From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 11:26 PM
Subject: City of New York - Correspondence #1-1-264496390 Message to AgencyHead, DOHMH - Other Health Matters

Your City of New York - CRM Correspondence Number is 1-1-264496390
DATE RECEIVED: 09/27/2006 22:20:31
DATE DUE: 10/11/2006 23:25:58
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 22:20:27
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: amybesq@yahoo.com (Amy Krallman)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Amy Krallman (amybesq@yahoo.com) on Wednesday, September 27, 2006 at 22:20:27

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Misc. Comments

Topic: Other Health Matters

Contact Info: Yes

M/M: Ms

First Name: Amy

Middle Name: B

Last Name: Krallman

Suffix: Esq

Street Address: 1400 E. Ocean Boulevard

Address Number: 2104

City: Long Beach

State: CA

Postal Code: 90802

Country: United States

Work Phone #: 310-872-6153

Email Address: amybesq@yahoo.com

Message: Do you really believe that regulation of restaurants is the answer to transfats ? Are you really a Republican ? What about personal responsibility ? What about not allowing the uninsured to receive treatment that insured people receive ? What about private funding for those who are unable to care for themselves ? What about no funding for those who are too lazy to eat properly ? No insurance company will insure someone with cholesterol that is too high, or blood pressure that is too high or other physical factors that are out of control; why should government ? I don't pay my taxes for this type of care, as I don't expect this type of care. I contribute liberally to charity and to individuals; that is what a CAPITALIST society is based on - you are sounding quite socialist.

I will be most interested in your responses.

Thank you,

Amy

REMOTE_HOST: 216.244.9.241
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

****

BARBARA A GROVA
447 Shelter Rd
Ronkonkoma, NY 11779

(631) 588 2427

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 and §81.50 to Article 81 of the NYC Health Code. I understand that §81.08 would restrict the serving of products containing artificial trans fats in NYC restaurants. §81.50 would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus. This would enable consumers to make informed choices among such items at the time of ordering.

Sincerely,

BARBARA A GROVA

2006 OCT 18 P 3:00

Annette Nack
130 Lake Nanuet Drive
Nanuet, New York 10954

(345)215-5001

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Annette Nack

Annette Nack

2006 OCT 18 P 3:00
DOHMH/SECRETARY'S OFFICE
RECEIVED

ANNA LONGO
3 Peter Cooper Rd #14C
NY, NY 10010

( ) -

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 27 A 10:50

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Please include my comments as testimony in support of the proposals to add §81.08 and §81.50 to Article 81 of the NYC Health Code. I understand that §81.08 would restrict the serving of products containing artificial trans fats in NYC restaurants. §81.50 would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus. This would enable consumers to make informed choices among such items at the time of ordering.

Sincerely,

A Longo

ANA GIRON
504 GRAND ST APT E62
NYC, NY 10002

(212) 260 - 6863

RECEIVED
DOHMH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 27 A 10:49

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 and §81.50 to Article 81 of the NYC Health Code. I understand that §81.08 would restrict the serving of products containing artificial trans fats in NYC restaurants. §81.50 would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus. This would enable consumers to make informed choices among such items at the time of ordering.

Sincerely,

Ana L.

Amanda Young
281 Mott St, 5r
New York, Ny
10012

(917) 208-7426

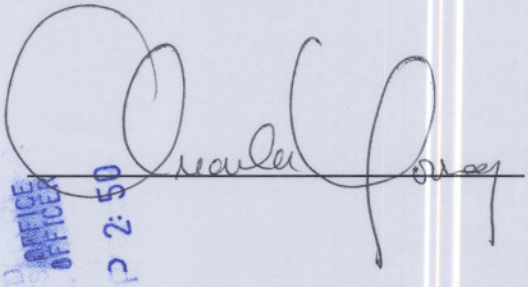
October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 and §81.50 to Article 81 of the NYC Health Code. I understand that §81.08 would restrict the serving of products containing artificial trans fats in NYC restaurants. §81.50 would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus. This would enable consumers to make informed choices among such items at the time of ordering.

Sincerely,



RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:50

Adrienne Piras
551 Henry St. #1
Brooklyn, NY 11231

(718) 852 9876

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

RECEIVED
2006 OCT 19 P 2:04
DOHMH SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 and §81.50 to Article 81 of the NYC Health Code. I understand that §81.08 would restrict the serving of products containing artificial trans fats in NYC restaurants. §81.50 would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus. This would enable consumers to make informed choices among such items at the time of ordering.

Sincerely,

Adrienne Piras

Conscious Cooking

Natural Cooking Classes & Health Counseling

RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: 10/9/06 **(must be before 10/30/06)**

RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 13 A 9:04

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 (which would restrict the serving of products containing artificial trans fats in NYC restaurants) and §81.50 (which would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus to enable consumers to make informed choices among such items at the time of ordering) to Article 81 of the NYC Health Code.

I agree with 81.50, put it on the menues
81.08 I do not agree with - I don't
approve of the gov't restrictions on
personal choices —

Sincerely,

First Name: Adele **Last Name:** Murphy

Street Address: _____ **Zip Code:** 11377

☒ Queens ☐ Manhattan ☐ Brooklyn ☐ Bronx ☐ Staten Island

Christine Lucas
1360 York Ave. #2L
New York, NY 10021

(646) 382-8900

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 and §81.50 to Article 81 of the NYC Health Code. I understand that §81.08 would restrict the serving of products containing artificial trans fats in NYC restaurants. §81.50 would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus. This would enable consumers to make informed choices among such items at the time of ordering.

Sincerely,

Christine Lucas

2006 OCT 18 P 2:51
RECEIVED
DOH/SECRETARY'S OFFICE
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Conscious Cooking

Natural Cooking Classes & Health Counseling

RECEIVED
2006 OCT 11 A 9:56
BOARD SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: October 8, 2006 **(must be before 10/30/06)**

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 (which would restrict the serving of products containing artificial trans fats in NYC restaurants) and §81.50 (which would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus to enable consumers to make informed choices among such items at the time of ordering) to Article 81 of the NYC Health Code.

This is good for all New Yorkers

Sincerely,

First Name: Stacy **Last Name:** Chin

Street Address: _____ **Zip Code:** 11377

☒ Queens ☐ Manhattan ☐ Brooklyn ☐ Bronx ☐ Staten Island

~~September 2006~~ October 8, 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 12 AM 9:

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

Three-quarters of adults report using nutrition labels on food packages, and almost half say that the labels have caused them to change their minds about which food products to purchase. Yet half of large chain restaurants do not provide *any* nutrition information to their customers. When information is available, it is usually from websites (requiring a computer and logging onto the Internet before going out), hard-to-find pamphlets, or tray liners that customers do not see until after they order. We do not expect people to make sound choices in supermarkets without nutrition information, and we should not expect them to be able to do so in restaurants.

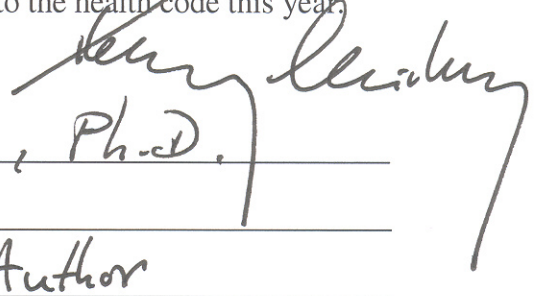
Since January 2006, almost all packaged foods have been required to list trans fat content on labels, this has lead many manufacturers to reduce or completely eliminate the use of

trans-fatty oils in their products. However, restaurants are exempt from such disclosure. Yet, many restaurants fry their foods in partially hydrogenated oil, which makes their foods dangerously high in trans fat. For example, the chicken pot pie at KFC has 14 grams of trans fat, about seven days' worth. A large order of McDonald's French fries contains four days' worth of trans fat (8 grams), and the hot chocolate at Dunkin' Donuts has two days' worth (4 grams).

Trans fat increases blood cholesterol and the risk of heart disease, the number-one cause of death in New York and the nation. Nationally, trans fat causes about 50,000 premature deaths each year. The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet." With about 3 percent of the nation's population, New York City may be unnecessarily afflicted with 1,000 to 2,000 heart attack deaths annually.

The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,



Name HENRY GRINBERG, Ph.D.

Organization Psychoanalyst and Author

Address 27 West 96 Street, 12B

City, State zip code New York NY 10025

Email address

Phone number 212-666-8098

Conscious Cooking

Natural Cooking Classes & Health Counseling

RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: 10-06-2006 **(must be before 10/30/06)**

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 (which would restrict the serving of products containing artificial trans fats in NYC restaurants) and §81.50 (which would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus to enable consumers to make informed choices among such items at the time of ordering) to Article 81 of the NYC Health Code.

Sincerely,

First Name: GARY **Last Name:** CAMPBELL

Street Address: 946-77th Street **Zip Code:** 11228

☐ Queens ☐ Manhattan ☒ Brooklyn ☐ Bronx ☐ Staten Island

www.conscious-cooking.com

FROM : NYCMNYBW-PROV FAX NO. : 212-513-2914 Oct. 06 2006 05:01AM P1

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

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NEW YORK STATE

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Email: gdunkel@aap.org

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Albany, NY 12203
Phone: 518/456-0951
Fax: 518/456-8573

Administrative Coordinator
Jessica Geslani
Email: jgeslani@aap.org

☐ 420 Lakeville Road
Suite 244
Lake Success, NY 11042
Phone: 516/326-0310
Fax: 516/326-0316

http://www.aapdistrictii.org

October 6, 2006

Thomas R. Frieden, MD MPH
Commissioner of Health
New York City Department of Health and Mental Hygiene
125 Worth Street
New York, NY 10013

Dear Dr. Frieden:

The American Academy of Pediatrics enthusiastically supports the proposed amendments to Article 81 of the New York City Health Code recently proposed by the New York City Department of Health and Mental Hygiene. These two proposed amendments, one restricting the sale and distribution of foods containing artificial trans-fats in New York City restaurants, and the second requiring food service establishments that routinely make nutritional information publicly available to post calorie information for consumers at the time of purchase, are both important public health initiatives that will have desirable consequences for the health of New York City residents.

As has been noted by the sponsors of proposed amendment §81.08 to Article 81 of the Health Code, the consumption of foods containing trans-fats (or partially hydrogenated vegetable oils) has been linked to the development of atherosclerotic heart disease. The restriction of the sale of trans-fats is therefore designed to remove a known risk factor for the development of coronary artery disease in adults. Those of us charged with the health and well-being of children and adolescents are well aware, however, that the precursors for this condition in adults emerge early in childhood.[1] In addition, as with adults, recent trends confirm that a higher percent of total calories consumed by children and adolescents is coming from food prepared away from home.[2] Moreover, patterns of food consumption begin quite early. It has been estimated that by 19-24 months of age, French fries are the most commonly consumed vegetable, one third of children eat no fruit whatsoever, while fully 60% are being fed baked desserts.[3] Since the vast majority of trans-fats are found in commercially prepared fried and baked goods, these eating patterns predispose even very young toddlers to the ingestion of trans-fats as regular elements of their diet. A sound approach to the threat posed by these conditions includes regular dietary counseling as part of routine primary care in the office

setting combined with innovative public health interventions that promote healthy eating patterns. As professionals who interact every day with parents concerned about their children's health, we recognize the importance of both of these strategies and applaud the New York City Department of Health and Mental Hygiene in its efforts to have food service establishments restrict the amount of trans-fats included in the foods they sell. There are healthy substitutes for these substances that are equally flavorful, easily obtained, and as economical. By restricting foods containing trans-fats, the Department of Health and Mental Hygiene will have taken an historic step in the direction of improving the cardiovascular health of all New Yorkers.

The second proposed amendment to the New York City Health Code, §81.50, is equally important to the health of children and receives our unqualified support as well. As is the case with other risk factors, epidemiologic evidence from longitudinal studies indicates that overweight and excess caloric intake among other risk factors track from childhood to adult life.[4,5] It is also well known that the twin epidemics of obesity and type II diabetes are becoming more severe even in the young pediatric age group over time,[6] particularly in areas such as New York City where recent estimates have indicated that one fifth of kindergarteners are obese.[7] As with the issue of trans-fat consumption, we believe that addressing the problem of excess caloric intake in the pediatric population must be a multi-pronged approach. As has recently been stated in a Policy Statement from the American Academy of Pediatrics when addressing a primary prevention approach to this issue:[8]

> *Education, with the support of the health care community, combined with health policy and environmental change to support optimal nutrition and physical activity, are central to this health strategy.*

In order for parents and young people to be able to make wise decisions concerning which foods they consume when dining out, it is imperative that information be provided to them about the caloric content of the foods they are purchasing *at the time* they are making their decisions about what to buy. Such information, clearly displayed at the time of purchase, will, when combined with the messages conveyed at primary care visits, enable parents and their children to modulate their intake of high calorie items containing large quantities of fats and carbohydrates. Parents routinely struggle when trying to resist the effects of well-financed food-related messages in print and electronic media that daily attempt to influence their children's food

purchases. Any aid that we can provide these parents that will help guide their choice of foods toward more nutritious alternatives constitutes an important public health intervention. We at the American Academy of Pediatrics therefore enthusiastically endorse the decision of the New York City Department of Health and Mental Hygiene to require food service establishments that routinely make public the calorie content of their menu items to post this information on menu boards and menus as proposed in amendment §81.50.

We believe that government can and should play an important role in addressing public health issues. We agree with Institute of Medicine's recent report on the prevention of childhood obesity which stated:[9]

> *Government at all levels serves several vital functions in a national public health crisis such as the childhood obesity epidemic. Government demonstrates leadership by establishing the childhood obesity epidemic as an urgent public health priority and coordinating the public- and private-sector response.*

Chapters 2 and 3 of District II of the American Academy of Pediatrics have historically recognized the vital role played by the New York City Department of Health and Mental Hygiene in promoting the health of New York City residents through a variety of critical activities. The two proposed amendments to the New York City Health Code are very much in keeping with this rich tradition and we are very pleased to join with the Department in support of their adoption.

Sincerely,

Anthony Battista, MD, FAAP
President, NY Chapter 2, AAP

Benard Dreyer, MD, FAAP
President, NY Chapter 3, AAP

Abraham Jelin, MD, FAAP
Co-Chair, NYC Youth Adv. Com.
NY Chapters 2 and 3, AAP

Andrew Racine, MD, PhD, FAAP
Co-Chair, NYC Youth Adv. Com.
NY Chapters 2 and 3, AAP

[1] Berenson GS, Srinivasan SR, Bao W, Newman WP 3rd, Tracy RE, Wattigney WA. Association between multiple cardiovascular risk factors and atherosclerosis in children and young adults. The Bogalusa Heart Study. *N Engl J Med.* 1998; 338: 1650-1656.

[2] Guthrie JF, Lin BH, Frazao E. Role of food prepared away from home in the American diet, 1977-78 versus 1994-96: changes and consequences. *J Nutr Educ Behav.* 2002;34:140-150.

[3] Fox MK, Pac S. Devaney B, Jankowski L. Feeding infants and toddlers study: what foods are infants and toddlers eating? *J Am Diet Assoc.* 2004; 104(1 suppl 1): s22-230.

[4] Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. *N Engl J Med.* 1997; 337: 869-873.

[5] Feunekes GI, de Graaf C, Meyboom S, van Staveren WA. Food choice and fat intake of adolescents and adults: associations of intakes within social networks. *Prev Med.* 1998; 27: 645-656.

[6] Mei Z, Scanlon KS, Grummer-Strawn LM, Freedman DS, Yip R, and Trowbridge FL. Increasing prevalence of overweight among low-income preschool children: the Centers for Disease Control and Prevention Pediatric Nutrition Surveillance, 1983-1995. Pediatrics 1998; 101 (1). URL: http://www.pediatrics.org/cgi/content/full/101/1/e12.

[7] Obesity in Early Childhood: More than 40% of Head Start Children in NYC are Overweight or Obese. NYC Vital Signs. NYCDOHMH. 2006. 5(2).

[8] American Heart Association, Gidding SS, Dennison BA, Birch LL, Daniels SR, Gilman MW, Lichtenstein AH, Rattay KT, Steinberger J, Stetler N, Van Horn L. Dietary recommendations for children and adolescents: A guide for practitioners. *Pediatrics* 2006; 117: 544-559.

[9] Koplan JP, Liverman CT, Kraak VI, Wisham SL. eds. Committee on Progress in Preventing Childhood Obesity. *Progress in Preventing Childhood Obesity. How do we Measure up?* Institute of Medicine of the National Academies. Washington, D.C.: National Academies Press. 2006.

October 5, 2006

Mr. Thomas Frieden, Commissioner
New York City Board of Health
125 Worth Street
New York, NY 100013

Dear Mr. Frieden,

Although some may think that the rule of strictly limiting trans fat is an infringement on civil liberties, I believe we have to look at the bigger picture, which is the community at large.

In recent years, the United States population health issues have greatly deteriorated in comparison to other nations. This is partly due to the consumption of artificial ingredients in our daily diet. A number of health issues, such as high blood pressure, obesity, diabetes, and high cholesterol, are becoming more prevalent in today's young children and adolescents.

Trans fat is one of the many artificial ingredients that is causing major ailments, which affect many Americans in today's society. Although banning it may increase the cost of dining out, it would be beneficial for every individual. Less of the taxpayers' money will have to go towards medical expenditures, insurance rates will decline since less money will be required to go towards medical coverage, and most important, people will have healthier choices.

Thank you for taking the time to read my comments and for considering my opinions.

In support of a healthier New York,

Najayra Rogers

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 27 A 10:43

Conscious Cooking

Natural Cooking Classes & Health Counseling

RECEIVED
SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 5 P 1:01

RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: 10/5/06 **(must be before 10/30/06)**

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 (which would restrict the serving of products containing artificial trans fats in NYC restaurants) and §81.50 (which would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus to enable consumers to make informed choices among such items at the time of ordering) to Article 81 of the NYC Health Code.

Please restrict the use of trans fat! It will only cause more problems and cost more money when people get sick and need care.

Sincerely,

First Name: Erin **Last Name:** McReynolds

Street Address: 215 E 10th St **Zip Code:** 10003

☐ Queens ☑ Manhattan ☐ Brooklyn ☐ Bronx ☐ Staten Island

Conscious Cooking

Natural Cooking Classes & Health Counseling

RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: 10/4/06 **(must be before 10/30/06)**

RECEIVED BOH/SECRETARY'S OFFICE RECORDS ACCESS OFFICER 2006 OCT -6 AM 11:15

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 (which would restrict the serving of products containing artificial trans fats in NYC restaurants) and §81.50 (which would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus to enable consumers to make informed choices among such items at the time of ordering) to Article 81 of the NYC Health Code.

New Yorkers' access to healthy foods – particularly in low-income neighborhoods, where fast-food chains abound – is crucial in preventing chronic obesity, risk of heart disease, Type 2 diabetes, and other major diseases.

Sincerely,

First Name: Teresa **Last Name:** Theophano

Street Address: 369 Bergen Street **Zip Code:** 11217

☐ Queens ☐ Manhattan ☒ Brooklyn ☐ Bronx ☐ Staten Island

October 4, 2006

MONTEFIORE MEDICAL CENTER STATEMENT

Montefiore Medical Center strongly supports the initiative by the Department of Health to require the labeling of calories and the elimination of trans fat in the food we eat. "These measures demand the full support of the NYC medical community," said Montefiore's Chief Medical Officer, Dr. Steven M. Safyer. "Fifty thousand New Yorkers are hospitalized each year with heart attacks, and heart disease is the leading cause of death in our city. This information will help us avoid foods that contribute to obesity, heart disease, diabetes and other preventable diseases now epidemic in our society, and make it easier for all of us to make informed choices and to avoid dangerous trans fat."

Pamela Adkins
Director
Public Relations
Montefiore Medical Center
718-920-4011
padkins@montefiore.org

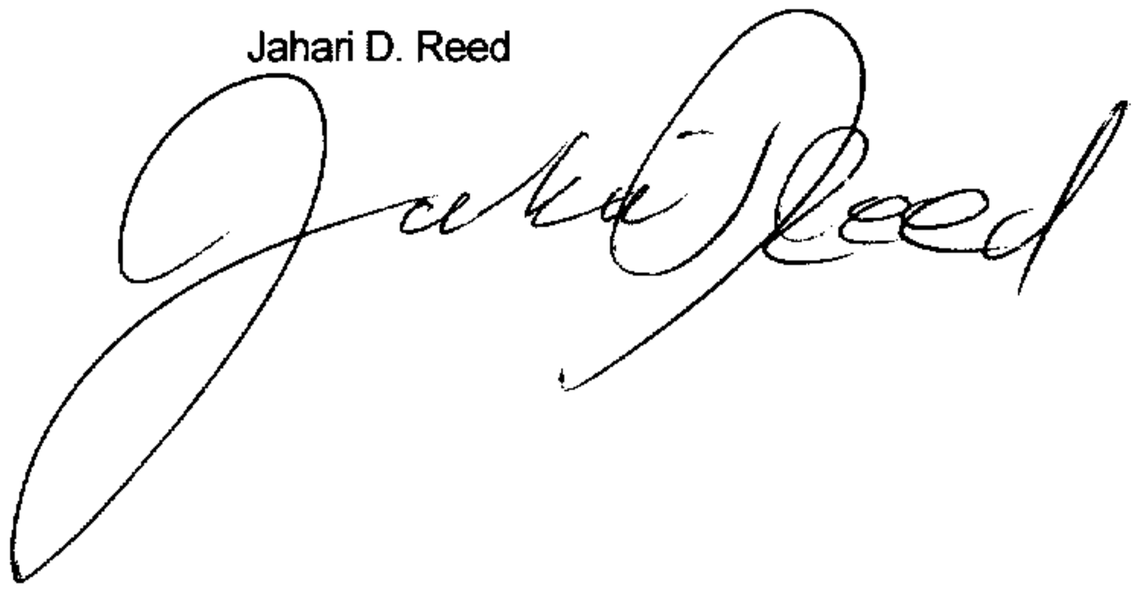
RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 10 A 11:08

October 4, 2006

New York City Board of Health

I am writing in response to the proposed rule banning trans fats in restaurants. I for one feel that the ban on trans fats is necessary and proper to ensure the future health of our youth. Heart disease and obesity are some of the effects of trans fats. They are also some of the issues that plague the black community. In many low income neighborhoods "bad" food choices are more readily available than "good" ones. I happen to live in a low income neighborhood where every other block has a restaurant that serves mostly fried foods. The removal of trans fats would force these restaurants to rethink their cooking methods. I am glad to see that the Board of Health is taking a stance to improve the health of New Yorkers.

Jahari D. Reed



RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 27 A 10:43

Conscious Cooking

Natural Cooking Classes & Health Counseling

RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: 10/3/06 **(must be before 10/30/06)**

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 (which would restrict the serving of products containing artificial trans fats in NYC restaurants) and §81.50 (which would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus to enable consumers to make informed choices among such items at the time of ordering) to Article 81 of the NYC Health Code.

I would probably eat out more if this was
Opposed as addressed I support the proposals
125 %

Sincerely,

First Name: Lynn **Last Name:** Piccolo HHC

Street Address: 1362 78th St Bklyn NY **Zip Code:** 11228

☐ Queens ☐ Manhattan ☑ Brooklyn ☐ Bronx ☐ Staten Island

www.conscious-cooking.com

10/03/2006 16:28 7189659801 DELCO ELECTRIC PAGE 01/04

Conscious Cooking

Natural Cooking Classes & Health Counseling

What is §81.08? This ruling would restrict NYC restaurants from serving food containing artificial or added trans fats. (Thus, meat and dairy products containing natural trans fats would be okay to serve, but restaurants would not be able to use oil and shortening that contains trans fat.) Trans fats lower "good" HDL cholesterol, and raise "bad" LDL cholesterol. There are healthier fat alternatives that are widely available and should be used, however the restaurant industry has yet to widely replace trans fat with available alternatives.

What is §81.50? This ruling would require restaurants that already make nutritional information available to post the calorie information for individual items on their menu boards and menus. This would enable consumers to make more informed choices among such items at the time of ordering. §81.50 is aimed at restaurants that use standard recipes for menu items, such as McDonalds and Starbucks. It's not aimed at smaller independent restaurants and would only affect about 1 in 10 restaurants, mostly chains.

By voicing (or faxing) your opinion, you are in good company. Here is what the experts are saying:

"If New Yorkers replace all sources of artificial trans fat, by even the most conservative estimates, **at least 500 deaths from heart disease would be prevented each year in New York City** - more than the number of people killed annually in motor vehicle crashes. Based on long-term studies, the number of preventable deaths may be many times higher. **Trans fat from partially hydrogenated vegetable oil is a toxic substance that does not belong in food.**" *Walter Willett, M.D., Dr. P.H., Chair of the Department of Nutrition at the Harvard School of Public Health.*

"I can't think of a better or more practical way to teach people about calories in food than to list them right next to the prices. If restaurant companies really want consumers to be healthier and to make better food choices, they should support both the banning of trans fats and the listing of calories, in New York and across the country." *Marion Nestle, a professor of food studies and public health at New York University, is the author of "What to Eat."*

www.conscious-cooking.com

10/03/2006 16:28 7189659801 DELCO ELECTRIC PAGE 02/04

Conscious Cooking

Natural Cooking Classes & Health Counseling

Smaller chains and restaurants like Sylvia's, Juniors and the Carnegie Deli have already removed trans fat ingredients without government intervention, and some larger companies have made the switch without major difficulties. Ruby Tuesday, Au Bon Pain, and even Wendy's, have all sharply reduced trans fats in their products.

Other local restaurant owners want you to know that they are also in agreement:

Chip Shop owner Chris Sell, said, "I can find trans fat-free and cholesterol-free oil for the same price as oil full of trans fat and cholesterol, so I am always going to choose the trans fat-free oil. We have been completely trans fat-free for the past five years."

Allysa Torey, **Magnolia Bakery** owner said, "We make all our products without trans fat, including our famous cupcakes. We only use shortening in a small number of our seasonal products and don't anticipate any issues in making the change."

Leslie Meenan, Managing Partner at **Café Habana** said, "Cooking with trans fat-free oils accentuates the natural flavors of the food. It is just as easy to cook without trans fat and the food tastes better."

Monica Von Thun Calderòn, owner of **Grandaisy Bakery**, said "Grandalsy Bakery has been totally committed to baking without trans fat since its inception because the health of our customers is important to us. Simple ingredients make a great tasting product."

Mohammad Moqbul Hossain, partner in **Taste of Tandoor**, said "Taste of Tandoor is already cooking without any artificial trans fat. The food we make for our customers, we also eat ourselves, so we are committed to making healthy food."

Manuel Colon, General Manager of **Bistro Cassis**, said, "We switched to trans fat free-oil because we liked the taste better than food fried in oil with trans fat. We have not had to change recipes or increase prices to customers as a result of the change."

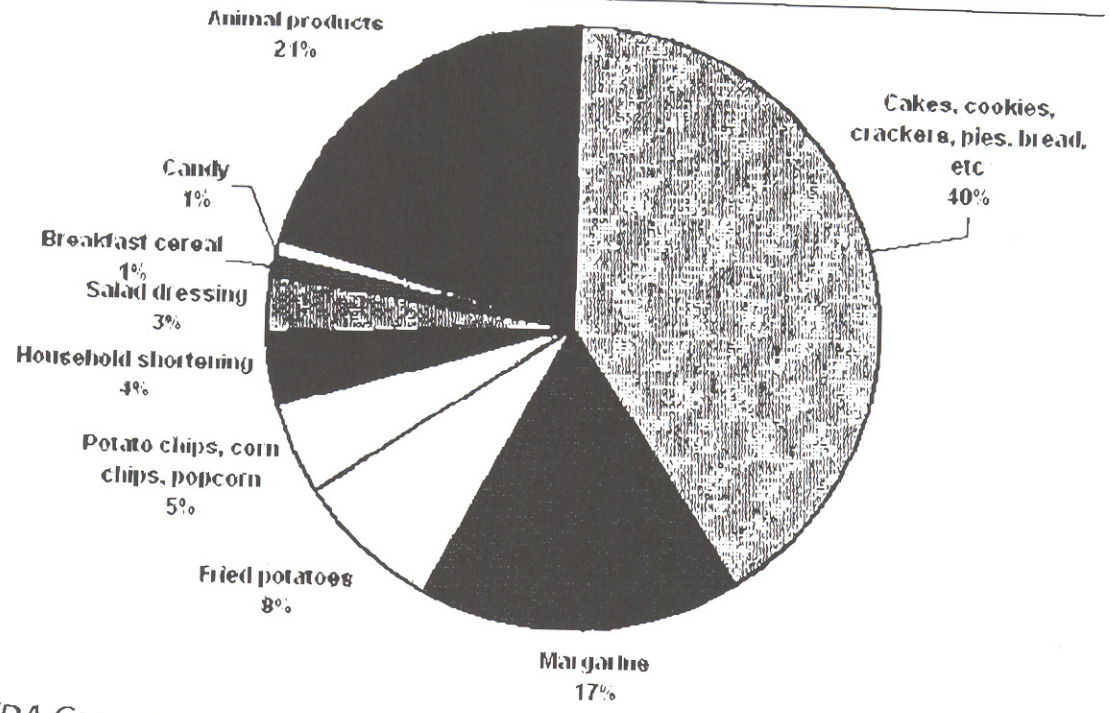
www.conscious-cooking.com

10/03/2006 16:28 7189659801 DELCO ELECTRIC PAGE 03/04

Conscious Cooking

Natural Cooking Classes & Health Counseling

Sources of Trans Fat in the U.S. Diet



FDA Consumer magazine. September-October 2003 Issue. Pub No. FDA04-1329C. URL: http://www.fda.gov/fdac/features/2003/503_fats.html

For more information:

www.nyc.gov/html/doh NYC Department of Health and Mental Hygiene Read the 2 proposals online. Attend the hearing in person on 10/30.

www.nytimes.com Many recent articles about the Trans Fat Proposal

www.conscious-cooking.com Holistic health counseling and healthy cooking classes with Diane Kolack, HHC. The best way to avoid unhealthy restaurant food is to stay at home and cook your own food. Learn to make 30 minute meals that leave more in your pocket and less around your middle. Email diane@conscious-cooking.com for more information.

www.conscious-cooking.com

10/03/2006 16:28 7189659801 DELCO ELECTRIC PAGE 04/04

Dale HT
CC: L SILVER
R. BRYANT

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Tue, Oct 3, 2006 6:58 PM
Subject: City of New York - Correspondence #1-1-265816500 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-265816500
DATE RECEIVED: 10/03/2006 17:50:39
DATE DUE: 10/17/2006 18:55:33
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/03/2006 17:49:52
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: helene@sagasys.com (Helene Eisenberg)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Helene Eisenberg (helene@sagasys.com) on Tuesday, October 3, 2006 at 17:49:52

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Helene

Last Name: Eisenberg

Street Address: 189 West 89th Street

City: New York

State: NY

Postal Code: 10024

Country: United States

Work Phone #: 212-706-2209

Email Address: helene@sagasys.com

Message: Bravo on your attempt to limit trans fats in restaurants. Who will miss them, after all? And one cannot make an informed choice in restaurants as meals do not come with ingredients labeled. I'd like to see disclosure of trans fats wherever offered - restaurants or store shelves. If you don't succeed in banning this substance, perhaps disclosure will discourage its use.

REMOTE_HOST: 209.219.104.30
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; .NET CLR 1.1.4322)

****

Conscious Cooking

Natural Cooking Classes & Health Counseling

RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT -3 A 8:5

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: Oct. 2. 2006 **(must be before 10/30/06)**

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 (which would restrict the serving of products containing artificial trans fats in NYC restaurants) and §81.50 (which would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus to enable consumers to make informed choices among such items at the time of ordering) to Article 81 of the NYC Health Code.

Can't agree more in removing trans fat from food plates ASAP for all DD

Sincerely,

First Name: YING **Last Name:** SHI

Street Address: 121 Ave of Americas **Zip Code:** 10021

☐ Queens ☒ Manhattan ☐ Brooklyn ☐ Bronx ☐ Staten Island

The Small Business Congress, Inc.

United with a Goal of Creating a Healthy Small Business Environment in New York City

146-03 34th Avenue, Flushing, NY 11354 Tel. (718) 886-5567 Fax (718) 886-5535
E-mail: smallbusinesscongress@yahoo.com

October 30, 2006

Testimony
to The Department of Health & Mental Hygiene's
Hearing on Proposed Amendment
To Add Section 81.08 To Article 81 of The New York City Health Code

My name is Sung Soo Kim, President of The Small Business Congress, Inc., a trade federation collectively representing the City's 185,000 small businesses. I would like to present our testimony to this issue that will seriously effect the many small restaurants and food eateries of New York City.

We admire the leadership of Mayor Michael Bloomberg and Dr. Thomas Frieden, Commissioner of The New York City Department of Health & Mental Hygiene, who have conscientiously addressed the issue of trans fat in New York restaurants. And we highly admire the spirit of this over-delayed measure.

Our concern is not with the nature, which is timely, but the practical implementation of the proposed reduction on trans fat usage by the July 2007 deadline. Simply, fast-food and ethnic restaurants, operated mainly by immigrants, such as Korean salad-bars, Chinese, Greek, and Hispanic fast-food businesses cannot be fully educated and adjusted to the new laws in the proposed timeframe. While large chain restaurants whose integrated supply, delivery, and management systems can successfully adjust with reasonable costs, small businesses are dictated by the available products in the market, and are without resources for alternatives. Furthermore, information of changes in the law is inaccessible for the many non-native speakers who operate these establishments and must be proactively instructed and advised by the government and trade community.

A prominent issue in the SBC's Small Business Bill of Rights of 2006-7 is the establishment of an Ethnic Health Advisory Board (enc.). With such measures, a partnership among restaurants, the larger food industry, and the government can network, discuss, and implement successful and timely initiatives to the benefit of all. SBC and our fellow trade groups will continue to educate our communities. We ask the City join in our efforts.

Thank you.

THE SMALL BUSINESS BILL OF RIGHTS
OF
2006-2007

PREAMBLE

It is time for the contribution of New York City's 185,000 small businesses to be fully recognized. These hardworking businesses, with their spirited work style and self-supporting capital formation, have expanded neighborhood markets, created hundreds of thousands of jobs and helped increase productivity in the City's economy. The valuable services provided by these neighborhood businesses improve all New Yorkers' quality of life.

Yet the City Government has long created a negative business climate for small businesses. These businesses have been squeezed as "cash cows" through high fees, heavy fines and 14 different kinds of direct and indirect taxes. Small businesses have been eliminated from the decision-making process regarding license fees and fines. This can no longer be tolerated and is "taxation without representation." Small businesses have also experienced "Southern Sheriff Syndrome" where agencies have been using fines as a way to pay for employee's salaries. The small business community in New York City has become a "deprived social class."

These policies are directly adding to the decline of small businesses in NYC. Over the past 20 years, the number of small businesses entering bankruptcy has steadily increased, from 4,000 per year in the late 1980's to over 12,000 projected for this year. With sales reduction ranging 20% to 50% many stores are at the brink of bankruptcy.

We, the responsible representatives of the small business community of the City, as its prime concern, appeal to the public sector and to the Bloomberg Administration and the City Council to take a sharp turn: from confrontation to entering into a partnership with the small business community. SBC firmly demands the Administration to immediately reinstate the Mayor's Small Business Advisory Board, the long-time proven effective standing channel of communication between the government and the community to resolve the Administration's daily operational issues and the City Council to create a Speaker's Small Business Legislative Advisory Board to articulate small business issues and to find legislative solutions. These channels will end the small business community's isolation from policy-making and the public sector's under-appreciation for the small business community's contribution and potential.

The Small Business Congress, Inc. is now presenting the 2006-7 Small Business Bill of Rights to the Administration and to the City Council. It outlines urgent emergency needs and issues that have long plagued the small business community and contains policy recommendations. The demands articulated in the Bill of Rights are urgent, and the solutions are compatible with the interests of consumers, environmentalists and all concerned New Yorkers. They must be adopted this year!

1. IMMEDIATE AND COMPREHENSIVE REVIEW OF CITY'S REGULATORY & ADJUDICATION SYSTEMS AND FINE SCHEDULES

It is time for the City government to declare a truce in its war against small businesses. The patchwork system of inspections, hearings and fines must be completely reviewed and overhauled as it is an unfair, inconsistent, time-consuming burden on small businesses. Every day, hundreds of small business owners have to take time off from work to attend hearings at various agencies to defend against a blizzard of summonses. Each agency has its own rules and procedures and they differ from one another. One thing is common, however; business owners wait hours to be heard due to the volume of summonses issued, are treated like cattle, are presumed guilty, often have to come back a second time because the inspector is not present, and are fined considerable sums for what is often minor or silly violations. And this is repeated twice a day, every day.

With an agenda of using small businesses as "cash cows", the City has adopted inspection programs that more often entrap businesses than address legitimate complaints and has increased fines and punishments leading to license revocations and business closures. SBC suggests its recommendations to the following key issues:

(i) REVIEW OF DECOY INSPECTIONS

NYPD and DCA have been using a method of "entrapment" in enforcing sale of alcoholic beverages and tobacco products to minors. Undercover officers or recruited minors usually one or two months shy of the legal age act as decoys in purchasing beer or cigarettes. In most cases, they disguise their appearance to look older. This type of "unethical" enforcement has placed undue fears and pressures upon merchants. The second time violation of the new cigarette law leads to a mandatory revocation of a license. DCA however has not even declared specific rules and regulations of the waiver clause that may save a cigarette retail dealer licensee from mandatory license revocation but has been eager to send out decoy inspections.

(ii) PROTEST AGAINST UNAFFORDABLE RECIDIVIST FINE SCHEDULES

Applying heavier fines to recidivist violations is contrary to the spirit of the codes and rather the respondent has little room for defending his/her case. Offering a stipulation instead of blindly levying double or triple fines is more reasonable.

(iii) ABOLITION OF REPEAT VIOLATORS PROGRAM

The Repeat Violators Program was installed by the Department of Sanitation to punish repeat offenders of sanitary codes. Repeat offenders of seven such codes are issued the maximum fine of $300 for each violation, after twelve summonses during a period of 12 months. Since the program's implementation in1989, the unduly prepared inception of the program, the intolerable inconsistencies in implementation, careless waste of City revenue, the eventual allowance of discretional power to enforcement agents in the process of summons issuance which leads to "harassment" of merchants and unethical transactions between agents and store owners are among the crucial reasons why this program should be suspended.

(iv) PROTEST AGAINST DEPARTMENT OF HEALTH'S OVER-ENFORCEMENT ON FOOD ESTABLISHMENT SANITARY CODES

Since March 2003, DOH&MH has practically tripled fines focusing on fast foods and ethnic foods. Fine increase is not the sole solution for advancing the quality of life. Offering more educational programs and a probationary period during which violations may be corrected is a more effective choice for securing the advancement of quality of life. While the Department has made encouraging steps to redress its escalating fines, for instance, its decision to reject recent rule changes that would have increased the minimum fines on many food violations, continued efforts toward fostering regulatory and business cooperation is necessary.

(v) INSTEAD OF TICKETING, IMPLEMENT WARNINGS WITH RETURN DATES

Laws should be strictly enforced to maintain the quality of life and the public order of the City. Merchants should abide by laws. Ticketing is however not the solution for this purpose. Storeowners who have poor access to governmental information have to be educated before ticketing. Conscientious administrators agree it is unfair that the Government issues tickets to merchants when they are not well aware of codes. Issuing a warning with instructions for correction before ticketing is a conscientious, fair and secure way to enforce the laws. A record shows that Department of Sanitation in 1992 issued tickets less than any previous year but the sanitary score for that year showed the highest one. DOS for that year made an intensive effort to launch educational projects. Issuing a warning with a return date before ticketing as practiced by Building Department and Fire Department is a fair, productive, and accountable piece of governance. We are demanding that this system should be applied to the other enforcement agencies, i.e., DCA, DOS, DOT, NYPD, etc.

(vi) INSTALLATION OF HEALTH DEPARTMENT'S ETHNIC FOOD ADVISORY BOARD

The City proudly boasts 140 different ethnic foods. These foods generally are very different in nature and preparation. To understand such types of ethnic food, an advisory board should be established within the Department of Health. The board would be

composed of representatives from ethnic groups who work together to better advise the Department as to sale and consumption of such foods. This measure will undoubtedly enable the Department to better regulate and offer variances to ethnic food establishments.

2. CREATION OF A MAYOR'S AND COUNCIL'S SMALL BUSINESS ADVISORY BOARDS

As a voice in expressing small business interests and conduit between the business community and the City, we ask the reinstatement of an advisory board that has shown itself effective under previous administrations. SBC requests that the Speaker of the City Council set up a Small Business Advisory Board so that the concerns of the small business community may be articulated in the legislative process.

3. OFFER OF SMALL BUSINESS AMNESTY PROGRAMS

The city's 185,000 small businesses have been suffering from the obligation to pay off default and judgment fines issued by 12 enforcement agencies whose penalty amounts normally go five to ten times higher than the original fine amounts. Estimated to be nearly a billion dollars, these fines are not only beyond the ability of small businesses to pay, but they are preventing small businesses from obtaining loans and lines of credit, thereby negatively impacting opportunities for expansion and job creation. Through amnesty programs, the Government shows a "graceful" gesture with an offer of affordable amounts of lowered fines. The Government may collect two hundred million dollars which will help the Government overcome its fiscal hardship. Amnesty is a win/win scenario.

4. ESTABLISHMENT OF SMALL BUSINESS OMBUDSMAN

A Small Business Ombudsman is recommended at every agency that regulates small business, including, DEP, Health, ECB and DCA amongst others. For example, to deal with problems that develop among landlord, tenant, and the Water Board because of the technical nature of water meter reading, we request the Government install an ombudsman to offer fair remedy and open communications.

5. ELIMINATION OF OUTDATED, EXCESSIVE, DUPLICATIVE AND SILLY LAWS AND REGULATIONS

It is more than time for a complete review of the thousands of pages of City laws and regulations adopted over the past 100 years. Many are outdated (such as licensing billiards and laundries), others are duplicative (such as one business requiring multiple

licenses from the same city agency or from both the city and state), many are excessive (such as the huge number of signs a restaurant must post) and some are just plain silly (such as sitting on a milk crate). Yet fines are regularly levied for violating these rules.

6. AID FOR SMALL BUSINESSES

Taken together, small businesses are the largest employers in the City. Yet there are pitiful few programs to attract and maintain these businesses. New and old programs, long eliminated, need to be addressed once again. These include a **Micro-Loan Program** for those who cannot obtain a bank loan and an **Incubator Program for Bidding on City Contracts**, encouraging small business entrepreneurs to participate in the bidding process, and requiring City contracts, when possible, to be in small portions that can be bid on by small businesses, not mega-contracts or franchises such as the coordinated street furniture contract, that only huge corporations can compete.

7. SUPPORT OF COMMERCIAL RENT MEDIATION/BINDING ARBITRATION BILL

In the face of increasing commercial rents that force neighborhood-based businesses into bankruptcy, we must have a law that introduces binding arbitration into the commercial rent area. SBC recommends this bill which offers the most equitable solution to protect tenants' survival while preserving for the landlords the principle of a free market with minimal interference from the public sector. The measure does not create any new government agency or any burden on taxpayers. It is a fair and effective system for all parties involved.

8 PROTECTING NEIGBORHOODS AND SMALL BUSINESSES FROM MEGATORES

While the megastore zoning proposal was defeated during the previous administration, megastores are still opening at an alarming rate, using zoning loopholes and variances to circumvent the law. Currently, neighborhood small businesses are hanging on to survive as megastores use the ULURP through their influential representatives to come into already over saturated areas, putting additional strain on traffic, infrastructure and emergency services. At the same time, these zoning distorting approvals have meant the systematic wiping out of local mom-and-pop stores in all categories. We believe the ULURP should not be used to distort the intent of the protective process to protect neighborhoods. In conjunction with civic communities, SBC will protect neighborhoods and their small businesses from zoning distorting approvals on megastore invasions and find compatible solutions for communities and megastores. SBC demands a mandatory independent economic impact study in processing a megastore application.

PUBLIC HEALTH ASSOCIATION OF NEW YORK CITY
1710 First Avenue • Suite 282 • New York, New York 10128
tel: 212-722-1063 • fax: 212-722-0726 • email: info@phanyc.org • www.phanyc.org

PHANYC Statement for the NYC Department of Health and Mental Hygiene Public Hearing on Proposed amendment of Article 81 of NYC Health Code to add §81.50 October 31, 2006

Good morning. My name is Amy J. Schwartz, and I am the Executive Director of the Public Health Association of New York City, an affiliate of the American Public Health Association, the national organization of public health professionals.

The Public Health Association of New York City, the largest and oldest independent public health organization in the city, writes in support of recently proposed amendments to Article 81 of the Health Code to (1) require restaurants to list the calorie content on menus and (2) to require restaurants to phase out *trans* fat. We support these amendments because they will help New York City to reduce the single largest cause of death, cardiovascular disease, and the fastest growing major cause of death, diabetes. These proposals will also add one more tool to New York City's efforts to reduce obesity and to reduce the unacceptably high disparities in health between better off and poor New Yorkers and between whites, on the one hand, and African-Americans and Latinos on the other.

The proposal for restaurants to list calorie content of food is a modest but important step in making New Yorkers aware of the high calorie content of many restaurant foods. By enabling New Yorkers to make more informed choices , the City can lend a helping hand to the many New Yorkers who want to lose weight. The proposal will affect only about one in ten restaurants but since these establishments are chains with high volume business and serve high proportions of low-income people, this targeting has a strong public health rationale.

The proposal to phase out artificial *trans* fat will also help to reduce cardiovascular disease and diabetes and will protect New Yorkers from a substance that has no known nutritional value. Moreover, numerous research studies over the last 12 years have shown that *trans* fats contribute to tens of thousands of premature deaths. The failure of the New York City food industry to voluntarily label or remove dangerous *trans* fats despite this evidence makes public health regulation a logical next step.

Critics of the proposed regulations, primarily food lobbyists and their supporters, raise two spurious arguments that we urge the Board of Health to reject. First, they suggest that the proposed *trans* fat regulation will restrict New Yorkers' freedom of choice. But no New Yorker has ever ordered a portion of *trans* fat. These products were added to the food supply not to benefit consumers but to enhance food industry profits. After these regulations are in effect, New Yorkers will continue to enjoy every food now available, but without the worry that an unnecessary and hidden ingredient is harming their health.

Second, some critics say that since other products and practices contribute to obesity, cardiovascular disease and diabetes, why pick on *trans* fats or require caloric labeling? In our view, this is like arguing that since seat belts don't prevent all car crashes, we should abandon their use. Unfortunately, no single intervention can reverse these epidemics. Rather, an accumulation of individual, community and policy steps will be needed to stem these conditions. Labeling the caloric content and phasing our *trans* fats in restaurants are two modest, low cost and effective steps for improving health. These steps will save lives, educate New Yorkers about the ongoing need to pay attention to their diet and contribute to a climate where further steps can be taken to save more lives.

We endorse the passage of these two amendments with enthusiasm.

END

For more information on this testimony or the Public Health Association of New York City, please contact Amy J. Schwartz, PHANYC Executive Director at (212) 722-1063 or info@phanyc.org , or Nichoas Freudenberg, Distinguished Professor of Public Health, Hunter College and PHANYC President at nfreuden@hunter.cuny. Please see "Nutrition and Physical Activity in New York City: Defining a Common Policy Agenda. Public Health Association of New York City,"for additional information on nutrition and physical activity at **http://www.phanyc.org/files/Nutrition%20Report%207-24.3.pdf**. Visit www.phanyc.org .

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Mon, Oct 2, 2006 9:51 PM
Subject: City of New York - Correspondence #1-1-265564590 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-265564590
DATE RECEIVED: 10/02/2006 20:49:18
DATE DUE: 10/16/2006 21:50:35
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/02/2006 20:48:32
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: mikerobe@atlanticbb.net (Michael Brown)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Michael Brown (mikerobe@atlanticbb.net) on Monday, October 2, 2006 at 20:48:32

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Complaint

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Michael

Last Name: Brown

Street Address: 127 Rebel Rd.

City: Grasonville

State: MD

Postal Code: 21638

Country: United States

Work Phone #: 410-827-6883

Email Address: mikerobe@atlanticbb.net

Message: Trans fats are not "lethal" in small amounts. Peopleshould have the freedom to choose what they consume. Who the hell gave you the right to decide what people eat? I'm so sick and tired of liberal assholes like yourself telling all of us what we can, or can't do. Mind your own Fucing business. It's a free country. or at least it once was before assholes like you started dictating to the people.

REMOTE_HOST: 72.45.6.11
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Mon, Oct 2, 2006 6:33 PM
Subject: City of New York - Correspondence #1-1-265540530 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-265540530
DATE RECEIVED: 10/02/2006 17:27:47
DATE DUE: 10/16/2006 18:31:24
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/02/2006 17:27:02
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: eldepp@earthlink.net (Lauraine Deppe)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Lauraine Deppe (eldepp@earthlink.net) on Monday, October 2, 2006 at 17:27:02

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Lauraine

Last Name: Deppe

Street Address: 108 Wooster St

Address Number: 6B

City: New York

State: NY

Postal Code: 10012

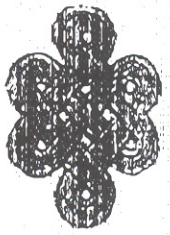
Country: United States

Email Address: eldepp@earthlink.net

Message: THANK YOU for your efforts to ban Trans Fat from NYC restaurants... I support this measure 100 and commend you for putting the health of New Yorkers ahead of the inconvenience of restaurant owners.

REMOTE_HOST: 4.231.243.129
HTTP_USER_AGENT: Mozilla/5.0 (Macintosh; U; PPC Mac OS X; en) AppleWebKit/312.8 (KHTML, like Gecko) Safari/312.6

****



Conscious Cooking

Natural Cooking Classes & Health Counseling

RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT -3 P 3:45

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: 10/2/06 **(must be before 10/30/06)**

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 (which would restrict the serving of products containing artificial trans fats in NYC restaurants) and §81.50 (which would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus to enable consumers to make informed choices among such items at the time of ordering) to Article 81 of the NYC Health Code.

Don't let corporate restaurants profit at the expense of the public's health. Let NYC lead the way with this landmark legislation that is in everyone's true best interests.

Sincerely, Kevin Kolack, Ph.D.

First Name: Kevin **Last Name:** Kolack, Ph.D.

Street Address: 48-41 43rd St., 5J **Zip Code:** 11377

☒ Queens ☐ Manhattan ☐ Brooklyn ☐ Bronx ☐ Staten Island

American Diabetes Association.
Cure • Care • Commitment®

FOR IMMEDIATE RELEASE
October 2, 2006

Contact: Elizabeth Magsig, 703-549-1500, ext. 2146
emagsig@diabetes.org

RECEIVED
2006 OCT 10 P 12:01
OFFICE OF THE SECRETARY'S
FOOD AND DRUG ADMINISTRATION

Statement of the American Diabetes Association on the New York City Health Department's Proposal to Phase Out Artificial Trans Fat In All Restaurants

ALEXANDRIA, VA – The American Diabetes Association applauds the New York City Health Department's proposal to eliminate artificial trans fats in all New York City restaurants and make calorie content for foods served in restaurants publicly available on menus and menu boards.

Trans fats are linked to heart disease and this proposal is especially relevant to people with diabetes who are at increased risk for heart attack and stroke. Heart disease is the leading cause of diabetes-related deaths. Adults with diabetes have heart disease death rates about 2 to 4 times higher than adults without diabetes.

Our nation is facing an epidemic of diabetes and when you consider that many American adults – and their children – are eating out several times a week, it is even more difficult to avoid trans fats and maintain a healthy diet. For the more than 700,000 New York City adults diagnosed with diabetes, this proposal will eliminate a major source of artificial trans fats and can hopefully serve as a model for other cities to consider.

Making calorie information available through postings on menus and menu boards is also a critical step in helping people get the information they need to better understand how the foods that they eat can have an impact on their weight and overall nutrition goals.

Some 20.8 million adults and children in the United States have diabetes, a group of serious diseases characterized by high blood glucose levels that result from defects in the body's ability to produce and/or use insulin. Diabetes can lead to severely debilitating or fatal complications, such as heart disease, blindness, kidney disease, and amputations. It is the fifth leading cause of death by disease in the U.S.

The American Diabetes Association is the nation's leading voluntary health organization supporting diabetes research, information and advocacy. Founded in 1940, the Association has offices in every region of the country, providing services to hundreds of communities. For more information, please call the American Diabetes Association at 1-800-DIABETES (1-800-342-2383) or visit www.diabetes.org. Information from both these sources is available in English and Spanish.

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From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Sun, Oct 1, 2006 9:12 AM
Subject: City of New York - Correspondence #1-1-265206250 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-265206250
DATE RECEIVED: 10/01/2006 08:07:57
DATE DUE: 10/15/2006 09:11:50
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/01/2006 08:06:59
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: cheiapete@yahoo.com (Peter Soltani)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Peter Soltani (cheiapete@yahoo.com) on Sunday, October 1, 2006 at 08:06:59

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Complaint

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: Peter

Last Name: Soltani

Street Address: 235 Sidonia Ave

Address Number: 318

City: Coral Gables

State: FL

Postal Code: 33134

Country: United States

Work Phone #: 1-516-467-6750

Email Address: cheiapete@yahoo.com

Message: This IMPORTANT message is regarding your recent trans fat ban idea for NYC restaurants. I think its a good idea, BUT THERE IS SOMETHING I WANT TO MAKE SURE U ARE AWARE OF. I graduated from a registered dietetics program, and i'm currently about to enter my 3rd year of medical school.I want to inform you that my medical biochemistry professor "quoted" that when unsaturated veggie oils are repeatedly heated and cooled. First they convert from Cis to Trans, and with more heating cooling....then from trans to fully saturated! Most restaurants keep oils in friers for while, heating/cooling them a plethora of times, causing full saturated conversion. I have boards to study for(no time)....BUT YOU PLEASE CHECK ON THE VIABILITY OF THIS IMPORTANT INFO, and take it into consideration when pushing the new law.(maybe not allow cooks to reuse same oil batch too many times?).

REMOTE_HOST: 71.196.81.131
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

****

Michael Troy
500 West End Ave., Apt. 10E
New York, NY 10024
mtroy@nyc.rr.com

DEPARTMENT OF HEALTH AND MENTAL HYGIENE
BOARD OF HEALTH
ATTN: RENA BRYANT
FAX # (212) 788-4315

Sept. 30, 2006

Dear Ms. Bryant:

I would like to comment on New York City's proposed law requiring restaurants to eliminate the use of less than ½ gram of Trans Fat in restaurants.

I am an ordinary citizen, with no financial interests in the food business. I am very health conscious and have been trying to avoid Trans Fat for several years. I do believe that the public must be protected from inadvertently consuming Trans Fat in restaurants. However, I believe this can best be accomplished by a different method than banning them.

I believe that restaurant should only be required to inform diners if they are using Trans Fat, by conspicuously posting this information on their menus and on signs in their establishment. Any item on their menu that contains any Trans Fat, should be listed. Then the public can make their own decision, if they wish to patronize a restaurant.

I do not support requiring all restaurants to avoid Trans Fat. A well informed public can let the marketplace determine what a restaurant uses. As long as we, the public, know what we are about to eat, it is our right to make the decision.

I believe that restaurants should be required to inform patrons of even more than just Trans Fat. They should inform patrons of the same information that is required of grocery items, i.e. calories, protein, carbohydrates, sugars, etc. Why should we be allowed to make informed decisions in the grocery store, but not in a restaurant?

Sincerely,

Michael Troy

Michael Troy

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Fri, Sep 29, 2006 3:20 PM
Subject: City of New York - Correspondence #1-1-264904570 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264904570
DATE RECEIVED: 09/29/2006 14:12:16
DATE DUE: 10/13/2006 15:16:44
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/29/2006 14:12:02
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: bill@bellgrouprealestate.com (William Bell)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
William Bell (bill@bellgrouprealestate.com) on Friday, September 29, 2006 at 14:12:02

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Complaint

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: William

Middle Name: T

Last Name: Bell

Street Address: 707 First Street

City: Liverpool

State: NY

Postal Code: 13088

Country: United States

Work Phone #: 315-436-2121

Email Address: bill@bellgrouprealestate.com

Message: Mr. Frieden,
Since I am restricted to 150 works, I will get to the point, STAY THE FUCK OUT OF MY LIFE!!. I do not need the government telling me what I can and cannot eat. That is my business. Your proposed ban on fatty acids is an afront on my freedom. Fatty acids are not, I repeat NOT toxic. The majority of people do not have a fat problem and for the government to take it upon themselves to cause havoc with restaurants is stupid. What is the next item that you will decide you do not like and proceed to ban it. That is not government's responsibility. So again, STAY THE FUCK OUT OF MY LIFE!!!!!!!!!!!

REMOTE_HOST: 72.43.28.194
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; .NET CLR 1.1.4322)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Fri, Sep 29, 2006 4:19 PM
Subject: City of New York - Correspondence #1-1-264922380 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264922380
DATE RECEIVED: 09/29/2006 15:13:38
DATE DUE: 10/13/2006 16:15:42
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/29/2006 15:13:33
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: npowell@gmail.com (nate powell)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
nate powell (npowell@gmail.com) on Friday, September 29, 2006 at 15:13:32

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: nate

Last Name: powell

Street Address: 3748 military ave.

City: los angeles

State: CA

Postal Code: 90034

Country: United States

Work Phone #: 3108377114

Email Address: npowell@gmail.com

Message: While I am not a resident of NYC, I applaud and commend your trans-fat ban. I wish that LA would do the same.

REMOTE_HOST: 69.226.18.143
HTTP_USER_AGENT: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.8.0.7) Gecko/20060909 Firefox/1.5.0.7

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Fri, Sep 29, 2006 11:46 PM
Subject: City of New York - Correspondence #1-1-264986940 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264986940
DATE RECEIVED: 09/29/2006 22:43:48
DATE DUE: 10/13/2006 23:45:53
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/29/2006 22:42:59
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: david.crawford74@hotmail.com ( )
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
(david.crawford74@hotmail.com) on Friday, September 29, 2006 at 22:42:59

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Misc. Comments

Topic: Restaurant Related Issues

Contact Info: Yes

State: NY

Country: United States

Email Address: david.crawford74@hotmail.com

Message: Please pass the law against trans fats - this is the best thing I've heard in a long time. Finally a government looking out for people! If you pass this, I'll move to NYC. Next, please ban corn syrup, which is almost as bad as trans fats.

REMOTE_HOST: 146.244.138.138
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; Q312461; SV1; .NET CLR 1.0.3705; .NET CLR 1.1.4322; .NET CLR 2.0.50727)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Thu, Sep 28, 2006 8:34 AM
Subject: City of New York - Correspondence #1-1-264528960 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264528960
DATE RECEIVED: 09/28/2006 07:29:14
DATE DUE: 10/12/2006 08:30:46
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/28/2006 07:29:06
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: rbgoodfellow@yahoo.com (Robert Goodfellow)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Robert Goodfellow (rbgoodfellow@yahoo.com) on Thursday, September 28, 2006 at 07:29:06

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: Robert

Middle Name: B

Last Name: Goodfellow

Street Address: 11 West 69th Street

Address Number: 8D

City: New York

State: NY

Postal Code: 10023

Country: United States

Work Phone #: 202 641-6636

Email Address: rbgoodfellow@yahoo.com

Message: Dear Commissioner Frieden:

I am writing to thank you very much for your recent action to ban trans fat in New York City. Trans fat is clearly a dangerous substance, and we cannot trust restauranteurs to self-regulate.

Whatever you do, please do not be intimidated or forced to change course due to huge chains like McDonald's or others that may use trans fat. We have an obligation to the poor in our society who turn to these restaurants more than others because of their low-cost food products. We must do everything we can to ensure that the quality of that food is not diminished by the use of trans fat. In the end, we will not only be saving lives, but we'll be saving tax dollars as well: hopefully your actions could serve to curb unnecessary trips to the hospital for heart disease.

Best wishes,

Robert Goodfellow

REMOTE_HOST: 68.175.127.5
HTTP_USER_AGENT: Mozilla/5.0 (Macintosh; U; PPC Mac OS X; en) AppleWebKit/418.8 (KHTML, like Gecko) Safari/419.3

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Thu, Sep 28, 2006 12:01 AM
Subject: City of New York - Correspondence #1-1-264501190 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264501190
DATE RECEIVED: 09/27/2006 22:57:36
DATE DUE: 10/12/2006 00:01:13
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 22:57:11
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: kevmuir@samritchie.com (Kevin Muir)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Kevin Muir (kevmuir@samritchie.com) on Wednesday, September 27, 2006 at 22:57:11

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Misc. Comments

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: Kevin

Last Name: Muir

Street Address: 309 West 19th Street, 43

Address Number: 43

City: New York

State: NY

Postal Code: 10011

Country: United States

Work Phone #: 917-208-1906

Email Address: kevmuir@samritchie.com

Message: The ban on trans fat is a good thing, but it might be better received as a tax. We started to tax cigarettes long before an outright ban in public places. It earns the city money while forcing restaurants to "choose" to phase out trans fat. Has this been considered? If so, why was the outright ban chosen over this other option?

Thank you for considering my comments.

REMOTE_HOST: 66.108.0.196
HTTP_USER_AGENT: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.8.0.7) Gecko/20060909 Firefox/1.5.0.7

****

From: <crmrepl@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Thu, Sep 28, 2006 11:06 AM
Subject: City of New York - Correspondence #1-1-264393770 NYC.govFeedback -Other

Your City of New York - CRM Correspondence Number is 1-1-264393770
DATE RECEIVED: 09/27/2006 14:46:07
DATE DUE: 10/11/2006 14:46:43
SOURCE: WEB

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 14:45:22
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: jheep@msn.com ( )
Subject: NYC.govFeedback

Below is the result of your feedback form. It was submitted by
(jheep@msn.com) on Wednesday, September 27, 2006 at 14:45:22

This form resides at
http://www.nyc.gov/html/misc/html/feedbackform.html

Topic: Other

How You Locate Site: search engine

Looking For Particular Info: Particular Information

What were you looking for: WHO MADE THE NAZI DECISION TO BAN
FRENCH FRIES TRANS FAT? GET REAL--I
DO NOT EAT FRENCH FRIES VERY OFTEN,
BUT IF I WANT THEM, I WILL DO SO--WHAT
WILL YOU BAN NEXT? Q-TIPS BECAUSE THEY
HAVE THE POTENTIAL FOR POKING YOUR EAR
DRUM OUT? DUH--LET PEOPLE MAKE THEIR
OWN DECISIONS AS TO WHAT FOUL THING
THEY PUT IN THEIR BODIES--PUT YOUR
TIME IN SOMETHING THAT REALLY MATTERS--
HOMELESS, ABANDONED ANIMALS, HEALTH
INSURANCE COSTS--THE LIST GOES ON--YOU
ARE JUST A BUNCH OF TIME WASTERS--I
WILL PROBABLY NEVER VISIT YOUR CITY

Did you find: yes

What Made Visit: YOUR STUPID DECISION MAKING

Find Useful Info: no

Rating: poor

Advice To Improve: WAY WAY TOO COMPLICATED

REMOTE_HOST: 64.128.84.8
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; MSN 9.0;MSN 9.1; MSNbMSNI; MSNmen-us; MSNcIA; MPLUS)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Thu, Sep 28, 2006 1:26 AM
Subject: City of New York - Correspondence #1-1-264507970 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264507970
DATE RECEIVED: 09/28/2006 00:21:45
DATE DUE: 10/12/2006 01:25:28
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/28/2006 00:21:28
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: chsamw@gmail.com (Charles Wekselbaum)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Charles Wekselbaum (chsamw@gmail.com) on Thursday, September 28, 2006 at 00:21:28

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: Charles

Middle Name: S

Last Name: Wekselbaum

Street Address: 104 East 68th Street

Address Number: 4b

City: New York

State: NY

Postal Code: 10021

Country: United States

Work Phone #: 917 539 9315

Email Address: chsamw@gmail.com

Message: This is the first letter I've ever sent to a department of the government, but I just couldn't resist, given how much satisfaction the trans fat issue gives me. Mr. Frieden, as soon as I heard about your city wide announcement encouraging the reduction of trans fat, I became a supporter of you and the the proposal. It's nice that someone with power is taking on this issue that is killing and harming so many New Yorkers and Americans. I just want to say how proud the motion to make trans fat limitation a law in City restaurants makes me. While reading the article in the NY Times, every line seemed to shock me more than the next in how, for lack of a better word, ballsy this initiative sounds. I think the best part of it is the fact that major restaurant chains are not exempt and that they're going to have to start taking some responsibility for the all the hazards their foods cause. Thank you again for such great leadership in this.

Best,
Charles Wekselbaum

REMOTE_HOST: 69.201.136.175
HTTP_USER_AGENT: Mozilla/5.0 (Macintosh; U; PPC Mac OS X Mach-O; en-US; rv:1.8) Gecko/20051111 Firefox/1.5

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Thu, Sep 28, 2006 1:07 AM
Subject: City of New York - Correspondence #1-1-264506010 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264506010
DATE RECEIVED: 09/28/2006 00:03:43
DATE DUE: 10/12/2006 01:06:16
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/28/2006 00:03:27
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: ( )
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
() on Thursday, September 28, 2006 at 00:03:27

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Misc. Comments

Topic: Restaurant Related Issues

Contact Info: No

State: NY

Country: United States

Message: Dear Dr.Thomas Frieden,
About The trans fat issue.
Good intent, Nazi type approach. It's America, welcome aboard. A ban will NEVER be upheld when it is an approved food product by FDA. Adjust or soften your approach before you lose your backing on the issue, or worse look like an idiot.

REMOTE_HOST: 71.253.0.97
HTTP_USER_AGENT: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.7.5) Gecko/20060127 Netscape/8.1

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 1:55 PM
Subject: City of New York - Correspondence #1-1-264373700 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264373700
DATE RECEIVED: 09/27/2006 12:46:35
DATE DUE: 10/11/2006 13:51:24
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 12:46:09
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: bzaffer@theriver.com (William Zaffer)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
William Zaffer (bzaffer@theriver.com) on Wednesday, September 27, 2006 at 12:46:09

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: William

Last Name: Zaffer

Company: Zaffer Mobile Home Sales

Street Address: 7660 E. McKellips Rd. #42

City: Scottsdale

State: NY

Postal Code: 85257

Country: United States

Work Phone #: 480-292-7246

Email Address: bzaffer@theriver.com

Message: Commissioner Friedman:

Great to hear you are trying to get trans fats out of restaurants. I never buy anything that has partially hydrogenated oils. I grew up in the restaurant business and it is nonsense they cannot make the switch. To say government is meddling in private enterprise. We need proper guidelines and regulations. We cannot afford health insurance, ir or higher taxes due to obesity today. Good health and the environment go hand in hand. I hope our government puts policies in the next administration that attacks global warming which is a threat to humanity. What good is low gas prices when there will be no air to breath?

I do drive a hybrid by the way and I use to market a health Greek salad dressing that I had to get out due to slot fees in grocery stores. I made the easy switch from sugar to using honey instead and strictly olive oil without any soybean oils to bring down the price. I added distilled water keeping the taste.

REMOTE_HOST: 70.190.182.122
HTTP_USER_AGENT: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.8.0.7) Gecko/20060909 Firefox/1.5.0.7

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 12:05 PM
Subject: City of New York - Correspondence #1-1-264304904 Message to AgencyHead, DOHMH - Suggestion

Your City of New York - CRM Correspondence Number is 1-1-264304904
DATE RECEIVED: 09/27/2006 11:52:33
DATE DUE: 10/11/2006 12:01:30
SOURCE: 3-1-1 Call Center
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT: 09/27/2006 11:53:18
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

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Message Type:

Topic: Suggestion

First Name: WILLLIAM

Last Name: CALLAHAM

Apartment Number: 513

Street Address: 10 SOULE STREET

City: SOUTH PORTLAND

State: ME

Postal Code: 04106

Country:

Work Phone #: 2077675043

Email Address:

Message: CUSTOMER STATES THE HEALTH DEPARTMENT SHOULD NOT TELL RESTAURANTS TO BAND HYDROGENATED OIL IN THERE FOOD. REGAURDLESS OF HEALTH RISK. HE BELIEVES ITS FREEDOM OF CHOICE OF WHAT PEOPLE WANT TO EAT. HYDROGENATED OIL APPEARS IN MANY DIFFERENT FOODS WITH OUT HYDROGENATED OIL THERE WOULD BE NO TASTE TO THE FOOD.

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 10:12 PM
Subject: City of New York - Correspondence #1-1-264488140 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264488140
DATE RECEIVED: 09/27/2006 21:06:21
DATE DUE: 10/11/2006 22:11:07
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 21:05:34
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: tyoder8@juno.com (Teryl Yoder)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Teryl Yoder (tyoder8@juno.com) on Wednesday, September 27, 2006 at 21:05:34

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Ms

First Name: Teryl

Middle Name: L

Last Name: Yoder

Street Address: 430 S. Dunn St.

Address Number: 216

City: Bloomington

State: IN

Postal Code: 47401

Country: United States

Email Address: tyoder8@juno.com

Message: Thank you SO MUCH for taking the step forward in requiring restaurants to stop using transfats! They'll never stop (and the prepared-food manufacturers will never stop) using transfats until they're forced to! As a restaurant patron, food consumer, and sometime visitor to New York, I thank you! I will be recommending that the cities where I live and spend most of my time do the exact same thing!

REMOTE_HOST: 68.251.148.133
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.0.3705; .NET CLR 1.1.4322; Media Center PC 4.0; .NET CLR 2.0.50727)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 1:35 PM
Subject: City of New York - Correspondence #1-1-264369070 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264369070
DATE RECEIVED: 09/27/2006 12:29:30
DATE DUE: 10/11/2006 13:31:15
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 12:28:52
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: stephanie.marcus@cbs.com (Stephanie Marcus)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Stephanie Marcus (stephanie.marcus@cbs.com) on Wednesday, September 27, 2006 at 12:28:52

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Misc. Comments

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Ms

First Name: Stephanie

Last Name: Marcus

Suffix: Esq

State: NY

Country: United States

Email Address: stephanie.marcus@cbs.com

Message: Hi. I think the partial ban on trans fats is a bad idea. This would particulatly affect kosher establishments that use these fats as substitutes for butter and other dairy products in meat restaurants. It would be terrible for any restaurant, they would have to rework many recipes. People should just be taight about the dangers of transfats, but sometimes people just want to have a celebratory piece of cake and don't care about trans fats, and also people should take responsibility for themselves. Restaurants should be encouraged to offer healthy options, but all the onus for eating healthy shouldn't be put on the restaurants.

REMOTE_HOST: 170.20.11.116
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322; InfoPath.1; .NET CLR 2.0.50727)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <clong@doitt.nyc.gov>, <anguyen@doitt.nyc.gov>, <ksheldon@doitt.nyc.gov>, <swinberg@doitt.nyc.gov>, <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 6:33 PM
Subject: City of New York - Correspondence #1-1-264459190 NYC.govFeedback -Health Issues

Your City of New York - CRM Correspondence Number is 1-1-264459190
DATE RECEIVED: 09/27/2006 18:27:57
DATE DUE: 10/11/2006 18:29:19
SOURCE: WEB

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 18:27:04
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: ste65@aol.com ( )
Subject: NYC.govFeedback

Below is the result of your feedback form. It was submitted by
(ste65@aol.com) on Wednesday, September 27, 2006 at 18:27:04

This form resides at
http://www.nyc.gov/html/misc/html/feedbackform.html

Topic: Health Issues

How You Locate Site: search engine

Looking For Particular Info: Particular Information

What were you looking for: New York City takes lead on Trans Fats

Did you find: yes

Please explain: Bravo for taking the lead aganist
trans fats, they are killing us! So
goes NYC, so goes the Nation! As a
native New Yorker from the Upper West
Side 92nd St. and Columbus Ave., thank
you for this action aganist Trans
Fats!!! My health owes you one!!!

Find Useful Info: yes

What useful Info: Trans Fats !

Rating: excellent

Name: Sidney B. Stewart

City: Dumfries

state: VA

Country: USA

REMOTE_HOST: 71.114.54.85
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322; .NET CLR 2.0.50727; InfoPath.1)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 11:05 AM
Subject: City of New York - Correspondence #1-1-264313350 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264313350
DATE RECEIVED: 09/27/2006 09:56:53
DATE DUE: 10/11/2006 11:01:50
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 09:56:02
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: smiller4@gwu.edu ( )
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
(smiller4@gwu.edu) on Wednesday, September 27, 2006 at 09:56:02

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: No

State: NY

Country: United States

Email Address: smiller4@gwu.edu

Message: I just want to commend you for your plan to remove trans-fats from city restaurants. As a public health student, it's reassuring to know that there are people out there who want to take a risk and make a real difference. I'm really inspired- good luck!

REMOTE_HOST: 216.15.61.180
HTTP_USER_AGENT: Mozilla/5.0 (Windows; U; Windows NT 5.0; en-US; rv:1.4) Gecko/20030624 Netscape/7.1 (ax)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 1:40 PM
Subject: City of New York - Correspondence #1-1-264370880 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264370880
DATE RECEIVED: 09/27/2006 12:34:31
DATE DUE: 10/11/2006 13:36:36
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 12:33:42
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: seyo@yahoo.com (Simon Potter)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Simon Potter (seyo@yahoo.com) on Wednesday, September 27, 2006 at 12:33:42

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Simon

Last Name: Potter

Street Address: 775 Riverside Drive

Address Number: 1H

City: NY

State: NY

Postal Code: 10032

Country: United States

Email Address: seyo@yahoo.com

Message: Congratulations on your initiative to ban the use of oils and products high in trans-fatty acids. I support this whole heartedly and agree entirely with your position that it is unhealthy for the consumer and unnecessary for the business owner, aside from maybe saving a few pennies. This cost is passed on to the consumer and the city in health care. Restaurants, in particular the fast food chains, should be held to a higher standard.

Thanks again,

Simon.

REMOTE_HOST: 63.139.34.162
HTTP_USER_AGENT: Mozilla/5.0 (Macintosh; U; PPC Mac OS X; en) AppleWebKit/312.8 (KHTML, like Gecko) Safari/312.6

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From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 8:09 PM
Subject: City of New York - Correspondence #1-1-264471990 Message to AgencyHead, DOHMH - Other Health Matters

Your City of New York - CRM Correspondence Number is 1-1-264471990
DATE RECEIVED: 09/27/2006 19:01:03
DATE DUE: 10/11/2006 20:05:36
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 19:00:53
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: rgoldman10@earthlink.net (Robert Goldman)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Robert Goldman (rgoldman10@earthlink.net) on Wednesday, September 27, 2006 at 19:00:53

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Request for Information

Topic: Other Health Matters

Contact Info: Yes

M/M: Mr.

First Name: Robert

Last Name: Goldman

Company: Hofstra University

Street Address: 317 East 3rd Street #25

Address Number: 317 East 3

City: New York

State: NY

Postal Code: 10009

Country: United States

Work Phone #: 212 7809738

Email Address: rgoldman10@earthlink.net

Message: I support your position to ban trans fats from NYC restaurants.
I have tried unsucessfully at the stores and the website to find out if there are trans fats in in the bread served at Subway sandwich shops. Do you know? Also, are there trans fats in store bought bread?
Thanks for your good work.
Robert Goldman

REMOTE_HOST: 24.215.231.93
HTTP_USER_AGENT: Mozilla/5.0 (Macintosh; U; PPC Mac OS X; en) AppleWebKit/418.8 (KHTML, like Gecko) Safari/419.3

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 10:57 PM
Subject: City of New York - Correspondence #1-1-264492690 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264492690
DATE RECEIVED: 09/27/2006 21:53:27
DATE DUE: 10/11/2006 22:56:17
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 21:52:37
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: rcoriasco@si.rr.com (Richard Coriasco)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Richard Coriasco (rcoriasco@si.rr.com) on Wednesday, September 27, 2006 at 21:52:37

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Complaint

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: Richard

Middle Name: J

Last Name: Coriasco

Suffix: Jr

Street Address: 332 Natick St.

City: Staten Island

State: NY

Postal Code: 10306

Country: United States

Work Phone #: 9176822626

Email Address: rcoriasco@si.rr.com

Message: Dear Mr. Commissioner,

I have just read about your idea to ban trans fat and was very displeased with your ideas. I lost my bowling alley/bar on Staten Island to the LIES of secondhand smoking and now to hear this gets me upset. The banning of trans fats is stupid and it will hurt many restaurants. You can not say that it will be un-noticeable. There is a point when it comes to personal responsibility, the City of New York has put that aside before with a horrible smoking ban that hurt many businesses including mine and I do not want to see that again with the banning of trans fats. There is no business that forces you to eat there and have trans fat, if you want to stay away from trans fats go eat somewhere else.

Sincerely,
Rick Coriasco

REMOTE_HOST: 24.164.138.171
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 12:04 PM
Subject: City of New York - Correspondence #1-1-264336320 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264336320
DATE RECEIVED: 09/27/2006 10:58:08
DATE DUE: 10/11/2006 12:00:55
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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All other web forms are to be handled by the receiving agency.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 10:57:34
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: 99neon@adelphia.net (ray morroni)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
ray morroni (99neon@adelphia.net) on Wednesday, September 27, 2006 at 10:57:34

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: ray

Middle Name: a

Last Name: morroni

Suffix: jr.

Company: n/a

Street Address: 1719 fawn way

City: finksburg

State: MD

Postal Code: 21048

Country: United States

Email Address: 99neon@adelphia.net

Message: I was amazed to read on MSN about your proposal to ban the use of trans fatty acids in NY. I hope this proposal goes through. I don't really understand how the spokesman for the restaurant industry can complain about something that is for the good of everyone. I hope you will do everything in your power to get this pushed through and start a precedent that may also lead to the restaurant industry as a whole adopting this policy. Ray Morroni

---

REMOTE_HOST: 69.174.133.250
HTTP_USER_AGENT: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.8.0.7) Gecko/20060909 Firefox/1.5.0.7

****

From: <outgoingagency@customerservice.nyc.gov>
To: <clong@doitt.nyc.gov>, <anguyen@doitt.nyc.gov>, <ksheldon@doitt.nyc.gov>, <swinberg@doitt.nyc.gov>, <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 11:50 AM
Subject: City of New York - Correspondence #1-1-264329300 NYC.govFeedback -Health Issues

Your City of New York - CRM Correspondence Number is 1-1-264329300
DATE RECEIVED: 09/27/2006 11:45:20
DATE DUE: 10/11/2006 11:46:38
SOURCE: WEB

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 11:44:59
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: michelle-weeks@sbcglobal.net ( )
Subject: NYC.govFeedback

Below is the result of your feedback form. It was submitted by
(michelle-weeks@sbcglobal.net) on Wednesday, September 27, 2006 at 11:44:59

This form resides at
http://www.nyc.gov/html/misc/html/feedbackform.html

Topic: Health Issues

How You Locate Site: search engine

Looking For Particular Info: Particular Information

What were you looking for: A place to leave a comment and show
support. BRAVO! It is about time a city
goverment took steps to protect the
residents health by banning bad oils
in restaurants. Someday, it will be
common knowladge that bad oils are
almost as bad as smoking.

Did you find: yes

Please explain: I'm here!

What Look For: Oil ban in Restarants!

Rating: excellent

City: St. Louis

state: MO

REMOTE_HOST: 70.246.137.205
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows 98)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 3:30 PM
Subject: City of New York - Correspondence #1-1-264407690 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264407690
DATE RECEIVED: 09/27/2006 14:21:58
DATE DUE: 10/11/2006 15:26:20
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 14:21:44
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: inlow@rose-hulman.edu (Mark Inlow)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Mark Inlow (inlow@rose-hulman.edu) on Wednesday, September 27, 2006 at 14:21:44

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Mark

Middle Name: H

Last Name: Inlow

Suffix: Ph.D.

Company: Rose-Hulman Institute of Technology

Street Address: 5500 Wabash Ave

City: Terre Haute

State: IN

Postal Code: 47804

Country: United States

Work Phone #: (812) 877-8089

Email Address: inlow@rose-hulman.edu

Message: Dr. Frieden,

Thank you for taking a stand against transfatty acids. I've harped about these since the 80's. The research is in so it's about time we got rid of them. Thank you for standing up to the whiny jerks in the restaurant industry. America has serious health problems which demand serious remedies. I wish there were more goverment officials like you. New York City is lucky.

REMOTE_HOST: 137.112.42.252
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322; .NET CLR 2.0.50727; InfoPath.1)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 6:14 PM
Subject: City of New York - Correspondence #1-1-264455630 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264455630
DATE RECEIVED: 09/27/2006 17:08:46
DATE DUE: 10/11/2006 18:11:09
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

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If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 17:08:09
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: leoisboss@hotmail.com ( )
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
(leoisboss@hotmail.com) on Wednesday, September 27, 2006 at 17:08:09

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: No

State: NY

Country: United States

Email Address: leoisboss@hotmail.com

Message: Great thinking Commissioner Freiden. Try out what you're doing with the trans fat. Keep it up.

REMOTE_HOST: 65.183.198.70
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <clong@doitt.nyc.gov>, <anguyen@doitt.nyc.gov>, <ksheldon@doitt.nyc.gov>, <swinberg@doitt.nyc.gov>, <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 9:26 PM
Subject: City of New York - Correspondence #1-1-264481580 NYC.govFeedback -Health Issues

Your City of New York - CRM Correspondence Number is 1-1-264481580
DATE RECEIVED: 09/27/2006 21:21:24
DATE DUE: 10/11/2006 21:22:42
SOURCE: WEB

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 21:20:32
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: dnxxl@yahoo.com ( )
Subject: NYC.govFeedback

Below is the result of your feedback form. It was submitted by
(dnxxl@yahoo.com) on Wednesday, September 27, 2006 at 21:20:32

This form resides at
http://www.nyc.gov/html/misc/html/feedbackform.html

Topic: Health Issues

How You Locate Site: search engine

Looking For Particular Info: Particular Information

What were you looking for: What the hell gives you and Dr. Thomas Frieden the hubris and the right to tell people not to eat fatty food?

Did you find: no

Please explain: Because there is no rational explanation for the "nannification" that you are trying to oppress on the people of NYC

What Look For: Neo Facism and oppresive govenment agencies and how subvert them

What Made Visit: News story

Find Useful Info: no

What Should Add: I don't know...a swastica?

Rating: poor

Advice To Improve: Kill yourselves...preferably with trans-fatty foods...

Name: Johnny

City: Deep

REMOTE_HOST: 66.229.31.163
HTTP_USER_AGENT: Mozilla/5.0 (Macintosh; U; PPC Mac OS X; en) AppleWebKit/418.8 (KHTML, like Gecko) Safari/419.3

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 8:52 PM
Subject: City of New York - Correspondence #1-1-264477140 Message to AgencyHead, DOHMH - Other Health Matters

Your City of New York - CRM Correspondence Number is 1-1-264477140
DATE RECEIVED: 09/27/2006 19:45:11
DATE DUE: 10/11/2006 20:51:39
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 19:45:08
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: jhnnydell@sbcglobal.net (John Nydell)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
John Nydell (jhnnydell@sbcglobal.net) on Wednesday, September 27, 2006 at 19:45:08

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Complaint

Topic: Other Health Matters

Contact Info: Yes

First Name: John

Last Name: Nydell

Street Address: 107 Wildes

City: Bay Point

State: CA

Postal Code: 94565

Country: United States

Email Address: jhnnydell@sbcglobal.net

Message: I was just reading about how NYC is going to ban the types of foods that we eat. I cannot beleive that the government is getting involved in what we eat. This is so arrogant of you, and is overstepping your authority. Please stop your attempts to control the citizens of NYC's personal lives.

Thank you John Nydell

REMOTE_HOST: 206.104.177.68
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; .NET CLR 1.1.4322)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <clong@doitt.nyc.gov>, <anguyen@doitt.nyc.gov>, <ksheldon@doitt.nyc.gov>, <swinberg@doitt.nyc.gov>, <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 3:35 PM
Subject: City of New York - Correspondence #1-1-264408770 NYC.govFeedback -Health Issues

Your City of New York - CRM Correspondence Number is 1-1-264408770
DATE RECEIVED: 09/27/2006 15:31:20
DATE DUE: 10/11/2006 15:31:51
SOURCE: WEB

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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 15:31:16
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: OceanCaptainJRD@peoplepc.com ( )
Subject: NYC.govFeedback

Below is the result of your feedback form. It was submitted by
(OceanCaptainJRD@peoplepc.com) on Wednesday, September 27, 2006 at 15:31:16

This form resides at
http://www.nyc.gov/html/misc/html/feedbackform.html

Topic: Health Issues

How You Locate Site: search engine

Looking For Particular Info: Particular Information

What were you looking for: email address for Health Commissioner Thomas Frieden

Did you find: no

Please explain: Evidently he doesn't wish to hear from the people he serves

What Look For: His idiotic idea to ban trans fats from use by restraunts. Every one in America knows what kinds of cooking and foods contain unhealthy transfatty acids. It is not the place of government to regulate what anyone chooses to when it is an approved food product allowable by the FDA. This is just one more extreme liberal idea to control the population of America. So much for being a free country and the concepts of personal responsibility. Jeez you liberals drive me nuts.

What Made Visit: it was the only outlet available

Find Useful Info: no

Rating: poor

Advice To Improve: Put links to the emails of city officials related to this department of government after all they do work for the taxpayers.

Name: Jim Davidson

REMOTE_HOST: 12.5.234.17
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; InfoPath.1)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 10:47 PM
Subject: City of New York - Correspondence #1-1-264491770 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264491770
DATE RECEIVED: 09/27/2006 21:40:25
DATE DUE: 10/11/2006 22:46:21
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 21:39:46
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: j_ponderific@yahoo.com (Jennifer Ponder)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Jennifer Ponder (j_ponderific@yahoo.com) on Wednesday, September 27, 2006 at 21:39:46

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Complaint

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Jennifer

Last Name: Ponder

Street Address: 2212 Katy Ln

Address Number: C

City: Georgetown

State: TX

Postal Code: 78626

Country: United States

Email Address: j_ponderific@yahoo.com

Message: Dear Commissioner Frieden:

I read the Associated Press article "NYC mulls ban on trans fats in eateries." I must caution you to consider this idea carefully for the following reasons:
The move is an obvious infringement on personal freedom. Unlike smoke which affects those around the smoker, food only affects the one who choses to eat.
There is no scientific difference between naturally hydrogenated oils and artificially hydrogenated oils.
The link of partially hydrogenated oils to clogged arteries is not solid. I have not read any conclusive scientific data that supports this claim.

How can you decided to create legislation that isn't based on hard facts? It seems to me that the idea that artificially hydrogenated foods causes heart problems is one of those generated by public hysteria rather than by scientific research.

REMOTE_HOST: 70.179.132.124
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 11:42 PM
Subject: City of New York - Correspondence #1-1-264499050 Message to AgencyHead, DOHMH - Other Health Matters

Your City of New York - CRM Correspondence Number is 1-1-264499050
DATE RECEIVED: 09/27/2006 22:38:32
DATE DUE: 10/11/2006 23:40:39
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 22:38:24
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: jvobyrne@yahoo.com (Jason O'Byrne)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Jason O'Byrne (jvobyrne@yahoo.com) on Wednesday, September 27, 2006 at 22:38:24

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Other Health Matters

Contact Info: Yes

M/M: Mr.

First Name: Jason

Last Name: OByrne

Street Address: 1246 Oakshire Ct

City: Walnut Creek

State: CA

Postal Code: 94598

Country: United States

Email Address: jvobyrne@yahoo.com

Message: Thank you for the proposal to ban trans fat! As an NYU/Stern Alum, it makes me proud to see NYC taking such a progressive position.

Many in my family suffer from heart disease so I personally appreciate your actions.

I will let California legistlators know that they have some catching up to do.

REMOTE_HOST: 192.12.78.250
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 1:55 PM
Subject: City of New York - Correspondence #1-1-264373680 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264373680
DATE RECEIVED: 09/27/2006 12:46:34
DATE DUE: 10/11/2006 13:51:20
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 12:45:38
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: jasonferriter@msn.com (Jason Ferriter)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Jason Ferriter (jasonferriter@msn.com) on Wednesday, September 27, 2006 at 12:45:38

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: Jason

Middle Name: R.

Last Name: Ferriter

Street Address: 1211 Homestead Blvd.

City: Westborough

State: MA

Postal Code: 01581

Country: United States

Work Phone #: (310) 633 - 4151

Extension: n/a

Email Address: jasonferriter@msn.com

Message: (In reference to the MSN article today about banning trans fats in NYC restaurants).
Dear Commissioner,
Brilliant!!! Thank you for helping to lead the fight against "partially hydrogenated oils." I'm still seeing food labels with "no trans fats" but the foods still contain partially hydrogenated oils!? SUPER SIZE ME is a great movie but it never once mentioned those three words. I could never understand why, after all this negative attention that fast food was getting, these restaurants wouldn't begin to correct the problem, not with their menus, but with their ingredients. PHOs may be legal, but that doesn't mean it's healthy or responsible. Americans have to stop harming each other with dangerous foods. Yes, absolutely force restaurants to cook with a conscious. Thank you so much for caring. I hope to move from Boston to NYC soon!
Sincerely,
Jason Ferriter
jasonferrite@msn.com

REMOTE_HOST: 65.96.55.134
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 5:55 PM
Subject: City of New York - Correspondence #1-1-264450350 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264450350
DATE RECEIVED: 09/27/2006 16:46:42
DATE DUE: 10/11/2006 17:51:46
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 16:46:02
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: washmuth@yahoo.com (Janet Kile)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Janet Kile (washmuth@yahoo.com) on Wednesday, September 27, 2006 at 16:46:02

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Misc. Comments

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Ms

First Name: Janet

Middle Name: W.

Last Name: Kile

Street Address: 3431 Wheat Street

City: Columbia

State: SC

Postal Code: 29205

Country: United States

Work Phone #: 803 429 2320

Email Address: washmuth@yahoo.com

Message: Why on EARTH does a law need to be passed for restaurants to do something that should be a choice they (should choose to) make???? We cannot regulate everything in the world and must, I repeat must rely on people to use their best judgment (producer and consumer).
How about suggeting that restaraunts advertise that they have chosen to serve healthier food? People must be, once again, required to think for themselves.

REMOTE_HOST: 71.76.37.252
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 9:29 PM
Subject: City of New York - Correspondence #1-1-264481760 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264481760
DATE RECEIVED: 09/27/2006 20:22:16
DATE DUE: 10/11/2006 21:26:03
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 20:22:08
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: eeisenberger@yahoo.com (Evan Eisenberger)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Evan Eisenberger (eeisenberger@yahoo.com) on Wednesday, September 27, 2006 at 20:22:08

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Evan

Last Name: Eisenberger

Street Address: 763 Princeton-Kingston Road

City: Princeton

State: NJ

Postal Code: NJ

Country: United States

Email Address: eeisenberger@yahoo.com

Message: I think the proposal to ban trans-fat in restaurants is a fantastic plan. This will benefit the health of all Americans as other parts of the country follow your lead. If McDonalds can cook without trans-fat in Denmark they can and should cook without it in the USA. BRAVO NY!

REMOTE_HOST: 24.149.236.216
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; WPC; .NET CLR 1.1.4322)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 6:35 PM
Subject: City of New York - Correspondence #1-1-264459370 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264459370
DATE RECEIVED: 09/27/2006 17:29:49
DATE DUE: 10/11/2006 18:31:51
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 17:29:08
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: rbopr@yahoo.com (Ellen Davenport)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Ellen Davenport (rbopr@yahoo.com) on Wednesday, September 27, 2006 at 17:29:08

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mrs.

First Name: Ellen

Middle Name: F

Last Name: Davenport

Company: California Rice Oil Company

Street Address: 138 Hamilton Dr #H

City: Novato

State: CA

Postal Code: 94949

Country: United States

Work Phone #: 415 382-0373

Email Address: rbopr@yahoo.com

Message: I applaud your efforts to ban trans fats from restaurants. I worked on the project to ban trans fats in Tiburon, CA. My company-the California Rice Oil Company was the oil that most restaurants switched to. I would like to help in any way in your drive. Our oil is not yet available in New York but it should be.

REMOTE_HOST: 68.122.224.117
HTTP_USER_AGENT: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.8.0.7) Gecko/20060909 Firefox/1.5.0.7

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 7:20 PM
Subject: City of New York - Correspondence #1-1-264465080 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264465080
DATE RECEIVED: 09/27/2006 18:14:56
DATE DUE: 10/11/2006 19:15:51
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 18:14:45
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: donigerc@yahoo.com (Colin Doniger)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Colin Doniger (donigerc@yahoo.com) on Wednesday, September 27, 2006 at 18:14:45

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Colin

Last Name: Doniger

Street Address: 13291 Blueberry Ln

Address Number: 201B

City: Fairfax

State: VA

Postal Code: 22033

Country: United States

Email Address: donigerc@yahoo.com

Message: Dr. Frieden,
I would like to know what I can do to support your trans fat ban proposal. Thanks,
Colin Doniger

REMOTE_HOST: 68.100.121.152
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 7:05 PM
Subject: City of New York - Correspondence #1-1-264463840 Message to AgencyHead, DOHMH - Other Health Matters

Your City of New York - CRM Correspondence Number is 1-1-264463840
DATE RECEIVED: 09/27/2006 17:57:54
DATE DUE: 10/11/2006 19:01:16
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 17:57:51
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: cbeljean@ aol.com (Christopher Beljean)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Christopher Beljean (cbeljean@ aol.com) on Wednesday, September 27, 2006 at 17:57:51

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Misc. Comments

Topic: Other Health Matters

Contact Info: Yes

M/M: Mr.

First Name: Christopher

Middle Name: A

Last Name: Beljean

Street Address: 9203 Richmond Rd

City: W Milford

State: NJ

Country: United States

Work Phone #: 845-641-4951

Email Address: cbeljean@ aol.com

Message: While I think it is great to get rid of transfat products in eateries. I think a bigger difference should be made in all nursing homes, boarding homes, hospitals, etc. In these places people have virtually no choice in what is served.
Health facilities should be in the forefront of maintaining optimum health.

REMOTE_HOST: 68.197.43.72
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 12:05 PM
Subject: City of New York - Correspondence #1-1-264336340 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264336340
DATE RECEIVED: 09/27/2006 10:55:06
DATE DUE: 10/11/2006 12:01:00
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 10:54:49
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: ChrisUtzig@gmail.com (Chris Utzig)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Chris Utzig (ChrisUtzig@gmail.com) on Wednesday, September 27, 2006 at 10:54:49

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: Chris

Last Name: Utzig

Street Address: 5 Water Street

City: New Paltz

State: NY

Postal Code: 12561

Country: United States

Work Phone #: 516-662-1385

Email Address: ChrisUtzig@gmail.com

Message: I just wanted to commend you on your efforts to ban trans fats in New York City restuarants. It is a wonderful step towards making New York and the United States a healtheir place to live. I wish you the best of luck in your efforts.

REMOTE_HOST: 24.105.151.180
HTTP_USER_AGENT: Mozilla/5.0 (Macintosh; U; PPC Mac OS X; en) AppleWebKit/418.8 (KHTML, like Gecko) Safari/419.3

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 11:31 PM
Subject: City of New York - Correspondence #1-1-264496940 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264496940
DATE RECEIVED: 09/27/2006 22:25:32
DATE DUE: 10/11/2006 23:30:51
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 22:25:21
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: cherylserra@yahoo.com (Cheryl Serra)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Cheryl Serra (cherylserra@yahoo.com) on Wednesday, September 27, 2006 at 22:25:21

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Complaint

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Cheryl

Middle Name: L

Last Name: Serra

Street Address: APTD 21

City: San Juan del Sur

State: YT

Country: Nicaragua

Work Phone #: 011 505 852 4651

Email Address: cherylserra@yahoo.com

Message: Please tell me you are only kidding about your proposal to bar chefs from using trans fatty acids in restaurants (NYC eyes ban on restaurant trans fats
POSTED: 8:07 p.m. EDT, September 26, 2006, CNN)
. I'm begging you to tell me this is a crazy, ridiculous joke. Surely our government has better things to do than police restaurant clients - vis a vis the cooks - about what is good for them to eat. What next? Low fat milk or your recipe can't be used? Use common sense, could you please??????????????

REMOTE_HOST: 165.98.244.162
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

****

September 27, 2006

Ms. Rena Bryant
Board of Health
125 Worth Street CN-31
NYC 10013

Hearing on restricting artificial trans fat

To Whom It May Concern:

Thank you, thank you, thank you for doing something!

The additives and contamination of our food supply has appalled many people for a long time!

I fully support taking out ALL harmful products from our food supply!

If you have objections from the medical profession – tell them that as per request from the public – you are considering a law suit against the AMA. It is criminal that the AMA have sat with their mouth shut on our food problem and criminal of them, as the largest UNION in the US, that they have not personally gone against the PRODUCERS of this garbage.

You should shut this down at the production level then there will be no possibility of non-compliance!!!

Thank you for all of your help.

Cecilia Dvorchak
70 West 95th Street
NYC

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 12:30 PM
Subject: City of New York - Correspondence #1-1-264345920 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264345920
DATE RECEIVED: 09/27/2006 11:23:14
DATE DUE: 10/11/2006 12:26:43
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 11:22:23
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: brian@bkspeck.com (Brian Speck)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Brian Speck (brian@bkspeck.com) on Wednesday, September 27, 2006 at 11:22:22

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Misc. Comments

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: Brian

Middle Name: K

Last Name: Speck

Street Address: 315 West Glendale Ave

City: Bedford

State: OH

Postal Code: 44146

Country: United States

Work Phone #: 216 287-2371

Email Address: brian@bkspeck.com

Message: Dr. Frieden:

I have read several articles on your quest to limit/ban trans fat in NYC restaurants. My hat is off to you and your staff!

I would like to offer a suggestion: It appears that you are fighting an uphill battle. The question isn't about right vs. wrong, but rather if the government should intervene, and, of course, money. On that note, I suggest that you team-up with the major health insurance companies. They too will benefit from a trans fat ban in your city by not paying out as much in medical benefits in the long term. They possess some very powerful leverage, and it may prove to be a good alliance in this issue.

I hope I was able to assist you in your fight. I wish you the best, and I can only hope that your quest goes nationwide very soon. I cringe every time I see a long line in the drive-thrus of the fast food restaurants, knowing that the people in them are slowly killing themselves in the name of convenience.

Sincerely,

Brian K. Speck
Cleveland, Ohio

REMOTE_HOST: 70.39.8.124
HTTP_USER_AGENT: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.8.0.7) Gecko/20060909 Firefox/1.5.0.7

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 11:09 AM
Subject: City of New York - Correspondence #1-1-264315510 Message to AgencyHead, DOHMH - Other Health Matters

Your City of New York - CRM Correspondence Number is 1-1-264315510
DATE RECEIVED: 09/27/2006 10:02:53
DATE DUE: 10/11/2006 11:05:44
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 10:02:43
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: bcalla73@yahoo.com (Brian Calla)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Brian Calla (bcalla73@yahoo.com) on Wednesday, September 27, 2006 at 10:02:43

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Complaint

Topic: Other Health Matters

Contact Info: Yes

M/M: Mr.

First Name: Brian

Middle Name: M

Last Name: Calla

Street Address: 776 President Ave

City: Lawrenceville

State: NJ

Postal Code: 08648

Country: United States

Work Phone #: 609-392-9914

Email Address: bcalla73@yahoo.corn

Message: Trans fats.. smoking.. what is next seriously. Is this 1984 come on please let people make their own choices. I have no problem with you informing the public but banning products is extreme and un-american. This is not russia or DENMARK. Your someone is a liberal and socialist bastard who thinks national health care is a good idea.

REMOTE_HOST: 148.177.1.213
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 10:16 PM
Subject: City of New York - Correspondence #1-1-264488550 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264488550
DATE RECEIVED: 09/27/2006 21:10:22
DATE DUE: 10/11/2006 22:16:01
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

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****
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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 21:09:54
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: bblaine7@yahoo.com (Brenda Blaine)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Brenda Blaine (bblaine7@yahoo.com) on Wednesday, September 27, 2006 at 21:09:54

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Complaint

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mrs.

First Name: Brenda

Last Name: Blaine

Street Address: 1244 Pine Sage Circle

City: West Palm Beach

State: FL

Postal Code: 33409

Country: United States

Email Address: bblaine7@yahoo.com

Message: When you going to stop controling our choices. I say enough is enough. Just another reason for me to never go back to your city. You just don't have the right to tell me i can't eat something because you think it might not be healthy. Too much meddling is unhealthy. That is called forced will. Worry about filthy kitchens and spreading diseases why don't you. We teach our children choices, then say sorry we lied to you, you do not have free will. Shame on you!

REMOTE_HOST: 69.167.196.163
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; YPC 3.0.3; .NET CLR 1.1.4322)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 12:40 PM
Subject: City of New York - Correspondence #1-1-264351380 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264351380
DATE RECEIVED: 09/27/2006 11:31:15
DATE DUE: 10/11/2006 12:36:16
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 11:30:23
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: benjamin_380xd@yahoo.com (ben beach)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
ben beach (benjamin_380xd@yahoo.com) on Wednesday, September 27, 2006 at 11:30:22

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Complaint

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: ben

Last Name: beach

Company: n/a

Street Address: 9 able view drive

City: butler

State: PA

Postal Code: 16001

Country: United States

Work Phone #: 724-282-9645

Email Address: benjamin_380xd@yahoo.com

Message: Your banning of trans fats far exceeds what government should do. It is my decision, not yours, to decide what I eat. You should stick to more pertinent issues and stay out of private enterprise.

REMOTE_HOST: 63.126.66.2
HTTP_USER_AGENT: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.8.0.7) Gecko/20060909 Firefox/1.5.0.7

****

From: <outgoingagency@customerservice.nyc.gov>
To: <clong@doitt.nyc.gov>, <anguyen@doitt.nyc.gov>, <ksheldon@doitt.nyc.gov>, <swinberg@doitt.nyc.gov>, <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 7:57 PM
Subject: City of New York - Correspondence #1-1-264469060 NYC.govFeedback -Health Issues

Your City of New York - CRM Correspondence Number is 1-1-264469060
DATE RECEIVED: 09/27/2006 19:53:12
DATE DUE: 10/11/2006 19:54:03
SOURCE: WEB

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 19:52:27
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: Aprilsun63@optonline.net ( )
Subject: NYC.govFeedback

Below is the result of your feedback form. It was submitted by
(Aprilsun63@optonline.net) on Wednesday, September 27, 2006 at 19:52:27

This form resides at
http://www.nyc.gov/html/misc/html/feedbackform.html

Topic: Health Issues

How You Locate Site: search engine

Looking For Particular Info: Just Browsing

What Made Visit: to send a comment

Find Useful Info: no

Rating: fair

Advice To Improve: How dare you try to regulate what food
people eat. I knew after cigarettes
the "Food Police" would start. What
happened to America the "Land of the
Free" What a joke you people are!

Name: April Gasparino

City: Armonk

state: NY

Country: USA!!!!!

REMOTE_HOST: 69.120.224.146
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322;
.NET CLR 2.0.50727; InfoPath.1)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 11:56 PM
Subject: City of New York - Correspondence #1-1-264500910 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264500910
DATE RECEIVED: 09/27/2006 22:50:34
DATE DUE: 10/11/2006 23:55:50
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 22:50:24
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: ( )
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
() on Wednesday, September 27, 2006 at 22:50:24

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Misc. Comments

Topic: Restaurant Related Issues

Contact Info: No

State: NY

Country: United States

Message: The trans fat ban is a ridiculous idea. Classic government meddling -- and petty bureaucrats like yourself trying to justify your existence. Why don't you get a job where you can make a real contribution to society.

REMOTE_HOST: 68.195.100.105
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; .NET CLR 1.0.3705; .NET CLR 1.1.4322; Media Center PC 3.1)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 9:40 PM
Subject: City of New York - Correspondence #1-1-264482610 Message to AgencyHead, DOHMH - Other Health Matters

Your City of New York - CRM Correspondence Number is 1-1-264482610
DATE RECEIVED: 09/27/2006 20:30:17
DATE DUE: 10/11/2006 21:36:15
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 20:29:58
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: ( )
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
() on Wednesday, September 27, 2006 at 20:29:58

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Complaint

Topic: Other Health Matters

Contact Info: No

State: NY

Country: United States

Message: BAN on Trans Fat.

I am skinny and healthy. I don't even eat Trans Fat. Please don't take my rights away. Let those suckers croak!!

REMOTE_HOST: 63.80.201.210
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; .NET CLR 1.1.4322)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 8:14 PM
Subject: City of New York - Correspondence #1-1-264473590 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264473590
DATE RECEIVED: 09/27/2006 19:07:06
DATE DUE: 10/11/2006 20:10:45
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 19:06:51
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: ( )
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
() on Wednesday, September 27, 2006 at 19:06:51

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Complaint

Topic: Restaurant Related Issues

Contact Info: No

State: NY

Country: United States

Message: Banning Trans fats is the wrong thing to do. Stop telling us what we can and cannot eat. It is up to each individual to monitor what they eat, not the government. We as consumers can decide with our wallets if we want to support restaurants with Trans fats in their foods or healthy establishments.

REMOTE_HOST: 216.195.199.67
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

****

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Sep 27, 2006 4:39 PM
Subject: City of New York - Correspondence #1-1-264431460 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-264431460
DATE RECEIVED: 09/27/2006 15:31:20
DATE DUE: 10/11/2006 16:36:11
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****

If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 09/27/2006 15:31:02
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: ( )
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
() on Wednesday, September 27, 2006 at 15:31:01

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: No

M/M: Mrs.

Country: United States

Message: I just read the article on CNN.com titled, "NYC eyes ban on restaurant trans fats". I completely agree with the ban. I cannot believe that restaurants (especially fast-foods) have been allowed to get away with selling such foods. This should have been done long ago, especially since so many children are given such foods by their parents! I just wanted to say GREAT JOB. I wish you all the best of luck, there needs to be more people in power who are willing to stand up for the people and not the big corporations.

REMOTE_HOST: 148.177.1.213
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0)

****

Bernadette Armiento
2 Bellevieu Terrace
West Orange, NJ 07052

973 944-4878

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 and §81.50 to Article 81 of the NYC Health Code. I understand that §81.08 would restrict the serving of products containing artificial trans fats in NYC restaurants. §81.50 would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus. This would enable consumers to make informed choices among such items at the time of ordering.

Sincerely,

Bernadette Armiento
BERNADETTE ARMIENTO

2006 OCT 18 P 3:00
RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

Conscious Cooking

Natural Cooking Classes & Health Counseling

RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: October 13, 2006 **(must be before 10/30/06)**

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 (which would restrict the serving of products containing artificial trans fats in NYC restaurants) and §81.50 (which would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus to enable consumers to make informed choices among such items at the time of ordering) to Article 81 of the NYC Health Code.

Trans fats are one of the most dangerous, but avoidable, food substances around. Directly linked to chronic inflamation, which is linked to Diabetes, Alzheimers and various types of Cancers — The biggest challenges to American health!

Sincerely,

First Name: LiYana **Last Name:** Silver, HHC

Street Address: 209 East 16th St. **Zip Code:** 10003

☐ Queens ☑ Manhattan ☐ Brooklyn ☐ Bronx ☐ Staten Island

RECEIVED
2006 OCT 13 A 10:01
OFFICE OF
LEGISLATIVE AFFAIRS
FREEDOM OF ACCESS OFFICER

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What is §81.08? This ruling would restrict NYC restaurants from serving food containing artificial or added trans fats. (Thus, meat and dairy products containing natural trans fats would be okay to serve, but restaurants would not be able to use oil and shortening that contains trans fat.) Trans fats lower "good" HDL cholesterol, and raise "bad" LDL cholesterol. There are healthier fat alternatives that are widely available and should be used, however the restaurant industry has yet to widely replace trans fat with available alternatives.

What is §81.50? This ruling would require restaurants that already make nutritional information available to post the calorie information for individual items on their menu boards and menus. This would enable consumers to make more informed choices among such items at the time of ordering. §81.50 is aimed at restaurants that use standard recipes for menu items, such as McDonalds and Starbucks. It's not aimed at smaller independent restaurants and would only affect about 1 in 10 restaurants, mostly chains.

By voicing (or faxing) your opinion, you are in good company. Here is what the experts are saying:

"If New Yorkers replace all sources of artificial trans fat, by even the most conservative estimates, **at least 500 deaths from heart disease would be prevented each year in New York City** - more than the number of people killed annually in motor vehicle crashes. Based on long-term studies, the number of preventable deaths may be many times higher. **Trans fat from partially hydrogenated vegetable oil is a toxic substance that does not belong in food.**" *Walter Willett, M.D., Dr. P.H., Chair of the Department of Nutrition at the Harvard School of Public Health.*

"I can't think of a better or more practical way to teach people about calories in food than to list them right next to the prices. If restaurant companies really want consumers to be healthier and to make better food choices, they should support both the banning of trans fats and the listing of calories, in New York and across the country." *Marion Nestle, a professor of food studies and public health at New York University, is the author of "What to Eat."*

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Smaller chains and restaurants like Sylvia's, Juniors and the Carnegie Deli have already removed trans fat ingredients without government intervention, and some larger companies have made the switch without major difficulties. Ruby Tuesday, Au Bon Pain, and even Wendy's, have all sharply reduced trans fats in their products.

Other local restaurant owners want you to know that they are also in agreement:

Chip Shop owner Chris Sell, said, "I can find trans fat-free and cholesterol-free oil for the same price as oil full of trans fat and cholesterol, so I am always going to choose the trans fat-free oil. We have been completely trans fat-free for the past five years."

Allysa Torey, **Magnolia Bakery** owner said, "We make all our products without trans fat, including our famous cupcakes. We only use shortening in a small number of our seasonal products and don't anticipate any issues in making the change."

Leslie Meenan, Managing Partner at **Café Habana** said, "Cooking with trans fat-free oils accentuates the natural flavors of the food. It is just as easy to cook without trans fat and the food tastes better."

Monica Von Thun Calderòn, owner of **Grandaisy Bakery**, said "Grandaisy Bakery has been totally committed to baking without trans fat since its inception because the health of our customers is important to us. Simple ingredients make a great tasting product."

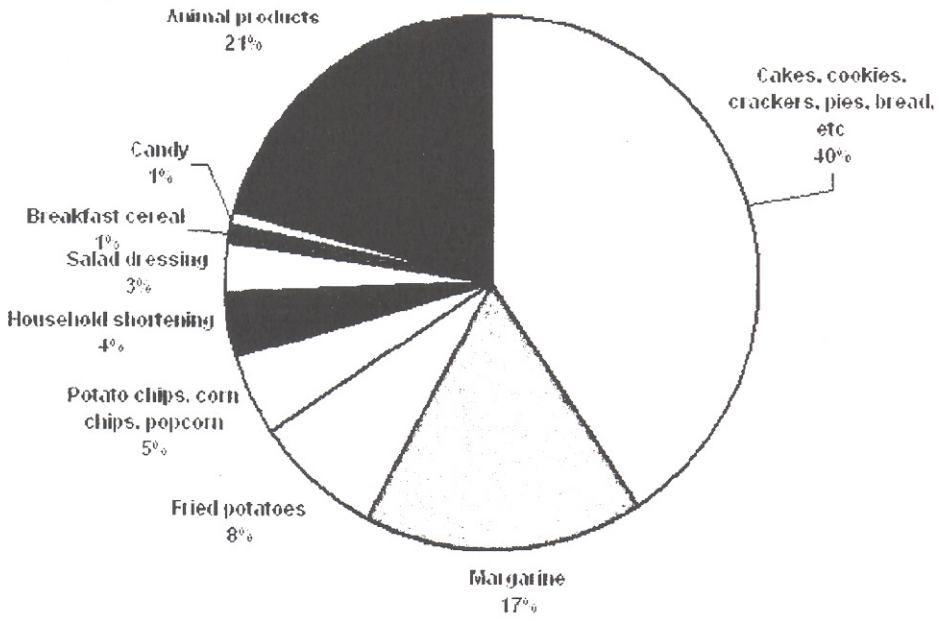
Mohammad Moqbul Hossain, partner in **Taste of Tandoor**, said "Taste of Tandoor is already cooking without any artificial trans fat. The food we make for our customers, we also eat ourselves, so we are committed to making healthy food."

Manuel Colon, General Manager of **Bistro Cassis**, said, "We switched to trans fat free-oil because we liked the taste better than food fried in oil with trans fat. We have not had to change recipes or increase prices to customers as a result of the change."

Conscious Cooking

Natural Cooking Classes & Health Counseling

Sources of Trans Fat in the U.S. Diet



FDA Consumer magazine. September-October 2003 Issue. Pub No. FDA04-1329C. URL: http://www.fda.gov/fdac/features/2003/503_fats.html

For more information:

www.nyc.gov/html/doh NYC Department of Health and Mental Hygiene Read the 2 proposals online. Attend the hearing in person on 10/30.

www.nytimes.com Many recent articles about the Trans Fat Proposal

www.conscious-cooking.com Holistic health counseling and healthy cooking classes with Diane Kolack, HHC. The best way to avoid unhealthy restaurant food is to stay at home and cook your own food. Learn to make 30 minute meals that leave more in your pocket and less around your middle. Email diane@conscious-cooking.com for more information.

RECEIVED
2006 OCT 13 A 9:45
DOHMH SECRETARY'S OFFICE
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

Three-quarters of adults report using nutrition labels on food packages, and almost half say that the labels have caused them to change their minds about which food products to purchase. Yet half of large chain restaurants do not provide *any* nutrition information to their customers. When information is available, it is usually from websites (requiring a computer and logging onto the Internet before going out), hard-to-find pamphlets, or tray liners that customers do not see until after they order. We do not expect people to make sound choices in supermarkets without nutrition information, and we should not expect them to be able to do so in restaurants.

Since January 2006, almost all packaged foods have been required to list trans fat content on labels, this has lead many manufacturers to reduce or completely eliminate the use of

trans-fatty oils in their products. However, restaurants are exempt from such disclosure. Yet, many restaurants fry their foods in partially hydrogenated oil, which makes their foods dangerously high in trans fat. For example, the chicken pot pie at KFC has 14 grams of trans fat, about seven days' worth. A large order of McDonald's French fries contains four days' worth of trans fat (8 grams), and the hot chocolate at Dunkin' Donuts has two days' worth (4 grams).

Trans fat increases blood cholesterol and the risk of heart disease, the number-one cause of death in New York and the nation. Nationally, trans fat causes about 50,000 premature deaths each year. The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet." With about 3 percent of the nation's population, New York City may be unnecessarily afflicted with 1,000 to 2,000 heart attack deaths annually.

The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Jennifer Pinto
Name

Organization

1133 Ogden Ave Apt 2OM
Address

Bronx Ny 10452
City, State zip code

jpintoproductions@gmail.com
Email address

646-331-0955
Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

RECEIVED
2006 OCT 13 A 11:16
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

Three-quarters of adults report using nutrition labels on food packages, and almost half say that the labels have caused them to change their minds about which food products to purchase. Yet half of large chain restaurants do not provide *any* nutrition information to their customers. When information is available, it is usually from websites (requiring a computer and logging onto the Internet before going out), hard-to-find pamphlets, or tray liners that customers do not see until after they order. We do not expect people to make sound choices in supermarkets without nutrition information, and we should not expect them to be able to do so in restaurants.

Since January 2006, almost all packaged foods have been required to list trans fat content on labels, this has lead many manufacturers to reduce or completely eliminate the use of

trans-fatty oils in their products. However, restaurants are exempt from such disclosure. Yet, many restaurants fry their foods in partially hydrogenated oil, which makes their foods dangerously high in trans fat. For example, the chicken pot pie at KFC has 14 grams of trans fat, about seven days' worth. A large order of McDonald's French fries contains four days' worth of trans fat (8 grams), and the hot chocolate at Dunkin' Donuts has two days' worth (4 grams).

Trans fat increases blood cholesterol and the risk of heart disease, the number-one cause of death in New York and the nation. Nationally, trans fat causes about 50,000 premature deaths each year. The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet." With about 3 percent of the nation's population, New York City may be unnecessarily afflicted with 1,000 to 2,000 heart attack deaths annually.

The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely, Jasper F. Fiscella

[redacted]

Name [redacted] JASPER F. FISCELLA

Organization [redacted] RETIRED

Address [redacted] 3511 85 ST #9C

City, State zip code JACKSON HTS. NY 11372

Email address [redacted]

Phone number 718-651-7374

RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 13 A 9:31

freshdirect
www.freshdirect.com

FOR IMMEDIATE RELEASE

Contact:
Samantha Freeman
MWW Group for FreshDirect
Office: 212-827-3761
After Hours: 914-671-7735
Email: sfreeman@mww.com

FRESHDIRECT SUPPORTS NYC HEALTH DEPARTMENT'S PROPOSED TRANS FAT PHASE OUT AHEAD OF SCHEDULE

Leading Online Grocer Dedicated to Customer Health Remains Artificial Trans Fat Free Since 2005 Following Original Voluntary Mandate from Bloomberg Administration

LONG ISLAND CITY, N.Y. – September 26, 2006 – FreshDirect, the nation's leading online fresh food manufacturing and delivery service, today announces its continued support of Mayor Bloomberg and the New York City Department of Health and Mental Hygiene's proposed change to the city's health code to phase out trans fats and hydrogenated oils in all New York City restaurants.

To promote healthier eating and help combat heart disease, New York City's leading cause of death, FreshDirect removed all hydrogenated oils from products produced in the company's bakery, kitchen and catering departments in November of 2005.

FreshDirect's elimination of trans fat producing hydrogenated vegetable oils from the kitchen's menu demonstrated early support for the voluntary mandate of the New York City health department urging all restaurateurs and food suppliers to eliminate hydrogenated vegetable oils and artificial trans fats from their menus.

"FreshDirect is committed to providing high-quality, nutritious dining choices to its busy customers and stands wholeheartedly behind Mayor Bloomberg's initiative," said Steve Michaelson, president of FreshDirect. "Our customers have embraced the healthier recipes, and we've seen a steady increase in sales of our ready-to-cook and chef-prepared meal options since removing all artificial trans fats."

"Preparing foods without artificial trans fats means choosing high quality, healthy ingredients," explained Eileen Rothenstein, registered dietician and nutritionist for FreshDirect. Executive Chef Michael Stark agrees, "Removing all hydrogenated oils from FreshDirect's kitchen and bakery was a relatively painless process that only adds to our customers' dining experience, from nutrition to flavor."

In addition to removing all hydrogenated oils and artificial trans fats from its meals, FreshDirect adheres to the second proposed change to the health code by making calorie content and nutritional information for every item sold available on its Web site. By clicking the "Nutrition" link on each item's detail page, customers can read about the selection's calories, serving size, fat content and vitamins.

FreshDirect's Web site serves as a resource to for those seeking more information and answers to frequently asked questions about hydrogenated oil and artificial trans fats. To learn more,

- more -

please visit www.freshdirect.com.

About FreshDirect

Founded in 1999, FreshDirect is one of the nation's leading online meals and fresh food manufacturing and delivery services. FreshDirect is setting a new standard for fresh food production and distribution by offering unparalleled quality, product customization, and value pricing from its state-of-the-art kitchen facility in Long Island City. The company is expanding rapidly and currently serves most of Manhattan and locations in Queens, Brooklyn, and the Bronx, as well as parts of New Jersey, Westchester, and Nassau County. The company's vision is to change consumers' lives by providing the ultimate shopping experience for impossibly fresh food and meal solutions. The company currently has over 250,000 customers and has fulfilled nearly 5 million orders since opening for business in September 2002. Additional information can be found at www.freshdirect.com

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 12 A 11:19

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

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Trans fat increases blood cholesterol and the risk of heart disease, the number-one cause of death in New York and the nation. Nationally, trans fat causes about 50,000 premature deaths each year. The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet." With about 3 percent of the nation's population, New York City may be unnecessarily afflicted with 1,000 to 2,000 heart attack deaths annually.

The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Name TSEHAY TESSEMA

Organization

Address 22 METROPOLITAN OVAL, #6F

City, State zip code BRONX, NY 10462

Email address TSGAMTA@yahoo.com

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 12 A 11:49

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

Three-quarters of adults report using nutrition labels on food packages, and almost half say that the labels have caused them to change their minds about which food products to purchase. Yet half of large chain restaurants do not provide *any* nutrition information to their customers. When information is available, it is usually from websites (requiring a computer and logging onto the Internet before going out), hard-to-find pamphlets, or tray liners that customers do not see until after they order. We do not expect people to make sound choices in supermarkets without nutrition information, and we should not expect them to be able to do so in restaurants.

Since January 2006, almost all packaged foods have been required to list trans fat content on labels, this has lead many manufacturers to reduce or completely eliminate the use of

trans-fatty oils in their products. However, restaurants are exempt from such disclosure. Yet, many restaurants fry their foods in partially hydrogenated oil, which makes their foods dangerously high in trans fat. For example, the chicken pot pie at KFC has 14 grams of trans fat, about seven days' worth. A large order of McDonald's French fries contains four days' worth of trans fat (8 grams), and the hot chocolate at Dunkin' Donuts has two days' worth (4 grams).

Trans fat increases blood cholesterol and the risk of heart disease, the number-one cause of death in New York and the nation. Nationally, trans fat causes about 50,000 premature deaths each year. The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet." With about 3 percent of the nation's population, New York City may be unnecessarily afflicted with 1,000 to 2,000 heart attack deaths annually.

The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Name CURLEY, Siana

Organization Receptionist

Address 43-14- 28 Ave ASTORIA NY

City, State zip code 11103

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

RECEIVED
2006 OCT 12 P 3:19
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

Three-quarters of adults report using nutrition labels on food packages, and almost half say that the labels have caused them to change their minds about which food products to purchase. Yet half of large chain restaurants do not provide *any* nutrition information to their customers. When information is available, it is usually from websites (requiring a computer and logging onto the Internet before going out), hard-to-find pamphlets, or tray liners that customers do not see until after they order. We do not expect people to make sound choices in supermarkets without nutrition information, and we should not expect them to be able to do so in restaurants.

Since January 2006, almost all packaged foods have been required to list trans fat content on labels, this has lead many manufacturers to reduce or completely eliminate the use of

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Trans fat increases blood cholesterol and the risk of heart disease, the number-one cause of death in New York and the nation. Nationally, trans fat causes about 50,000 premature deaths each year. The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet." With about 3 percent of the nation's population, New York City may be unnecessarily afflicted with 1,000 to 2,000 heart attack deaths annually.

The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Loren Marks D.C. DACBN.

Name DR. LOREN MARKS

Organization

Address 200 W 57 ST. #1010 NY 10019

City, State zip code

Email address LMARKS1000@AOL.COM.

Phone number 212-333-7300

St.John's University
8000 Utopia Parkway
Jamaica, NY 11439
October 12, 2006

RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 27 A 10:57

To: New York City Board of Health,

I am a resident of New York. I live in Queens, and I am always on the go. I work and go to school. Sometimes it's difficult to get home to cook a meal. By ending trans fat use in New York restraunts it can be a big health factor to me and many other moving New Yorkers.

Trans fat is not part of a healthy life style. Banning trans fat can help many people struggling with, heart disease or obesity. Banning trans fat can help improve our eating habits. Who cares about dollar amounts, when the cost of health is more important. I was never aware of eating right or healthy eating based on fat, and trans fat food, until my boyfriend had a heart attack one year ago, and he almost died. He wasn't eating right and the one thing he ate the most was fast food in restraunts in the city. It is very important for you to pass this regulation to ban trans fat in restraunts. Many people's health is in your hands by making this rule you can be helping many better their eating habits. Please remove the trans fat!!

Sincerely yours,

Jennifer M. Giammarino

Jennifer M. Giammarino

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 12 A 10:59

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

Three-quarters of adults report using nutrition labels on food packages, and almost half say that the labels have caused them to change their minds about which food products to purchase. Yet half of large chain restaurants do not provide *any* nutrition information to their customers. When information is available, it is usually from websites (requiring a computer and logging onto the Internet before going out), hard-to-find pamphlets, or tray liners that customers do not see until after they order. We do not expect people to make sound choices in supermarkets without nutrition information, and we should not expect them to be able to do so in restaurants.

Since January 2006, almost all packaged foods have been required to list trans fat content on labels, this has lead many manufacturers to reduce or completely eliminate the use of

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Trans fat increases blood cholesterol and the risk of heart disease, the number-one cause of death in New York and the nation. Nationally, trans fat causes about 50,000 premature deaths each year. The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet." With about 3 percent of the nation's population, New York City may be unnecessarily afflicted with 1,000 to 2,000 heart attack deaths annually.

The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Beverly Beckwith
Name

Organization

Address
145 Valentine Lane
City, State zip code
Yonkers, NY 10705
Email address

Phone number

FILE HP
CC: ACAFFERELLI
ORIGINAL
SILVER
R. BRYAN
CC OR FRANCIS
TO REVIEW

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Oct 11, 2006 10:45 AM
Subject: City of New York - Correspondence #1-1-267532580 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-267532580
DATE RECEIVED: 10/11/2006 09:36:13
DATE DUE: 10/25/2006 10:41:14
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/11/2006 09:36:06
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: mblivice@nyc.rr.com (Marni Blivice)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Marni Blivice (mblivice@nyc.rr.com) on Wednesday, October 11, 2006 at 09:36:06

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Conscious Cooking

Natural Cooking Classes & Health Counseling

RECEIVED
2006 OCT 11 P 2:00
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: 10/11/06 **(must be before 10/30/06)**

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 (which would restrict the serving of products containing artificial trans fats in NYC restaurants) and §81.50 (which would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus to enable consumers to make informed choices among such items at the time of ordering) to Article 81 of the NYC Health Code.

Sincerely,

First Name: Rashmi **Last Name:** Sharma

Street Address: 960 Sterling Pl. #3k, Brooklyn, NY **Zip Code:** 11213

☐ Queens ☐ Manhattan ☑ Brooklyn ☐ Bronx ☐ Staten Island

www.conscious-cooking.com

10/11/2006 12:21 6464956059 WOODHULL INSTITUTE PAGE 01/01

Message Type: Misc. Comments

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Marni

Last Name: Blivice

State: NY

Postal Code: 10002

Country: United States

Email Address: mblivice@nyc.rr.com

Message: I am writing to urge the Dept of Health to Limit NYC Restaurants' Use of Trans Fats. Would prefer absolutely no trans fats were ever used by restaurants in the city. Thank you - Marni Blivice

---

REMOTE_HOST: 12.20.30.132
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

****

Dear Ms. Rena Bryant,

As a resident of New York City, I urge you to support the Department of Health and Mental Hygiene's recommendation to limit the amount of trans fat in restaurant food and to require certain restaurants to list calories on menus.

Trans fats from partially hydrogenated oils increase "bad" cholesterol and decrease "good" cholesterol in blood, increasing the risk of heart disease. Heart disease is the number-one cause of death for women and men in New York City and the nation. Nationally, trans fats cause approximately 50,000 premature deaths each year and about 1,500 in New York City . The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet."

Since January 2006, almost all packaged foods are required to list trans fat on their Nutrition Facts labels. However, restaurants are exempt from such disclosure. Yet, New Yorkers are getting about one-third of their calories from restaurants and other food service establishments, and many restaurant foods contain high levels of trans fat. For example, the chicken pot pie at KFC has 14 grams of trans fat. That is as much as the American Heart Association recommends consuming for a whole week. A large order of McDonald's French fries contains 8 grams of trans fat.

Although Americans get about a third of their calories from restaurants and other food service establishments, few restaurants provide nutrition information at the point of decision-making. It's nice that information may sometimes be found on the Internet or brochures, but that's not very helpful when you're weighing your choices at a restaurant. As a result, people often consume more calories than they realize. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke and an order of chicken tenders has more calories than the baby back ribs at a typical dinner house restaurant.

People have become accustomed to having nutrition information on packaged foods in grocery stores and want it at restaurants. Rather than hiding nutrition information on websites, restaurants should provide it to their customers where they need it and can use it.

The Department of Health's recommendation to both limit trans fat in restaurant foods and to require calorie disclosure on menus in certain restaurants are excellent steps toward helping New Yorkers watch their weight and reduce their chances of getting heart disease. Please support these important health measures.

Sincerely,

Gail E. Peters
313 E. 89th St. Apt. 5C
New York, NY 10128-5050

Gail E. Peters

RECEIVED
OFFICE OF GENERAL COUNSE
2006 OCT 11 A 9:44

Conscious Cooking

Natural Cooking Classes & Health Counseling

RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 11 A 9:57

RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: 10/11/06 **(must be before 10/30/06)**

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 (which would restrict the serving of products containing artificial trans fats in NYC restaurants) and §81.50 (which would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus to enable consumers to make informed choices among such items at the time of ordering) to Artjcle 81 of the NYC Health Code.

Trans fat does not belong in our food. New Yorkers want to be able to eat healthy with confidence.

Sincerely,

First Name: Diane **Last Name:** Kolack

Street Address: 48-41 43rd St **Zip Code:** 11377

☒ Queens ☐ Manhattan ☐ Brooklyn ☐ Bronx ☐ Staten Island

Center for Science in the Public Interest

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 11 A 10:36

For Immediate Release: September 26, 2006
http://www.cspinet.org/new/200609262.html

Bold New York City Health Department Proposals Praised

NYC May Require Calories on Menus and Limit Artificial Trans Fat in Restaurants
All restaurants in New York City would have to remove most artificial trans fat from foods, and the typical fast food restaurant would have to list calories for each item on its menu boards if two new proposed regulations in New York City are adopted. The proposals are winning plaudits from health advocates, including the nonprofit Center for Science in the Public Interest (CSPI), which has been urging cities, states, and the federal government to take both of those actions. The proposals, put forward by the city's health commissioner, Dr. Thomas R. Frieden, were announced at a meeting of the city's Board of Health today.

The first proposal would limit artificial trans fat—the trans fat that is produced when oil is partially hydrogenated in a factory—in all New York City restaurants and food service outlets. Restaurants could either switch to healthier oils or use partially hydrogenated oils only to the extent that they contribute less than half a gram of trans per serving. Although small amounts of trans fat occur naturally in foods like milk and beef, most trans fat in the American diet comes from partially hydrogenated oil.

The American Heart Association recommends that Americans get no more than 1 percent of their calories from trans fat, which amounts to about 2 grams per day. A large order of McDonald's French fries contains about 8 grams—or four days' worth. In contrast, French fries at Wendy's, Chili's, and Ruby Tuesday are trans-fat-free since they're fried in healthier vegetable oil blends.

"It makes perfectly good sense for health authorities to set limits on the amount of artificial trans fat in foods in the same way they set limits on various dyes, chemicals, or other additives in food," said CSPI executive director Michael F. Jacobson. "Fortunately, as Wendy's, Legal Sea Foods, and a few other chains and numerous food manufacturers have found, healthier alternatives to partially hydrogenated oil are available for every kind of food."

CSPI first urged the Food and Drug Administration to revoke its approval of partially hydrogenated oil in 2004. Leading epidemiological researchers estimate that use of partially hydrogenated oil kills roughly 50,000 Americans—including about 1,500 New Yorkers—each year. A Chicago alderman recently proposed getting partially hydrogenated oil out of that city's restaurants, but withdrew the measure in order to give chains more time to switch on their own. CSPI says restaurants have been much slower to get rid of partially hydrogenated oils than food manufacturers which, spurred by new

trans fat labeling requirements, have reformulated many food products that used to include significant amounts of trans fat.

The second proposal advanced today by the Department of Health and Mental Hygiene would require all restaurants that currently make available calorie information for standardized menu items to list calories on menus and menu boards. Fast-food chains that have nutrition information on web sites, like McDonald's, Burger King, KFC, and Cosi would have to list calorie counts on their menu boards alongside the menu item and the price in all their New York City outlets.

Listing calories on menus would help people make more informed choices when eating out, according to CSPI. For instance, people might be surprised to learn that a large shake at McDonald's (1,160 calories) has twice as many calories as a Big Mac (560). At Subway, most people wouldn't assume that a 6-inch tuna sub actually has more calories (530) than a 6-inch roast beef (290).

"With people eating more and more of their meals away from home, putting calorie counts on menus and menu boards will help Americans watch their weight and encourage restaurant chains to add a wider variety of options," said CSPI nutrition policy director Margo G. Wootan. "If chains already have this information, they should make it available to their customers when they're deciding what to order instead of hiding it on a web site."

CSPI has helped advance similar menu-labeling proposals in about a dozen state legislatures and in Congress. The federal bills are known as the Menu Education and Labeling, or MEAL, Acts. In the District of Columbia, a menu labeling bill enjoys majority support in the city council but has yet to come up for a vote.

The next step for the New York City proposals is a public hearing on October 30.

"The Board of Health and the Bloomberg administration deserve enormous credit for putting these urgently needed health measures on the front burner," said Jacobson. "Reducing use of partially hydrogenated oils and putting calorie counts on menus are easy ways to help New Yorkers reduce their risks of heart disease and obesity."

For more information, contact:
Center for Science in the Public Interest
1875 Connecticut Avenue, NW
Washington, DC 20009
phone 202.332.9110
fax 202.265.4954

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

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NEW YORK STATE

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Vice President, NY Chapter 3
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New York, NY

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George Dunkel
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Albany, NY 12203
Phone: 518/456-0951
Fax: 518/456-8573

Administrative Coordinator
Jessica Geslani
Email: jgeslani@aap.org

❑ 420 Lakeville Road
Suite 244
Lake Success, NY 11042
Phone: 516/326-0310
Fax: 516/326-0316

http://www.aapdistrictii.org

October 11, 2006

Lynn Silver, MD, MPH
Assistant Commissioner
Bureau of Chronic Disease Prevention
New York City Department of Health and Mental Hygiene
2 Lafayette Street, 20th Floor
New York, NY 10007

Dear Doctor Silver:

Obesity has been growing explosively amongst our children in New York City. Today, 43% of children in grades K-5 and 42% of children in daycare at Headstart sites are either overweight or obese. Pediatricians are seeing more and more of what was formerly called adult-onset diabetes in teenagers, due to obesity. These rapid and dramatic changes in our children require serious public policy approaches.

The proposal by the New York City Department of Health and Mental Hygiene to require calorie labeling in certain restaurants represents an important step to providing adults and children with the information they need to make informed choices. The New York State District of the American Academy of Pediatrics is pleased to lend its support to this proposal.

The other proposal by the Department to reduce or eliminate use of trans fats - an unnecessary substance that significantly increases the risk of future heart disease thereby compounding the effects of obesity – will also help to decrease the obesity epidemic. Children and teenagers eating at fast food restaurants are unlikely to know how to avoid artificial trans fat. They shouldn't have to know. This substance should no longer be used in our food. The NYS District of the American Academy of Pediatrics again strongly endorses this important public health proposal.

Yours truly,

Henry A. Schaeffer, MD, FAAP
Chair, New York State District II
American Academy of Pediatrics

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

RECEIVED
OFFICE OF GENERAL COUNSEL
2005 OCT 1 P 12: 24

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

Three-quarters of adults report using nutrition labels on food packages, and almost half say that the labels have caused them to change their minds about which food products to purchase. Yet half of large chain restaurants do not provide *any* nutrition information to their customers. When information is available, it is usually from websites (requiring a computer and logging onto the Internet before going out), hard-to-find pamphlets, or tray liners that customers do not see until after they order. We do not expect people to make sound choices in supermarkets without nutrition information, and we should not expect them to be able to do so in restaurants.

Since January 2006, almost all packaged foods have been required to list trans fat content on labels, this has lead many manufacturers to reduce or completely eliminate the use of

trans-fatty oils in their products. However, restaurants are exempt from such disclosure. Yet, many restaurants fry their foods in partially hydrogenated oil, which makes their foods dangerously high in trans fat. For example, the chicken pot pie at KFC has 14 grams of trans fat, about seven days' worth. A large order of McDonald's French fries contains four days' worth of trans fat (8 grams), and the hot chocolate at Dunkin' Donuts has two days' worth (4 grams).

Trans fat increases blood cholesterol and the risk of heart disease, the number-one cause of death in New York and the nation. Nationally, trans fat causes about 50,000 premature deaths each year. The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet." With about 3 percent of the nation's population, New York City may be unnecessarily afflicted with 1,000 to 2,000 heart attack deaths annually.

The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

ALKMINI ANASTASIADOU, M.D.
Name

ENDONY ENDOCRINOLOGY, PLLC
Organization

133 EAST 73 STR #4D1
Address

NY NY 10021
City, State zip code

alkminia@hotmail.com
Email address

212-717-8800
Phone number

FIRST IN THE FIGHT
Mr. Al Landsman
21827 68th Avenue
Flushing, NY 11364-2606

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

RECEIVED
OFFICE OF GENERAL COUNSEL
2005 OCT 11 P 12: 23

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Name AL LANDSMAN

Organization CENTER FOR SCIENCE IN THE PUBLIC INTEREST

Address 218-27 68 AVE

City, State zip code FLUSHING, N.Y. 11364

Email address

Phone number

Conscious Cooking

Natural Cooking Classes & Health Counseling

RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 13 A 9:04

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: 10/10/06 **(must be before 10/30/06)**

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 (which would restrict the serving of products containing artificial trans fats in NYC restaurants) and §81.50 (which would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus to enable consumers to make informed choices among such items at the time of ordering) to Article 81 of the NYC Health Code.

I support the above proposals.

Sincerely,

First Name: Rosezz **Last Name:** Boyd

Street Address: 84-60 86th Ave Woodhaven **Zip Code:** 11421

☒ Queens ☐ Manhattan ☐ Brooklyn ☐ Bronx ☐ Staten Island

Sept 26, 2006

Northern Manhattan Perinatal Partnership, Inc.

NMPP and hopefully, the BBKH Coalition supports these new policies by the Board of Health. They fit within NMPP's and the coalition's advocacy portfolio. The political and public health environment has become ripe to combat obesity and diabetes throughout NYC. We strongly believe that our strategy and day-to-day work has helped to create this new situation. These policies are just one small step in creating a culture of health throughout NYC!

Mario Drummonds
Northern Manhattan Perinatal Partnership, Inc.
mdrummonds@msn.com

OCT 10 2006

FILE HP
J. Leighton
CC: A CAFERELLI
(ORIGINAL)
L SELLER
R BRYANT

CC DR. FRIEDEN
TO REVIEW

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Tue, Oct 10, 2006 10:39 PM
Subject: City of New York - Correspondence #1-1-267437390 Message to AgencyHead, DOHMH - Other Health Matters

Your City of New York - CRM Correspondence Number is 1-1-267437390
DATE RECEIVED: 10/10/2006 21:30:55
DATE DUE: 10/24/2006 22:36:34
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****

If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/10/2006 21:30:31
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: njs@peerviews.com (Neil Squillante)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Neil Squillante (njs@peerviews.com) on Tuesday, October 10, 2006 at 21:30:31

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

RECEIVED
OFFICE OF GENERAL COUNSEL
2005 OCT 11 P 5:19

Message Type: Misc. Comments

Topic: Other Health Matters

Contact Info: Yes

First Name: Neil

Middle Name: J

Last Name: Squillante

Street Address: 36 East 36th Street

City: New York

State: NY

Postal Code: 10016

Country: United States

Work Phone #: 2126862466

Email Address: njs@peerviews.com

Message: From February 2004 to April 2005, I lost 45 pounds by counting calories. I have since maintained my new weight. I eat 1,700 calories/day during the week and about 2,000 calories/day on weekends. I'm 5'7" 140 pounds. The key to my success lies in understanding caloric density. I have found that most people don't have a good understanding of calories. Therefore, I fully support Mayor Bloomberg and Commissioner Frieden in their effort to require restaurants to list the calorie content on menus.

All that said, I don't understand why Commissioner Frieden has chosen to focus on calories to the exclusion of more pressing issues. For example, New York City is in the midst of a bedbug epidemic. Most people, including so-called pest control experts, don't know how to deal with the problem. The Commissioner should begin an education program so that New York can gain the upper hand before the problem spirals out of control. Thank you.

REMOTE_HOST: 12.30.102.190
HTTP_USER_AGENT: Mozilla/5.0 (Macintosh; U; PPC Mac OS X; en) AppleWebKit/418.8 (KHTML, like Gecko) Safari/419.3

****

Harlem Consumer Education Council, Inc.

P.O. Box 1165 Triboro Station, New York, NY 10032 • (212) 795-0234

FLORENCE M. RICE
PRESIDENT

October 10, 2006

Rena Bryant
Secretary to the Board of Health
125 Worth Street, CN-31
New York, New York 10013

Dear Members of the New York City Board of Health:

As the President of the Harlem Consumer Education Council and a resident of New York City, I urge you to support the Department of Health and Mental Hygiene's recommendation to limit the amount of trans fat in restaurant food and to require certain restaurants to list calories on menus.

Trans fat promotes heart disease, killing roughly 50,000 Americans each year. Many restaurant foods contain far too much Trans fat. A three-piece extra crispy combo meal (with a drumstick, two thighs, potato wedges, and a biscuit) at KFC contains a staggering 15 grams of trans fat. The American Heart Association recommends that people eat no more than 2 grams of trans fat per day.

People have gotten used to having nutrition information on packaged foods in grocery stores and have a right to know what is in their food in restaurants. Otherwise how can you know that a tuna fish sandwich has 50% more calories than a roast beef sandwich? Or that a small chocolate milkshake at McDonald's has more calories than a Big Mac?

The Department of Health's recommendation to both limit trans fat in restaurant foods and to require calorie disclosure on menus in certain restaurants are excellent steps toward helping New Yorkers watch their weight and reduce their chances of getting heart disease. Please support these important health measures.

Sincerely,

Florence M. Rice
President
Harlem Consumer Education Council

CITIZENS' COMMITTEE for CHILDREN
OF NEW YORK INC

RECEIVED
2006 OCT 10 A 11:07
BOH SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

For Immediate Release

Contact:
Rose Anello 212.673.1800 x 13 or 917.690.2869

Citizens' Committee for Children Supports Proposals to Phase-Out the Use of Trans Fats in Restaurants and Provide Calorie Labeling in Menus

Proposals will Reduce Obesity Rate and Improve Child Health Outcomes

(September 26, 2006, New York, NY) – Today Citizens' Committee for Children of New York (CCC) announced its support for two proposals that would amend the city's Health Code to phase-out trans fatty acids in restaurants and mandate calorie labeling in menus.

"For too many children and families, access to affordable, nutritious food is an impossible challenge. By phasing-out trans fats from restaurants, we will cut the obesity rate and improve health outcomes for children across New York City," said Gail B. Nayowith, Executive Director of Citizens' Committee for Children.

"Disclosure of caloric information on restaurant menus will allow parents to make better food choices that will improve their children's nutrition and promote life-long healthy diets and lifestyles," continued Nayowith.

"Eating habits today determine children's health tomorrow," continued Nayowith. "With obesity rates in the city more than double the national average – it is critical that the Board of Health adopt these proposals."

CCC, a 62 year-old child advocacy organization with a mission of ensuring that every child is healthy, housed, educated and safe believes that the proposals will go a long way in helping children, adolescents and families live healthier lives. Close to a quarter or 470,000 New York City children are obese, increasing the likelihood that they will develop diabetes and heart disease as adults. The two proposals will control the obesity epidemic that plagues New York City's children.

####

URSULA SCHERRER
101 STANTON ST #4
NEW YORK NY 10002

(212) - 253 5398

RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 27 A 10:49

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 and §81.50 to Article 81 of the NYC Health Code. I understand that §81.08 would restrict the serving of products containing artificial trans fats in NYC restaurants. §81.50 would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus. This would enable consumers to make informed choices among such items at the time of ordering.

Sincerely,

Tatyana Borisova
37-65, 61st St., #3D
Woodside, NY 11377

(917) - 405 6924

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Tatyana Borisova

2006 OCT 18 P 2:55
RECEIVED
BOARD/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

Suzanne E. Kind
22 Halcyon Road
LINDENHURST, NY
11757

(631)882-8398

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Suzanne E. Kind
Suzanne E. Kind

2006 OCT 18 P 3:00
OFFICE OF THE SECRETARY
RECEIVED

Sonya Shteynberg
105 Kings Hwy 4B
Brooklyn, NY 11214

(347) 563-7701

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Sonya Shteynberg

Sonya Shteynberg

RECEIVED
DOHMH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 3:03

Shaneca Adams
141 1st Ave #1
N.Y, N.Y. 10003

( ) -

RECEIVED
DOHMH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 27 A 10:49

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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NYC Department of Health and Mental Hygiene
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New York, NY 10013

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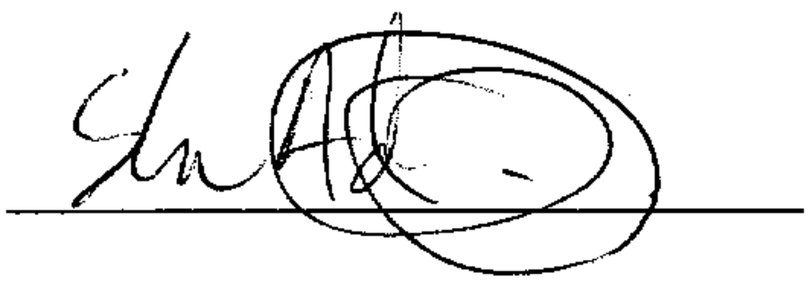
Sincerely,



Sandy Jones
1368 E 53rd St
B'klyn NY 11234

(718) 444-2541

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Sandy Jones

2006 OCT 18 P 3:03
RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

Sandra Izzo
355 New York Avenue
Lyndhurst, NJ 07071

(201) 804-2724

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Sandra Izzo

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:51

Rochelle Blank
315 Kenmore Ave
Fair Lawn, NJ 07410

(917) 612-4024

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely, Rochelle Blank

Rochelle Blank

RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:57

Robyn Myhr
372 8th Street #4L
Brooklyn, NY 11215

(917) 969-1475

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Robyn Myhr

2006 OCT 16 P 3:01
OFFICE
OFFICER

Robert Notter
447 West 45th Street
New York, NY 10036

(212) 541-8794

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Robert Notter

2006 OCT 18 P 2:54

RICK MARQUARDT
44-44 21ST ST #15
L.I.C., NY 11101

(917) 805-4811

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

RICK MARQUARDT

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:51

Randi Halpern
413 grand Street
NYC 10001
Apt. 17D4F
212 228.9034

RECEIVED
DOHMH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 27 AM 9:50

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Randi Halpern

Rachel Leslie
50 Glenbrook Rd 9H
Stamford CT 06902

(203)327-3178

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:53

Conscious Cooking

Natural Cooking Classes & Health Counseling

RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: 10/9/06 **(must be before 10/30/06)**

Dear Ms. Bryant:

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RECEIVED
2006 OCT 10 A 10:47
BOARD SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

Sincerely,

First Name: Phyllis **Last Name:** Rosser

Street Address: 14 East Fourth St. **Zip Code:** 10012

☐ Queens ☒ Manhattan ☐ Brooklyn ☐ Bronx ☐ Staten Island

Pascale Kavanagh
697 Red Lion Way
Bridgewater, NJ 08807

(908) 575-1434

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Pascale Kavanagh

RECEIVED
2006 OCT 18 P 2:56
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

LINA BEROT
137 AVE A #2A
NY, NY 10009
USA

(212) 528 8766

RECEIVED
DOHMH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 27 A 10:00

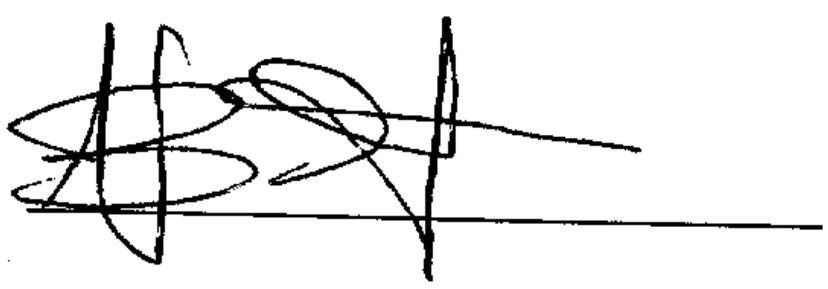
October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 and §81.50 to Article 81 of the NYC Health Code. I understand that §81.08 would restrict the serving of products containing artificial trans fats in NYC restaurants. §81.50 would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus. This would enable consumers to make informed choices among such items at the time of ordering.

Sincerely,



Morella Devost

85 John St, 4N

New York, NY 10038

(646) 201-9273

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Morella Devost

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:51

Mary Lou Minard
1 Terrace Cir #3C
Great Neck, NY 11021

(516) -482-6943

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Mary Lou Minard
MARY LOU MINARD

2006 OCT 18 P 2:53
RECEIVED
BOARD OF HEALTH
RESPONSE TO RULES OFFICER
RECORDS ACCESS OFFICER

MAYA BHAGAT

165 No 16TH STREET

BLOOMFIELD NJ 07003

(973) 951-5984

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
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2006 OCT 18 P 2:52
RECEIVED
BOARD OF HEALTH
OFFICE OF THE
SECRETARY

Sincerely,

MMBhagat

MAYA BHAGAT

Lynn Goldstein
21 W. 86th St Apt 905
New York, NY 10024

(212) 706-8146

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Lynn Goldstein

Lynn Goldstein

2006 OCT 18 P 2:54
ACCESS OFFICER

Joan Pisher
332 E 4th St. #45
NY NY 10009

( ) -

RECEIVED
DOHMH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 27 A 10:49

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
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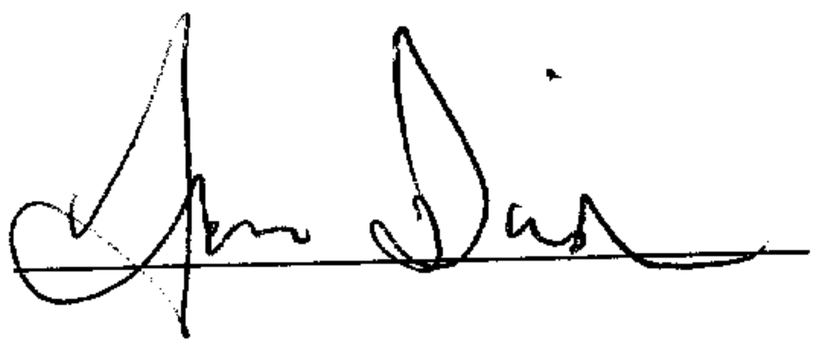

LISA STORCH
17 Beachside Common
Westport CT
06880

(203)829-9065

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code

RECEIVED
2006 OCT 19 P 2:05
SECRETARY'S OFFICE
ACCESS OFFICER

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Lisa Storch

LISA STORCH

Linda Principato
671 North Railroad Ave
Staten Island NY 10304

(718)980-1109

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
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Sincerely,

Linda Principato

Linda Principato

2006 OCT 18 P 2:56
RECORDS ACCESS OFFICER
BOH/SECRETARY'S OFFICE
NYC DOH/MHC

Laura L. Frisk
234 E. 3rd St. #2C
NY NY 10009

( ) -

RECEIVED
HEALTH SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 27 A 10:50

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Laura L. Frisk

Larry Rogowsky
6035 B'way #4D
Bronx, NY. 10471

(917) 716 6414

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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NYC Department of Health and Mental Hygiene
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Sincerely,

Larry Rogowsky

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:50

Katie Graham
101 Perry Street #4H
New York, NY 10014

(646) 221-4875

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Katie Graham

RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 3:03

Katalin Moroczq
95. Orient Way Apt. BB.
Rutherford NJ-07070

(201)655-9888

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
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Sincerely,

Katalin Moroczq

KATALIN MOROCZA

2006 OCT 18 P 2:56
RECEIVED
BOH/OFFICE OF THE
SECRETARY'S OFFICE

Julie Lerner
430 W 24th St #6E
NY NY 10011

(212) 929-4623

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Julie Lerner

Julie Lerner

2006 OCT 18 P 2:55
RECORDS ACCESS OFFICER
DOH/SECRETARY'S OFFICE
RECEIVED

Josefina Ritondo
7210 - 11th Avenue
Brooklyn N.Y 11228

( ) -

2006 OCT 18 P 2:51
BOARD OF HEALTH
RECORDS OFFICER

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code

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Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Josefina Ritondo

Josefina Ritondo

Jordana Maurer
60 Sutton Place. 8LS
Ny. NY 10022.

(646) 303-0626.

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
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Sincerely,

Jordana Maurer.

RECEIVED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:54

Jody Stramling-Muchow
3800 Independence Ave., #5F
Bronx, NY 10463

(917) 373 6093

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
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Sincerely,

Jody Stramling-Muchow

2006 OCT 16 P 3:03
OFFICE

JoAnne K. Richards
72 2nd Place
Brooklyn, N.Y. 11231

(917)753-7277 (718)-722-7559

October 9, 2006
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NYC Department of Health and Mental Hygiene
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RECEIVED
2006 OCT 18 P 2:51
BOARDS ACCESS OFFICER
COMMISSIONER'S OFFICE

Sincerely,

JA Richards

JoAnne K. Richards

Jennifer Carroll-Fischer
934 Chamberlain Hwy
Kensington, CT 06037
(860) 829-1479

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
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Sincerely,

Jennifer Carroll-Fischer

RECEIVED
2006 OCT 18 P 3:02
CORP/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

Jeffrey Canter
43 Grand St F1704
NYC 10002

(212 228 9034

RECEIVED
BOH'S SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 27 A 10:55

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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Sincerely,

Janine Brancale
71 Strawberry Hill Ave, 909
Stamord, CT 06902

(203) 569-7194

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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NYC Department of Health and Mental Hygiene
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Sincerely,

Janine Brancale

Gabe Hoffman
29 Harriet Lane
Huntington, NY
11743

(631)697-6511

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 19 P 2:05

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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Sincerely,

Gabe Hoffman

Taraleigh Silberberg
POB 1045
Greenwood Lake, NY 10925

(917) 756-0309

October 9, 2006
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Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Taraleigh Silberberg

2006 OCT 18 P 2:54
BOARD/AGENCY SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
RECEIVED

Felicia Desrosiers
69 South Oxford St. #3A
Brooklyn, NY 11217

(571) 239-2074

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Felicia Lucia Desrosiers

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:52

FARAH GOKTURK
43-30 44th St #4C
Long Island City, NY 11104
(917)294-4903

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
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Sincerely,

FILED
BOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:59

Ellen Daniels
886 Union St. #3A
Brooklyn, NY 11215

(718) 783-1426

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
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Sincerely,

Ellen Daniels

RECEIVED
DOHMH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:53

Elizabeth Kochor
656 Fairfield Beach Rd
Fairfield, CT 06480

203 319-0872

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
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Sincerely,

Elizabeth Kochor

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:52

Diane Judin
72 South 8th St #4
Brooklyn N.Y. 11211

(347) 853-0768

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 27 A 10:49

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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Sincerely,

Diane Judin

Debra Siegel
235 E. 87th St. #5E
New York, NY 10128

(917)797-4745

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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NYC Department of Health and Mental Hygiene
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Sincerely,

Debra M. Siegel

Debra M. Siegel

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:51

Dale Marcus
3881 Sally Lane
Oceanside, NY 11572.

( ) -

October 9, 2006
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Secretary to the Board of Health
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Sincerely,

Dale Marcus

DALE MARCUS

2006 OCT 18 P 3:01
RECEIVED
DOHMH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

Christine Lucas
1360 York Ave. #2L
New York, NY 10021

(646) 382-8900

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
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Sincerely,

Christine Lucas

2006 OCT 18 P 2:51
RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

Christian Fisler
934 Chamberlain Hwy
Kensington CT 06037

(860)829-1486

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

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New York, NY 10013

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 and §81.50 to Article 81 of the NYC Health Code. I understand that §81.08 would restrict the serving of products containing artificial trans fats in NYC restaurants. §81.50 would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus. This would enable consumers to make informed choices among such items at the time of ordering.

Sincerely,

Christian Fisler

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 3:03

Chana Citron
235 W. 76th St.
Apt. 3E
New York, NY 10023
(212) 799-8798

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 and §81.50 to Article 81 of the NYC Health Code. I understand that §81.08 would restrict the serving of products containing artificial trans fats in NYC restaurants. §81.50 would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus. This would enable consumers to make informed choices among such items at the time of ordering.

Sincerely,

Chana Citron

2006 OCT 18 P 2:52
RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

CAROLYN BALLEN
130 SPRUCE ST., #26A
PHILA., PA 19106

(215) 627-1308

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Carolyn Ballen

CAROLYN BALLEN

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 18 P 2:53

CARLOS A. REMOTTI
315 East 56th Street Apt 4"E"
New York, NY

(212 317-9002

2006 OCT 18 P 3:03
DEPARTMENT OF HEALTH AND MENTAL HYGIENE
RECORDS AND REPORTS OFFICER

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

CARLOS A. REMOTTI

Carla W. Cohen
42 Main St. -2A
Brooklyn, NY 11201

* 6305 S. Main St.
Athens, Pa. 18810

(607)222-4439

RECEIVED
2006 OCT 18 P 3:02
PUBLIC HEALTH LAW/GEN
LAW/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Carla W. Cohen

Bonnie Taub
16 Radford Road
Lake Grove, N.Y. 11755

(631)585-0192

October 9, 2006
Re: Support proposal to add §81.08 and §81.50 to Article 81 of the NYC Health Code.

Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene
125 Worth St CN-31
New York, NY 10013

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Sincerely,

Bonnie Taub

Bonnie Taub

2006 OCT 16 P 2:57

From: Shannon Copeland <slcopeland@yahoo.com>
To: <gcowley@health.nyc.gov>, <atucker@health.nyc.gov>
Date: 9/27/2006 9:37:15 AM
Subject: DON'T GIVE UP!!!

PLEASE DON'T GIVE UP!!!

YOU'RE LEADING THE WORLD TO A MORE SUSTAINABLE FUTURE.

TRANSFATS ARE NOT FOOD, THEY ARE A TYPE OF NON-PETROLEUM PLASTIC.

IGNORANCE MUST SOMETIMES BE FOUGHT WITH REGULATION.

2006 OCT 13 A 9:19

Printer Friendly Format
FOR IMMEDIATE RELEASE
Press Release # 093-06
Tuesday, September 26, 2006
Contact: (212) 788-5290; (212) 788-3058 (after hours)
Geoff Cowley (gcowley@health.nyc.gov)
Andrew Tucker (atucker@health.nyc.gov)

HEALTH DEPARTMENT PROPOSES TWO CHANGES TO CITY'S HEALTH CODE FOR PUBLIC COMMENT: FIRST, TO PHASE OUT ARTIFICIAL TRANS FAT IN ALL RESTAURANTS; SECOND, TO REQUIRE CALORIE LABELING IN SOME RESTAURANTS
Artificial Trans Fat Still Widely Used in Restaurants Despite Year-Long Education Campaign; Artificial Trans Fat Is Hazardous but Replaceable; Would Be Phased Out Over 18 Months; Calorie Information, Where Feasible to Provide, Would Be More Readily Accessible to Customers

NEW YORK CITY - September 26, 2006 - The Health Department today proposed for public comment two separate initiatives that will affect New York City restaurants. The first proposal is a partial phase-out of artificial trans fat in all New York City restaurants. The second would require restaurants that already make calorie content publicly available on or after March 1, 2007 to also post it on their menus and menu boards. The proposed changes are available for public comment on the Department's website, nyc.gov/health. There will also be a public hearing on October 30, 2006.

First Proposal: Partial Phase-Out of Artificial Trans Fat

Artificial trans fat is an unnecessary and dangerous ingredient in food. The Health Department is proposing that restaurants remove most artificial trans fats from their cooking over an 18-month period. "New Yorkers are consuming a hazardous, artificial substance without their knowledge or consent," Health Commissioner Dr. Thomas R. Frieden said. "Trans fat causes heart disease. Like lead in paint, artificial trans fat in food is invisible and dangerous, and it can be replaced. While it may take some effort, restaurants can replace trans fat without changing the taste or cost of food. No one will miss it when it's gone"

Restaurants are a major source of artificial trans fat. On average, Americans consume almost 6 grams of trans fat each day; a single fast food meal can contain more than 10 grams of trans fat. While the Federal Food and Drug Administration (FDA) has required food manufacturers to list trans fat content on all nutrition labels since January 1, 2006, restaurant customers have no practical way to know whether food they eat contains artificial trans fat.

This proposal allows restaurants six months to switch to oils, margarines and shortening that have less than 0.5 grams of trans fat per serving. After 18 months, all other food items would need to contain less than 0.5 grams of trans fat per serving. Packaged food items still in the manufacturer's original packaging when served would be exempt.

Restaurants Have Not Voluntarily Removed Artificial Trans Fat

The Health Department conducted a year-long education campaign to help restaurants voluntarily reduce trans fat. Information was provided to every restaurant in New York City and training was provided to help restaurants and food suppliers make the change. Restaurants were surveyed before and after the campaign. While some restaurants reduced or stopped using artificial trans fat, overall use did not decline at all. In restaurants where it could be determined whether trans fat was used, half used it in oils or spreads both before and after the year-long campaign. A year after this voluntary effort, New Yorkers are still being exposed to high levels of dangerous trans fat.

Walter Willett, M.D., Dr. P.H., Chair of the Department of Nutrition at the Harvard School of Public Health, said, "If New Yorkers replace all sources of artificial trans fat, by even the most conservative estimates, at least 500 deaths from heart disease would be prevented each year in New York City - more than the number of people killed annually in motor vehicle crashes. Based on long-term studies, the number of preventable deaths may be many times higher. Trans fat from partially hydrogenated vegetable oil is a toxic substance that does not belong in food."

Many restaurants and several restaurant chains have already reduced or eliminated artificial trans fat - or never used it in the first place. Artificial trans fat can be replaced with readily available heart-healthy oils (e.g., corn, canola, soy), without changing the taste of foods. Restaurants can switch to trans fat-free products with no significant increase in cost.

Tim Zagat, Co-founder and CEO of Zagat Survey, said, "This proposal is both good and long overdue. With all of the trans fat-free products on the market today, restaurants should have no trouble complying with these regulations."

"For the past year, Sylvia's Restaurant made the proactive decision to invest in the health of our customers by changing to oil that has zero trans fat", said H. Kenneth Woods, President and CEO of Sylvia's Restaurant. "Sylvia's Restaurant for the past 44 years has been America's number one choice for soul food cuisine and we are extremely proud to know that our food tastes better than ever and our customers' health is not being compromised by consuming it."

Carnegie Deli owner Sanford Levine said, "We have been using 100% Canola Oil for 20 years because it has a better taste and is better for the customers. It's easy to replace artificial trans fat, it costs the same, and the food tastes great. Our cakes and other baked goods are already trans fat free. If we can do it, so can other restaurants."

Second Proposal: Calorie Labeling

In addition, to help customers have ready access to information, the Health Department is proposing that some restaurants post calorie information on menus and menu boards, where consumers can see it before they order.

Published calorie information is often located in places such as hard-to-find brochures, the internet, or on food wrappers or tray liners, where customers cannot see it at the time of purchase.

Eating more calories than the body needs causes excess weight gain, which leads to obesity, diabetes and heart disease. Obesity among U.S. adults more than doubled over the past three decades, from 14.5% to 32.2%. A large soda can have 600 calories and a single dinner may contain up to 1600 calories - three-quarters of the recommended daily calories of about 2,000 calories for an average adult.

This proposal would only affect restaurants that make calorie information for standard menu items publicly available on or after March 1, 2007 (e.g., in a brochure, on packaging or online). The Health Department estimates that this proposal would affect about one in 10 restaurants. The Health Department does not think it would be feasible to validate or publish calorie information in restaurants without standard menus, and has no plans to require this for all restaurants in the future.

"We want to put more information into the hands of consumers," the Department's Assistant Commissioner for Chronic Disease Prevention, Dr. Lynn Silver, said. "By knowing how many calories a food contains before they buy it, New Yorkers can make more informed choices. New Yorkers have this information available to them when they buy their groceries; under this proposal, it would be available to them, where feasible, when they buy food in restaurants."

"New Yorkers get at least a third of their calories from food eaten outside the home," said Marion Nestle, Ph.D., Professor of Nutrition, Food Studies, and Public Health at New York University. "People often eat more calories than they need and are not aware of how many calories are in the foods and drinks they get served. With obesity, it is how much you eat that matters most. Providing calorie information before they buy foods should help consumers better understand the links between what they choose to eat and how much they weigh."

Quotations from Restaurant Owners & Operators

Chip Shop owner Chris Sell, said, "I can find trans fat-free and cholesterol-free oil for the same price as oil full of trans fat and cholesterol, so I am always going to choose the trans fat-free oil. We have been completely trans fat-free for the past five."
Allysa Torey, Magnolia Bakery owner said, "We make all our products without trans fat, including our famous cupcakes. We only use shortening in a small number of our seasonal products and don't anticipate any issues in making the change."
Leslie Meenan, Managing Partner at Café Habana said, "Cooking with trans fat-free oils accentuates the natural flavors of the food. It is just as easy to cook without trans fat and the food tastes better."
Monica Von Thun Calderòn, owner of Grandaisy Bakery, said "Grandaisy Bakery has been totally committed to baking without trans fat since its inception because the health of our customers is important to us. Simple ingredients make a great tasting product."
Mohammad Moqbul Hossain, partner in Taste of Tandoor, said "Taste of Tandoor is already cooking without any artificial trans fat. The food we make for our customers, we also eat ourselves, so we are committed to making the healthy food."
Manuel Colon, General Manager of Bistro Cassis, said, "We switched to trans fat free-oil because we liked the taste better than food fried in oil with trans fat. We have not had to change recipes or increase prices to customers as a result of the change."
For more information about healthy weight or trans fat call 3-1-1 or visit nyc.gov/heart.
The New York City Board of Health is an independent regulatory body. It was the Board of Health which prohibited the use of lead paint in 1960, 18 years before Federal action, to protect New Yorkers from avoidable health hazards.

Geoff Cowley (gcowley@health.nyc.gov)
Andrew Tucker (atucker@health.nyc.gov)

Shannon Copeland
Atlanta, Georgia 30318
slcopeland@yahoo.com
m: 678.595.6341
h: 404.228.1414

Dale GP
CC: A Cifarelli (Correction)
L Sellon
R Bergman

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Nov 1, 2006 11:00 AM
Subject: City of New York - Correspondence #1-1-272513190 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-272513190
DATE RECEIVED: 11/01/2006 09:52:38
DATE DUE: 11/15/2006 10:56:36
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

AMT

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 11/01/2006 09:51:56
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: bayclubmgmt@yahoo.com (Mary Ann Williams)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Mary Ann Williams (bayclubmgmt@yahoo.com) on Wednesday, November 1, 2006 at 09:51:56

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

RECEIVED
2006 NOV -2 P 3:58
COMMISSIONER'S OFFICE
RECORDS ACCESS OFFICER

Message Type: Misc. Comments

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Mary Ann

Last Name: Williams

Company: The Bay CLub

Street Address: Two Bay Club Drive

City: Whitestone

State: NY

Postal Code: 11357

Country: United States

Email Address: bayclubmgmt@yahoo.com

Message: While I can support providing information on food content so that we can make informed decisions, I resent government intervention to remove my right to serve or eat foods with trans fat. Spend more time on the quality of the food so that we don't get sick, let us decide what we want to eat

---

REMOTE_HOST: 24.193.216.27
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

****

file HP
cc:
A CAPPARELLI (CORRESP)
L SILVER
RIETMAN

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Nov 1, 2006 2:45 PM
Subject: City of New York - Correspondence #1-1-272589190 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-272589190
DATE RECEIVED: 11/01/2006 13:39:38
DATE DUE: 11/15/2006 14:41:36
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
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All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 11/01/2006 13:38:49
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: joe.rietman@lmco.com (Joe Rietman)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Joe Rietman (joe.rietman@lmco.com) on Wednesday, November 1, 2006 at 13:38:48

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 NOV -3 P 5:04

Message Type: Misc. Comments

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: Joe

Last Name: Rietman

State: NY

Country: United States

Email Address: joe.rietman@lmco.com

Message: It's great that your office has taken an interest in the trans fat issue to help curb the obesity problem facing many people. That being said, I would like to see your office force all fast food restaurant chains to publish the nutritional information for the prepared items they sell. Specifically, Quiznos Subs do not publish their nurtrional information and do not respond to nutrional requests on their website. I realize the FDA does not force restaurants to disclose nutritional information but how do they expect consumers to make educated decisions when they have no idea the nutritional content of what they are eating.

REMOTE_HOST: 192.91.147.35
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.0.3705; .NET CLR 1.1.4322; InfoPath.1)

****

FDA Counsel Office
cc: R Bryant
L Stover
re: Art. 161

From: <outgoingagency@customerservice.nyc.gov>
To: <clong@doitt.nyc.gov>, <anguyen@doitt.nyc.gov>, <ksheldon@doitt.nyc.gov>, <swinberg@doitt.nyc.gov>, <jfreeman@health.nyc.gov>
Date: Thu, Nov 2, 2006 11:32 AM
Subject: City of New York - Correspondence #1-1-272837240 NYC.govFeedback -Health Issues

Your City of New York - CRM Correspondence Number is 1-1-272837240
DATE RECEIVED: 11/02/2006 11:27:21
DATE DUE: 11/16/2006 11:28:49
SOURCE: WEB

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****

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****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 11/02/2006 11:26:29
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: bapbrooklyn@aol.com ( )
Subject: NYC.govFeedback

Below is the result of your feedback form. It was submitted by
(bapbrooklyn@aol.com) on Thursday, November 2, 2006 at 11:26:29

This form resides at
http://www.nyc.gov/html/misc/html/feedbackform.html

2006 NOV -3 P 5:11
RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

Topic: Health Issues

How You Locate Site: search engine

Looking For Particular Info: Particular Information

What were you looking for: to make comments on the new proposal
regarding trans-fats in restaurants and
to comment against opening parks for
dogs to run freely

Did you find: no

Please explain: could not find either

What Look For: stated above

Rating: poor

Advice To Improve: i do not think the average person can
find what he is looking for, unless it
is already one of your listed topics

Name: barry a. pearson

City: brooklyn, ny

state: ny

Country: usa

REMOTE_HOST: 64.12.116.6
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; AOL 9.0; Windows 98; Win 9x 4.90; VZ_IE6; .NET CLR 1.1.4322)

****

Jule HP
CC: A CAFFERELLI
(ORIGINAL)
R BRYANT
FYI
L SILVA
FYI

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Tue, Oct 31, 2006 8:09 PM
Subject: City of New York - Correspondence #1-1-272389420 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-272389420
DATE RECEIVED: 10/31/2006 19:02:14
DATE DUE: 11/14/2006 20:06:13
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****

If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/31/2006 19:02:09
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: ( )
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
() on Tuesday, October 31, 2006 at 19:02:09

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

RECEIVED
CITY COUNCIL
PROTOCOL & ASSISTANT'S OFFICE
2006 NOV -2 P 3:58

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: No

State: NY

Country: United States

Message: Hi,

Here is the punch-line: Please have restaurants identify items cooked with trans fat on their menu.

I applaud your effort to eliminate Trans Fat from restaurant menus. I understand this proposal did not pass, and I am aware of the main objections.

I strongly encourage you to continue your efforts but it would be a huge success if you could just get the restaurants to identify the items cooked with trans fat. This will allow the consumer to make an informed decision.

Thansk and regards,

Mike

REMOTE_HOST: 67.98.68.130
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1)

****

Jule HP
CC: A Caracciolo
(original)
R Bryant
L Silver

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Tue, Oct 31, 2006 10:10 AM
Subject: City of New York - Correspondence #1-1-272214860 Message to AgencyHead, DOHMH - Other Health Matters

Your City of New York - CRM Correspondence Number is 1-1-272214860
DATE RECEIVED: 10/31/2006 09:04:58
DATE DUE: 11/14/2006 10:06:25
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/31/2006 09:04:07
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: alanteck@fx4casts.com (Alan Teck)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Alan Teck (alanteck@fx4casts.com) on Tuesday, October 31, 2006 at 09:04:06

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

RECEIVED
DOHMH SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 NOV -2 P 3:59

Message Type: Compliment

Topic: Other Health Matters

Contact Info: Yes

M/M: Dr.

First Name: Alan

Last Name: Teck

Company: personal message

Street Address: 44 Havilands Lane

City: White Plains

State: NY

Postal Code: 10605

Country: United States

Work Phone #: 914-949-6364

Email Address: alanteck@fx4casts.com

Message: Please require restaurants to provide calorie information in a prominant place on their menus. If they can put it on the back or on their web sites, they can put it on the front of the menu.

Obesity is a growing epidemic that reduces the quality of life, shortens life and requires major medical costs in later years. Anything that increases the public's awareness of what they are eating will help everyone make healthy choices.

Respectfully,
Alan Teck

REMOTE_HOST: 68.199.75.236
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

****

MORRIS HEIGHTS HEALTH CENTER
85 West Burnside Avenue, Bronx, NY 10453
Tel: (718) 716-4400 ▪ Fax: (718) 294-6912 ▪ Web: www.mhhc.org

Transfat Public Forum

As the Chief Medical Officer of Morris Heights Health Center, a practicing pediatrician and as a representative of the entire staff of the center, I am happy to testify at this public forum in full support of the proposal put forth by the New York City Department of Health and Mental Hygiene to partially phase out artificial trans fat in food preparation in all food establishments. This is an excellent way to have an impact on the whole population of the city of New York.

Morris Heights Health Center's main and oldest site is situated in the southwest Bronx, and has been delivering comprehensive primary and specialty care to Morris Heights and its surrounding communities for the last 25 years. As all are aware, especially after the recent release of the health profiles of New Yorkers, the Bronx has some of the highest rates of diabetes, heart disease and obesity in the city and in the State. In fact poor communities all across the city are besieged by many environmental factors

that lead to poor health outcomes, not the least of which is food service establishments that primarily serve items that are high in fat and carbohydrate content with high calorie counts that are often fried. Fresh fruits and vegetables are not usually available as choices or part of the meal. Our community residents spend a large amount of their limited income and dollars on prepared food outside of the home and our community is no different than most other poor communities that are surrounded by the typical fast food establishments and other restaurants that unfortunately offer choices that are not heart healthy. Many of our community residents are already at an increased risk for diabetes secondary to genetics and family history.

This passive legislation, if approved will be a boost to the armamentarium that we have to help our fellow New Yorkers live healthier lives and make more informed choices. Requiring car manufacturers to develop appropriate seat restraints and passing a law mandating the use of seat belts and car seats has saved countless lives in ways that counseling and education one on one in the office setting could never do.

It is staggering to see the rate of obesity in our practice over the last several years especially in infants, children and adolescents and we as practitioners and educators often feel helpless in our ability to make a difference given the barriers that we face.

Ensuring prominent displays of the calorie content of all items on the menus in the restaurants will undoubtedly inform choices and educate consumers. Just as people comparison shop for the best prices on items that are clearly labeled so too will individuals comparison shop for meal choices when they are informed about the amount of calories.

We desperately need a multipronged collaborative approach to effectively turn the tide on the rising epidemics of obesity and diabetes. Health care providers, educators, politicians, community based organizations, business leaders, members of the faith based community and others have to strategize together. Morris Heights Health center on it's part will continue education and counseling efforts to the community on issues of diabetes, heart disease and obesity and perils of Trans fat.

We applaud Dr. Thomas R. Frieden, Commissioner of Health and the NYC Department of Health and Mental Hygiene and his staff for making this

proposal. The business community should be able to embrace this with little or no impact to their bottom line making this a win-win situation for all New Yorkers.

Statement prepared by:

Wanda N. McCoy, MD
Chief Medical Officer
Morris Heights Health Center

NYC Trans Fat and Calorie Menu Listing Hearing Testimony

10/30/06

Good morning. I am Assemblyman Felix Ortiz representing the Sunset Park/Red Hook neighborhood in Brooklyn. I have always fought hard to protect the lives and health of New Yorkers. Some of you may know me as the sponsor of the law banning the use of handheld cell phones while driving. That battle took five years. It took almost as long to pass the law I sponsored creating a State Childhood Obesity Program. I welcome New York City's efforts to improve the health and well-being of our families and hope you are successful right away.

Obesity and its complications, such as heart disease and diabetes, are serious problems and we must all join together to solve it. We are spending $3.5 billion in Medicaid alone in New York State to treat the results of obesity. That is by far the highest amount in the country. This has also led to a diabetes epidemic which is killing thousands of our citizens and also costing billions of dollars. And these problems are getting worse and starting at earlier ages.

Several months ago the NYC Health Department issued a report that found that by the age of 2, there is a one-in-four chance that a child will be obese if he or she is from a low-income family. As bad as those numbers are the figures jumped to one in three by the age of 4! This is a wake up call that we are in a health emergency.

We need to turn this around for the children who will suffer and for the taxpayers who will pay.... including businesses. But to turn it around we need to take some bold steps to prevent the problem from getting worse. For example, food businesses need to provide healthy alternatives that are really healthy for kids. Especially in low-income neighborhoods where healthy foods are hard to find or very expensive. That is why I strongly urge you to adopt your proposed rules prohibiting the use of artificial trans fat and requiring calorie information for certain restaurants in New York City. At least some of the foods our children eat will be improved.

Many of the foods that are contributing to the obesity problem contain trans fat. It is bad enough that these foods contain too much fat and calories… but it is a double whammy when they have artificial trans fat, which is the worst kind. Physicians who testified at my public hearings on childhood obesity told us they found symptoms of heart disease in grade school children. Artificial trans fat could be one of the main reasons for that.

There is no nutritional reason to be using these trans fats. The New England Journal of Medicine recently found that, (quote) "from a nutritional standpoint, the consumption of trans fatty acids results in considerable potential harm but no apparent benefit. (end quote)" Factory made trans fat is not part of any culture or culinary style. It is a product designed in a laboratory to solve corporate America's need to mass produce inexpensive snack foods and keep them on the shelf for long periods of time. This is a perfect example of why we need

Banning trans fat isn't the only solution to our society's nutrition and health crisis. School districts need to provide support for schools so they don't have to sell candy and soda to pay for football uniforms and so they can provide physical education for students. We in government need to spend more than the $3 million that we at the State level allocated the last two years for the Childhood Obesity Prevention Program that I sponsored in 2003.

While government programs are extremely important we also need to change our environment to address this problem. If we teach children to eat healthier foods and they are not available in the marketplace.... or we teach them they need more exercise but don't provide gym class or playgrounds... then all of our programs will fail. Banning trans fat is one step that will help change the food environment.

Your proposal for requiring calories information on menus is similar to my chain restaurant labeling bill which would also change the environment and could lead to better food choices.

Your proposal for requiring calories information on menus is similar to my chain restaurant labeling bill which would also change the environment and could lead to better food choices. I have attached my legislation which includes a definitions of what restaurants should be affected and definitions of standard menu items. Your calorie listing proposal does not identify these specifics which could make it difficult to implement.

My bill would require chain restaurants to list calorie and other nutrition information on their menus. This information is important for families and children to help them make better decisions. Dr. Margo Wootan, from the Center for Science in the Public Interest has said that most nutritionists could not tell how much fat or calories were in chain restaurant meals. If people with Master degrees and PH D's are confused, how can the general public make educated choices? We need to make the invisible…visible.

If these chains have to disclose the amount of calories, sugar and fat... (including trans fat in my proposal)... they may decide to change the nutrition quality of their products. Some of them have already done this and I applaud them for offering more salads and fresh fruit. However, the industry is lobbying heavily against my bill and I hope that we are not limited to only calorie counts.

Although the menu labeling bill is a high priority for me, I am also sponsoring other bills to help change the environment, especially in schools. I co-sponsor legislation that would further restrict the sale of soda and candy and other snacks in schools. New York was a leader in this effort when in 1987 we banned the sale of soda and candy until after the last lunch period. This year's bill would extend the time of the ban, and include more products such as sports drinks and snacks that have too much sugar and fat.

I also sponsor legislation to increase the length of time, and the number of days that students are required to have physical education.

Another bill would have schools analyze the BMI of every student and provide guidance for parents.

Finally, the last bill may be the best known. Some people call it the Fat Tax. Although many have mistakenly described this idea as out-of-control taxes, this legislation is very modest. Under my bill if you purchased a kid's meal at $4.00 it would cost an extra penny!
If you bought a Playstation at $200 it would cost an extra 50 cents!
However, the bill would still raise close to $50 million for nutrition education, and exercise or physical activity programs in neighborhoods where there are no gyms but many fast food restaurants.

This bill isn't about taxing;... it is about preventing a teenager from needing a daily insulin injection... or a 3rd grader from being taunted about their appearance...it is also about preventing health insurance premiums and Medicaid spending from skyrocketing. This bill would help every taxpayer including chain restaurants and other businesses.

Preventing obesity or heart disease or diabetes is easier, and less expensive, than treating it.

Even if a child is not obese now it can occur at any age so these programs and laws are important for every child. And trans fat is likely damaging the hearts of children and adults who are not obese. It is a real tragedy that most nutrition-related health problems are preventable. We need to act now. We owe it to our children and to our future society to give them the opportunity to become healthy, productive adults -- not cursed with illness and out-of control health care costs.

Once again I applaud your actions on artificial trans fat and calories on menus. I urge you to support my proposal for improved restaurant nutrition information and my other legislation. I thank you for this opportunity to support efforts to improve the health of my fellow New Yorkers. If you have any questions I will be happy to answer them.

STATE OF NEW YORK

5664--A

2005-2006 Regular Sessions

IN ASSEMBLY

February 25, 2005

Introduced by M. of A. ORTIZ, GALEF, GOTTFRIED, COOK, P. RIVERA, MAYER-SOHN -- Multi-Sponsored by -- M. of A. BRENNAN, A. COHEN, LAVINE, LIFTON, MARKEY, PHEFFER, J. RIVERA, SANDERS, TOWNS -- read once and referred to the Committee on Health -- reported and referred to the Committee on Codes -- committee discharged, bill amended, ordered reprinted as amended and recommitted to said committee

AN ACT to amend the public health law, in relation to the posting of caloric value, carbohydrate, fat and sodium content of food items

THE PEOPLE OF THE STATE OF NEW YORK, REPRESENTED IN SENATE AND ASSEMBLY, DO ENACT AS FOLLOWS:

Section 1. The public health law is amended by adding a new section 1352-c to read as follows:

S 1352-C. CALORIC VALUE, CARBOHYDRATE, FAT AND SODIUM CONTENT. 1. A CHAIN RESTAURANT OR FOOD ESTABLISHMENT SHALL LIST ADJACENT TO EACH FOOD OR BEVERAGE ITEM ON THE STANDARD PRINTED MENU, THE TOTAL NUMBER OF CALORIES, GRAMS OF SATURATED AND TRANS FAT, GRAMS OF CARBOHYDRATES, AND MILLIGRAMS OF SODIUM PER SERVING, AS USUALLY PREPARED AND OFFERED FOR SALE, IN A CLEAR AND CONSPICUOUS MANNER. FOR FOOD OR BEVERAGES OFFERED FOR SALE IN A CHAIN RESTAURANT OR FOOD ESTABLISHMENT THAT USES ONLY MENU BOARDS OR SIMILAR SIGNS, THE INFORMATION REQUIRED MAY BE LIMITED TO THE TOTAL NUMBER OF CALORIES PER SERVING PER ITEM AS USUALLY PREPARED AND OFFERED FOR SALE AND SHALL BE LISTED ADJACENT TO EACH FOOD OR BEVERAGE ITEM ON THE STANDARD MENU BOARD OR SIGN, HOWEVER, INFORMATION ABOUT GRAMS OF SATURATED AND TRANS FAT AND GRAMS OF CARBOHYDRATES AND MILLIGRAMS OF SODIUM SHALL BE MADE AVAILABLE TO CUSTOMERS UPON REQUEST.

2. FOOD OR BEVERAGE ITEMS SHALL BE ANALYZED BY THE FRANCHISORS OR CORPORATE OWNERS OF THE CHAIN RESTAURANTS OR FOOD ESTABLISHMENTS FOR CALORIE, SATURATED AND TRANS FAT, CARBOHYDRATE AND SODIUM CONTENT USING METHODS APPROVED BY THE COMMISSIONER AND SUCH INFORMATION SHALL BE PROVIDED TO THEIR INDIVIDUAL CHAIN RESTAURANTS AND FOOD ESTABLISHMENTS FOR LISTING ON MENUS OR MENU BOARDS OR SIGNS. THE NUTRIENT CONTENT

EXPLANATION--Matter in ITALICS (underscored) is new; matter in brackets { } is old law to be omitted.

LBD04547-06-5

VALUE LISTED ON THE MENU OR MENU BOARD SHALL BE WITHIN TWENTY PERCENT OF THE VALUES OF REPRESENTATIVE ITEMS AS USUALLY PREPARED AND OFFERED FOR SALE. FRANCHISORS OR CORPORATE OWNERS SHALL PROVIDE TO THE COMMISSIONER, IF REQUESTED, INFORMATION DOCUMENTING THE ACCURACY OF THE NUTRIENT CONTENT VALUES. WHEN A FOOD OR BEVERAGE ITEM IS OFFERED IN MORE THAN ONE SIZE OR AMOUNT ON THE MENU OR MENU BOARD THE CHAIN RESTAURANT OR FOOD ESTABLISHMENT SHALL HAVE THE OPTION OF PROVIDING THE REQUIRED NUTRIENT INFORMATION FOR THE MEDIUM SIZE, WHEN OFFERED, OR THE RANGE OF NUTRIENT CONTENTS FOR ALL THE SIZES INSTEAD OF EACH SIZE INDIVIDUALLY. NOTHING IN THIS SECTION SHALL PROHIBIT ANY RESTAURANT OR FOOD ESTABLISHMENT FROM PROVIDING ADDITIONAL NUTRITIONAL INFORMATION FOR FOOD OR BEVERAGE ITEMS.

3. AS USED IN THIS SECTION "CHAIN RESTAURANT OR FOOD ESTABLISHMENT" SHALL MEAN A RESTAURANT OR FOOD ESTABLISHMENT SUBJECT TO THE PROVISIONS OF SECTION THIRTEEN HUNDRED FIFTY-ONE OF THIS TITLE ENGAGED IN THE PREPARATION, SERVING AND SALE OF FOOD OR BEVERAGES OR MEALS INTENDED FOR PUBLIC CONSUMPTION, INCLUDING THE SITE WHERE PORTIONS ARE PROVIDED REGARDLESS OF WHETHER CONSUMPTION TAKES PLACE ON OR OFF THE PREMISES, THAT IS ONE OF AT LEAST TEN SUCH RESTAURANTS OR ESTABLISHMENTS IN THE UNITED STATES AND AT LEAST FIVE SUCH RESTAURANTS OR ESTABLISHMENTS IN NEW YORK STATE DOING BUSINESS UNDER THE SAME TRADE NAME AND OFFERING PREDOMINANTLY THE SAME MEALS OR FOOD AND MENUS OR MENU BOARDS. THE PROVISIONS OF THIS SECTION SHALL NOT APPLY TO FOOD ESTABLISHMENTS THAT ARE LICENSED UNDER ARTICLE TWENTY-C OF THE AGRICULTURE AND MARKETS LAW EXCEPT FOR SECTIONS WITHIN SUCH ESTABLISHMENTS THAT HAVE BEEN DETERMINED BY THE DEPARTMENT TO MEET THE ABOVE DEFINITION OF CHAIN RESTAURANTS OR FOOD ESTABLISHMENTS INCLUDING THE USE OF A COMMON TRADE NAME FOR THE SECTION, STANDARDIZED MENUS OR MENU BOARDS AND THE OFFER OF ON-PREMISES CONSUMPTION.

4. FOR PURPOSES OF THIS SECTION, THE COMMISSIONER OR HIS DULY AUTHORIZED AGENTS OR EMPLOYEES WHO INSPECT CHAIN RESTAURANTS AND FOOD ESTABLISHMENTS SHALL ONLY BE REQUIRED TO DETERMINE THAT THE NUTRIENT CONTENT LISTINGS REQUIRED UNDER THIS SECTION ARE LISTED ON THE MENU OR MENU BOARD AND THAT ANY ADDITIONAL REQUIRED INFORMATION IS AVAILABLE FOR AND PROVIDED TO CUSTOMERS UPON REQUEST. SUCH INSPECTORS SHALL NOT BE REQUIRED TO VERIFY THE ACCURACY OF THE LISTINGS BUT THE COMMISSIONER MAY REQUEST THAT FRANCHISORS OR CORPORATE OWNERS OF CHAIN RESTAURANTS AND FOOD ESTABLISHMENTS PROVIDE DOCUMENTATION OF THE ACCURACY. VIOLATIONS OF THIS SECTION BY INDIVIDUAL CHAIN RESTAURANTS AND FOOD ESTABLISHMENTS SHALL BE LIMITED TO THE FAILURE TO LIST THE REQUIRED INFORMATION ON THE MENU OR MENU BOARDS OR SIGNS OR FAILURE TO PROVIDE THE ADDITIONAL REQUIRED INFORMATION TO CUSTOMERS UPON REQUEST AT CHAIN RESTAURANTS OR FOOD ESTABLISHMENTS WITH ONLY MENU BOARDS OR SIGNS. VIOLATIONS BY FRANCHISORS OR CORPORATE OWNERS OF SUCH RESTAURANTS AND ESTABLISHMENTS SHALL BE LIMITED TO FAILURE TO PROVIDE TO THE COMMISSIONER SATISFACTORY DOCUMENTATION OF THE ACCURACY OF SUCH LISTINGS OR FAILURE TO PROVIDE THE REQUIRED INFORMATION FOR SUCH LISTINGS TO THEIR RESTAURANTS OR FOOD ESTABLISHMENTS. NOTWITHSTANDING THE PROVISIONS OF SECTION THIRTEEN HUNDRED FIFTY-THREE OF THIS TITLE, THE PENALTY FOR A VIOLATION OF THIS SECTION SHALL BE LIMITED TO THE PENALTY SET FORTH IN SECTION TWELVE OF THIS CHAPTER.

FILE IN

CC:
A CARDELLE
CORCORAN
L SAUER
R BRYANT

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Mon, Oct 30, 2006 12:30 PM
Subject: City of New York - Correspondence #1-1-271989060 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-271989060
DATE RECEIVED: 10/30/2006 11:20:18
DATE DUE: 11/13/2006 12:26:24
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****

If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/30/2006 11:19:26
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: skane1@nyc.rr.com (Sherman Kane)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Sherman Kane (skane1@nyc.rr.com) on Monday, October 30, 2006 at 11:19:26

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 31 P 3:55

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Sherman

Last Name: Kane

Street Address: 8614 Woodhaven Blvd.

City: Woodhaven

State: NY

Postal Code: 11421

Country: United States

Work Phone #: 718-805-1968

Email Address: skane1@nyc.rr.com

Message: As a New Yorker and frequent restaurant patron, I applaud and support your initiative to require restaurants to eliminate trans-fat usage and advertise the caloric content of their menu offerings. Congratulations on your responsibility and integrity!

REMOTE_HOST: 204.126.130.10
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; .NET CLR 1.0.3705)

****

SALVATORE FICHERA 212-687-1646 (Part 1)
www.FORZAFITNESS.com
Health Commissioner, Dr. Frieden, to all on the Board of Health, Dept

~~Committee Chair (or Presiding Officer), committee members,~~ and anyone interested in freedom of choice. This is such a vital issue. After all, the banning of trans fats is not ~~It's not even about.~~ about increased costs for businesses, or control by the government. It's about freedom of choice – the freedom to avoid toxic substances that don't belong in food. It's about having the freedom to eat and live more healthfully.

As an exercise physiologist, public speaker, and author, I spend each day studying, researching, and teaching principles for living a longer, stronger life. I've appeared on TV channels like CNN, Dateline, NBC, and WB11, addressing a variety of issues that concern health. Today, I'm here to speak about life – the life of our citizens … the life of our economy … our culture.

We are at war. Each year, the United States is losing billions of dollars and thousands of American lives. I'm not talking about the wars in Iraq and Afghanistan. I'm talking about a much more deadly and costly war – one that's more of a threat to our existence as a culture. It's right here on our soil. It's not a war with bombs and bullets. Instead, it's a war of glitzy advertising and misleading misinformation, a war that's causing obesity.

Saturated fat ≠ trans fat: Consider the "Nurses Health Study" as mentioned in the N.E. Journal of Medicine

Due to overweight and obesity, we are spending over $118 billion dollars on sick days, diseases and death – every year… and the figure is rapidly rising! There are 300,000 premature American deaths each year from obesity. Our health care system is headed for collapse. A primary cause for excess body fat is dietary fat. And trans fats are a big part

This study has been following 120,000 nurses since its inception in 1976. After analyzing data from 900 coronary events during 14 years of follow-up.
- a nurse's CHD risk doubled for each 2% increase in trans fat calories
By contrast – it takes more than a 15% increase in saturated fat cals for the same results.

of that problem. The human body was designed to be fed the proper nutrients. We must keep unnecessary toxins out of our foods.

Dietary fats have been shown to contribute greatly to heart disease. Heart disease, alone, is ~~a crippling scenario,~~ claiming more and more lives each year. Additionally, excess fat tissue becomes a storage site for carcinogens – cancer-causing elements. And, trans fats is a direct contributor to excess fat.

The trans fats ban has nothing to do with taste; in fact, it tastes worse than healthful options. It has little to do with cost; healthful alternatives cost nearly the same. Denmark has proven that taste and cost are not challenges when ~~minimizing trans~~ fats, ~~they minimized it~~ three years ago. Even healthier options did cost more, restaurants can reduce the portion sizes – they ***should***. As we all know, portion size is a major cause for the rise in obesity.

As an entrepreneur, I have compassion for business owners. However, if you can't do business without harming people, then find alternative ways. More important than business is the health of our parents, spouses, children. How can anyone, regardless of profession, not feel the same way?

Trans fats is not a food substance. It's a chemical, ~~a chemical~~ that never ~~even~~ belonged in food. I suggest that we all choose to live free lives – lives that are free of disease. Lives that are free to last longer, lives that are protected from dangerous, toxic substances that

Lappland and

don't belong in our bodies. Support the bill to ban trans fats and let this become a

healthier society. Dr. Frieden in proposing

I ask the Nat'l Restaurant Association:

which is more important — shelf life

OR ~~your~~ life of staff

I a violation of rights? SAL FICHERA (Part 2)
212-687-1646

Trans fats are not a food. It's a chemical – one that never belonged in our food

II

DENMARK:

This proposal is not based merely on a computer model.

It's based on factual experience:

- In 2003, Denmark made it illegal for any food to have more than 2% trans fats.

- The results:
  a) Consumers didn't know the difference
     - fries are still crispy
     - pastries " " delicious
     - fried chicken is still tasty.

  b) The Danish Health ministry reports that cardiovascular disease has fallen by 20% in the last 5 yrs.

In countries that aren't making an effort to regulate trans fats in food – like Hungary + Bulgaria – heart disease rates have continued to climb.

III ~~Saturated Fat~~ ≠ Trans Fat

a) eating a daily amount of less than 5 grams of trans fat – the amount found in one piece of fried chicken & a side of fries – has been linked with a 25% increased risk of Heart Disease.

b) Consider the Nurses Health Study.

So, for the National Restaurant Assoc., I ask – which matters more – Shelf Life OR Life, itself?

Good Day,

I am Paul Kligfield, MD, and I speak today as the President of the New York State Chapter of the American College of Cardiology and as President-Elect of our educational affiliate, The New York Cardiological Society. I represent most clinical and academic cardiologists in New York City and New York State.

At a meeting of our State Council on October 14, 2006, the New York State Chapter of the American College of Cardiology endorsed the initiatives of the New York City Department of Health and Mental Hygiene regarding the phasing out of artificial trans fat and the listing of calorie content on menus in New York City. We applaud the leadership demonstrated by the Department in ensuring the health of New Yorkers.

It is established that atherosclerotic heart disease is the leading cause of death among New Yorkers. It is also established that trans-fatty acids increase the risk for morbidity and mortality of atherosclerotic disease by elevating levels of "bad cholesterol" (low density lipoproteins) and by reducing levels of "good cholesterol" (high density lipoproteins). Therefore, the continued use of partially hydrogenated vegetable oils (PHVOs), or trans-fat oils, in foods served in restaurants constitutes a risk to the health of New Yorkers. Most of the trans-fat in our diets is found in industrially-produced PHVOs used in frying, baking, and in processed foods. We note the particular dependence of working New Yorkers on commercial available food products during daily life. Experience in other settings suggests that PHVOs can be replaced with heart healthier alternatives without significant effects on taste or cost of preparation. It is therefore in the best health interests of all New Yorkers that the Department of Health amendment of Article 81 of the Health Code be adopted the restrict our food service establishments from using trans-fat products.

For similar reasons, we also endorse the labeling of calorie content of foods on menus, to help limit the impact of diabetes and obesity on the mortality and morbidity of New Yorkers by providing informed food choices in restaurants. We believe it is in the best health interests of all New Yorkers that the Department of Health amendment of article 81 of the Health Code be adopted to list caloric content of foods.

With regards to both amendments, we recognize the importance of food service industry commitment to change in the best interests of the population of New York. We look forward to solution of problems that might impede implementation of these resolutions, and we will be happy to assist the Department, the food industry, and our citizens in any way that will facilitate better health for all New Yorkers.

Thank you.

Written Testimony

New York City Board of Health on the proposal by the Department of Health and Mental Hygiene to amend Article 81 of the New York City Health Code to require certain food service establishments to post calorie labels on their menus and menu boards, October 30, 2006

Virginia Schiffino, JD, LL.M and Marion Nestle, PhD, MPH

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Thank you for the opportunity to submit written comments on the proposal by the Department of Health and Mental Hygiene (the "Department") to amend Article 81 of the New York City Health Code (the "Health Code"), which requires certain food service establishments to make information about calorie content available on their menus and menu boards. We strongly support the proposal and commend the Department for this bold and much-needed step in addressing the high rates of overweight and obesity that affect more than half of New York City residents.

The shortened lifespan and chronic diseases such as diabetes, heart disease, stroke, high blood pressure, arthritis, and cancer that are associated with overweight and obesity could be prevented in part by combating high rates of these conditions in New York City. Providing New Yorkers with the knowledge with which to make informed food choices is a necessary component of a broader strategy to improve the health of City residents by reducing overweight and its public health consequences.

While numerous social, behavioral, environmental, and economic factors can affect an individual's risk for overweight and obesity, the immediate cause is energy imbalance: more energy (measured in calories) consumed for energy expended in physical activity.[1] Substantial research demonstrates that one significant factor contributing to obesity is the increasing frequency with which meals are consumed away from home; such foods are typically high in calories, relatively low in nutrients, and larger in serving size than those consumed at home.[2] Larger meals pose one other problem: consumers tend to underestimate their energy content.[3]

Today, consumers spend roughly half of their food dollars on meals prepared outside the home,[4] and away-from-home foods comprise about one-third of Americans' total caloric intake.[5] Thus, efforts to reverse obesity trends must necessarily engage food service establishments and consumers, as well as health professionals and Federal, state, and local governments. The intervention proposed by the Department furthers this engagement.

The proposed amendment should serve as an impetus for change both for consumer behavior and, ultimately, for the quality and quantity of food offered at food service establishments. We urge the Board to approve the proposal for the following three reasons:

1. *Consumers need accurate information about the calorie content of food to make informed choices.*

The absence of readily available information about calories at the point-of-purchase affects the ability of consumers to make informed food choices, often leading to inadvertent consumption of more calories than expected. Although the FDA requires nutrition information to be listed on the Nutrition Facts panels of the labels of packaged foods, this is not the case for foods prepared away from the home.[6] Since neither Federal nor state laws require restaurants to post information about calories (or nutrients), consumers have inadequate or no access to information to support healthful choices of foods that comprise one-third of their daily calorie intake.

This information gap constitutes a significant environmental barrier to healthful food choices.[7] Other factors exacerbate this gap. For example, consumers can be misguided by the flood of advertisements, marketing messages and techniques, and weight-loss and weight management claims to which they are exposed.[8] Ubiquitous fast food "value marketing" promotes overconsumption of food through price incentives to buy larger portions of drinks, sandwiches, and meals.[9] Buying larger portions for a few cents more can seem like a bargain that justifies excessive caloric intake.

Notwithstanding that certain restaurants are increasingly providing a wider range of food choices, consumers (and even nutrition professionals) typically underestimate the energy content of foods and meals by 30% to 50%; they typically underestimate calories in a single meal, for example, by 600 calories or more.[10] In theory at least, errors this large could result in an intake of an additional 30,000 calories a year and an annual weight gain of approximately nine pounds.[11]

Calorie underestimation, combined with industry claims and the absence of accurate information, can lead people to eat a full day's worth of calories in a single meal.[12] Many people, for example, do not realize that a 64-ounce soft drink contains 800 calories (kcal),[13] more than the amount provided by a cheeseburger (530-760 kcal). It is difficult to imagine that a large chocolate shake may contain more calories than a large hamburger at certain popular fast-food chains.[14] French fries add calories as do "supersized" and "value meals." Finally, consumers can be misled by menu items that are marketed or traditionally perceived as "healthy" options, but that contain more calories than expected.[15]

Point-of-purchase calorie information could engage consumers by providing them with the ability to compare options and make more thoughtful decisions before they order food. Although some restaurants voluntarily offer nutrition information, some restaurants offer information only on limited items, and the charts are rarely accessible. In most places, the existing information is difficult for consumers to find and use. A recent study on the availability of point-of-purchase nutrition information at the largest fast food restaurant in the country, for example, revealed that it was nearly impossible to obtain the information about items in a manner that would inform their decisions.[16] Although several fast food chains provide nutrition information on their Web sites, consumers may not have computers or they cannot easily access the information at point of purchase. A study of the extent of nutrition information in chain table-service restaurants, found that while the majority provided it, point-of-purchase information was only available for the healthier items in the menu and was never available for children's menus.[17]

Considering that overweight and obesity are directly related to an individual's caloric imbalance, the implementation of mandatory calorie labeling should promote awareness of the caloric content of food and where it matters most: at the point of food decision-making.

2. *Calorie labeling is a sound public health approach to the obesity epidemic and its consequences.*

Overweight and obesity constitute a major public health threat to physical and economic health (see Appendix). As the number of overweight and obese people continues to rise, so will rates of morbidity and mortality and related medical treatments and costs. Actions by local government bodies, such as the Department of Health cannot be taken as isolated events, but rather as significant steps within national efforts to reduce and prevent this problem.

Whereas the financial costs of obesity can be quantified, it is more difficult to estimate the value of a person's life or quality of life. Obesity-related chronic diseases limit the freedom and quality of life of people who have such diseases. Preventing obesity and its consequences is a worthwhile goal. Although obesity has no single cause or solution, dietary improvements can help reduce disease risks.[18] Because the present food environment promotes overconsumption of "junk" foods, active and direct intervention is needed to help consumers to make informed choices. Requiring food service establishments to post information about calories at the point-

of-purchase directly addresses environmental factors that contribute to consumer behavior.

Research indicates that disclosure of calorie and nutrition information at the point-of-purchase does indeed influence consumers' attitudes and intentions towards food, and diminishes preference for less-healthful items.[19] Eighty-five percent of Americans view nutrition as important[20] and the use of food labels has been associated with choice of healthier foods.[21] Providing calorie information at the point of decision will aid consumers in making sensible food choices.

Furthermore, this proposed public health strategy is widely supported by consumers. Numerous surveys indicate that 62% - 87% of Americans support requiring fast-food restaurants to display the calorie content of their foods on menus and menu boards.[22] Almost two thirds (62%) support laws requiring nutrition labeling on restaurant menus and one third (34%) support laws requiring restaurants to offer lower prices on smaller rather than larger sized portions.[23] Such surveys suggest that if consumers find food labels to be useful when choosing packaged foods, they also will find such labels useful when choosing meals outside the home.

This proposal is likely to produce other beneficial effects. Point-of-purchase calorie information removes the need for guesswork. It also reveals the real "value" of certain meals—the tradeoff between price and unhealthful weight. Furthermore, a shift in consumer behavior toward lower calorie foods is likely to encourage the industry to place more healthful options on restaurant menus and, perhaps, generate competition to provide such options.

Although obesity affects people of all races and background, in New York City disproportionately high rates affect low-income people.[24] For example, forty-percent of the children in New York City's "Head Start" program were found obese or overweight.[25] Because low-income neighborhoods contain disproportionately large numbers of fast food establishments, the Department's proposal is likely to have an especially large impact in areas where it is most needed.

3. *Narrowly tailored regulations pose a low burden for food service establishments.*

The proposed amendment will not create a substantial burden on food service establishments as its scope is narrowly defined, covering an estimated 10% of such places in New York City. The requirement to post calorie information extends to establishments that make nutritional information publicly available on or after March 1, 2007. Therefore, those that

are affected will already have incurred the expense of determining the nutritional content of their meals. The only additional expense that they would incur in would be in incorporating the calorie data on their menus or menus boards, which is offset by the fact that most establishments already change their menus periodically.

The proposal asks this limited number of establishments to display only calorie information. While some studies recommend the inclusion of additional nutritional information such as fats, carbohydrates, proteins, sugars, weight management depends on balancing calories, no matter where they come from.[26] Emphasizing calories alone should have a significant impact on consumer behavior by making it clear that larger portions have more calories.

By approving the Department's proposed amendment on calorie labeling, the Board of Health would be setting the stage for change not only at the local level, but also across other states. To date, none of the state or Federal bills requiring nutritional information disclosure at food service establishments has been approved.[27] Therefore, the Board's favorable decision on this urgent issue will constitute an important precedent on a public health strategy to control and prevent obesity. The Department's calorie labeling initiative, along with its other preventive initiatives,[28] will help achieve its goals.

Mandatory calorie labeling is a risk mitigation strategy analogous to any other public health approach that encourages behavioral change such as banning cigarette smoking in public indoor establishments. New York City should not have to wait until overweight and obesity surpass tobacco smoking as the number one contributor of death in America in order to adopt these measures. We strongly encourage the Board to adopt the Department's proposed amendment to the Health Code.

Appendix: The importance of obesity as a public health problem

Unhealthy eating habits, overweight, and obesity are at the root of America's major public health challenges. The obesity epidemic represents a serious public health concern for New York City, and the Board is surely aware of the alarming national and local statistics: In the United States, an estimated 65% (130 million) of Americans are overweight and more than 30% are obese.[29] Unless the pace of development of these conditions is halted, it is expected that 40% of the population will be considered obese within the next five years.[30] Poor nutrition, overweight and obesity directly influence the leading causes of death in the United States – heart disease (for example, heart attack, congestive heart failure, high blood pressure, sudden cardiac death, chest pain and abnormal heart rhythm), stroke, cancer and diabetes.[31] All of these are preventable chronic diseases. Overweight and obesity also increase the risk for respiratory heart problems, arthritis, sleep apnea (*i.e.*, interrupted breathing during sleep), pre-menopausal breast cancer in women, gall bladder disease, fatty liver disease, pregnancy complications, and depression.[32]

As of 2001, an estimated 300,000 deaths per year were attributed to diet and weight-related diseases.[33] According to the Centers for Disease Control (CDC), it is expected that one in three U.S. children born in 2000 will develop diabetes mellitus in their lifetime because of obesity,[34] shortening the lifespan of the younger generation. According to some estimates, the total economic cost of obesity in the United States is about $100 billion per year, including more than $50 billion in avoidable medical costs, more than five percent of total annual health care expenditures.[35] In New York, obesity-related expenditures exceed $6 billion per year.[36]

The prevalence of overweight and obesity among New Yorkers is similar to that in the rest of the country.[37] In New York City alone, where three-quarters of a million residents are known to have diabetes, more than half of the population is overweight and one in five is obese (approximately 1 million).[38] New York City has been cited as having among the highest nationwide childhood obesity rates, with 21% of kindergarten children already qualifying as obese.[39] Almost half of the children in the City's public elementary schools are overweight,[40] and 29.5% of New York City high school students are overweight or obese.[41] As these children grow, so will the rates of diabetes and other chronic diet-related diseases unless firm steps are taken to halt the growing epidemic. These statistics demand serious and urgent attention.

Notes

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TRANS FAT AND MENU RULES ARE IMPORTANT STEPS FOR PUBLIC HEALTH

Richard N. Gottfried,
Chair, New York State Assembly Committee on Health
Testimony before the New York City Board of Health
Public Hearing October 30, 2006

My name is Richard N. Gottfried. I represent the 75th Assembly District in Manhattan and I chair the Assembly Committee on Health. I appreciate this opportunity to present this testimony. I regret that I have to be in Albany today and cannot appear before you in person. I congratulate Commissioner Thomas Frieden for his leadership in proposing the regulations on trans fats and menu information, and I urge that the Board of Health approve them.

Heart disease and obesity are major public health problems, and they do not have to be. We have the ability – and the moral obligation – to help reduce these epidemics and save lives. These proposals are important steps in this life-saving effort.

These proposals are in keeping with the proud tradition of public health, including the distinguished history of leadership of our City's Health Department and the Board of Health. Obesity is a sensitive subject in our society, and these proposals have obviously struck a nerve. It is no wonder that these proposals have been the target of attacks and wisecracks. The early proposals to protect us from tobacco received a similar reaction, but today the public overwhelmingly supports them.

Trans Fat

One proposal would effectively phase out artificial trans fat (mainly partially hydrogenated vegetable oil) in food preparation in food service establishments. After 6 months, it would apply to cooking oil, shortening and margarine. After 18 months, it would apply to all food served, except food served in the original manufacturer's sealed package. Trace amounts of less than half a gram per serving would be allowed.

Trans fat is much more dangerous than other fats in foods. It raises the LDL "bad" cholesterol and lowers HDL "good" cholesterol. Trans fat has no safe level and no nutritional value. The Center for Science in the Public Interest reports scientific estimates that in New York City alone, trans fat kills up to 1,500 people a year.

It can easily be replaced in food preparation by other ingredients that taste and work just

as well, at essentially the same cost. Several restaurant chains and leading restaurants have already stopped using trans fat, and are doing fine. Sylvia's serves its world-famous soul food without using trans fat, and any restaurant can easily comply with this proposed rule.

Consumers have no way of knowing whether food they are served contains trans fat. Packaged food bought in stores is now labeled for trans fat content, and consumers can make choices. Not so in restaurants.

In 1960, the Board of Health was in the forefront of banning lead in paint. We protect consumers from eating food prepared in the presence of rats and other vermin. The government protects us from consuming many cancer-causing ingredients. The trans fat regulation is a fitting step in this tradition.

While trans fat is more dangerous than other fat, that does not mean other fat is safe to consume in excess. It is important to make sure that the public does not misunderstand the campaign against trans fat. This makes the other proposed regulation, relating to calorie information on menus, especially important.

Calorie Information on Menus

Consumer lack of information is a serious factor in the effort to combat the epidemic of overweight and obesity. Most people would not think that a six inch tuna sub at Subway has 530 calories – much more than the 290 calories in the roast beef sub. Most people might not be surprised to learn that a McDonald's Big Mac has 560 calories, but a McDonald's large shake has more than twice that – 1,160 calories, more than half the recommended daily calorie intake for an adult.

With packaged food sold in stores or food cooked at home, consumers who want to can know the ingredients and determine the calorie content of their food. But that is not the case with food served in restaurants. Calorie counts can be extraordinarily higher than most people would imagine.

The proposed regulation requires calorie counts to be displayed on menus and menu boards, but only in restaurants that already make calorie information available, on web sites or otherwise. Without the information being displayed, a consumer must do research to get the information before ordering. It is important not only to make the information easily available to consumers but also to put it in front of them when they are thinking about their food choices.

Complying with this regulation will be easy, because the restaurants that are subject to it are only those that already make the information available in some form to the public.

I strongly support the proposal, and I understand the Department's reasons for limiting its applicability. However, I am concerned that some restaurants or chains that now make calorie information available might stop doing so, or others might refrain from doing so, to avoid being subject to the new regulation. Also, large chain restaurants that do not make their calorie information available could easily do so for standard menu items. Therefore, I urge the

Department and the Board to be open, in the future, to expanding the scope of the regulation.

Conclusion

Of course, much more needs to be done to combat the epidemics of overweight and obesity and the grave health problems that come with them, including heart disease and diabetes. Most of what we eat is not covered by these proposed regulations. We need to build on what the Department of Education has done to improve what is served and sold in schools. We need to educate and persuade parents and children to overcome the power of advertising and culture. We need to get people to exercise more.

But these proposed regulations are important steps in the right direction. They will improve the health of New Yorkers and prolong and save lives. I urge the Board of Health to stand firmly with Commissioner Frieden and approve the regulations, and then move on to further efforts.

TRANS FAT MEETING – NYC DEPT OF HEALTH
October 30, 2006 - Comments by Annemarie Colbin, Ph.D.

Thank you for including me in your speaker's list.

My name is Annemarie Colbin, and I'm here to speak for the Natural Gourmet Institute for Health and Culinary Arts, of which I am the founder. The Natural Gourmet is the oldest natural foods cooking school in the country; we will be 30 years old in 2007, and have been teaching people to cook and eat healthful food all these years.

We are here to talk about regulating the presence of trans fats in restaurant food. I want to briefly address two points:

1. The issue of fats in food and cooking.
2. The issue of banning unhealthy food ingredients

Regarding the issue of fats: We at the NGI support the science that has determined that artificially produced trans fatty acids are deleterious to the health of the public. We agree with the concerns about the presence of trans fats in the food supply.

Teachers at the Natural Gourmet never have used, and never will use, artificial or hydrogenated fats with trans fatty acids in them – or even those without.

While we agree that trans fats are unhealthy, the classification of monounsaturated fats and polyunsaturated fats as "good fats" and trans fats and saturated fats as "bad fats" is misleading, and appears to be based entirely on their presumed effects on serum cholesterol.

According to our information, most of the oils rich in polyunsaturated fatty acids, such as corn, soybean, safflower, sunflower canola and cottonseed, should not be consumed in large quantity, as they contain significant amounts of the omega-6 fatty acid, linoleic acid. (Especially cottonseed should be avoided, for cotton is not considered a food crop and is sprayed extensively.) These oils are processed at very high temperatures and pressures, which not only can create some trans fat, but also destroys the beneficial properties of the oil.

They become rancid easily from exposure to light, oxygen and heat, and so become a source of free radicals.

Although the linoleic Omega 6, found in the plant oils, is an essential nutrient, an excess of it has been shown in several studies to promote cancer and heart disease. The other essential fatty acid, the Omega 3 or linolenic acid, is required for good brain function as well as cardiovascular health. Omega 3's are found in fatty fish, walnuts, flaxseeds, and other foods. Many researchers estimate that the ideal ratio of omega-6 to omega-3 should be 1 to 3 parts omega-6 to 1 part omega 3, but the ratio for modern Americans is closer to 20 to 50 parts omega-6 to 1 part omega 3. This can lead to chronic inflammation, decreased blood circulation and increased blood clotting. Furthermore, these liquid plant oils don't produce the same culinary effects as solid fats.

For the cook, saturated fats – those solid at room temperature - fulfill a certain culinary purpose of texture and flavor. Traditional saturated fats (butter, palm oil, coconut oil) fell out of

favor with the cholesterol scares. They were replaced with hydrogenated fats (which are the ones containing the trans fatty acids), and which in fact are polyunsaturated fats that have been saturated artificially. Now that it has been found that the imitation replacement is damaging – What shall they be replaced with? It's easy for non-cooks to tell cooks what to cook with. But a cake made with oil is not the same, in any way, to a cake made with butter (or shortening).

Natural saturated fats are more stable than trans fats or unsaturated fats and have been used for cooking since humans began cooking with fat. They have many benefits, including anti-microbial properties, and the effect of raising protective HDL cholesterol. Traditional coconut and palm oils, which are saturated, are used by several populations that boast much lower rates of the chronic diseases plaguing Americans today.

If saturated fats were useless or harmful, why would breast milk provide an abundance of saturated fatty acids such as butyric, caproic, caprylic, lauric, myristic, palmitic and stearic acids?

After all, breast milk is designed to ensure the growth, brain development and survival of children. So perhaps it's time to go back to natural saturated fats from healthy animals.

Replacing hydrogenated fats with others that have been chemically manipulated to be solid at room temperature, even if they contain no trans-fats (or at least no measurable amounts), is a double-edged sword; it took 50 or more years to figure out that trans fats are dangerous – will it take as long to find out what the problems are with their replacements? have any studies been done to see if they have bad effects in the very long run? We support the use of natural, traditional fats, be they mono or poly-unsaturated, or saturated, and avoid the use of any commercially processed fats, with or without trans fats in them.

My second comment is Regarding the Banning of Unhealthy Food Ingredients.

Even though trans fats are clearly deleterious, I recommend caution in forbidding cooking ingredients by law. Prohibition didn't work either, people just kept on drinking on the sly. There are many other ingredients in the food supply that I understand to be damaging to the public health. If I were the one to legislate, I would remove all artificial colors, flavors and sweeteners, as well as BHT, BHA, nitrites, nitrates, and other preservatives. If it were up to me I would eliminate all cane sugar and corn sweeteners from the food supply. However, there are many people who disagree with me, and who want to keep these ingredients available for their choice.

Perhaps a better approach to support healthful food might be what BF Skinner called the positive reinforcement technique. I saw a diner with the sign: "We are trans-fat free!" By setting up a ban, the Dept of Health would become a police system, with all the difficulty and personnel problems that might bring. An easier, more practical, and more effective approach would be to set up a system certifying establishments as being "Certified Trans-fat Free." I bet that would be much more of an incentive

than the fear of punishment! Soon it would become a real status symbol, people would obviously flock to these establishments, and others would be shamed into following suit. Ascertaining compliance would be a lot easier than finding non-compliance.

In addition, the Dept of Health could continue with its educational campaign about the dangers of trans fats. A good slogan could be: "Avoiding trans fats is a sensible health measure," or something like that. If a lot of people began to avoid the foods with the trans fats, there will be a voluntary movement away from them, and the chefs/cooks would be likely to eliminate them on their own. Again, it would be a self-reinforcing system, rather than a punishment system.

Human beings are stubborn. Tell them not to do something and you immediately awaken the inner mule who will go contrarian. Nobody likes to be told what not to do. It's easier to go positive, and reinforce good behavior - *positive reinforcement*, which has been shown time and again to get excellent results. And I think that is what you want: good results, healthy people. People

who CHOOSE to be healthy. Education and reinforcement are the way.

For the health of the people, our entire national diet, in the long run, must be changed. We should go back to what it used to be: real, fresh, natural foods, with a good balance between Omega 3 and Omega 6 fatty acids, devoid chemical and artificial ingredients, and without hydrogenated and manipulated fats. We all should remember the comment of Joseph Hibbeln, a physician and a researcher at the National Institutes of Health, who has recently said: "The changes in our diet in the past century are a very large uncontrolled experiment that may have contributed to the societal burden of aggression, depression and cardiovascular death. To ask whether we have enough evidence to change diets is to put the question the wrong way round. Whoever said it was safe to change them so radically in the first place?"

Thank you for the opportunity to address this distinguished audience.

Testimony of
Kate MacKenzie, Director of Food and Nutrition
FoodChange

New York City Department of Health and Mental Hygiene

Board of Health

Monday, October 30, 2006

Support to amend Article 81 of the New York City Health Code to make information on calorie content of menu items clear to consumers at the time of ordering at Food Service Establishments where such information is publicly available (sec 81.08).

And

Support to amend Article 81 of the New York City Health code to allow for artificial trans fat to be phased out of city licensed Food Service establishments (sec 81.50).

Good Morning. My name is Kate MacKenzie, and I am the Director of Food and Nutrition, at FoodChange. FoodChange is a twenty-six year old non-profit organization that improves lives through nutrition, education, and financial empowerment.

Thank you for holding this hearing to not only provide public comment about the two proposed amendments to the New York City Health Code, but also for allowing the community to request recommendations for implementation.

FoodChange fully supports making calorie information known to consumers. This information is already widely available, but is not easily accessible. Typically such information is available via a website or occasionally in a small print brochure if requested. The Increasing rates of overweight and obesity presents a significant threat to the current and future public health of the city. While food choices clearly are not the only cause for these conditions, they are a large contributor. Providing consumers with calorie information about food

choices can lead to informed choice. Think to yourself. How many times have you eaten out in the last week? The majority of New Yorkers get at least one third or more of their calories from food eaten away from home. Even when we think we know the nutritional value (including calories) of the foods we choose, the reality is, we do not. As a result, too many people are consuming too many calories, and without adequate energy expenditure. This leads to weight gain. One pound of weight gain is equal to an excess of 3500 calories. This sounds like a lot, but when you consider a large soda that may contain as many as 600 calories, you can see that it isn't that hard for the excess calories to add up.

Providing this service to New Yorkers is a significant approach to reducing rates of overweight and obesity. When paired with strong nutrition education, this amendment has the potential to transform the long-term health of many New Yorkers.

To this point, nutrition education alone has not been an overwhelmingly effective means of informing food choice, primarily because the food environment has not allowed for health promoting food choices. Clearly displaying calorie content will enhance the food environment in restaurants, so consumers can more easily make an informed choice.

Section 81.50 of the Health Code would restrict NYC food service establishments from using artificial trans fats, with the exception of foods served in the manufacturers' original sealed packages. Again, FoodChange offers its full support of this amendment. The evidence is clear and sound that consumption of trans fat not only increases LDL cholesterol levels, but decreases HDL levels. This in turn increases the risk of heart disease.

It is important to note that trans fat can feasibly be replaced with alternative items. The Health Department should be commended for implementing their Trans Fat Education Campaign, which aimed to encourage Food Service Establishments to voluntarily switch to trans-fat free oils and shortenings. Because of the campaign's limited success, the department is taking the next necessary step toward eliminating artificial trans fat from the city.

Removing trans fats will lower the risk of disease for anyone who eats out in New York City – and that's just about everyone – but especially for people who are dependent on inexpensive and highly processed food. Lower disease rates, in turn, will likely lower medical costs to the City associated with nutrition related disease risk factors.

In addition to our support for section 81.50, FoodChange encourages the Board of Health to take special consideration about implementation in free feeding programs, especially within the emergency food system.

It is well known that soup kitchens in particular are in fact not "emergency" sources of food for their recipients, but rather, they are regular and necessary. These food service establishments obtain their food through City EFAP, State HPNAP, and Federal TEFAP dollars, in addition to donations. Technically, food coming into soup kitchens from each of these sources would have to be artificial trans fat free. This idea, and its potential reality is brilliant, yet its practically is slim, at best. However, if it is accomplished, New York City could revolutionize the emergency food system of the country, by slowing the influx of foods of poor nutritional value into this system which feeds vulnerable consumers.

Given that soup kitchens generally do not have enough food to meet their demand, FoodChange strongly encourages the Board of Health to consider the repercussions of further limiting this food supply.

In summary, FoodChange commends and supports the efforts the Department of Health is taking to improve the health of its residents. It is particularly timely because of the efforts the Mayor's administration and the City Council are taking to address food security, hunger, and nutrition. Collectively these strides will improve the food environment of NYC, enable New Yorkers to make informed eating choices, and demonstrate to other cities that such progressive efforts are possible and effective. I urge the Board to adopt these amendments and consider these recommendations.

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Comment; Notice of Intention to Add Section 81.08 to Article 81 of the New York City Health Code; Trans Fat Ban

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Risk Factors and Coronary Heart Disease

AHA Scientific Position

Extensive clinical and statistical studies have identified several factors that increase the risk of coronary heart disease and heart attack. Major risk factors are those that research has shown significantly increase the risk of heart and blood vessel (cardiovascular) disease. Other factors are associated with increased risk of cardiovascular disease, but their significance and prevalence haven't yet been precisely determined. They're called contributing risk factors.

The American Heart Association has identified several risk factors. Some of them can be modified, treated or controlled, and some can't. The more risk factors you have, the greater your chance of developing coronary heart disease. Also, the greater the level of each risk factor, the greater the risk. For example, a person with a total cholesterol of 300 mg/dL has a greater risk than someone with a total cholesterol of 245 mg/dL, even though everyone with a total cholesterol greater than 240 is considered high-risk.

What are the major risk factors that can't be changed?

- **Increasing age** — Over 83 percent of people who die of coronary heart disease are 65 or older. At older ages, women who have heart attacks are more likely than men are to die from them within a few weeks.
- **Male sex (gender)** — Men have a greater risk of heart attack than women do, and they have attacks earlier in life. Even after menopause, when women's death rate from heart disease increases, it's not as great as men's.
- **Heredity** (including **Race**) — Children of parents with heart disease are more likely to develop it themselves. African Americans have more severe high blood pressure than Caucasians and a higher risk of heart disease. Heart disease risk is also higher among Mexican Americans, American Indians, native Hawaiians and some Asian Americans. This is partly due to higher rates of obesity and diabetes. Most people with a strong family history of heart disease have one or more other risk factors. Just as you can't control your age, sex and race, you can't control your family history. Therefore, it's even more important to treat and control any other risk factors you have.

What are the major risk factors you can modify, treat or control by changing your lifestyle or taking medicine?

- **Tobacco smoke** — Smokers' risk of developing coronary heart disease is 2–4 times that of nonsmokers. Cigarette smoking is a powerful independent risk factor for sudden cardiac death in patients with coronary heart disease; smokers have about twice the risk of nonsmokers. Cigarette smoking also acts with other risk

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factors to greatly increase the risk for coronary heart disease. People who smoke cigars or pipes seem to have a higher risk of death from coronary heart disease (and possibly stroke) but their risk isn't as great as cigarette smokers'. Exposure to other people's smoke increases the risk of heart disease even for nonsmokers.

- **High blood cholesterol** — As blood cholesterol rises, so does risk of coronary heart disease. When other risk factors (such as high blood pressure and tobacco smoke) are present, this risk increases even more. A person's cholesterol level is also affected by age, sex, heredity and diet.

- **High blood pressure** — High blood pressure increases the heart's workload, causing the heart to thicken and become stiffer. It also increases your risk of stroke, heart attack, kidney failure and congestive heart failure. When high blood pressure exists with obesity, smoking, high blood cholesterol levels or diabetes, the risk of heart attack or stroke increases several times.

- **Physical inactivity** — An inactive lifestyle is a risk factor for coronary heart disease. Regular, moderate-to-vigorous physical activity helps prevent heart and blood vessel disease. The more vigorous the activity, the greater your benefits. However, even moderate-intensity activities help if done regularly and long term. Exercise can help control blood cholesterol, diabetes and obesity, as well as help lower blood pressure in some people.

- **Obesity and overweight** — People who have excess body fat — especially if a lot of it is at the waist — are more likely to develop heart disease and stroke even if they have no other risk factors. Excess weight increases the heart's work. It also raises blood pressure and blood cholesterol and triglyceride levels, and lowers HDL ("good") cholesterol levels. It can also make diabetes more likely to develop. Many obese and overweight people may have difficulty losing weight. But by losing even as few as 10 pounds, you can lower your heart disease risk.

- **Diabetes mellitus** — Diabetes seriously increases your risk of developing cardiovascular disease. Even when glucose (blood sugar) levels are under control, diabetes increases the risk of heart disease and stroke, but the risks are even greater if blood sugar is not well controlled. About three-quarters of people with diabetes die of some form of heart or blood vessel disease. If you have diabetes, it's extremely important to work with your healthcare provider to manage it and control any other risk factors you can.

What other factors contribute to heart disease risk?

- Individual response to **stress** may be a contributing factor. Some scientists have noted a relationship between coronary heart disease risk and stress in a person's life, their health behaviors and socioeconomic status. These factors may affect established risk factors. For example, people under stress may overeat, start smoking or smoke more than they otherwise would.

- Drinking **too much alcohol** can raise blood pressure, cause heart failure and lead to stroke. It can contribute to high triglycerides, cancer and other diseases, and produce irregular heartbeats. It contributes to obesity, alcoholism, suicide and accidents.

The risk of heart disease in people who drink **moderate** amounts of alcohol (an average of one drink for women or two drinks for men per day) is lower than in nondrinkers. One drink is defined as 1-1/2 fluid ounces (fl oz) of 80-proof spirits (such as bourbon, Scotch, vodka, gin, etc.), 1 fl oz of 100-proof spirits, 4 fl oz of wine or 12 fl oz of beer. It's **not** recommended that nondrinkers start using alcohol or that drinkers increase the amount they drink.

Cholesterol News

High Blood Pressure News

Related AHA publications:

- Heart and Stroke Facts
- Heart Disease and Stroke Statistics Update
- Know the Facts, Get the Stats
- Are You at Risk of Heart Attack or Stroke? (also in Spanish)
- Stroke: Are You at Risk?
- Controlling Your Risk Factors
- Six Steps to a Healthier Heart

Detailed Research

AHA Scientific Statements on Prevention of Coronary Heart Disease and Stroke

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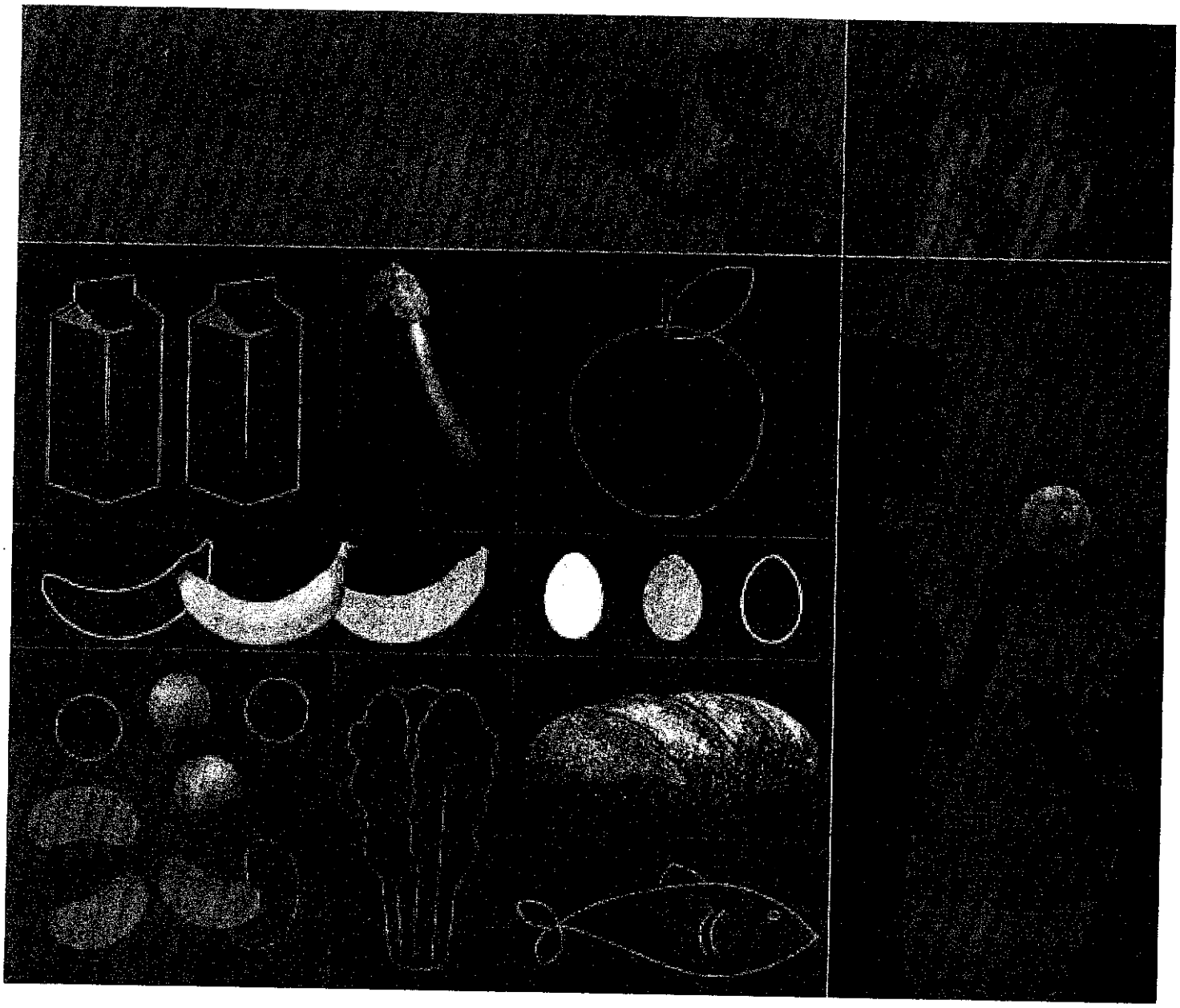

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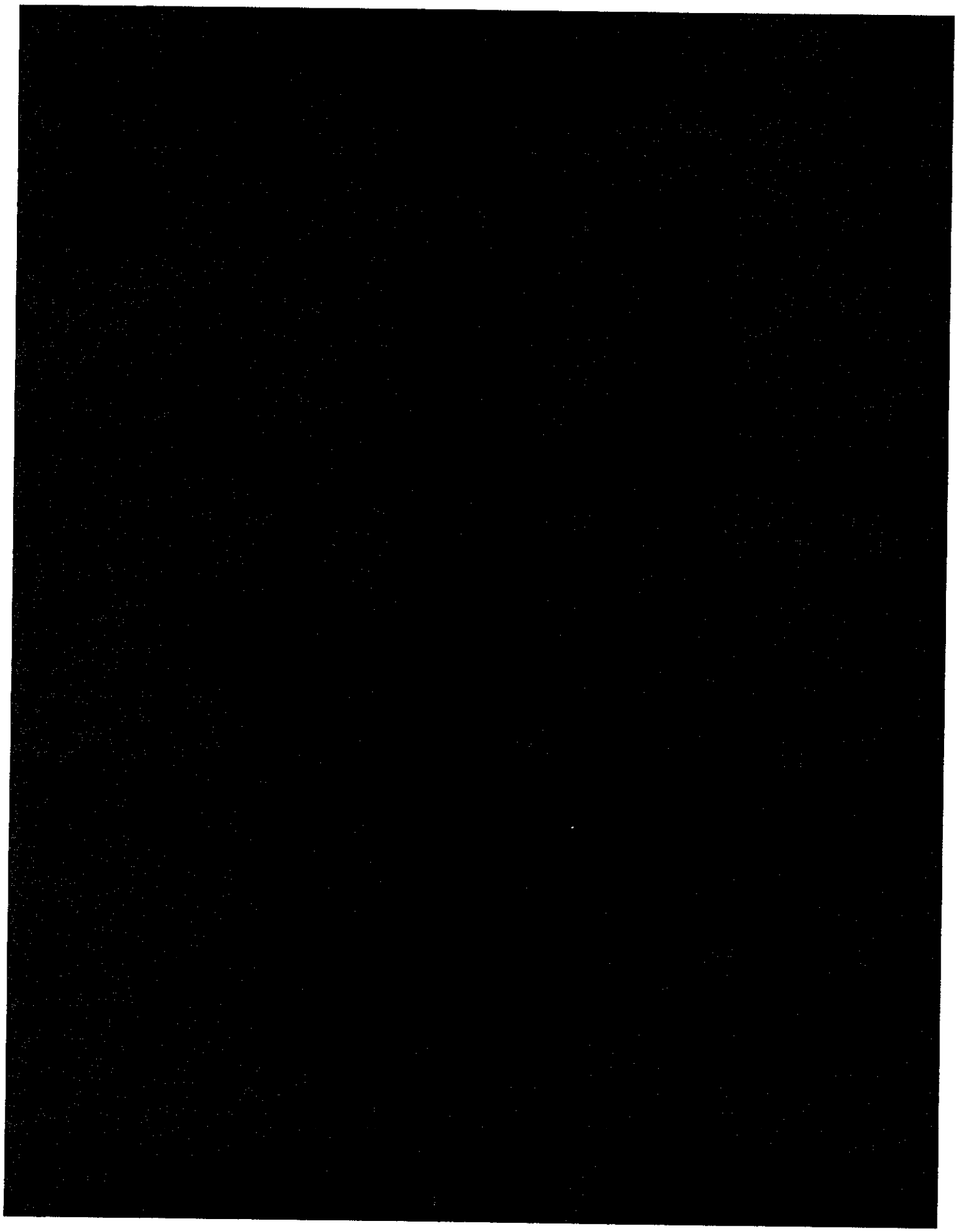


MESSAGE FROM THE SECRETARIES

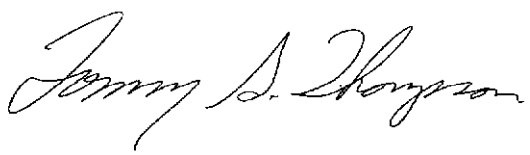
We are pleased to present the 2005 *Dietary Guidelines for Americans*. This document is intended to be a primary source of dietary health information for policymakers, nutrition educators, and health providers. Based on the latest scientific evidence, the 2005 *Dietary Guidelines* provides information and advice for choosing a nutritious diet, maintaining a healthy weight, achieving adequate exercise, and "keeping foods safe" to avoid foodborne illness.

This document is based on the recommendations put forward by the Dietary Guidelines Advisory Committee. The Committee was composed of scientific experts who were responsible for reviewing and analyzing the most current dietary and nutritional information and incorporating this into a scientific evidence-based report. We want to thank them and the other public and private professionals who assisted in developing this document for their hard work and dedication.

The more we learn about nutrition and exercise, the more we recognize their importance in everyday life. Children need a healthy diet for normal growth and development, and Americans of all ages may reduce their risk of chronic disease by adopting a nutritious diet and engaging in regular physical activity.

However, putting this knowledge into practice is difficult. More than 90 million Americans are affected by chronic diseases and conditions that compromise their quality of life and well-being. Overweight and obesity, which are risk factors for diabetes and other chronic diseases, are more common than ever before. To correct this problem, many Americans must make significant changes in their eating habits and lifestyles.

We live in a time of widespread availability of food options and choices. More so than ever, consumers need good advice to make informed decisions about their diets. The 2005 *Dietary Guidelines* will help Americans choose a nutritious diet within their energy requirements. We believe that following the recommendations in the *Dietary Guidelines* will assist many Americans in living longer, healthier, and more active lives.



Tommy G. Thompson
Secretary of Health and Human Services

Ann M. Veneman
Secretary of Agriculture

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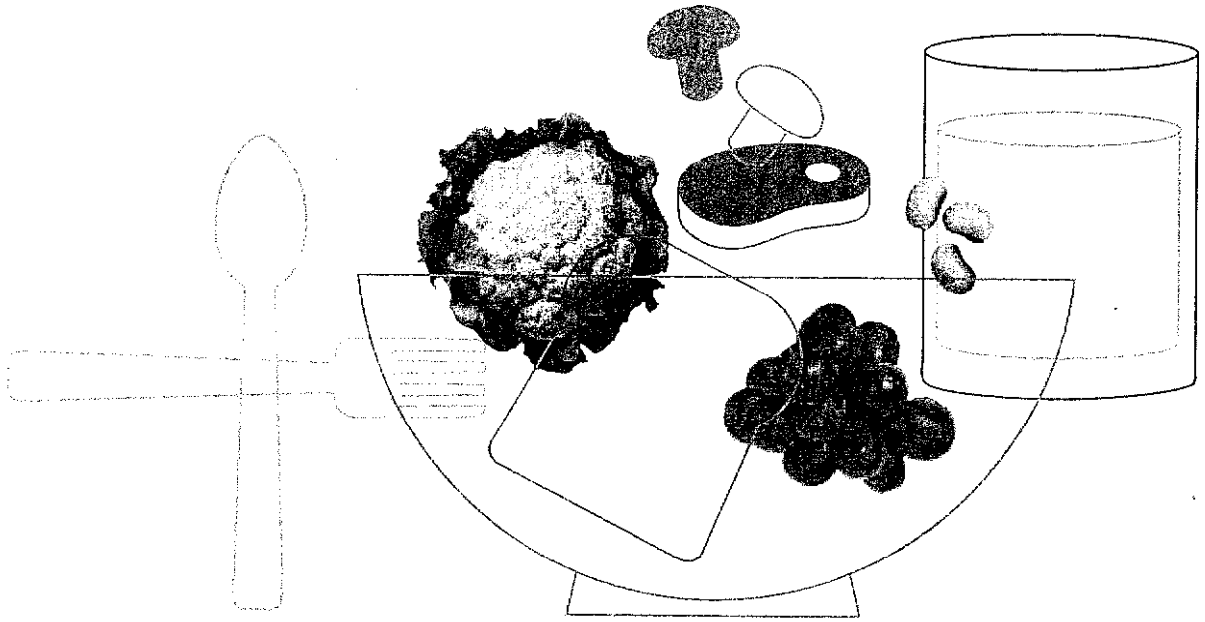


Executive Summary

The *Dietary Guidelines for Americans [Dietary Guidelines]* provides science-based advice to promote health and to reduce risk for major chronic diseases through diet and physical activity. Major causes of morbidity and mortality in the United States are related to poor diet and a sedentary lifestyle. Some specific diseases linked to poor diet and physical inactivity include cardiovascular disease, type 2 diabetes, hypertension, osteoporosis, and certain cancers. Furthermore, poor diet and physical inactivity, resulting in an energy imbalance (more calories consumed than expended), are the most important factors contributing to the increase in overweight and obesity in this country. Combined with physical activity, following a diet that does not provide excess calories according to the recommendations in this document should enhance the health of most individuals.

An important component of each 5-year revision of the *Dietary Guidelines* is the analysis of new scientific information by the Dietary Guidelines Advisory Committee (DGAC) appointed by the Secretaries of the U.S. Department of Health and Human Services (HHS) and the U.S. Department of Agriculture (USDA). This analysis, published in the DGAC Report (http://www.health.gov/dietaryguidelines/dga2005/report/), is the primary resource for development of the report on the Guidelines by the Departments. The *Dietary Guidelines* and the report of the DGAC differ in scope and purpose compared to reports for previous versions of the *Guidelines*. The 2005 DGAC report is a detailed scientific analysis. The scientific report was used to develop the *Dietary Guidelines* jointly between the two Departments and forms the basis of recommendations that will be used by USDA and HHS for program and policy development.

Thus it is a publication oriented toward policymakers, nutrition educators, nutritionists, and healthcare providers rather than to the general public, as with previous versions of the *Dietary Guidelines*, and contains more technical information.

The intent of the *Dietary Guidelines* is to summarize and synthesize knowledge regarding individual nutrients and food components into recommendations for a pattern of eating that can be adopted by the public. In this publication, Key Recommendations are grouped under nine inter-related focus areas. The recommendations are based on the preponderance of scientific evidence for lowering risk of chronic disease and promoting health. It is important to remember that these are integrated messages that should be implemented as a whole. Taken together, they encourage most Americans to eat fewer calories, be more active, and make wiser food choices.

Taken together, [the *Dietary Guidelines*] encourage most Americans to eat fewer calories, be more active, and make wiser food choices.

A basic premise of the *Dietary Guidelines* is that nutrient needs should be met primarily through consuming foods. Foods provide an array of nutrients and other compounds that may have beneficial effects on health. In certain cases, fortified foods and dietary supplements may be useful sources of one or more nutrients that otherwise might be consumed in less than recommended amounts. However, dietary supplements, while recommended in some cases, cannot replace a healthful diet.

Two examples of eating patterns that exemplify the *Dietary Guidelines* are the USDA Food Guide (http://www.usda.gov/cnpp/pyramid.html) and the DASH (Dietary Approaches to Stop Hypertension) Eating Plan.[1] Both of these eating patterns are designed to integrate dietary recommendations into a healthy way to eat for most individuals. These eating patterns are not weight loss diets, but rather illustrative examples of how to eat in accordance with the *Dietary Guidelines*. Both eating patterns are constructed across a range of calorie levels to meet the needs of various age and gender groups. For the USDA Food Guide, nutrient content estimates for each food group and subgroup are based on population-weighted food intakes. Nutrient content estimates for the DASH Eating Plan are based on selected foods chosen for a sample 7-day menu. While originally developed to study the effects of an eating pattern on the prevention and treatment of hypertension, DASH is one example of a balanced eating plan consistent with the 2005 *Dietary Guidelines*.

Throughout most of this publication, examples use a 2,000-calorie level as a reference for consistency with the Nutrition Facts Panel. Although this level is used as a reference, recommended calorie intake will differ for individuals based on age, gender, and activity level. At each calorie level, individuals who eat nutrient-dense foods may be able to meet their recommended nutrient intake without consuming their full calorie allotment. The remaining calories—the *discretionary calorie allowance*—allow individuals flexibility to consume some foods and beverages that may contain added fats, added sugars, and alcohol.

The recommendations in the *Dietary Guidelines* are for Americans over 2 years of age. It is important to incorporate the food preferences of different racial/ethnic groups, vege-

[1] NIH Publication No. 03-4082, Facts about the DASH Eating Plan, United States Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute. Karanja NM et al. *Journal of the American Dietetic Association (JADA)* 8:519-27, 1999. http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/.

tarians, and other groups when planning diets and developing educational programs and materials. The USDA Food Guide and the DASH Eating Plan are flexible enough to accommodate a range of food preferences and cuisines.

The *Dietary Guidelines* is intended primarily for use by policymakers, healthcare providers, nutritionists, and nutrition educators. The information in the *Dietary Guidelines* is useful for the development of educational materials and aids policymakers in designing and implementing nutrition-related programs, including federal food, nutrition education, and information programs. In addition, this publication has the potential to provide authoritative statements as provided for in the Food and Drug Administration Modernization Act (FDAMA). Because the *Dietary Guidelines* contains discussions where the science is emerging, only statements included in the Executive Summary and the sections titled "Key Recommendations," which reflect the preponderance of scientific evidence, can be used for identification of authoritative statements. The recommendations are interrelated and mutually dependent; thus the statements in this document should be used together in the context of planning an overall healthful diet. However, even following just some of the recommendations can have health benefits.

The following is a listing of the *Dietary Guidelines* by chapter.

ADEQUATE NUTRIENTS WITHIN CALORIE NEEDS

Key Recommendations

- Consume a variety of nutrient-dense foods and beverages within and among the basic food groups while choosing foods that limit the intake of saturated and *trans* fats, cholesterol, added sugars, salt, and alcohol.
- Meet recommended intakes within energy needs by adopting a balanced eating pattern, such as the USDA Food Guide or the DASH Eating Plan.

Key Recommendations for Specific Population Groups

- *People over age 50.* Consume vitamin B_{12} in its crystalline form (i.e., fortified foods or supplements).
- *Women of childbearing age who may become pregnant.* Eat foods high in heme-iron and/or consume iron-rich plant foods or iron-fortified foods with an enhancer of iron absorption, such as vitamin C-rich foods.
- *Women of childbearing age who may become pregnant and those in the first trimester of pregnancy.* Consume adequate synthetic folic acid daily (from fortified foods or supplements) in addition to food forms of folate from a varied diet.
- *Older adults, people with dark skin, and people exposed to insufficient ultraviolet band radiation (i.e., sunlight).* Consume extra vitamin D from vitamin D-fortified foods and/or supplements.

WEIGHT MANAGEMENT

Key Recommendations

- To maintain body weight in a healthy range, balance calories from foods and beverages with calories expended.
- To prevent gradual weight gain over time, make small decreases in food and beverage calories and increase physical activity.

Key Recommendations for Specific Population Groups

- *Those who need to lose weight.* Aim for a slow, steady weight loss by decreasing calorie intake while maintaining an adequate nutrient intake and increasing physical activity.
- *Overweight children.* Reduce the rate of body weight gain while allowing growth and development. Consult a healthcare provider before placing a child on a weight-reduction diet.
- *Pregnant women.* Ensure appropriate weight gain as specified by a healthcare provider.
- *Breastfeeding women.* Moderate weight reduction is safe and does not compromise weight gain of the nursing infant.
- *Overweight adults and overweight children with chronic diseases and/or on medication.* Consult a healthcare provider about weight loss strategies prior to starting a weight-reduction program to ensure appropriate management of other health conditions.

PHYSICAL ACTIVITY

Key Recommendations

- Engage in regular physical activity and reduce sedentary activities to promote health, psychological well-being, and a healthy body weight.
  - To reduce the risk of chronic disease in adulthood: Engage in at least 30 minutes of moderate-intensity physical activity, above usual activity, at work or home on most days of the week.
  - For most people, greater health benefits can be obtained by engaging in physical activity of more vigorous intensity or longer duration.
  - To help manage body weight and prevent gradual, unhealthy body weight gain in adulthood: Engage in approximately 60 minutes of moderate- to vigorous-intensity activity on most days of the week while not exceeding caloric intake requirements.
  - To sustain weight loss in adulthood: Participate in at least 60 to 90 minutes of daily moderate-intensity physical activity while not exceeding caloric intake requirements. Some people may need to consult with a healthcare provider before participating in this level of activity.
- Achieve physical fitness by including cardiovascular conditioning, stretching exercises for flexibility, and resistance exercises or calisthenics for muscle strength and endurance.

Key Recommendations for Specific Population Groups

- *Children and adolescents.* Engage in at least 60 minutes of physical activity on most, preferably all, days of the week.
- *Pregnant women.* In the absence of medical or obstetric complications, incorporate 30 minutes or more of moderate-intensity physical activity on most, if not all, days of the week. Avoid activities with a high risk of falling or abdominal trauma.
- *Breastfeeding women.* Be aware that neither acute nor regular exercise adversely affects the mother's ability to successfully breastfeed.
- *Older adults.* Participate in regular physical activity to reduce functional declines associated with aging and to achieve the other benefits of physical activity identified for all adults.

FOOD GROUPS TO ENCOURAGE

Key Recommendations

- Consume a sufficient amount of fruits and vegetables while staying within energy needs. Two cups of fruit and 2½ cups of vegetables per day are recommended for a reference 2,000-calorie intake, with higher or lower amounts depending on the calorie level.
- Choose a variety of fruits and vegetables each day. In particular, select from all five vegetable subgroups (dark green, orange, legumes, starchy vegetables, and other vegetables) several times a week.
- Consume 3 or more ounce-equivalents of whole-grain products per day, with the rest of the recommended grains coming from enriched or whole-grain products. In general, at least half the grains should come from whole grains.
- Consume 3 cups per day of fat-free or low-fat milk or equivalent milk products.

Key Recommendations for Specific Population Groups

- *Children and adolescents.* Consume whole-grain products often; at least half the grains should be whole grains. Children 2 to 8 years should consume 2 cups per day of fat-free or low-fat milk or equivalent milk products. Children 9 years of age and older should consume 3 cups per day of fat-free or low-fat milk or equivalent milk products.

FATS

Key Recommendations

- Consume less than 10 percent of calories from saturated fatty acids and less than 300 mg/day of cholesterol, and keep *trans* fatty acid consumption as low as possible.
- Keep total fat intake between 20 to 35 percent of calories, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.
- When selecting and preparing meat, poultry, dry beans, and milk or milk products, make choices that are lean, low-fat, or fat-free.
- Limit intake of fats and oils high in saturated and/or *trans* fatty acids, and choose products low in such fats and oils.

Key Recommendations for Specific Population Groups

- *Children and adolescents.* Keep total fat intake between 30 to 35 percent of calories for children 2 to 3 years of age and between 25 to 35 percent of calories for children and adolescents 4 to 18 years of age, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.

CARBOHYDRATES

Key Recommendations

- Choose fiber-rich fruits, vegetables, and whole grains often.
- Choose and prepare foods and beverages with little added sugars or caloric sweeteners, such as amounts suggested by the USDA Food Guide and the DASH Eating Plan.
- Reduce the incidence of dental caries by practicing good oral hygiene and consuming sugar- and starch-containing foods and beverages less frequently.

SODIUM AND POTASSIUM

Key Recommendations

- Consume less than 2,300 mg (approximately 1 tsp of salt) of sodium per day.
- Choose and prepare foods with little salt. At the same time, consume potassium-rich foods, such as fruits and vegetables.

Key Recommendations for Specific Population Groups

- *Individuals with hypertension, blacks, and middle-aged and older adults.* Aim to consume no more than 1,500 mg of sodium per day, and meet the potassium recommendation (4,700 mg/day) with food.

ALCOHOLIC BEVERAGES

Key Recommendations

- Those who choose to drink alcoholic beverages should do so sensibly and in moderation—defined as the consumption of up to one drink per day for women and up to two drinks per day for men.
- Alcoholic beverages should not be consumed by some individuals, including those who cannot restrict their alcohol intake, women of childbearing age who may become pregnant, pregnant and lactating women, children and adolescents, individuals taking medications that can interact with alcohol, and those with specific medical conditions.
- Alcoholic beverages should be avoided by individuals engaging in activities that require attention, skill, or coordination, such as driving or operating machinery.

FOOD SAFETY

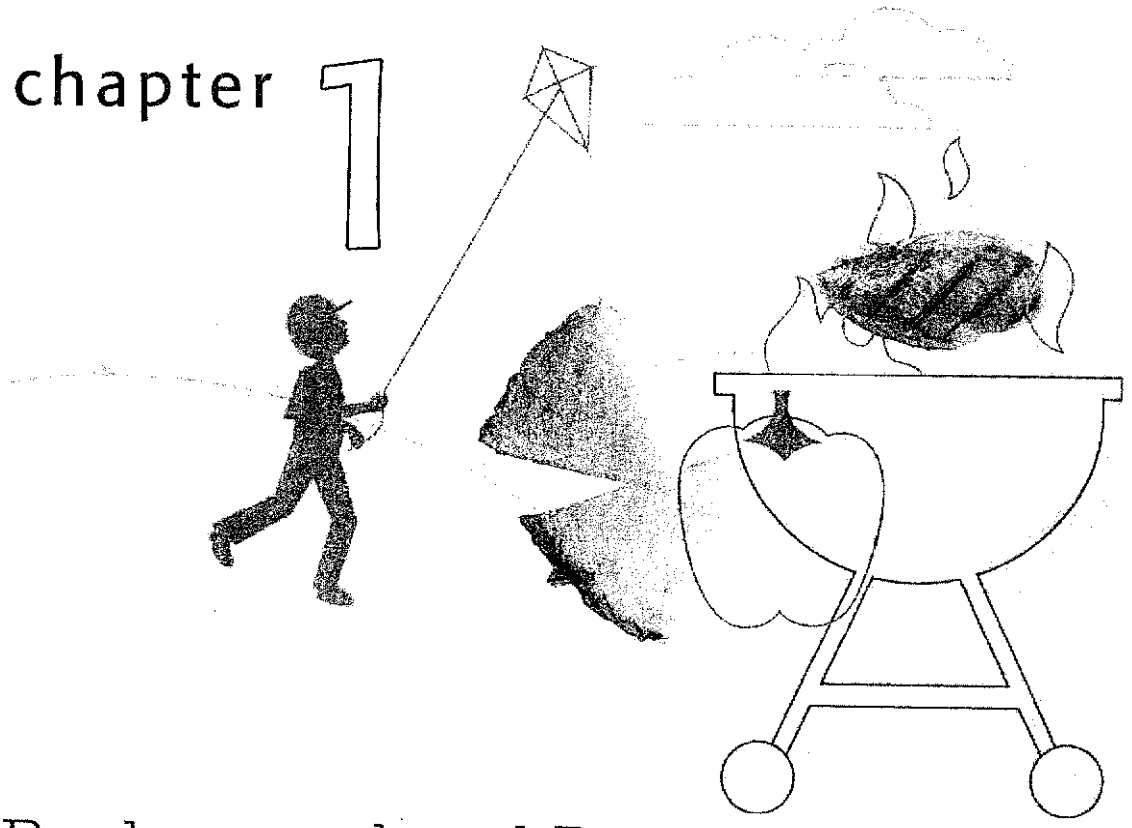
Key Recommendations

- To avoid microbial foodborne illness:
  - Clean hands, food contact surfaces, and fruits and vegetables. Meat and poultry should *not* be washed or rinsed.
  - Separate raw, cooked, and ready-to-eat foods while shopping, preparing, or storing foods.
  - Cook foods to a safe temperature to kill microorganisms.
  - Chill (refrigerate) perishable food promptly and defrost foods properly.
  - Avoid raw (unpasteurized) milk or any products made from unpasteurized milk, raw or partially cooked eggs or foods containing raw eggs, raw or undercooked meat and poultry, unpasteurized juices, and raw sprouts.

Key Recommendations for Specific Population Groups

- *Infants and young children, pregnant women, older adults, and those who are immunocompromised.* Do not eat or drink raw (unpasteurized) milk or any products made from unpasteurized milk, raw or partially cooked eggs or foods containing raw eggs, raw or undercooked meat and poultry, raw or undercooked fish or shellfish, unpasteurized juices, and raw sprouts.
- *Pregnant women, older adults, and those who are immunocompromised:* Only eat certain deli meats and frankfurters that have been reheated to steaming hot.

chapter 1



Background and Purpose of the *Dietary Guidelines for Americans*

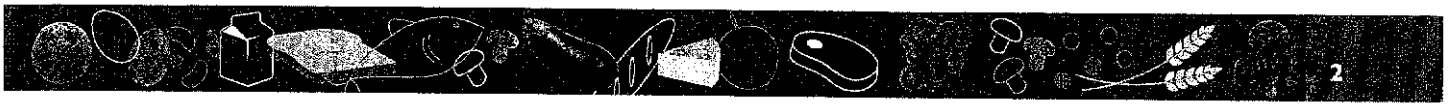
The *Dietary Guidelines for Americans [Dietary Guidelines]*, first published in 1980, provides science-based advice to promote health and to reduce risk for chronic diseases through diet and physical activity. The recommendations contained within the *Dietary Guidelines* are targeted to the general public over 2 years of age who are living in the United States. Because of its focus on health promotion and risk reduction, the *Dietary Guidelines* form the basis of federal food, nutrition education, and information programs.

By law (Public Law 101-445, Title II, 7 U.S.C. 5301 et seq.), the *Dietary Guidelines* is reviewed, updated if necessary, and published every 5 years. The process to create the *Dietary Guidelines* is a joint effort of the U.S. Department of Health and Human Services (HHS) and the U.S. Department of Agriculture (USDA) and has evolved to include three stages.

In the first stage, an external scientific Advisory Committee appointed by the two Departments conducted an analysis of new scientific information and prepared a report summarizing its findings.[2] The Advisory Committee's report was made available to the public and Government agencies for comment. The Committee's analysis was the primary resource for development of the *Dietary Guidelines* by the Departments. A significant amount of the new scientific information used by the Dietary Guidelines Advisory Committee (DGAC) was based on the Dietary Reference Intake (DRI) reports published since 2000 by the Institute of Medicine (IOM), in particular the macronutrient report and the fluid and electrolyte report.

During the second stage, the Departments jointly developed Key Recommendations based on the Advisory Committee's report and public and agency comments.

[2] For more information about the process, summary data, and the resources used by the Advisory Committee, see the 2005 Dietary Guidelines Advisory Committee Report (2005 DGAC Report) at http://www.health.gov/dietaryguidelines.



The *Dietary Guidelines* details these science-based policy recommendations. Finally, in the third stage, the two Departments developed messages communicating the *Dietary Guidelines* to the general public.

Because of the three-part process used to develop and communicate the 2005 *Dietary Guidelines*, this publication and the report of the DGAC differ in scope and purpose compared to reports for previous versions of the *Guidelines*. The 2005 DGAC report is a detailed scientific analysis that identifies key issues such as energy balance, the consequences of a sedentary lifestyle, and the need to emphasize certain food choices to address nutrition issues for the American public. The scientific report was used to develop the *Dietary Guidelines* jointly between the two Departments, and this publication forms the basis of recommendations that will be used by USDA and HHS for program and policy development. Thus it is a publication oriented toward policymakers, nutrition educators, nutritionists and healthcare providers rather than to the general public, as with previous versions of the *Dietary Guidelines*, and contains more technical information.

New sections in the *Dietary Guidelines*, consistent with its use for program development, are a glossary of terms and appendixes with detailed information about the USDA Food Guide and the Dietary Approaches to Stop Hypertension (DASH) Eating Plan as well as tables listing sources of some nutrients. Consumer messages have been developed to educate the public about the Key Recommendations in the *Dietary Guidelines* and will be used in materials targeted for consumers separate from this publication. In organizing the *Dietary Guidelines* for the Departments, chapters 2 to 10 were given titles that characterize the topic of each section, and the *Dietary Guidelines* itself is presented as an integrated set of Key Recommendations in each topic area.

These Key Recommendations are based on a preponderance of the scientific evidence of nutritional factors that are important for lowering risk of chronic disease and promoting health. To optimize the beneficial impact of these recommendations on health, the *Guidelines* should be implemented in their entirety.

IMPORTANCE OF THE *DIETARY GUIDELINES* FOR HEALTH PROMOTION AND DISEASE PREVENTION

Good nutrition is vital to good health and is absolutely essential for the healthy growth and development of children and adolescents. Major causes of morbidity and mortality in the United States are related to poor diet and a sedentary lifestyle. Specific diseases and conditions linked to poor diet include cardiovascular disease, hypertension, dyslipidemia, type 2 diabetes, overweight and obesity, osteoporosis, constipation, diverticular disease, iron deficiency anemia, oral disease, malnutrition, and some cancers. Lack of physical activity has been associated with cardiovascular disease, hypertension, overweight and obesity, osteoporosis, diabetes, and certain cancers. Furthermore, muscle strengthening and improving balance can reduce falls and increase functional status among older adults. Together with physical activity, a high-quality diet that does not provide excess calories should enhance the health of most individuals.

Poor diet and physical inactivity, resulting in an energy imbalance (more calories consumed than expended), are the most important factors contributing to the increase in overweight and obesity in this country. Moreover, overweight and obesity are major risk factors for certain chronic diseases such as diabetes. In 1999–2002, 65 percent of U.S. adults were overweight, an increase from 56 percent in 1988–1994. Data from 1999–2002 also showed that 30 percent of adults were obese, an increase from 23 percent in an earlier survey. Dramatic increases in the prevalence of overweight have occurred in children and adolescents of both sexes, with approximately 16 percent of children and adolescents aged 6 to 19 years considered to be overweight (1999–2002).[3] In order to reverse this trend, many Americans need to consume fewer calories, be more active, and make wiser choices within and among food groups. The *Dietary Guidelines* provides a framework to promote healthier lifestyles (see ch. 3).

Given the importance of a balanced diet to health, the intent of the *Dietary Guidelines* is to summarize and synthesize knowledge regarding individual nutrients and

[3] Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtin LR, Flegal KM. Prevalence of overweight and obesity among U.S. children, adolescents, and adults, 1999-2002. *Journal of the American Medical Association (JAMA)* 291(23):2847-2850, 2004.

food components into recommendations for an overall pattern of eating that can be adopted by the general public. These patterns are exemplified by the USDA Food Guide and the DASH Eating Plan (see ch. 2 and app. A). The *Dietary Guidelines* is applicable to the food preferences of different racial/ethnic groups, vegetarians, and other groups. This concept of balanced eating patterns should be utilized in planning diets for various population groups.

There is a growing body of evidence which demonstrates that following a diet that complies with the *Dietary Guidelines* may reduce the risk of chronic disease. Recently, it was reported that dietary patterns consistent with recommended dietary guidance were associated with a lower risk of mortality among individuals age 45 years and older in the United States.[4] The authors of the study estimated that about 16 percent and 9 percent of mortality from any cause in men and women, respectively, could be eliminated by the adoption of desirable dietary behaviors. Currently, adherence to the *Dietary Guidelines* is low among the U.S. population. Data from USDA illustrate the degree of change in the overall dietary pattern of Americans needed to be consistent with a food pattern encouraged by the *Dietary Guidelines* (fig. 1).

A basic premise of the *Dietary Guidelines* is that nutrient needs should be met primarily through consuming foods. Foods provide an array of nutrients (as well as phytochemicals, antioxidants, etc.) and other compounds that may have beneficial effects on health. In some cases, fortified foods may be useful sources of one or more nutrients that otherwise might be consumed in less than recommended amounts. Supplements may be useful when they fill a specific identified nutrient gap that cannot or is not otherwise being met by the individual's intake of food. Nutrient supplements cannot replace a healthful diet. Individuals who are already consuming the recommended amount of a nutrient in food will not achieve any additional health benefit if they also take the nutrient as a supplement. In fact, in some cases, supplements and fortified foods may cause intakes to exceed the safe levels of nutrients. Another important premise of the *Dietary Guidelines* is that foods should be prepared and handled in such a way that reduces risk of foodborne illness.

USES OF THE *DIETARY GUIDELINES*

The *Dietary Guidelines* is intended primarily for use by policymakers, healthcare providers, nutritionists, and nutrition educators. While the *Dietary Guidelines* was developed for healthy Americans 2 years of age and older, where appropriate, the needs of specific population groups have been addressed. In addition, other individuals may find this report helpful in making healthful choices. As noted previously, the recommendations contained within the *Dietary Guidelines* will aid the public in reducing their risk for obesity and chronic disease. Specific uses of the *Dietary Guidelines* include:

Development of Educational Materials and Communications.
The information in the *Dietary Guidelines* is useful for the development of educational materials. For example, the federal dietary guidance-related publications are required by law to be based on the *Dietary Guidelines*. In addition, this publication will guide the development of messages to communicate the *Dietary Guidelines* to the public. Finally, the USDA Food Guide, the food label, and Nutrition Facts Panel provide information that is useful for implementing the key recommendations in the *Dietary Guidelines* and should be integrated into educational and communication messages.

Development of Nutrition-Related Programs.
The *Dietary Guidelines* aids policymakers in designing and implementing nutrition-related programs. The Federal Government bases its nutrition programs, such as the National Child Nutrition Programs or the Elderly Nutrition Program, on the *Dietary Guidelines*.

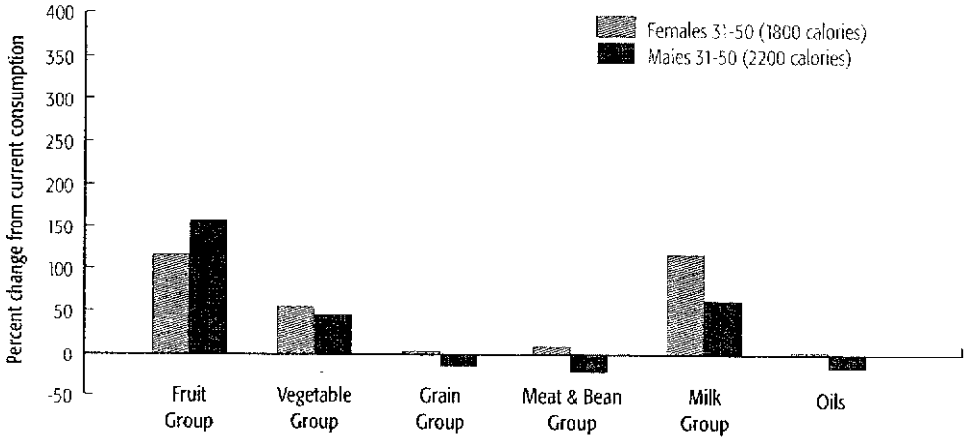
Development of Authoritative Statements.
The *Dietary Guidelines* has the potential to provide authoritative statements as provided for in the Food and Drug Administration Modernization Act (FDAMA). Because the recommendations are interrelated and mutually dependent, the statements in this publication should be used together in the context of an overall healthful diet. Likewise, because the *Dietary Guidelines* contains discussions about emerging science, only statements included in the Executive Summary and the highlighted boxes entitled "Key Recommendations," which reflect the preponderance of scientific evidence, can be used for identification of authoritative statements.

[4] Kant AK, Graubard BI, Schatzkin A. Dietary patterns predict mortality in a national cohort: The national health interview surveys, 1987 and 1992. *Journal of Nutrition (J Nutr)* 134:1793-1799, 2004.

FIGURE 1. Percent Increase or Decrease From Current Consumption (Zero Line) to Recommended Intakes[a,b]

A graphical depiction of the degree of change in average daily food consumption by Americans that would be needed to be consistent with the food patterns encouraged by the *Dietary Guidelines for Americans*. The zero line represents average consumption levels from each food group or subgroup by females 31 to 50 years of age and males 31 to 50 years of age. Bars above the zero line represent recommended increases in food group consumption, while bars below the line represent recommended decreases.

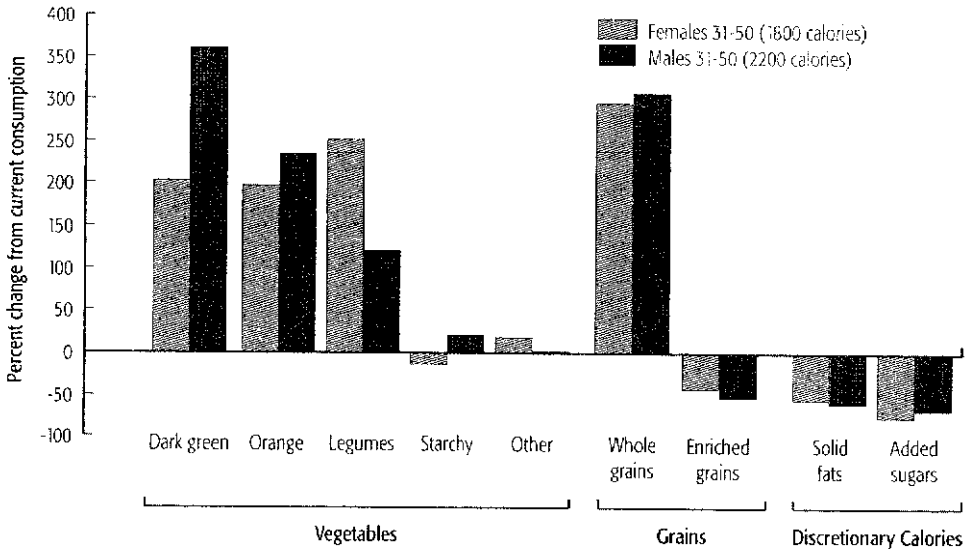
Food Groups and Oils



Actual change from consumption to recommended intakes:

Females	+0.8 cups	+0.9 cups	+0.1 oz	+0.4 oz	+1.6 cups	+0.4 g
Males	+1.2 cups	+0.9 cups	-1.0 oz	-1.4 oz	+1.2 cups	-4.2 g

Subgroups, Solid Fats, and Added Sugars



Actual change from consumption to recommended intakes:

Females	+0.3 cups	+0.2 cups	+0.3 cups	-0.1 cups	+0.1 cups	+2.2 oz	-2.1 oz	-18 g	-14 tsp
Males	+0.3 cups	+0.2 cups	+0.2 cups	+0.2 cups	+0.0 cups	+2.6 oz	-3.6 oz	-27 g	-18 tsp

[a] USDA Food Guide in comparison to National Health and Nutrition Examination Survey 2001-2002 consumption data.

[b] Increases in amounts of some food groups are offset by decreases in amounts of solid fats (i.e., saturated and *trans* fats) and added sugars so that total calorie intake is at the recommended level.

chapter 2

Adequate Nutrients Within Calorie Needs

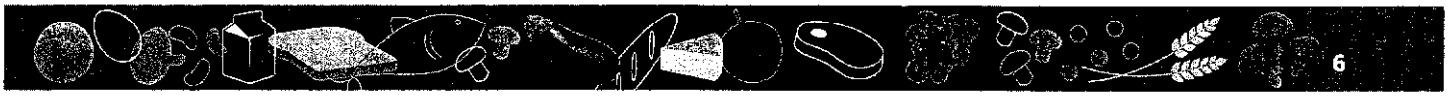
OVERVIEW

Many Americans consume more calories than they need without meeting recommended intakes for a number of nutrients. This circumstance means that most people need to choose meals and snacks that are high in nutrients but low to moderate in energy content; that is, meeting nutrient recommendations must go hand in hand with keeping calories under control. Doing so offers important benefits—normal growth and development of children, health promotion for people of all ages, and reduction of risk for a number of chronic diseases that are major public health problems.

Based on dietary intake data or evidence of public health problems, intake levels of the following nutrients may be of concern for:

- Adults: calcium, potassium, fiber, magnesium, and vitamins A (as carotenoids), C, and E,
- Children and adolescents: calcium, potassium, fiber, magnesium, and vitamin E,
- Specific population groups (see below): vitamin B_{12}, iron, folic acid, and vitamins E and D.

At the same time, in general, Americans consume too many calories and too much saturated and *trans* fats, cholesterol, added sugars, and salt.



DISCUSSION

Meeting Recommended Intakes Within Energy Needs

A basic premise of the *Dietary Guidelines* is that food guidance should recommend diets that will provide all the nutrients needed for growth and health. To this end, food guidance should encourage individuals to achieve the most recent nutrient intake recommendations of the Institute of Medicine, referred to collectively as the Dietary Reference Intakes (DRIs). Tables of the DRIs are provided at http://www.iom.edu/Object.File/Master/21/372/0.pdf.

An additional premise of the *Dietary Guidelines* is that the nutrients consumed should come primarily from foods. Foods contain not only the vitamins and minerals that are often found in supplements, but also hundreds of naturally occurring substances, including carotenoids, flavonoids and isoflavones, and protease inhibitors that may protect against chronic health conditions. There are instances when fortified foods may be advantageous, as identified in this chapter. These include providing additional sources of certain nutrients that might otherwise be present only in low amounts in some food sources, providing nutrients in highly bioavailable forms, and where the fortification addresses a documented public health need.

Two examples of eating patterns that exemplify the *Dietary Guidelines* are the DASH Eating Plan and the USDA Food Guide. These two similar eating patterns are designed to integrate dietary recommendations into a healthy way to eat and are used in the *Dietary Guidelines* to provide examples of how nutrient-focused recommendations can be expressed in terms of food choices. Both the USDA Food Guide and the DASH Eating Plan differ in important ways from common food consumption patterns in the United States. In general, they include:

- *More* dark green vegetables, orange vegetables, legumes, fruits, whole grains, and low-fat milk and milk products.
- *Less* refined grains, total fats (especially cholesterol, and saturated and *trans* fats), added sugars, and calories.

KEY RECOMMENDATIONS

- Consume a variety of nutrient-dense foods and beverages within and among the basic food groups while choosing foods that limit the intake of saturated and *trans* fats, cholesterol, added sugars, salt, and alcohol.
- Meet recommended intakes within energy needs by adopting a balanced eating pattern, such as the USDA Food Guide or the DASH Eating Plan.

Key Recommendations for Specific Population Groups

- *People over age 50.* Consume vitamin B_{12} in its crystalline form (i.e., fortified foods or supplements).
- *Women of childbearing age who may become pregnant.* Eat foods high in heme-iron and/or consume iron-rich plant foods or iron-fortified foods with an enhancer of iron absorption, such as vitamin C-rich foods.
- *Women of childbearing age who may become pregnant and those in the first trimester of pregnancy.* Consume adequate synthetic folic acid daily (from fortified foods or supplements) in addition to food forms of folate from a varied diet.
- *Older adults, people with dark skin, and people exposed to insufficient ultraviolet band radiation (i.e., sunlight).* Consume extra vitamin D from vitamin D-fortified foods and/or supplements.

Both the USDA Food Guide and the DASH Eating Plan are constructed across a range of calorie levels to meet the nutrient needs of various age and gender groups. Table 1 provides food intake recommendations, and table 2 provides nutrient profiles for both the DASH Eating Plan and the USDA Food Guide at the 2,000-calorie level. These tables illustrate the many similarities between the two eating patterns. Additional calorie levels are shown in appendixes A-1 and A-2 for the USDA Food Guide and the DASH Eating Plan. The exact amounts of foods in these plans do not need to be achieved every day, but on average, over time. Table 3 can aid in identification of an individual's caloric requirement based on gender, age, and physical activity level.

Variety Among and Within Food Groups

Each basic food group[5] is the major contributor of at least one nutrient while making substantial contributions of many other nutrients. Because each food group provides a wide array of nutrients in substantial amounts, it is important to include all food groups in the daily diet.

Both illustrative eating patterns include a variety of nutrient-dense foods within the major food groups. Selecting a variety of foods within the grain, vegetable, fruit, and meat groups may help to ensure that an adequate amount of nutrients and other potentially beneficial substances are consumed. For example, fish contains varying amounts of fatty acids that may be beneficial in reducing cardiovascular disease risk (see ch. 6).

> ...meeting nutrient recommendations must go hand in hand with keeping calories under control.

Nutrient-Dense Foods

Nutrient-dense foods are those foods that provide substantial amounts of vitamins and minerals (micronutrients) and relatively few calories. Foods that are low in nutrient density are foods that supply calories but relatively small amounts of micronutrients, sometimes none at all. The greater the consumption of foods or beverages that are low in nutrient density, the more difficult it is to consume enough nutrients without gaining weight, especially for sedentary individuals. The consumption of added sugars, saturated and *trans* fats, and alcohol provides calories while providing little, if any, of the essential nutrients. (See ch. 7 for additional information on added sugars, ch. 6 for information on fats, and ch. 9 for information on alcohol.)

Selecting low-fat forms of foods in each group and forms free of added sugars—in other words nutrient-dense versions of foods—provides individuals a way to meet their nutrient needs while avoiding the overconsumption of calories and of food components such as saturated fats. However, Americans generally do not eat nutrient-dense forms of foods. Most people will exceed calorie recommendations if they consistently choose higher fat foods within the food groups—even if they do not have dessert, sweetened beverages, or alcoholic beverages.

If only nutrient-dense foods are selected from each food group in the amounts proposed, a small amount of calories can be consumed as added fats or sugars, alcohol, or other foods—the *discretionary calorie allowance*. Appendixes A-2 and A-3 show the maximum discretionary calorie allowance that can be accommodated at each calorie level in the USDA Food Guide. Eating in accordance with the USDA Food Guide or the DASH Eating Plan will also keep intakes of saturated fat, total fat, and cholesterol within the limits recommended in chapter 6.

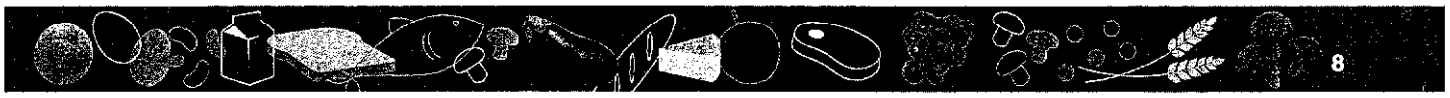
Nutrients of Concern

The actual prevalence of inadequacy for a nutrient can be determined only if an Estimated Average Requirement (EAR) has been established and the distribution of usual dietary intake can be obtained. If such data are not available for a nutrient but there is evidence for a public health problem associated with low intakes, a nutrient might still be considered to be of concern.

Based on these considerations, dietary intakes of the following nutrients may be low enough to be of concern for:

- Adults: calcium, potassium, fiber, magnesium, and vitamins A (as carotenoids), C, and E,
- Children and adolescents: calcium, potassium, fiber, magnesium, and vitamin E,
- Specific population groups: vitamin B_{12}, iron, folic acid, and vitamins E and D.

[5] The food groups in the USDA Food Guide are grains; vegetables; fruits; milk, yogurt, and cheese; and meat, poultry, fish, dry beans, eggs, and nuts. Food groups in the DASH Eating Plan are grains and grain products; vegetables; fruits; low-fat or fat-free dairy; meat, poultry, and fish; and nuts, seeds, and dry beans.



Efforts may be warranted to promote increased dietary intakes of potassium, fiber, and possibly vitamin E, regardless of age; increased intakes of calcium and possibly vitamins A (as carotenoids) and C and magnesium by adults; efforts are warranted to increase intakes of calcium and possibly magnesium by children age 9 years or older. Efforts may be especially warranted to improve the dietary intakes of adolescent females in general. Food sources of these nutrients are shown in appendix B.

Low intakes of fiber tend to reflect low intakes of whole grains, fruits, and vegetables. Low intakes of calcium tend to reflect low intakes of milk and milk products. Low intakes of vitamins A (as carotenoids) and C and magnesium tend to reflect low intakes of fruits and vegetables. Selecting fruits, vegetables, whole grains, and low-fat and fat-free milk and milk products in the amounts suggested by the USDA Food Guide and the DASH Eating Plan will provide adequate amounts of these nutrients.

Most Americans of all ages also need to increase their potassium intake. To meet the recommended potassium intake levels, potassium-rich foods from the fruit, vegetable, and dairy groups must be selected in both the USDA Food Guide and the DASH Eating Plan. Foods that can help increase potassium intake are listed in table 5 (ch. 5) and appendix B-1.

Most Americans may need to increase their consumption of foods rich in vitamin E (α-tocopherol) while decreasing their intake of foods high in energy but low in nutrients. The vitamin E content in both the USDA Food Guide and the DASH Eating Plan is greater than current consumption, and specific vitamin E-rich foods need to be included in the eating patterns to meet the recommended intake of vitamin E. Foods that can help increase vitamin E intake are listed in appendix B-2, along with their calorie content. Breakfast cereal that is fortified with vitamin E is an option for individuals seeking to increase their vitamin E intake while consuming a low-fat diet.

In addition, most Americans need to decrease sodium intake. The DASH Eating Plan provides guidance on how to keep sodium intakes within recommendations. When using the USDA Food Guide, selecting foods that are lower in sodium than others is especially necessary to meet the recommended intake level at calorie levels of 2,600/day and above. Food choices that are lower in sodium are identified in chapter 8.

Considerations for Specific Population Groups

People Over 50 and Vitamin B_{12}

Although a substantial proportion of individuals over age 50 have reduced ability to absorb naturally occurring vitamin B_{12}, they are able to absorb the crystalline form. Thus, all individuals over the age of 50 should be encouraged to meet their Recommended Dietary Allowance (RDA) (2.4 µg/day) for vitamin B_{12} by eating foods fortified with vitamin B_{12} such as fortified cereals, or by taking the crystalline form of vitamin B_{12} supplements.

Women and Iron

Based on blood values, substantial numbers of adolescent females and women of childbearing age are iron deficient. Thus, these groups should eat foods high in heme-iron (e.g., meats) and/or consume iron-rich plant foods (e.g., spinach) or iron-fortified foods with an enhancer of iron absorption, such as foods rich in vitamin C (e.g., orange juice). Appendix B-3 lists foods that can help increase iron intake and gives their iron and calorie content.

Women and Folic Acid

Since folic acid reduces the risk of the neural tube defects, spina bifida, and anencephaly, a daily intake of 400 µg/day of synthetic folic acid (from fortified foods or supplements in addition to food forms of folate from a varied diet) is recommended for women of childbearing age who may become pregnant. Pregnant women should consume 600 µg/day of synthetic folic acid (from fortified foods or supplements) in addition to food forms of folate from a varied diet. It is not known whether the same level of protection could be achieved by using food that is naturally rich in folate.

Special Groups and Vitamin D

Adequate vitamin D status, which depends on dietary intake and cutaneous synthesis, is important for optimal calcium absorption, and it can reduce the risk for bone

loss. Two functionally relevant measures indicate that optimal serum 25-hydroxyvitamin D may be as high as 80 nmol/L. The elderly and individuals with dark skin (because the ability to synthesize vitamin D from exposure to sunlight varies with degree of skin pigmentation) are at a greater risk of low serum 25-hydroxyvitamin D concentrations. Also at risk are those exposed to insufficient ultraviolet radiation (i.e., sunlight) for the cutaneous production of vitamin D (e.g., housebound individuals). For individuals within the high-risk groups, substantially higher daily intakes of vitamin D (i.e., 25 µg or 1,000 International Units (IU) of vitamin D per day) have been recommended to reach and maintain serum 25-hydroxyvitamin D values at 80 nmol/L. Three cups of vitamin D-fortified milk (7.5 µg or 300 IU), 1 cup of vitamin D-fortified orange juice (2.5 µg or 100 IU), and 15 µg (600 IU) of supplemental vitamin D would provide 25 µg (1,000 IU) of vitamin D daily.

Fluid

The combination of thirst and normal drinking behavior, especially the consumption of fluids with meals, is usually sufficient to maintain normal hydration. Healthy individuals who have routine access to fluids and who are not exposed to heat stress consume adequate water to meet their needs. Purposeful drinking is warranted for individuals who are exposed to heat stress or perform sustained vigorous activity (see ch. 4).

Flexibility of Food Patterns for Varied Food Preferences

The USDA Food Guide and the DASH Eating Plan are flexible to permit food choices based on individual and cultural food preferences, cost, and availability. Both can also accommodate varied types of cuisines and special needs due to common food allergies. Two adaptations of the USDA Food Guide and the DASH Eating Plan are:

Vegetarian Choices

Vegetarians of all types can achieve recommended nutrient intakes through careful selection of foods. These individuals should give special attention to their intakes of protein, iron, and vitamin B12, as well as calcium and vitamin D if avoiding milk products. In addition, vegetarians could select only nuts, seeds, and legumes from the meat and beans group, or they could include eggs if so desired. At the 2,000-calorie level, they could choose about 1.5 ounces of nuts and ⅔ cup legumes instead of 5.5 ounces of meat, poultry, and/or fish. One egg, ½ ounce of nuts, or ¼ cup of legumes is considered equivalent to 1 ounce of meat, poultry, or fish in the USDA Food Guide.

Substitutions for Milk and Milk Products

Since milk and milk products provide more than 70 percent of the calcium consumed by Americans, guidance on other choices of dietary calcium is needed for those who do not consume the recommended amount of milk products. Milk product consumption has been associated with overall diet quality and adequacy of intake of many nutrients, including calcium, potassium, magnesium, zinc, iron, riboflavin, vitamin A, folate, and vitamin D. People may avoid milk products because of allergies, cultural practices, taste, or other reasons. Those who avoid all milk products need to choose rich sources of the nutrients provided by milk, including potassium, vitamin A, and magnesium in addition to calcium and vitamin D (see app. B). Some non-dairy sources of calcium are shown in appendix B-4. The bioavailability of the calcium in these foods varies.

Those who avoid milk because of its lactose content may obtain all the nutrients provided by the milk group by using lactose-reduced or low-lactose milk products, taking small servings of milk several times a day, taking the enzyme lactase before consuming milk products, or eating other calcium-rich foods. For additional information, see appendixes B-4 and B-5 and NIH Publication No. 03-2751.[6]

[6] NIH Publication No. 03-2751, U.S. Department of Health and Human Services, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, March 2003. http://digestive.niddk.nih.gov/ddiseases/pubs/lactoseintolerance/index.htm.

TABLE 1. Sample USDA Food Guide and the DASH Eating Plan at the 2,000-Calorie Level[a]

Amounts of various food groups that are recommended each day or each week in the USDA Food Guide and in the DASH Eating Plan (amounts are daily unless otherwise specified) at the 2,000-calorie level. Also identified are equivalent amounts for different food choices in each group. To follow either eating pattern, food choices over time should provide these amounts of food from each group on average.

Food Groups and Subgroups	USDA Food Guide Amount[b]	DASH Eating Plan Amount	Equivalent Amounts
Fruit Group	2 cups (4 servings)	2 to 2.5 cups (4 to 5 servings)	½ cup equivalent is: • ½ cup fresh, frozen, or canned fruit • 1 med fruit • ¼ cup dried fruit • USDA: ½ cup fruit juice • DASH: ¾ cup fruit juice
Vegetable Group • Dark green vegetables • Orange vegetables • Legumes (dry beans) • Starchy vegetables • Other vegetables	2.5 cups (5 servings) 3 cups/week 2 cups/week 3 cups/week 3 cups/week 6.5 cups/week	2 to 2.5 cups (4 to 5 servings)	½ cup equivalent is: • ½ cup of cut-up raw or cooked vegetable • 1 cup raw leafy vegetable • USDA: ½ cup vegetable juice • DASH: ¾ cup vegetable juice
Grain Group • Whole grains • Other grains	6 ounce-equivalents 3 ounce-equivalents 3 ounce-equivalents	7 to 8 ounce-equivalents (7 to 8 servings)	1 ounce-equivalent is: • 1 slice bread • 1 cup dry cereal • ½ cup cooked rice, pasta, cereal • DASH: 1 oz dry cereal (½–1¼ cup depending on cereal type—check label)
Meat and Beans Group	5.5 ounce-equivalents	6 ounces or less meat, poultry, fish	1 ounce-equivalent is: • 1 ounce of cooked lean meats, poultry, fish • 1 egg • USDA: ¼ cup cooked dry beans or tofu, 1 Tbsp peanut butter, ½ oz nuts or seeds • DASH: 1½ oz nuts, ½ oz seeds, ½ cup cooked dry beans
		4 to 5 servings per week nuts, seeds, and dry beans[c]	
Milk Group	3 cups	2 to 3 cups	1 cup equivalent is: • 1 cup low-fat/fat-free milk, yogurt • 1½ oz of low-fat or fat-free natural cheese • 2 oz of low-fat or fat-free processed cheese
Oils	24 grams (6 tsp)	8 to 12 grams (2 to 3 tsp)	1 tsp equivalent is: • DASH: 1 tsp soft margarine • 1 Tbsp low-fat mayo • 2 Tbsp light salad dressing • 1 tsp vegetable oil
Discretionary Calorie Allowance • Example of distribution: Solid fat[d] Added sugars	267 calories 18 grams 8 tsp	~2 tsp (5 Tbsp per week)	1 Tbsp added sugar equivalent is: • DASH: 1 Tbsp jelly or jam • ½ oz jelly beans • 8 oz lemonade

[a] All servings are per day unless otherwise noted. USDA vegetable subgroup amounts and amounts of DASH nuts, seeds, and dry beans are per week.

[b] The 2,000-calorie USDA Food Guide is appropriate for many sedentary males 51 to 70 years of age, sedentary females 19 to 30 years of age, and for some other gender/age groups who are more physically active. See table 3 for information about gender/age/activity levels and appropriate calorie intakes. See appendixes A-2 and A-3 for more information on the food groups, amounts, and food intake patterns at other calorie levels.

[c] In the DASH Eating Plan, nuts, seeds, and dry beans are a separate food group from meat, poultry, and fish.

[d] The oils listed in this table are not considered to be part of discretionary calories because they are a major source of the vitamin E and polyunsaturated fatty acids, including the essential fatty acids, in the food pattern. In contrast, solid fats (i.e., saturated and *trans* fats) are listed separately as a source of discretionary calories.

TABLE 2. Comparison of Selected Nutrients in the Dietary Approaches to Stop Hypertension (DASH) Eating Plan[a], the USDA Food Guide[b], and Nutrient Intakes Recommended Per Day by the Institute of Medicine (IOM)[c]

Estimated nutrient levels in the DASH Eating Plan and the USDA Food Guide at the 2,000-calorie level, as well as the nutrient intake levels recommended by the Institute of Medicine for females 19–30 years of age.

Nutrient	DASH Eating Plan (2,000 kcals)	USDA Food Guide (2,000 kcals)	IOM Recommendations for Females 19 to 30
Protein, g	108	91	RDA: 46
Protein, % kcal	21	18	AMDR: 10–35
Carbohydrate, g	288	271	RDA: 130
Carbohydrate, % kcal	57	55	AMDR: 45–65
Total fat, g	48	65	–
Total fat, % kcal	22	29	AMDR: 20–35
Saturated fat, g	10	17	–
Saturated fat, % kcal	5	7.8	ALAP[d]
Monounsaturated fat, g	21	24	–
Monounsaturated fat, % kcal	10	11	–
Polyunsaturated fat, g	12	20	–
Polyunsaturated fat, % kcal	5.5	9.0	–
Linoleic acid, g	11	18	AI: 12
Alpha-linolenic acid, g	1	1.7	AI: 1.1
Cholesterol, mg	136	230	ALAP[d]
Total dietary fiber, g	30	31	AI: 28[e]
Potassium, mg	4,706	4,044	AI: 4,700
Sodium, mg	2,329[f]	1,779	AI: 1,500, UL: <2,300
Calcium, mg	1,619	1,316	AI: 1,000
Magnesium, mg	500	380	RDA: 310
Copper, mg	2	1.5	RDA: 0.9
Iron, mg	21	18	RDA: 18
Phosphorus, mg	2,066	1,740	RDA: 700
Zinc, mg	14	14	RDA: 8
Thiamin, mg	2.0	2.0	RDA: 1.1
Riboflavin, mg	2.8	2.8	RDA: 1.1
Niacin equivalents, mg	31	22	RDA: 14
Vitamin B_6, mg	3.4	2.4	RDA: 1.3
Vitamin B_{12}, µg	7.1	8.3	RDA: 2.4
Vitamin C, mg	181	155	RDA: 75
Vitamin E (AT)[g]	16.5	9.5	RDA: 15.0
Vitamin A, µg (RAE)[h]	851	1,052	RDA: 700

[a] DASH nutrient values are based on a 1-week menu of the DASH Eating Plan. NIH publication No. 03-4082. www.nhlbi.nih.gov.

[b] USDA nutrient values are based on population-weighted averages of typical food choices within each food group or subgroup.

[c] Recommended intakes for adult females 19–30; RDA = Recommended Dietary Allowance; AI = Adequate Intake; AMDR = Acceptable Macronutrient Distribution Range; UL = Upper Limit.

[d] As Low As Possible while consuming a nutritionally adequate diet.

[e] Amount listed is based on 14 g dietary fiber/1,000 kcal.

[f] The DASH Eating Plan also can be used to follow at 1,500 mg sodium per day.

[g] AT = mg d-α-tocopherol

[h] RAE = Retinol Activity Equivalents

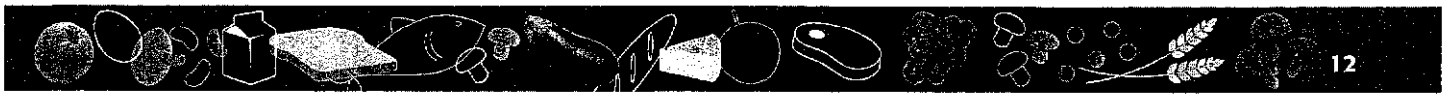


TABLE 3. Estimated Calorie Requirements (in Kilocalories) for Each Gender and Age Group at Three Levels of Physical Activity[a]

Estimated amounts of calories needed to maintain energy balance for various gender and age groups at three different levels of physical activity. The estimates are rounded to the nearest 200 calories and were determined using the Institute of Medicine equation.

		Activity Level[b,c,d]		
Gender	Age (years)	Sedentary[b]	Moderately Active[c]	Active[d]
Child	2–3	1,000	1,000–1,400[e]	1,000–1,400[e]
Female	4–8	1,200	1,400–1,600	1,400–1,800
	9–13	1,600	1,600–2,000	1,800–2,200
	14–18	1,800	2,000	2,400
	19–30	2,000	2,000–2,200	2,400
	31–50	1,800	2,000	2,200
	51+	1,600	1,800	2,000–2,200
Male	4–8	1,400	1,400–1,600	1,600–2,000
	9–13	1,800	1,800–2,200	2,000–2,600
	14–18	2,200	2,400–2,800	2,800–3,200
	19–30	2,400	2,600–2,800	3,000
	31–50	2,200	2,400–2,600	2,800–3,000
	51+	2,000	2,200–2,400	2,400–2,800

[a] These levels are based on Estimated Energy Requirements (EER) from the Institute of Medicine Dietary Reference Intakes macronutrients report, 2002, calculated by gender, age, and activity level for reference-sized individuals. "Reference size," as determined by IOM, is based on median height and weight for ages up to age 18 years of age and median height and weight for that height to give a BMI of 21.5 for adult females and 22.5 for adult males.

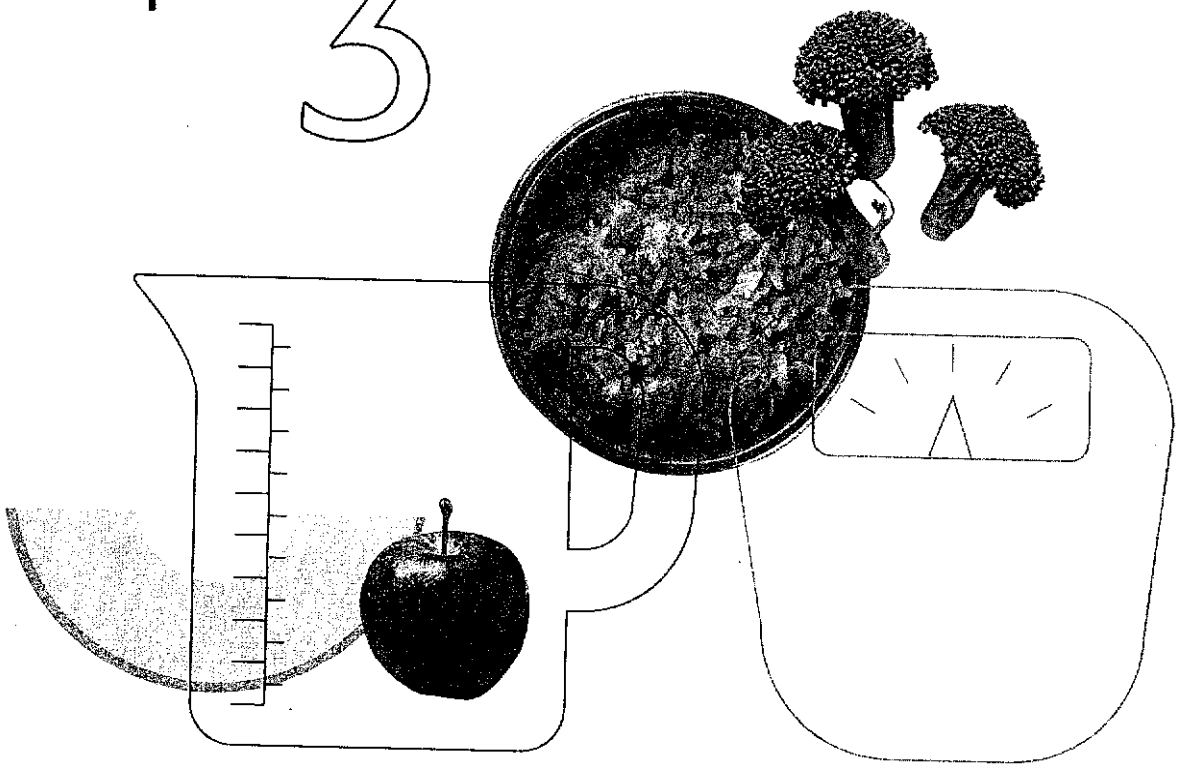
[b] Sedentary means a lifestyle that includes only the light physical activity associated with typical day-to-day life.

[c] Moderately active means a lifestyle that includes physical activity equivalent to walking about 1.5 to 3 miles per day at 3 to 4 miles per hour, in addition to the light physical activity associated with typical day-to-day life.

[d] Active means a lifestyle that includes physical activity equivalent to walking more than 3 miles per day at 3 to 4 miles per hour, in addition to the light physical activity associated with typical day-to-day life.

[e] The calorie ranges shown are to accommodate needs of different ages within the group. For children and adolescents, more calories are needed at older ages. For adults, fewer calories are needed at older ages.

chapter 3



Weight Management

OVERVIEW

The prevalence of obesity in the United States has doubled in the past two decades. Nearly one-third of adults are obese, that is, they have a body mass index (BMI) of 30 or greater. One of the fastest growing segments of the population is that with a BMI≥30 with accompanying comorbidities. Over the last two decades, the prevalence of overweight among children and adolescents has increased substantially; it is estimated that as many as 16 percent of children and adolescents are overweight, representing a doubling of the rate among children and tripling of the rate among adolescents. A high prevalence of overweight and obesity is of great public health concern because excess body fat leads to a higher risk for premature death, type 2 diabetes, hypertension, dyslipidemia, cardiovascular disease, stroke, gall bladder disease, respiratory dysfunction, gout, osteoarthritis, and certain kinds of cancers.

Ideally, the goal for adults is to achieve and maintain a body weight that optimizes their health. However, for obese adults, even modest weight loss (e.g., 10 pounds) has health benefits, and the prevention of further weight gain is very important. For overweight children and adolescents, the goal is to slow the rate of weight gain while achieving normal growth and development. Maintaining a healthy weight throughout childhood may reduce the risk of becoming an overweight or obese adult. Eating fewer calories while increasing physical activity are the keys to controlling body weight.

While overweight and obesity are currently significant public health issues, not all Americans need to lose weight. People at a healthy weight should strive to maintain their weight, and underweight individuals may need to increase their weight.

DISCUSSION

Overweight and obesity in the United States among adults and children has increased significantly over the last two decades. Those following typical American eating and activity patterns are likely to be consuming diets in excess of their energy requirements. However, caloric intake is only one side of the energy balance equation. Caloric expenditure needs to be in balance with caloric intake to maintain body weight and must exceed caloric intake to achieve weight loss (see tables 3 and 4). To reverse the trend toward obesity, most Americans need to eat fewer calories, be more active, and make wiser food choices.

Prevention of weight gain is critical because while the behaviors required are the same, the extent of the behaviors required to lose weight makes weight loss more challenging than prevention of weight gain. Since many adults gain weight slowly over time, even small decreases in calorie intake can help avoid weight gain, especially if accompanied by increased physical activity. For example, for most adults a reduction of 50 to 100 calories per day may prevent gradual weight gain, whereas a reduction of 500 calories or more per day is a common initial goal in weight-loss programs. Similarly, up to 60 minutes of moderate- to vigorous-intensity physical activity per day may be needed to prevent weight gain, but as much as 60 to 90 minutes of moderate-intensity physical activity per day is recommended to sustain weight loss for previously overweight people. It is advisable for men over age 40, women over age 50, and those with a history of chronic diseases such as heart disease or diabetes to consult with a healthcare provider before starting a vigorous exercise program. However, many people can safely increase their physical activity without consulting a healthcare provider.[7]

KEY RECOMMENDATIONS

- To maintain body weight in a healthy range, balance calories from foods and beverages with calories expended.
- To prevent gradual weight gain over time, make small decreases in food and beverage calories and increase physical activity.

Key Recommendations for Specific Population Groups

- *Those who need to lose weight.* Aim for a slow, steady weight loss by decreasing calorie intake while maintaining an adequate nutrient intake and increasing physical activity.
- *Overweight children.* Reduce the rate of body weight gain while allowing growth and development. Consult a healthcare provider before placing a child on a weight-reduction diet.
- *Pregnant women.* Ensure appropriate weight gain as specified by a healthcare provider.
- *Breastfeeding women.* Moderate weight reduction is safe and does not compromise weight gain of the nursing infant.
- *Overweight adults and overweight children with chronic diseases and/or on medication.* Consult a healthcare provider about weight loss strategies prior to starting a weight-reduction program to ensure appropriate management of other health conditions.

Monitoring body fat regularly can be a useful strategy for assessing the need to adjust caloric intake and energy expenditure. Two surrogate measures used to approximate body fat are BMI (adults and children) and waist circumference (adults).[8] BMI is defined as weight in kilograms divided by height, in meters, squared. For adults, weight status is based on the absolute BMI level (fig. 2). For children and adolescents, weight status is determined by the comparison of the individual's BMI with age- and gender-specific percentile values (see fig. 3 for a sample boys' growth curve). Additional growth curves can be

[7] For more information on recommendations to consult a healthcare provider, see Physical Activity and Public Health—A Recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *JAMA* 273:402-407, 1995. http://wonder.cdc.gov/wonder/prevguid/p0000391/P0000391.asp.

[8] NIH Publication Number 00-4084, The Practical Guide: Identification, Evaluation and Treatment of Overweight and Obesity in Adults, U.S. Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute, October 2000. http://www.nhlbi.nih.gov/guidelines/obesity/prctgd_c.pdf

found at http://www.cdc.gov/growthcharts. BMI is more accurate at approximating body fat than is measuring body weight alone. However, BMI has some limitations. BMI overestimates body fat in people who are very muscular and underestimates body fat in people who have lost muscle mass. The relationship between BMI and body fat varies somewhat with age, gender, and ethnicity. In addition, for adults, BMI is a better predictor of a population's disease risk than an individual's risk of chronic disease.[8] For children gaining excess weight, small decreases in energy intake reduce the rate at which they gain weight (body fat), thus improving their BMI percentile over time. As another surrogate measure, waist circumference can approximate abdominal fat but should be measured very carefully. Fat located in the abdominal region is associated with a greater health risk than peripheral fat.[8]

Eating fewer calories while increasing physical activity are the keys to controlling body weight.

Some proposed caloric lowering strategies include eating foods that are low in calories for a given measure of food (e.g., many kinds of vegetables and fruits and some soups). However, when making changes to improve nutrient intake, one needs to make substitutions to avoid excessive calorie intake. The healthiest way to reduce calorie intake is to reduce one's intake of added sugars, fats, and alcohol, which all provide calories but few or no essential nutrients (for more information, see chs. 6, 7, and 9).

Special attention should be given to portion sizes, which have increased significantly over the past two decades (http://hin.nhlbi.nih.gov/portion/index.htm). Though there are no empirical studies to show a causal relationship between increased portion sizes and obesity, there are studies showing that controlling portion sizes helps limit calorie intake, particularly when eating calorie-dense foods (foods that are high in calories for a given measure of food). Therefore, it is essential that the public understand how portion sizes compare to a recommended amount of food (i.e., serving) from each food group at a specific caloric level. The understanding of serving size and portion size is important in following either the DASH Eating Plan or the USDA Food Guide (see app. A). When using packaged foods with nutrient labels, people should pay attention to the units for serving sizes and how they compare to the serving sizes in the USDA Food Guide and the DASH Eating Plan.

Lifestyle change in diet and physical activity is the best first choice for weight loss. A reduction in 500 calories or more per day is commonly needed. When it comes to body weight control, it is calories that count—not the proportions of fat, carbohydrates, and protein in the diet. However, when individuals are losing weight, they should follow a diet that is within the Acceptable Macronutrient Distribution Ranges (AMDR) for fat, carbohydrates, and protein, which are 20 to 35 percent of total calories, 45 to 65 percent of total calories, and 10 to 35 percent of total calories, respectively. Diets that provide very low or very high amounts of protein, carbohydrates, or fat are likely to provide low amounts of some nutrients and are not advisable for long-term use. Although these kinds of weight- loss diets have been shown to result in weight reduction, the maintenance of a reduced weight ultimately will depend on a change in lifestyle. Successful and sustainable weight loss and weight maintenance strategies require attention to both sides of the energy balance equation (i.e., caloric intake and energy expenditure).

[8] NIH Publication Number 00-4084, The Practical Guide: Identification, Evaluation and Treatment of Overweight and Obesity in Adults, U.S. Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute, October 2000. http://www.nhlbi.nih.gov/guidelines/obesity/prctgd_c.pdf

TABLE 4. Calories/Hour Expended in Common Physical Activities

Some examples of physical activities commonly engaged in and the average amount of calories a 154-pound individual will expend by engaging in each activity for 1 hour. The expenditure value encompasses both resting metabolic rate calories and activity expenditure. Some of the activities can constitute either moderate- or vigorous-intensity physical activity depending on the rate at which they are carried out (for walking and bicycling).

Moderate Physical Activity	Approximate Calories/Hr for a 154 lb Person[a]
Hiking	370
Light gardening/yard work	330
Dancing	330
Golf (walking and carrying clubs)	330
Bicycling (<10 mph)	290
Walking (3.5 mph)	280
Weight lifting (general light workout)	220
Stretching	180
Vigorous Physical Activity	**Approximate Calories/Hr for a 154 lb Person[a]**
Running/jogging (5 mph)	590
Bicycling (>10 mph)	590
Swimming (slow freestyle laps)	510
Aerobics	480
Walking (4.5 mph)	460
Heavy yard work (chopping wood)	440
Weight lifting (vigorous effort)	440
Basketball (vigorous)	440

[a] Calories burned per hour will be higher for persons who weigh more than 154 lbs (70 kg) and lower for persons who weigh less.

Source: Adapted from the 2005 DGAC Report.

FIGURE 2. Adult BMI Chart

Locate the height of interest in the left-most column and read across the row for that height to the weight of interest. Follow the column of the weight up to the top row that lists the BMI. BMI of 18.5–24.9 is the healthy weight range, BMI of 25–29.9 is the overweight range, and BMI of 30 and above is in the obese range.

BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Height	Weight in Pounds																
4'10"	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167
4'11"	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173
5'	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179
5'1"	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185
5'2"	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191
5'3"	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197
5'4"	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204
5'5"	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210
5'6"	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216
5'7"	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223
5'8"	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230
5'9"	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236
5'10"	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243
5'11"	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250
6'	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258
6'1"	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265
6'2"	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272
6'3"	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279
	Healthy Weight						Overweight					Obese					

Source: Evidence Report of Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults, 1998. NIH/National Heart, Lung, and Blood Institute (NHLBI).

FIGURE 3. Example of Boys' BMI Growth Curve (2 to 20 years): Boys' Body Mass Index-For-Age Percentiles

Calculate the BMI for an individual child using the following:

BMI = Weight (kg)/(Height [cm])^2 x 10,000 or BMI = Weight (lb)/(Height [in])^2 x 703

Find the age of the child on the bottom, x-axis, and read up the chart from that age to the calculated BMI on the left and right, y-axis. The curve that is closest to the spot where the age and BMI of the child meet on the graph indicate the BMI percentile for this child relative to the population.

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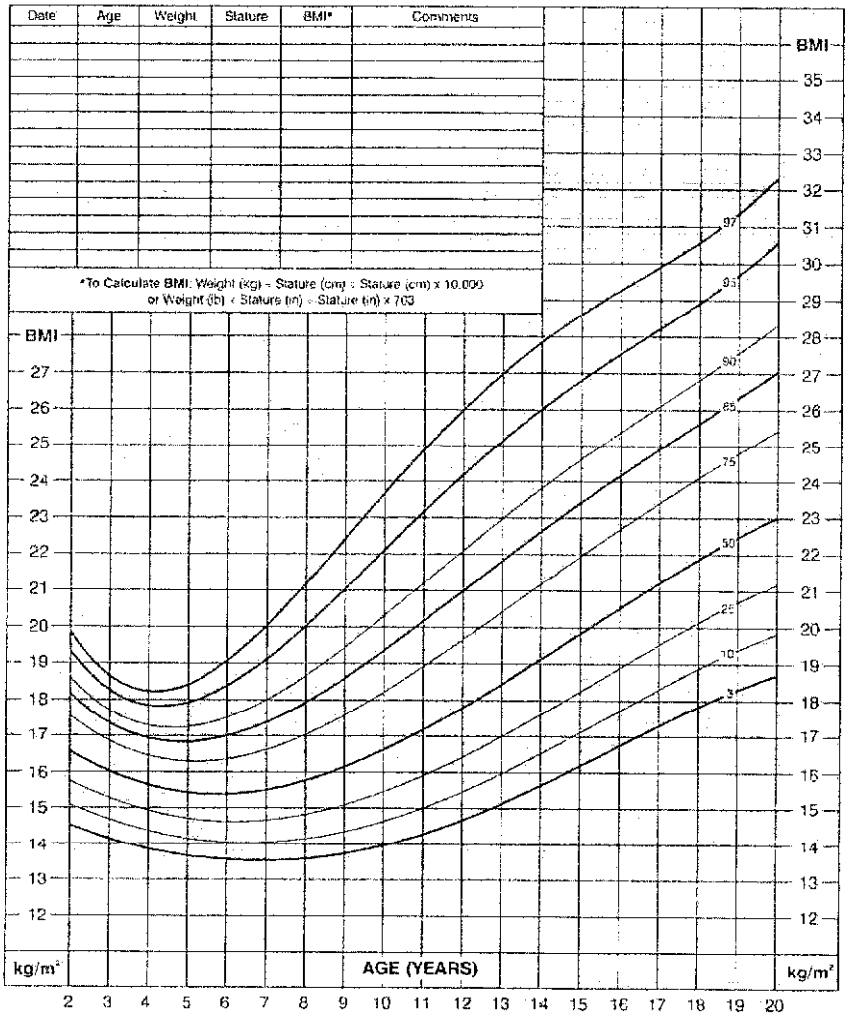
2 to 20 years: Boys
Body mass index-for-age percentiles



Published May 30, 2000 (modified 10/16/00).

Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion. http://www.cdc.gov/growthcharts (2000). Other growth charts are available at this source.

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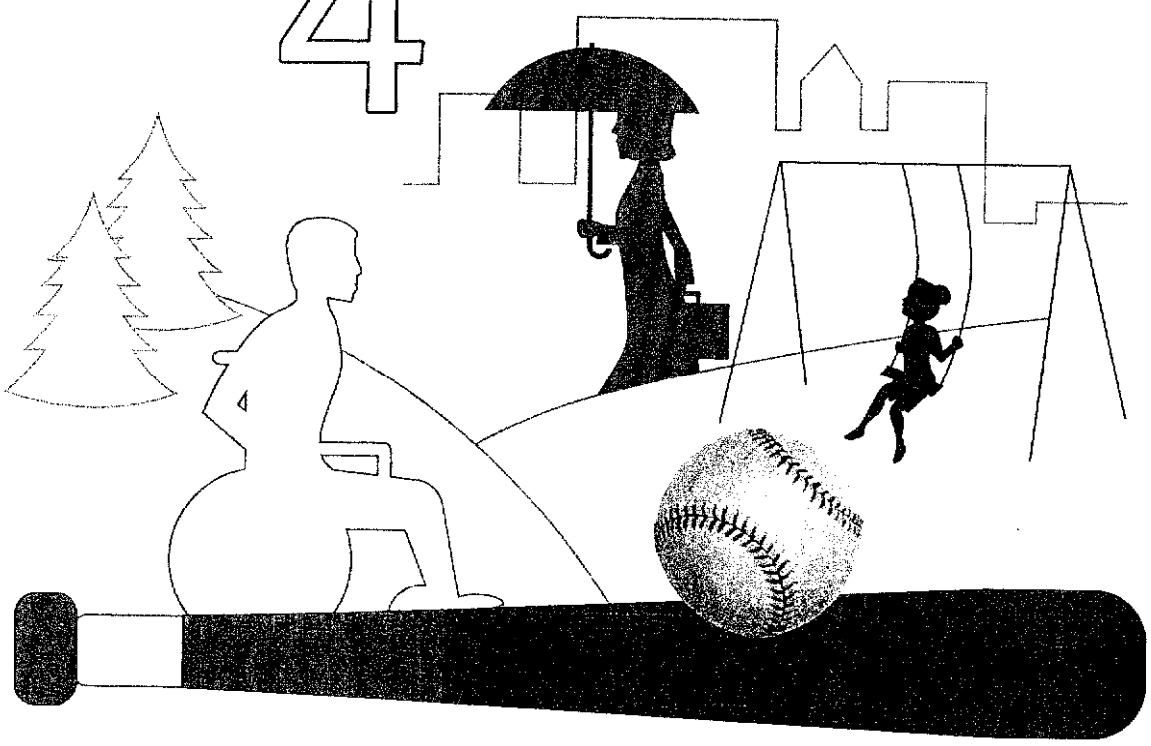


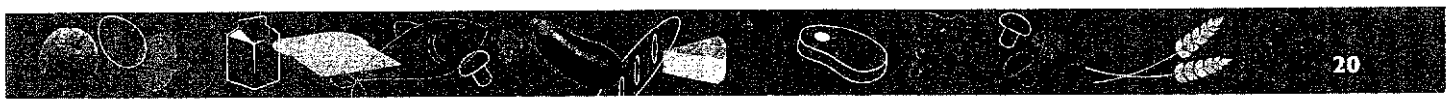
Physical Activity

OVERVIEW

Americans tend to be relatively inactive. In 2002, 25 percent of adult Americans did not participate in any leisure time physical activities in the past month,[9] and in 2003, 38 percent of students in grades 9 to 12 viewed television 3 or more hours per day.[10] Regular physical activity and physical fitness make important contributions to one's health, sense of well-being, and maintenance of a healthy body weight. Physical activity is defined as any bodily movement produced by skeletal muscles resulting in energy expenditure (http://www.cdc.gov/nccdphp/dnpa/physical/terms/index.htm). In contrast, physical fitness is a multi-component trait related to the ability to perform physical activity. Maintenance of good physical fitness enables one to meet the physical demands of work and leisure comfortably. People with higher levels of physical fitness are also at lower risk of developing chronic disease. Conversely, a sedentary lifestyle increases risk for overweight and obesity and many chronic diseases, including coronary artery disease, hypertension, type 2 diabetes, osteoporosis, and certain types of cancer. Overall, mortality rates from all causes of death are lower in physically active people than in sedentary people. Also, physical activity can aid in managing mild to moderate depression and anxiety.

[9] Behavioral Risk Factor Surveillance System, Surveillance for Certain Health Behaviors Among Selected Local Areas—United States, Behavioral Risk Factor Surveillance System, 2002, *Morbidity and Mortality Weekly Report (MMWR)*, 53, No SS-05. http://www.cdc.gov/brfss/.

[10] Youth Risk Behavior Surveillance System, Youth Risk Behavior Surveillance—United States, 2003 *MMWR* 53(SS-2):1–29, 2004. http://www.cdc.gov/healthyyouth/yrbs/.



DISCUSSION

Regular physical activity has been shown to reduce the risk of certain chronic diseases, including high blood pressure, stroke, coronary artery disease, type 2 diabetes, colon cancer and osteoporosis. Therefore, to reduce the risk of chronic disease, it is recommended that adults engage in at least 30 minutes of moderate-intensity physical activity on most, preferably all, days of the week. For most people, greater health benefits can be obtained by engaging in physical activity of more vigorous intensity or of longer duration. In addition, physical activity appears to promote psychological well-being and reduce feelings of mild to moderate depression and anxiety.

Regular physical activity is also a key factor in achieving and maintaining a healthy body weight for adults and children. To prevent the gradual accumulation of excess weight in adulthood, up to 30 additional minutes per day may be required over the 30 minutes for reduction of chronic disease risk and other health benefits. That is, approximately 60 minutes of moderate- to vigorous-intensity physical activity on most days of the week may be needed to prevent unhealthy weight gain (see table 4 for some examples of moderate- and vigorous-intensity physical activities). While moderate-intensity physical activity can achieve the desired goal, vigorous-intensity physical activity generally provides more benefits than moderate-intensity physical activity. Control of caloric intake is also advisable. However, to sustain weight loss for previously overweight/obese people, about 60 to 90 minutes of moderate-intensity physical activity per day is recommended.

Most adults do not need to see their healthcare provider before starting a moderate-intensity physical activity program. However, men older than 40 years and women older than 50 years who plan a vigorous program or who have either chronic disease or risk factors for chronic disease should consult their physician to design a safe, effective program. It is also important during leisure time to limit sedentary behaviors, such as television watching and video viewing, and replace them with activities requiring more movement. Reducing these sedentary activities appears to be helpful in treating and preventing overweight among children and adolescents.

KEY RECOMMENDATIONS

- Engage in regular physical activity and reduce sedentary activities to promote health, psychological well-being, and a healthy body weight.
  - To reduce the risk of chronic disease in adulthood: Engage in at least 30 minutes of moderate-intensity physical activity, above usual activity, at work or home on most days of the week.
  - For most people, greater health benefits can be obtained by engaging in physical activity of more vigorous intensity or longer duration.
  - To help manage body weight and prevent gradual, unhealthy body weight gain in adulthood: Engage in approximately 60 minutes of moderate- to vigorous-intensity activity on most days of the week while not exceeding caloric intake requirements.
  - To sustain weight loss in adulthood: Participate in at least 60 to 90 minutes of daily moderate-intensity physical activity while not exceeding caloric intake requirements. Some people may need to consult with a healthcare provider before participating in this level of activity.
- Achieve physical fitness by including cardiovascular conditioning, stretching exercises for flexibility, and resistance exercises or calisthenics for muscle strength and endurance.

Key Recommendations for Specific Population Groups

- *Children and adolescents.* Engage in at least 60 minutes of physical activity on most, preferably all, days of the week.
- *Pregnant women.* In the absence of medical or obstetric complications, incorporate 30 minutes or more of moderate-intensity physical activity on most, if not all, days of the week. Avoid activities with a high risk of falling or abdominal trauma.
- *Breastfeeding women.* Be aware that neither acute nor regular exercise adversely affects the mother's ability to successfully breastfeed.
- *Older adults.* Participate in regular physical activity to reduce functional declines associated with aging and to achieve the other benefits of physical activity identified for all adults.

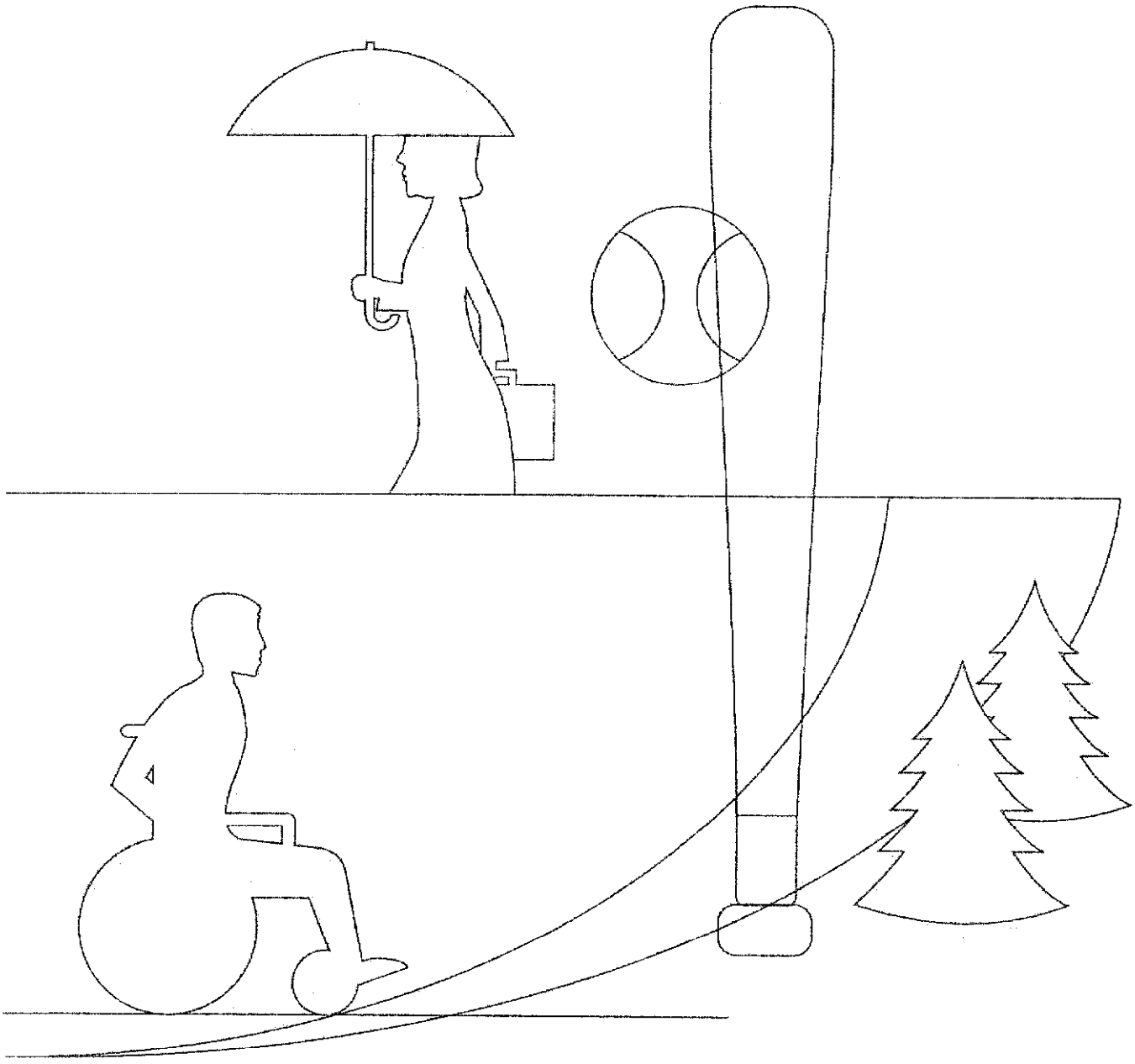
Different intensities and types of exercise confer different benefits. Vigorous physical activity (e.g., jogging or other aerobic exercise) provides greater benefits for physical fitness than does moderate physical activity and burns more calories per unit of time. Resistance exercise (such as weight training, using weight machines, and resistance band workouts) increases muscular strength and endurance and maintains or increases muscle mass. These benefits are seen in adolescents, adults, and older adults who perform resistance exercises on 2 or more days per week. Also, weight-bearing exercise has the potential to reduce the risk of osteoporosis by increasing peak bone mass during growth, maintaining peak bone mass during adulthood, and reducing the rate of bone loss during aging. In addition, regular exercise can help prevent falls, which is of particular importance for older adults.

The barrier often given for a failure to be physically active is lack of time. Setting aside 30 to 60 consecutive minutes each day for planned exercise is one way to obtain physical activity, but it is not the only way. Physical activity may include short bouts (e.g., 10-minute bouts) of moderate-intensity activity. The accumulated total is what is important—both for health and for burning calories. Physical activity can be accumulated through three to six 10-minute bouts over the course of a day.

Elevating the level of daily physical activity may also provide indirect nutritional benefits. A sedentary lifestyle limits the number of calories that can be consumed without gaining weight. The higher a person's physical activity level, the higher his or her energy requirement and the easier it is to plan a daily food intake pattern that meets recommended nutrient requirements.

Proper hydration is important when participating in physical activity. Two steps that help avoid dehydration during prolonged physical activity or when it is hot include: (1) consuming fluid regularly during the activity and (2) drinking several glasses of water or other fluid after the physical activity is completed (see chs. 2 and 8).

Regular physical activity and physical fitness make important contributions to one's health, sense of well-being, and maintenance of a healthy body weight.



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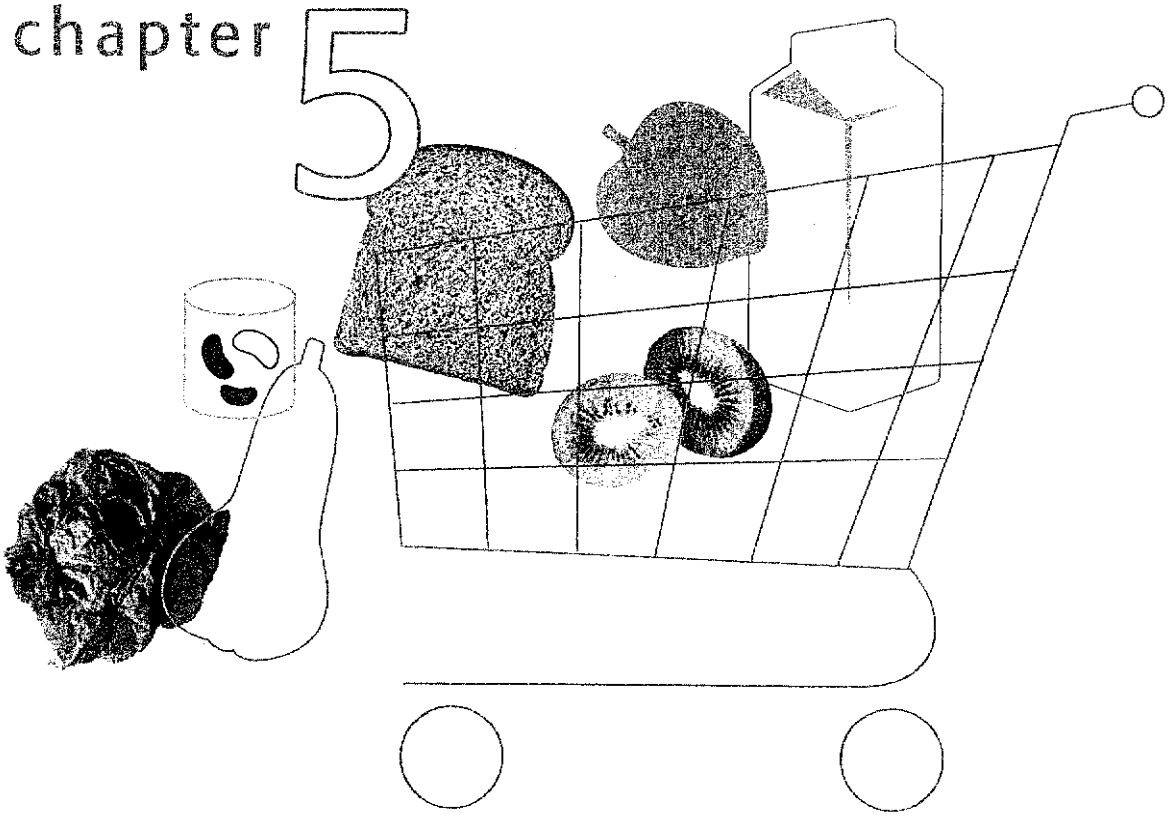


Food Groups To Encourage

OVERVIEW

Increased intakes of fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products are likely to have important health benefits for most Americans. While protein is an important macronutrient in the diet, most Americans are already currently consuming enough (AMDR = 10 to 35 percent of calories) and do not need to increase their intake. As such, protein consumption, while important for nutrient adequacy, is not a focus of this document. Although associations have been identified between specific food groups (e.g., fruits and vegetables) and reduced risk for chronic diseases, the effects are interrelated and the health benefits should be considered in the context of an overall healthy diet that does not exceed calorie needs (such as the USDA Food Guide or the DASH Eating Plan; see ch. 2). The strength of the evidence for the association between increased intake of fruits and vegetables and reduced risk of chronic diseases is variable and depends on the specific disease, but an array of evidence points to beneficial health effects.

Compared with the many people who consume a dietary pattern with only small amounts of fruits and vegetables, those who eat more generous amounts as part of a healthful diet are likely to have reduced risk of chronic diseases, including stroke and perhaps other cardiovas-

cular diseases, type 2 diabetes, and cancers in certain sites (oral cavity and pharynx, larynx, lung, esophagus, stomach, and colon-rectum). Diets rich in foods containing fiber, such as fruits, vegetables, and whole grains, may reduce the risk of coronary heart disease. Diets rich in milk and milk products can reduce the risk of low bone mass throughout the life cycle. The consumption of milk products is especially important for children and adolescents who are building their peak bone mass and developing lifelong habits. Although each of these food groups may have a different relationship with disease outcomes, the adequate consumption of all food groups contributes to overall health.

KEY RECOMMENDATIONS

- Consume a sufficient amount of fruits and vegetables while staying within energy needs. Two cups of fruit and 2½ cups of vegetables per day are recommended for a reference 2,000-calorie intake, with higher or lower amounts depending on the calorie level.
- Choose a variety of fruits and vegetables each day. In particular, select from all five vegetable subgroups (dark green, orange, legumes, starchy vegetables, and other vegetables) several times a week.
- Consume 3 or more ounce-equivalents of whole-grain products per day, with the rest of the recommended grains coming from enriched or whole-grain products. In general, at least half the grains should come from whole grains.
- Consume 3 cups per day of fat-free or low-fat milk or equivalent milk products.

Key Recommendations for Specific Population Groups

- *Children and adolescents.* Consume whole-grain products often; at least half the grains should be whole grains. Children 2 to 8 years should consume 2 cups per day of fat-free or low-fat milk or equivalent milk products. Children 9 years of age and older should consume 3 cups per day of fat-free or low-fat milk or equivalent milk products.

DISCUSSION

Fruits, vegetables, whole grains, and milk products are all important to a healthful diet and can be good sources of the nutrients of concern (see ch. 2). When increasing intake of fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products, it is important to decrease one's intake of less-nutrient-dense foods to control calorie intake. The 2,000-calorie level used in the discussion is a reference level only; it is not a recommended calorie intake because many Americans should be consuming fewer calories to maintain a healthy weight.

Fruits and Vegetables

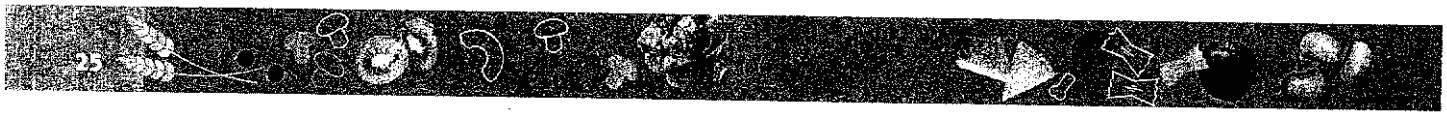
Four and one-half cups (nine servings) of fruits and vegetables are recommended daily for the reference 2,000-calorie level, with higher or lower amounts depending on the caloric level. This results in a range of 2½ to 6½ cups (5 to 13 servings) of fruits and vegetables each day for the 1,200- to 3,200-calorie levels[11] (app. A-2). Fruits and vegetables provide a variety of micronutrients and fiber. Table 5 provides a list of fruits and vegetables that are good sources of vitamins A (as carotenoids) and C, folate, and potassium. In the fruit group, consumption of whole fruits (fresh, frozen, canned, dried) rather than fruit juice for the majority of the total daily amount is suggested to ensure adequate fiber intake. Different vegetables are rich in different nutrients. In the vegetable group, weekly intake of specific amounts from each of five vegetable subgroups (dark green, orange, legumes [dry beans], starchy, and other vegetables)[12] is recommended for adequate nutrient intake. Each subgroup provides a somewhat different array of nutrients. In the USDA Food Guide at the reference 2,000-calorie level, the following weekly amounts are recommended:

Dark green vegetables	3 cups/week
Orange vegetables	2 cups/week
Legumes (dry beans)	3 cups/week
Starchy vegetables	3 cups/week
Other vegetables	6½ cups/week

Most current consumption patterns do not achieve the recommended intakes of many of these vegetables. The DASH Eating Plan and the USDA Food Guide suggest increasing intakes of dark green vegetables, orange

[11] See appendix A-2 and table D1-16 from the 2005 DGAC Report (or USDA website) for information on children age 2 to 3 years.

[12] Includes all fresh, frozen, canned, cooked, or raw forms of vegetables. Examples of vegetables are dark green (broccoli, spinach, most greens); orange (carrots, sweetpotatoes, winter squash, pumpkin); legumes (dry beans, chickpeas, tofu); starchy (corn, white potatoes, green peas); other (tomatoes, cabbage, celery, cucumber, lettuce, onions, peppers, green beans, cauliflower, mushrooms, summer squash).



vegetables, and legumes (dry beans) as part of the overall recommendation to have an adequate intake of fruits and vegetables (see ch. 2).

Whole Grains

In addition to fruits and vegetables, whole grains are an important source of fiber and other nutrients. Whole grains, as well as foods made from them, consist of the entire grain seed, usually called the kernel. The kernel is made of three components—the bran, the germ, and the endosperm. If the kernel has been cracked, crushed, or flaked, then it must retain nearly the same relative proportions of bran, germ, and endosperm as the original grain to be called whole grain. In the grain-refining process, most of the bran and some of the germ is removed, resulting in the loss of dietary fiber (also known as cereal fiber), vitamins, minerals, lignans, phytoestrogens, phenolic compounds, and phytic acid. Some manufacturers add bran to grain products to increase the dietary fiber content. Refined grains are the resulting product of the grain-refining processing. Most refined grains are enriched before being further processed into foods. Enriched refined grain products that conform to standards of identity are required by law to be fortified with folic acid, as well as thiamin, riboflavin, niacin, and iron. Food manufacturers may fortify whole-grain foods where regulations permit the addition of folic acid. Currently, a number of whole-grain, ready-to-eat breakfast cereals are fortified with folic acid. As illustrated by the comparison of whole-wheat and enriched white flours in table 6, many nutrients occur at higher or similar levels in whole grains when compared to enriched grains, but whole grains have less folate unless they have been fortified with folic acid.

Consuming at least 3 or more ounce-equivalents of whole grains per day can reduce the risk of several chronic diseases and may help with weight maintenance. Thus, daily intake of at least 3 ounce-equivalents of whole grains per day is recommended by substituting whole grains for refined grains. However, because three servings may be difficult for younger children to achieve, it is recommended that they increase whole grains into their diets as they grow. At all calorie levels, all age groups should consume at least half the grains as whole grains to achieve the fiber recommendation. All grain servings can be whole-grain; however, it is advisable to include some folate-fortified products, such as folate-fortified whole-grain cereals, in these whole-grain choices.

Increased intakes of fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products are likely to have important health benefits for most Americans.

Whole grains cannot be identified by the color of the food; label-reading skills are needed. Table 7 identifies names of whole grains that are available in the United States. For information about the ingredients in whole-grain and enriched-grain products, read the ingredient list on the food label. For many whole-grain products, the words "whole" or "whole grain" will appear before the grain ingredient's name. The whole grain should be the first ingredient listed. Wheat flour, enriched flour, and degerminated cornmeal are not whole grains. The Food and Drug Administration requires foods that bear the whole-grain health claim to (1) contain 51 percent or more whole-grain ingredients by weight per reference amount and (2) be low in fat.

Milk and Milk Products

Another source of nutrients is milk and milk products. Milk product consumption has been associated with overall diet quality and adequacy of intake of many nutrients. The intake of milk products is especially important to bone health during childhood and adolescence. Studies specifically on milk and other milk products, such as yogurt and cheese, showed a positive relationship between the intake of milk and milk products and bone mineral content or bone mineral density in one or more skeletal sites (see table 1 for information on equivalent amounts of milk products).

Adults and children should not avoid milk and milk products because of concerns that these foods lead to weight gain. There are many fat-free and low-fat choices without added sugars that are available and consistent with an overall healthy dietary plan. If a person wants to consider milk alternatives because of lactose intolerance, the most reliable and easiest ways to derive the health benefits associated with milk and milk product consumption is to choose alternatives within the milk food group, such as yogurt or lactose-free milk, or to consume the enzyme lactase prior to the consumption of milk products. For individuals who choose to or must avoid all milk products (e.g., individuals with lactose intolerance, vegans), nondairy calcium-containing alternatives may be selected to help meet calcium needs (app. B-4).

TABLE 5. Fruits, Vegetables, and Legumes (Dry Beans) That Contain Vitamin A (Carotenoids), Vitamin C, Folate, and Potassium

Many of the fruits, vegetables, and legumes (beans) are considered to be important sources of vitamin A (as carotenoids), vitamin C, and potassium in the adult population. Intakes of these nutrients, based on dietary intake data or evidence of public health problems, may be of concern. Also listed are sources of naturally occurring folate, a nutrient considered to be of concern for women of childbearing age and those in the first trimester of pregnancy. Folic acid-fortified grain products, not listed in this table, are also good sources.

Sources of vitamin A (carotenoids) (see app. B-6) • Bright orange vegetables like carrots, sweetpotatoes, and pumpkin • Tomatoes and tomato products, red sweet pepper • Leafy greens such as spinach, collards, turnip greens, kale, beet and mustard greens, green leaf lettuce, and romaine • Orange fruits like mango, cantaloupe, apricots, and red or pink grapefruit
Sources of vitamin C • Citrus fruits and juices, kiwi fruit, strawberries, guava, papaya, and cantaloupe • Broccoli, peppers, tomatoes, cabbage (especially Chinese cabbage), brussels sprouts, and potatoes • Leafy greens such as romaine, turnip greens, and spinach
Sources of folate • Cooked dry beans and peas • Oranges and orange juice • Deep green leaves like spinach and mustard greens
Sources of potassium (see app. B-1) • Baked white or sweetpotatoes, cooked greens (such as spinach), winter (orange) squash • Bananas, plantains, many dried fruits, oranges and orange juice, cantaloupe, and honeydew melons • Cooked dry beans • Soybeans (green and mature) • Tomato products (sauce, paste, puree) • Beet greens

TABLE 6. Comparison of 100 Grams of Whole-Grain Wheat Flour and Enriched, Bleached, White, All-Purpose Flour

Some of the nutrients of concern and the fortification nutrients in 100 percent whole-wheat flour and enriched, bleached, all-purpose white (wheat) flour. Dietary fiber, calcium, magnesium and potassium, nutrients of concern, occur in much higher concentrations in the whole-wheat flour on a 100-gram basis (percent). The fortification nutrients—thiamin, riboflavin, niacin, and iron—are similar in concentration between the two flours, but folate, as Dietary Folate Equivalent (DFE), µg, is higher in the enriched white flour.

	100 Percent Whole-Grain Wheat Flour	Enriched, Bleached, All-Purpose White Flour
Calories, kcal	339.0	364.0
Dietary fiber, g	12.2	2.7
Calcium, mg	34.0	15.0
Magnesium, mg	138.0	22.0
Potassium, mg	405.0	107.0
Folate, DFE, µg	44.0	291.0
Thiamin, mg	0.5	0.8
Riboflavin, mg	0.2	0.5
Niacin, mg	6.4	5.9
Iron, mg	3.9	4.6

Source: Agricultural Research Service Nutrient Database for Standard Reference, Release 17.

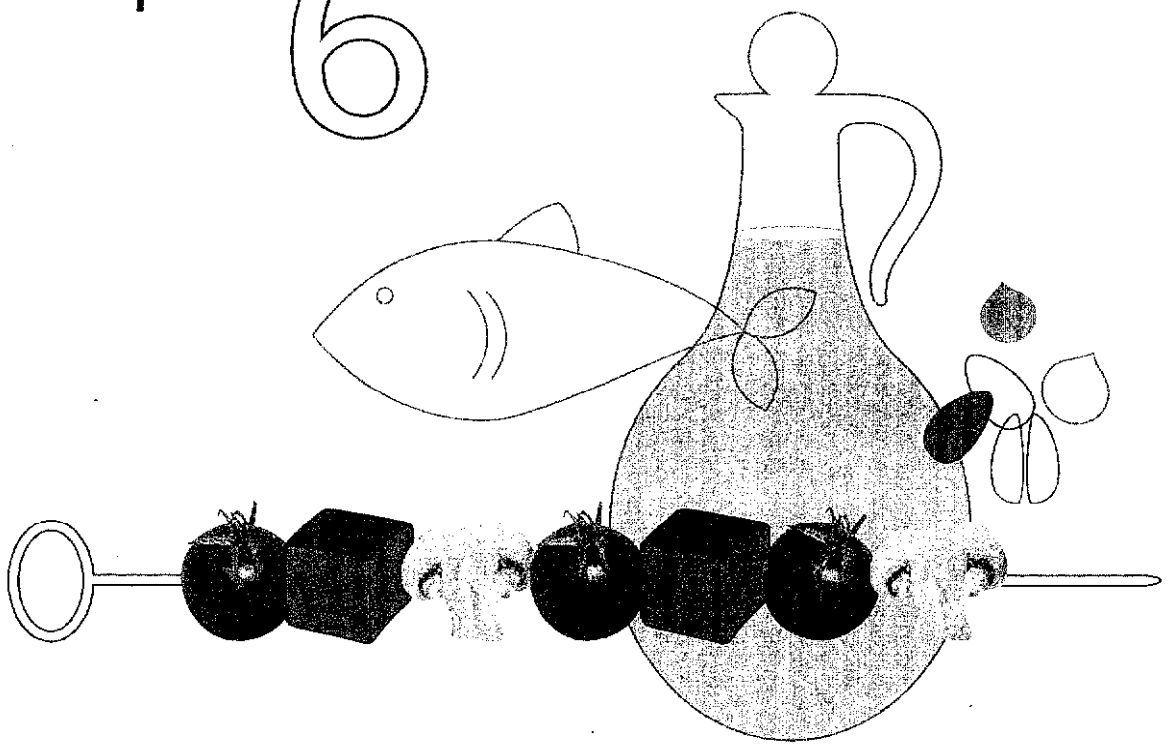
TABLE 7. Whole Grains Available in the United States

Whole grains that are consumed in the United States either as a single food (e.g., wild rice, popcorn) or as an ingredient in a multi-ingredient food (e.g., in multi-grain breads). This listing of whole grains was determined from a breakdown of foods reported consumed in nationwide food consumption surveys, by amount consumed. The foods are listed in approximate order of amount consumed, but the order may change over time. In addition, other whole grains may be consumed that are not yet represented in the surveys.

Whole wheat
Whole oats/oatmeal
Whole-grain corn
Popcorn
Brown rice
Whole rye
Whole-grain barley
Wild rice
Buckwheat
Triticale
Bulgur (cracked wheat)
Millet
Quinoa
Sorghum

Source: Agriculture Research Service Database for CSFII 1994–1996.

chapter 6



Fats

OVERVIEW

Fats and oils are part of a healthful diet, but the type of fat makes a difference to heart health, and the total amount of fat consumed is also important. High intake of saturated fats, *trans* fats, and cholesterol increases the risk of unhealthy blood lipid levels, which, in turn, may increase the risk of coronary heart disease. A high intake of fat (greater than 35 percent of calories) generally increases saturated fat intake and makes it more difficult to avoid consuming excess calories. A low intake of fats and oils (less than 20 percent of calories) increases the risk of inadequate intakes of vitamin E and of essential fatty acids and may contribute to unfavorable changes in high-density lipoprotein (HDL) blood cholesterol and triglycerides.

DISCUSSION

Fats supply energy and essential fatty acids and serve as a carrier for the absorption of the fat-soluble vitamins A, D, E, and K and carotenoids. Fats serve as building blocks of membranes and play a key regulatory role in numerous biological functions. Dietary fat is found in foods derived from both plants and animals. The recommended total fat intake is between 20 and 35 percent of calories for adults. A fat intake of 30 to 35 percent of calories is recommended for children 2 to 3 years of age and 25 to 35 percent of calories for children and adolescents 4 to 18 years of age. Few Americans consume less than 20 percent of calories from fat. Fat intakes that exceed 35 percent of calories are associated with both total increased saturated fat and calorie intakes.

To decrease their risk of elevated low-density lipoprotein (LDL) cholesterol in the blood, most Americans need to decrease their intakes of saturated fat and *trans* fats, and many need to decrease their dietary intake of cholesterol. Because men tend to have higher intakes of dietary cholesterol, it is especially important for them to meet this recommendation. Population-based studies of American diets show that intake of saturated fat is more excessive than intake of *trans* fats and cholesterol. Therefore, it is most important for Americans to decrease their intake of saturated fat. However, intake of all three should be decreased to meet recommendations. Table 8 shows, for selected calorie levels, the maximum gram amounts of saturated fat to consume to keep saturated fat intake below 10 percent of total calorie intake. This table may be useful when combined with label-reading guidance. Table 9 gives a few practical examples of the differences in the saturated fat content of different forms of commonly consumed foods. Table 10 provides the major dietary sources of saturated fats in the U.S. diet listed in decreasing order. Diets can be planned to meet nutrient recommendations for linoleic acid and α-linolenic acid while providing very low amounts of saturated fatty acids.

Based on 1994–1996 data, the estimated average daily intake of *trans* fats in the United States was about 2.6 percent of total energy intake. Processed foods and oils provide approximately 80 percent of *trans* fats in the diet, compared to 20 percent that occur naturally in food from animal sources. Table 11 provides the major dietary sources of *trans* fats listed in decreasing order. *Trans* fat content of certain processed foods has changed and is likely to continue to change as the industry reformulates products. Because the *trans* fatty acids produced in the partial hydrogenation of vegetable oils account for more than 80 percent of total intake, the food industry has an important role in decreasing *trans* fatty acid content of the food supply. Limited consumption of foods made with processed sources of *trans* fats provides the most effective means of reducing intake of *trans* fats. By looking at the food label, consumers can select products that are lowest in saturated fat, *trans* fats,[13] and cholesterol.

To meet the total fat recommendation of 20 to 35 percent of calories, most dietary fats should come from sources of polyunsaturated and monounsaturated fatty acids. Sources of omega-6 polyunsaturated fatty acids are liquid vegetable oils, including soybean oil, corn oil, and safflower oil. Plant sources of omega-3 polyunsaturated fatty acids (α-linolenic acid) include soybean oil, canola oil, walnuts, and flaxseed. Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are omega-3 fatty acids that are contained in fish and shellfish. Fish that naturally contain more oil (e.g., salmon, trout, herring) are higher in EPA and DHA than are lean fish (e.g., cod, haddock, catfish). Limited evidence suggests an association between consumption of fatty acids in fish and reduced risks of mortality from cardiovascular disease for the general population. Other sources of EPA and DHA may provide similar benefits; however, more research is needed. Plant sources that are rich in monounsaturated fatty acids include vegetable oils (e.g., canola, olive, high oleic safflower, and sunflower oils) that are liquid at room temperature and nuts.

KEY RECOMMENDATIONS

- Consume less than 10 percent of calories from saturated fatty acids and less than 300 mg/day of cholesterol, and keep *trans* fatty acid consumption as low as possible.
- Keep total fat intake between 20 to 35 percent of calories, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.
- When selecting and preparing meat, poultry, dry beans, and milk or milk products, make choices that are lean, low-fat, or fat-free.
- Limit intake of fats and oils high in saturated and/or *trans* fatty acids, and choose products low in such fats and oils.

Key Recommendations for Specific Population Groups

- *Children and adolescents.* Keep total fat intake between 30 to 35 percent of calories for children 2 to 3 years of age and between 25 to 35 percent of calories for children and adolescents 4 to 18 years of age, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.

[13] Including the amount of *trans* fats on the Nutrition Facts Panel is voluntary until January 2006.

Considerations for Specific Population Groups

Evidence suggests that consuming approximately two servings of fish per week (approximately 8 ounces total) may reduce the risk of mortality from coronary heart disease and that consuming EPA and DHA may reduce the risk of mortality from cardiovascular disease in people who have already experienced a cardiac event.

Federal and State advisories provide current information about lowering exposure to environmental contaminants in fish. For example, methylmercury is a heavy metal toxin found in varying levels in nearly all fish and shellfish. For most people, the risk from mercury by eating fish and shellfish is not a health concern. However, some fish contain higher levels of mercury that may harm an unborn baby or young child's developing nervous system. The risks from mercury in fish and shellfish depend on the amount of fish eaten and the levels of mercury in the fish. Therefore, the Food and Drug Administration (FDA) and the Environmental Protection Agency are advising women of childbearing age who may become pregnant, pregnant women, nursing mothers, and young children to avoid some types of fish and shellfish and eat fish and shellfish that are lower in mercury. For more information, call FDA's food information line toll-free at 1-888-SAFEFOOD or visit http://www.cfsan.fda.gov/~dms/admehg3.html.

...most Americans need to decrease their intakes of saturated fat and *trans* fats, and many need to decrease their dietary intake of cholesterol.

Lower intakes (less than 7 percent of calories from saturated fat and less than 200 mg/day of cholesterol) are recommended as part of a therapeutic diet for adults with elevated LDL blood cholesterol (i.e., above their LDL blood cholesterol goal [see table 12]). People with an elevated LDL blood cholesterol level should be under the care of a healthcare provider.

TABLE 8. Maximum Daily Amounts of Saturated Fat To Keep Saturated Fat Below 10 Percent of Total Calorie Intake

The maximum gram amounts of saturated fat that can be consumed to keep saturated fat intake below 10 percent of total calorie intake for selected calorie levels. A 2,000-calorie example is included for consistency with the food label. This table may be useful when combined with label-reading guidance.

Total Calorie Intake	Limit on Saturated Fat Intake
1,600	18 g or less
2,000[a]	20 g or less
2,200	24 g or less
2,500[a]	25 g or less
2,800	31 g or less

[a] Percent Daily Values on the Nutrition Facts Panel of food labels are based on a 2,000-calorie diet. Values for 2,000 and 2,500 calories are rounded to the nearest 5 grams to be consistent with the Nutrition Facts Panel.

TABLE 9. Differences in Saturated Fat and Calorie Content of Commonly Consumed Foods

This table shows a few practical examples of the differences in the saturated fat content of different forms of commonly consumed foods. Comparisons are made between foods in the same food group (e.g., regular cheddar cheese and low-fat cheddar cheese), illustrating that lower saturated fat choices can be made within the same food group.

Food Category	Portion	Saturated Fat Content (grams)	Calories
Cheese			
• Regular cheddar cheese	1 oz	6.0	114
• Low-fat cheddar cheese	1 oz	1.2	49
Ground beef			
• Regular ground beef (25% fat)	3 oz (cooked)	6.1	236
• Extra lean ground beef (5% fat)	3 oz (cooked)	2.6	148
Milk			
• Whole milk (3.24%)	1 cup	4.6	146
• Low-fat (1%) milk	1 cup	1.5	102
Breads			
• Croissant (med)	1 medium	6.6	231
• Bagel, oat bran (4")	1 medium	0.2	227
Frozen desserts			
• Regular ice cream	½ cup	4.9	145
• Frozen yogurt, low-fat	½ cup	2.0	110
Table spreads			
• Butter	1 tsp	2.4	34
• Soft margarine with zero *trans*	1 tsp	0.7	25
Chicken			
• Fried chicken (leg with skin)	3 oz (cooked)	3.3	212
• Roasted chicken (breast no skin)	3 oz (cooked)	0.9	140
Fish			
• Fried fish	3 oz	2.8	195
• Baked fish	3 oz	1.5	129

Source: ARS Nutrient Database for Standard Reference, Release 17

TABLE 10. Contribution of Various Foods to Saturated Fat Intake in the American Diet (Mean Intake = 25.5 g)

The major dietary sources of saturated fats in the U.S. diet listed in decreasing order.

Food Group	Contribution (percent of total sat fat consumed)
Cheese	13.1
Beef	11.7
Milk[a]	7.8
Oils	4.9
Ice cream/sherbet/frozen yogurt	4.7
Cakes/cookies/quick breads/doughnuts	4.7
Butter	4.6
Other fats[b]	4.4
Salad dressings/mayonnaise	3.7
Poultry	3.6
Margarine	3.2
Sausage	3.1
Potato chips/corn chips/popcorn	2.9
Yeast bread	2.6
Eggs	2.3

[a] The milk category includes all milk, including whole milk, low-fat milk, and fat-free milk.

[b] Shortening and animal fats

Source: Adapted from Cotton PA, Subar AF, Friday JE, Cook A, Dietary Sources of Nutrients among U.S. Adults, 1994–1996. *JADA* 104:921–931, 2004.

TABLE 11. Contribution of Various Foods to *Trans* Fat Intake in the American Diet (Mean Intake = 5.84 g)

The major dietary sources of *trans* fats listed in decreasing order. Processed foods and oils provide approximately 80 percent of *trans* fats in the diet, compared to 20 percent that occur naturally in food from animal sources. *Trans* fats content of certain processed foods has changed and is likely to continue to change as the industry reformulates products.

Food Group	Contribution (percent of total *trans* fats consumed)
Cakes, cookies, crackers, pies, bread, etc.	40
Animal products	21
Margarine	17
Fried potatoes	8
Potato chips, corn chips, popcorn	5
Household shortening	4
Other[a]	5

[a] Includes breakfast cereal and candy. USDA analysis reported 0 grams of *trans* fats in salad dressing

Source: Adapted from *Federal Register* notice. *Food Labeling; Trans Fatty Acids in Nutrition Labeling; Consumer Research To Consider Nutrient Content and Health Claims and Possible Footnote or Disclosure Statements; Final Rule and Proposed Rule*. Vol. 68, No. 133, p. 41433-41506, July 11, 2003. Data collected 1994-1996.

TABLE 12. Relationship Between LDL Blood Cholesterol Goal and the Level of Coronary Heart Disease Risk

Information for adults with elevated LDL blood cholesterol. LDL blood cholesterol goals for these individuals are related to the level of coronary heart disease risk. People with an elevated LDL blood cholesterol value should make therapeutic lifestyle changes (diet, physical activity, weight control) under the care of a healthcare provider to lower LDL blood cholesterol.

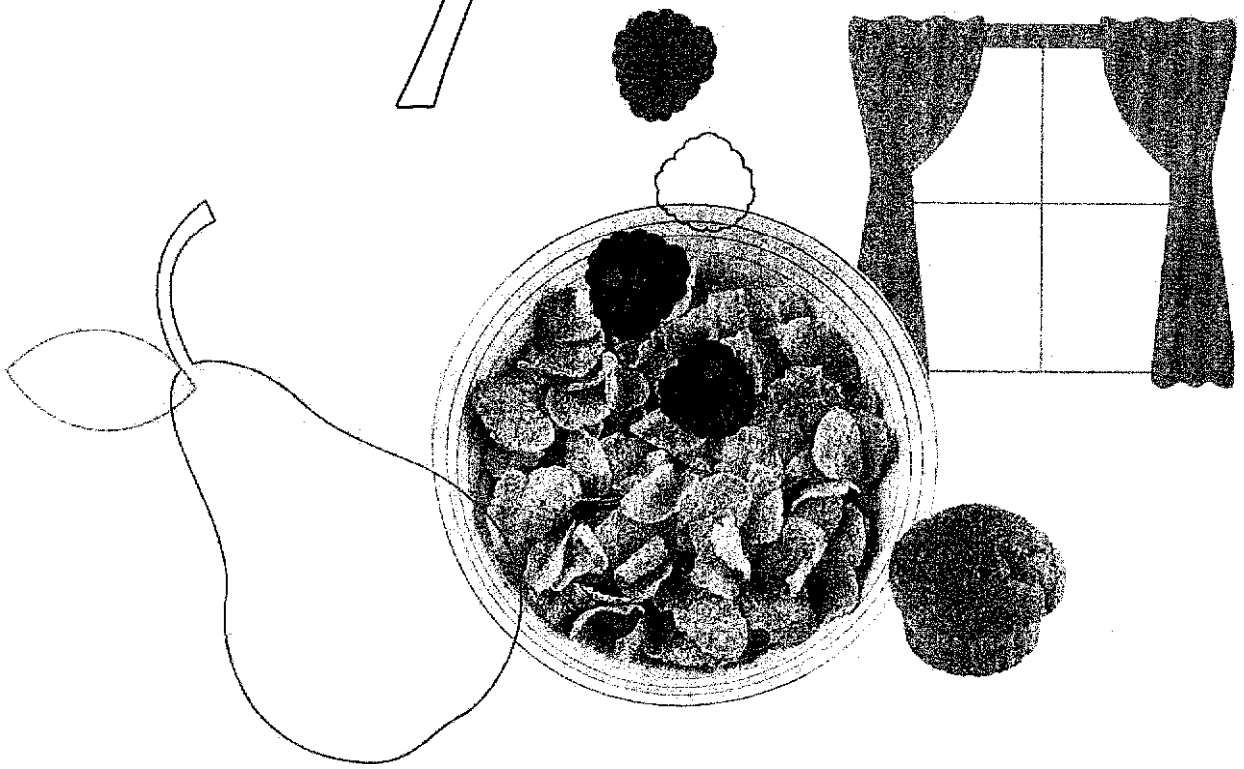
If Someone Has:	LDL Blood Cholesterol Goal Is:
CHD or CHD risk equivalent[a]	Less than 100 mg/dL
Two or more risk factors other than elevated LDL blood cholesterol[b]	Less than 130 mg/dL
Zero or one risk factor other than elevated LDL blood cholesterol[b]	Less than 160 mg/dL

[a] CHD (coronary heart disease) risk equivalent = presence of clinical atherosclerotic disease that confers high risk for CHD events:
- Clinical CHD
- Symptomatic carotid artery disease
- Peripheral arterial disease
- Abdominal aortic aneurysm
- Diabetes
- Two or more risk factors with >20% risk for CHD (or myocardial infarction or CHD death) within 10 years

[b] Major risk factors that affect your LDL goal:
- Cigarette smoking
- High blood pressure (140/90 mmHg or higher or on blood pressure medication)
- Low HDL blood cholesterol (less than 40 mg/dL)
- Family history of early heart disease (heart disease in father or brother before age 55; heart disease in mother or sister before age 65)
- Age (men 45 years or older; women 55 years or older)

Source: NIH Publication No. 01-3290, U.S. Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute, National Cholesterol Education Program Brochure, High Blood Cholesterol What You Need to Know, May 2001. http://www.nhlbi.nih.gov/health/public/heart/chol/hbc_what.htm.

chapter 7



Carbohydrates

OVERVIEW

Carbohydrates are part of a healthful diet. The AMDR for carbohydrates is 45 to 65 percent of total calories. Dietary fiber is composed of nondigestible carbohydrates and lignin intrinsic and intact in plants. Diets rich in dietary fiber have been shown to have a number of beneficial effects, including decreased risk of coronary heart disease and improvement in laxation. There is also interest in the potential relationship between diets containing fiber-rich foods and lower risk of type 2 diabetes. Sugars and starches supply energy to the body in the form of glucose, which is the only energy source for red blood cells and is the preferred energy source for the brain, central nervous system, placenta, and fetus. Sugars can be naturally present in foods (such as the fructose in fruit or the lactose in milk) or added to the food. Added sugars, also known as caloric sweeteners, are sugars and syrups that are added to foods at the table or during processing or preparation (such as high fructose corn syrup in sweetened beverages and baked products). Although the body's response to sugars does not depend on whether they are naturally present in a food or added to the food, added sugars supply calories but few or no nutrients.

Consequently, it is important to choose carbohydrates wisely. Foods in the basic food groups that provide carbohydrates—fruits, vegetables, grains, and milk—are important sources of many nutrients. Choosing plenty of these foods, within the context of a calorie-controlled diet, can promote health and reduce chronic disease risk. However, the greater the consumption of foods containing large amounts of added sugars, the more difficult it is to

consume enough nutrients without gaining weight. Consumption of added sugars provides calories while providing little, if any, of the essential nutrients.

DISCUSSION

The recommended dietary fiber intake is 14 grams per 1,000 calories consumed. Initially, some Americans will find it challenging to achieve this level of intake. However, making fiber-rich food choices more often will move people toward this goal and is likely to confer significant health benefits.

The majority of servings from the fruit group should come from whole fruit (fresh, frozen, canned, dried) rather than juice. Increasing the proportion of fruit that is eaten in the form of whole fruit rather than juice is desirable to increase fiber intake. However, inclusion of some juice, such as orange juice, can help meet recommended levels of potassium intake. Appendixes B-1 and B-8 list some of the best sources of potassium and dietary fiber, respectively.

Legumes—such as dry beans and peas—are especially rich in fiber and should be consumed several times per week. They are considered part of both the vegetable group and the meat and beans group as they contain nutrients found in each of these food groups.

Consuming at least half the recommended grain servings as whole grains is important, for all ages, at each calorie level, to meet the fiber recommendation. Consuming at least 3 ounce-equivalents of whole grains per day can reduce the risk of coronary heart disease, may help with weight maintenance, and may lower risk for other chronic diseases. Thus, at lower calorie levels, adults should consume more than half (specifically, at least 3 ounce-equivalents) of whole grains per day, by substituting whole grains for refined grains. (See table 7 for a list of whole grains available in the United States.)

Diets rich in dietary fiber have been shown to have a number of beneficial effects.

KEY RECOMMENDATIONS

- Choose fiber-rich fruits, vegetables, and whole grains often.
- Choose and prepare foods and beverages with little added sugars or caloric sweeteners, such as amounts suggested by the USDA Food Guide and the DASH Eating Plan.
- Reduce the incidence of dental caries by practicing good oral hygiene and consuming sugar- and starch-containing foods and beverages less frequently.

Individuals who consume food or beverages high in added sugars tend to consume more calories than those who consume food or beverages low in added sugars; they also tend to consume lower amounts of micronutrients. Although more research is needed, available prospective studies show a positive association between the consumption of calorically sweetened beverages and weight gain. For this reason, decreased intake of such foods, especially beverages with caloric sweeteners, is recommended to reduce calorie intake and help achieve recommended nutrient intakes and weight control.

Total discretionary calories should not exceed the allowance for any given calorie level, as shown in the USDA Food Guide (see ch. 2). The discretionary calorie allowance covers all calories from added sugars, alcohol, and the additional fat found in even moderate fat choices from the milk and meat group. For example, the 2,000-calorie pattern includes only about 267 discretionary calories. At 29 percent of calories from total fat (including 18 g of solid fat), if no alcohol is consumed, then only 8 teaspoons (32 g) of added sugars can be afforded. This is less than the amount in a typical 12-ounce calorically sweetened soft drink. If fat is decreased to 22 percent of calories, then 18 teaspoons (72 g) of added sugars is allowed. If fat is increased to 35 percent of calories, then no allowance remains for added sugars, even if alcohol is not consumed.

In some cases, small amounts of sugars added to nutrient-dense foods, such as breakfast cereals and reduced-fat milk products, may increase a person's intake of such

...the greater the consumption of foods containing large amounts of added sugars, the more difficult it is to consume enough nutrients without gaining weight.

foods by enhancing the palatability of these products, thus improving nutrient intake without contributing excessive calories. The major sources of added sugars are listed in table 13 (app. A-3 provides examples of how added sugars can fit into the discretionary calorie allowance).

The Nutrition Facts Panel on the food label provides the amount of total sugars but does not list added sugars separately. People should examine the ingredient list to find out whether a food contains added sugars. The ingredient list is usually located under the Nutrition Facts Panel or on the side of a food label. Ingredients are listed in order of predominance, by weight; that is, the ingredient with the greatest contribution to the product weight is listed first and the ingredient contributing the least amount is listed last. Table 14 lists ingredients that are included in the term "added sugars."[14]

Sugars and starches contribute to dental caries by providing substrate for bacterial fermentation in the mouth. Thus, the frequency and duration of consumption of starches and sugars can be important factors because they increase exposure to cariogenic substrates. Drinking fluoridated water and/or using fluoride-containing dental hygiene products help reduce the risk of dental caries. Most bottled water is not fluoridated. With the increase in consumption of bottled water, there is concern that Americans may not be getting enough fluoride for maintenance of oral health. A combined approach of reducing the frequency and duration of exposure to fermentable carbohydrate intake and optimizing oral hygiene practices, such as drinking fluoridated water and brushing and flossing teeth, is the most effective way to reduce incidence of dental caries.

Considerations for Specific Population Groups

Older Adults

Dietary fiber is important for laxation. Since constipation may affect up to 20 percent of people over 65 years of age, older adults should choose to consume foods rich in dietary fiber. Other causes of constipation among this age group may include drug interactions with laxation and lack of appropriate hydration (see ch. 2).

Children

Carbohydrate intakes of children need special considerations with regard to obtaining sufficient amounts of fiber, avoiding excessive amounts of calories from added sugars, and preventing dental caries. Several cross-sectional surveys on U.S. children and adolescents have found inadequate dietary fiber intakes, which could be improved by increasing consumption of whole fruits, vegetables, and whole-grain products. Sugars can improve the palatability of foods and beverages that otherwise might not be consumed. This may explain why the consumption of sweetened dairy foods and beverages and presweetened cereals is positively associated with childrens' and adolescents' nutrient intake. However, beverages with caloric sweeteners, sugars and sweets, and other sweetened foods that provide little or no nutrients are negatively associated with diet quality and can contribute to excessive energy intakes, affirming the importance of reducing added sugar intake substantially from current levels. Most of the studies of preschool children suggest a positive association between sucrose consumption and dental caries, though other factors (particularly infrequent brushing or not using fluoridated toothpaste) are more predictive of caries outcome than is sugar consumption.

[14] For information on amounts of added sugars in some common foods, see Krebs-Smith, SM. Choose beverages and foods to moderate your intake of sugars: measurement requires quantification. *The Journal of Nutrition (J Nutr)* 131(2S-1): 527S-535S, 2001.

TABLE 13. Major Sources of Added Sugars (Caloric Sweeteners) in the American Diet

Food groups that contribute more than 5 percent of the added sugars to the American diet in decreasing order.

Food Categories	Contribution to Added Sugars Intake (percent of total added sugars consumed)
Regular soft drinks	33.0
Sugars and candy	16.1
Cakes, cookies, pies	12.9
Fruit drinks (fruitades and fruit punch)	9.7
Dairy desserts and milk products (ice cream, sweetened yogurt, and sweetened milk)	8.6
Other grains (cinnamon toast and honey-nut waffles)	5.8

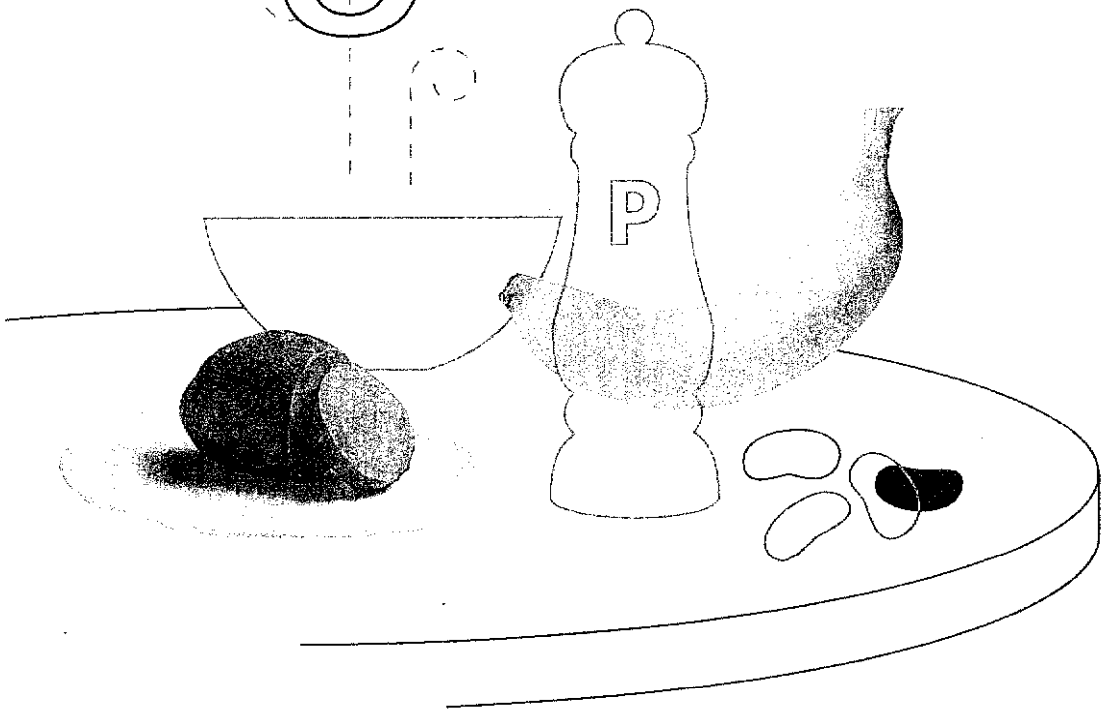
Source: Guthrie and Morton, *Journal of the American Dietetic Association*, 2000.

TABLE 14. Names for Added Sugars That Appear on Food Labels

Some of the names for added sugars that may be in processed foods and listed on the label ingredients list.

Brown sugar	Invert sugar
Corn sweetener	Lactose
Corn syrup	Maltose
Dextrose	Malt syrup
Fructose	Molasses
Fruit juice concentrates	Raw sugar
Glucose	Sucrose
High-fructose corn syrup	Sugar
Honey	Syrup

chapter 8



Sodium and Potassium

OVERVIEW

On average, the higher an individual's salt (sodium chloride) intake, the higher an individual's blood pressure. Nearly all Americans consume substantially more salt than they need. Decreasing salt intake is advisable to reduce the risk of elevated blood pressure. Keeping blood pressure in the normal range reduces an individual's risk of coronary heart disease, stroke, congestive heart failure, and kidney disease. Many American adults will develop hypertension (high blood pressure) during their lifetime. Lifestyle changes can prevent or delay the onset of high blood pressure and can lower elevated blood pressure. These changes include reducing salt intake, increasing potassium intake, losing excess body weight, increasing physical activity, and eating an overall healthful diet.

DISCUSSION

Salt is sodium chloride. Food labels list sodium rather than salt content. When reading a Nutrition Facts Panel on a food product, look for the sodium content. Foods that are low in sodium (less than 140 mg or 5 percent of the Daily Value [DV]) are low in salt.

Common sources of sodium found in the food supply are provided in figure 4. On average, the natural salt content of food accounts for only about 10 percent of total intake,

while discretionary salt use (i.e., salt added at the table or while cooking) provides another 5 to 10 percent of total intake. Approximately 75 percent is derived from salt added by manufacturers. In addition, foods served by food establishments may be high in sodium. It is important to read the food label and determine the sodium content of food, which can vary by several hundreds of milligrams in similar foods. For example, the sodium content in regular tomato soup may be 700 mg per cup in one brand and 1,100 mg per cup in another brand. Reading labels, comparing sodium contents of foods, and purchasing the lower sodium brand may be one strategy to lower total sodium intake (see table 15 for examples of these foods).

An individual's preference for salt is not fixed. After consuming foods lower in salt for a period of time, taste for salt tends to decrease. Use of other flavorings may satisfy an individual's taste. While salt substitutes containing potassium chloride may be useful for some individuals, they can be harmful to people with certain medical conditions. These individuals should consult a healthcare provider before trying salt substitutes.

Discretionary salt use is fairly stable, even when foods offered are lower in sodium than typical foods consumed. When consumers are offered a lower sodium product, they typically do not add table salt to compensate for the lower sodium content, even when available. Therefore, any program for reducing the salt consumption of a population should concentrate primarily on reducing the salt used during food processing and on changes in food selection (e.g., more fresh, less-processed items, less sodium-dense foods) and preparation.

Lifestyle changes can prevent or delay the onset of high blood pressure and can lower elevated blood pressure.

KEY RECOMMENDATIONS

- Consume less than 2,300 mg (approximately 1 tsp of salt) of sodium per day.
- Choose and prepare foods with little salt. At the same time, consume potassium-rich foods, such as fruits and vegetables.

Key Recommendations for Specific Population Groups

- *Individuals with hypertension, blacks, and middle-aged and older adults.* Aim to consume no more than 1,500 mg of sodium per day, and meet the potassium recommendation (4,700 mg/day) with food.

Reducing salt intake is one of several ways that people may lower their blood pressure. The relationship between salt intake and blood pressure is direct and progressive without an apparent threshold. On average, the higher a person's salt intake, the higher the blood pressure. Reducing blood pressure, ideally to the normal range, reduces the risk of stroke, heart disease, heart failure, and kidney disease.

Another dietary measure to lower blood pressure is to consume a diet rich in potassium. A potassium-rich diet also blunts the effects of salt on blood pressure, may reduce the risk of developing kidney stones, and possibly decrease bone loss with age. The recommended intake of potassium for adolescents and adults is 4,700 mg/day. Recommended intakes for potassium for children 1 to 3 years of age is 3,000 mg/day, 4 to 8 years of age is 3,800 mg/day, and 9 to 13 years of age is 4,500 mg/day. Potassium should come from food sources. Fruits and vegetables, which are rich in potassium with its bicarbonate precursors, favorably affect acid-base metabolism, which may reduce risk of kidney stones and bone loss. Potassium-rich fruits and vegetables include leafy green vegetables, fruit from vines, and root vegetables. Meat, milk, and cereal products also contain potassium, but may not have the same effect on acid-base metabolism. Dietary sources of potassium are listed in table 5 and appendix B-1.

Considerations for Specific Population Groups

Individuals With Hypertension, Blacks, and Middle-Aged and Older Adults. Some individuals tend to be more salt sensitive than others, including people with hypertension, blacks, and middle-aged and older adults. Because blacks commonly have a relatively low intake of potassium and a high prevalence of elevated blood pressure and salt sensitivity, this population subgroup may especially benefit from an increased dietary intake of potassium. Dietary potassium can lower blood pressure and blunt the effects of salt on blood pressure in some individuals. While salt substitutes containing potassium chloride may be useful for some individuals, they can be harmful to people with certain medical conditions. These individuals should consult a healthcare provider before using salt substitutes.

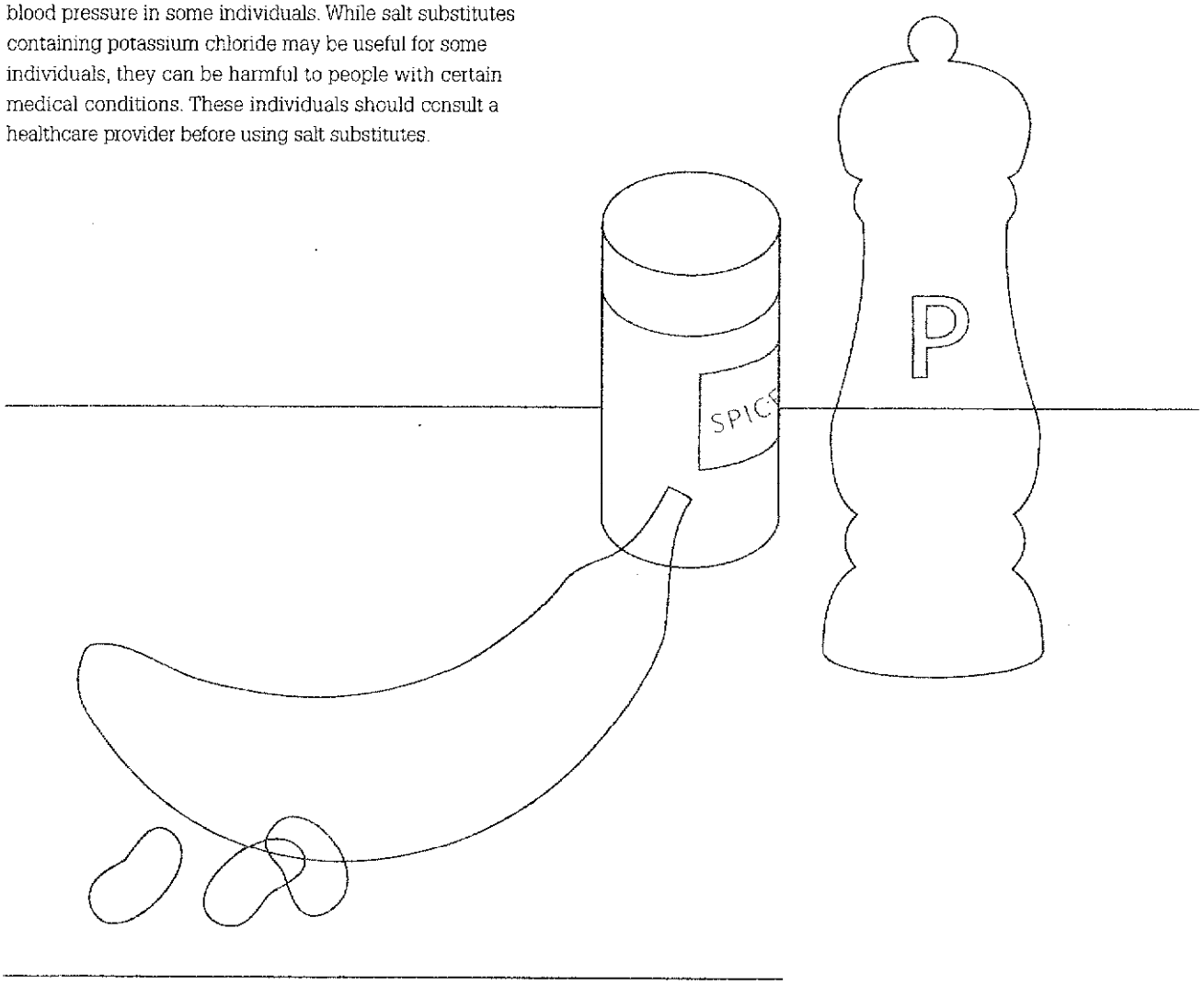
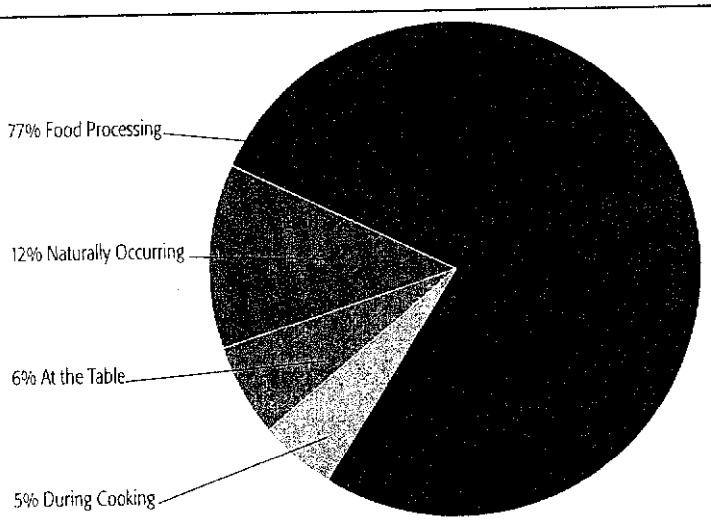


FIGURE 4. Sources of Dietary Sodium

The relative amounts of dietary sodium in the American diet.



Source: Mattes RD, Donnelly D. Relative contributions of dietary sodium sources. *J Am Coll Nutr.* 1991 Aug;10(4):383-93.

TABLE 15. Range of Sodium Content for Selected Foods

The ranges of sodium content for selected foods available in the retail market. This table is provided to exemplify the importance of reading the food label to determine the sodium content of food, which can vary by several hundreds of milligrams in similar foods.

Food Group	Serving Size	Range (mg)
Breads, all types	1 oz	95–210
Frozen pizza, plain, cheese	4 oz	450–1200
Frozen vegetables, all types	½ c	2–160
Salad dressing, regular fat, all types	2 Tbsp	110–505
Salsa	2 Tbsp	150–240
Soup (tomato), reconstituted	8 oz	700–1260
Tomato juice	8 oz (~1 c)	340–1040
Potato chips[a]	1 oz (28.4 g)	120–180
Tortilla chips[a]	1 oz (28.4 g)	105–160
Pretzels[a]	1 oz (28.4 g)	290–560

[a] All snack foods are regular flavor, salted.

Source: Agricultural Research Service Nutrient Database for Standard Reference, Release 17 and recent manufacturers label data from retail market surveys. Serving sizes were standardized to be comparable among brands within a food. Pizza and bread slices vary in size and weight across brands.

Note: None of the examples provided were labeled low-sodium products.

chapter 9

Alcoholic Beverages

OVERVIEW

The consumption of alcohol can have beneficial or harmful effects depending on the amount consumed, age and other characteristics of the person consuming the alcohol, and specifics of the situation. In 2002, 55 percent of U.S. adults were current drinkers. Forty-five percent of U.S. adults do not drink any alcohol at all.[15] Abstention is an important option. Fewer Americans consume alcohol today as compared to 50 to 100 years ago.

The hazards of heavy alcohol consumption are well known and include increased risk of liver cirrhosis, hypertension, cancers of the upper gastrointestinal tract, injury, violence, and death. Moreover, certain individuals who are more susceptible to the harmful effects of alcohol should not drink at all. In addition, alcohol should be avoided by those participating in activities that require attention, skill, and/or coordination.

Alcohol may have beneficial effects when consumed in moderation. The lowest all-cause mortality occurs at an intake of one to two drinks per day. The lowest coronary heart disease mortality also occurs at an intake of one to two drinks per day. Morbidity and mortality are highest among those drinking large amounts of alcohol

[15] Behavioral Risk Factor Surveillance System, Surveillance for Certain Health Behaviors Among Selected Local Areas–United States, Behavioral Risk Factor Surveillance System, 2002, *MMWR*, 53, No SS-05. http://www.cdc.gov/brfss/.

DISCUSSION

Alcoholic beverages supply calories but few essential nutrients (see table 16). As a result, excessive alcohol consumption makes it difficult to ingest sufficient nutrients within an individual's daily calorie allotment and to maintain a healthy weight. Although the consumption of one to two alcoholic beverages per day is not associated with macronutrient or micronutrient deficiencies or with overall dietary quality, heavy drinkers may be at risk of malnutrition if the calories derived from alcohol are substituted for those in nutritious foods.

The majority of American adults consume alcohol. Those who do so should drink alcoholic beverages in moderation. Moderation is defined as the consumption of up to one drink per day for women and up to two drinks per day for men. Twelve fluid ounces of regular beer, 5 fluid ounces of wine, or 1.5 fluid ounces of 80-proof distilled spirits count as one drink for purposes of explaining moderation. This definition of moderation is not intended as an average over several days but rather as the amount consumed on any single day.

The effect of alcohol consumption varies depending on the amount consumed and an individual's characteristics and circumstances. Alcoholic beverages are harmful when consumed in excess. Excess alcohol consumption alters judgment and can lead to dependency or addiction and other serious health problems such as cirrhosis of the liver, inflammation of the pancreas, and damage to the heart and brain. Even less than heavy consumption of alcohol is associated with significant risks. Consuming more than one drink per day for women and two drinks per day for men increases the risk for motor vehicle accidents, other injuries, high blood pressure, stroke, violence, some types of cancer, and suicide. Compared with women who do not drink, women who consume one drink per day appear to have a slightly higher risk of breast cancer.

KEY RECOMMENDATIONS

- Those who choose to drink alcoholic beverages should do so sensibly and in moderation—defined as the consumption of up to one drink per day for women and up to two drinks per day for men.
- Alcoholic beverages should not be consumed by some individuals, including those who cannot restrict their alcohol intake, women of childbearing age who may become pregnant, pregnant and lactating women, children and adolescents, individuals taking medications that can interact with alcohol, and those with specific medical conditions.
- Alcoholic beverages should be avoided by individuals engaging in activities that require attention, skill, or coordination, such as driving or operating machinery.

Studies suggest adverse effects even at moderate alcohol consumption levels in specific situations and individuals. Individuals in some situations should avoid alcohol—those who plan to drive, operate machinery, or take part in other activities that require attention, skill, or coordination. Some people, including children and adolescents, women of childbearing age who may become pregnant, pregnant and lactating women, individuals who cannot restrict alcohol intake, individuals taking medications that can interact with alcohol, and individuals with specific medical conditions should not drink at all. Even moderate drinking during pregnancy may have behavioral or developmental consequences for the baby. Heavy drinking during pregnancy can produce a range of behavioral and psychosocial problems, malformation, and mental retardation in the baby.

Alcoholic beverages supply calories but few essential nutrients.

Moderate alcohol consumption may have beneficial health effects in some individuals. In middle-aged and older adults, a daily intake of one to two alcoholic beverages per day is associated with the lowest all-cause mortality. More specifically, compared to non-drinkers, adults who consume one to two alcoholic beverages a day appear to have a lower risk of coronary heart disease. In contrast, among younger adults alcohol consumption appears to provide little, if any, health benefit, and alcohol use among young adults is associated with a higher risk of traumatic injury and death. As noted previously, a number of strategies reduce the risk of chronic disease, including a healthful diet, physical activity, avoidance of smoking, and maintenance of a healthy weight. Furthermore, it is not recommended that anyone begin drinking or drink more frequently on the basis of health considerations.

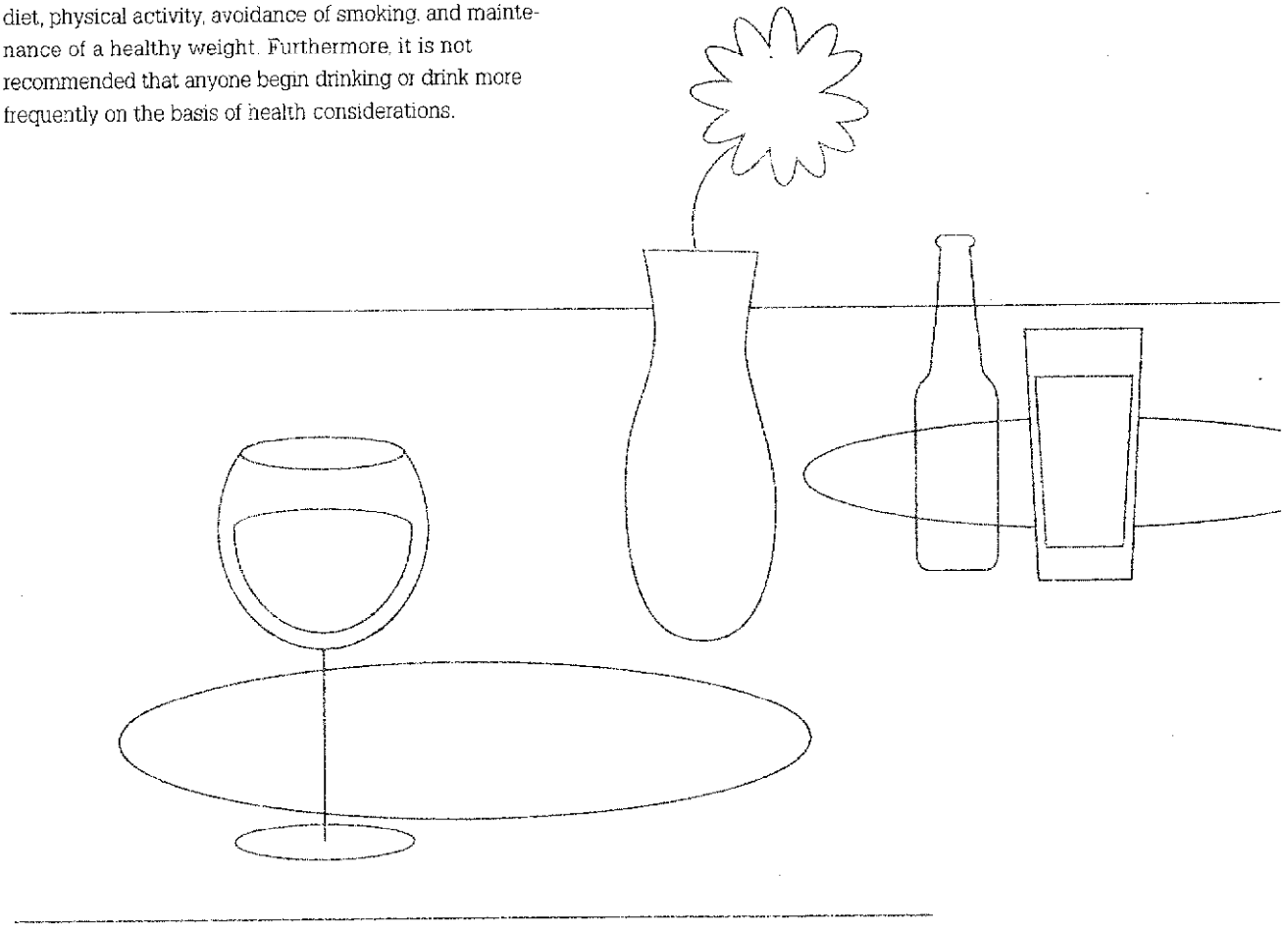


TABLE 16. Calories in Selected Alcoholic Beverages

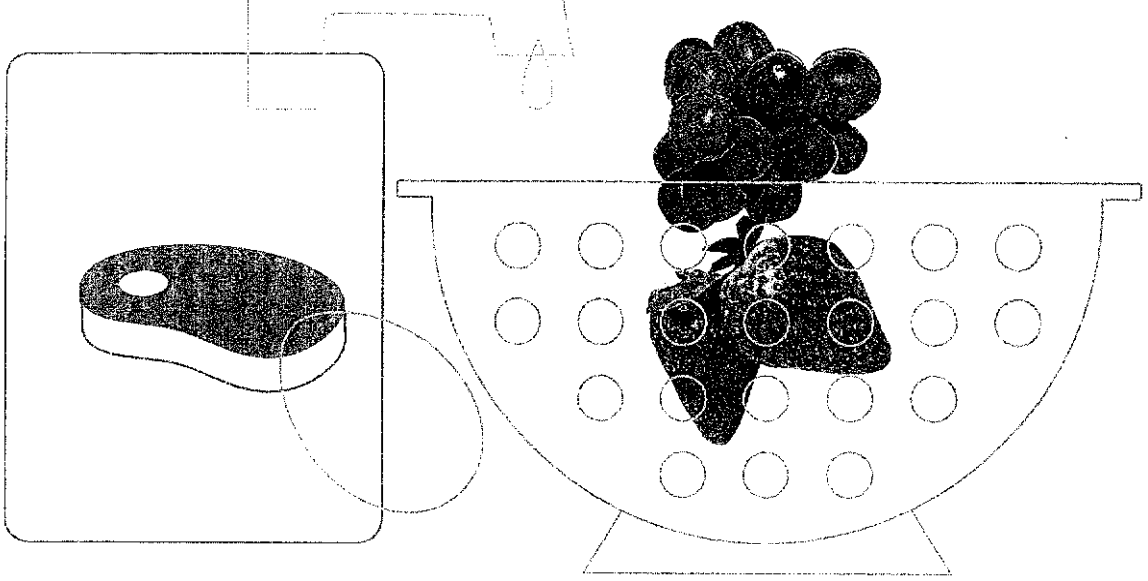
This table is a guide to estimate the caloric intake from various alcoholic beverages. An example serving volume and the calories in that drink are shown for beer, wine, and distilled spirits. Higher alcohol content (higher percent alcohol or higher proof) and mixing alcohol with other beverages, such as calorically sweetened soft drinks, tonic water, fruit juice, or cream, increases the amount of calories in the beverage. Alcoholic beverages supply calories but provide few essential nutrients.

Beverage	Approximate Calories Per 1 Fluid Oz[a]	Example Serving Volume	Approximate Total Calories[b]
Beer (regular)	12	12 oz	144
Beer (light)	9	12 oz	108
White wine	20	5 oz	100
Red wine	21	5 oz	105
Sweet dessert wine	47	3 oz	141
80 proof distilled spirits (gin, rum, vodka, whiskey)	64	1.5 oz	96

[a] Source: Agricultural Research Service (ARS) Nutrient Database for Standard Reference (SR), Release 17 (http://www.nal.usda.gov/fnic/foodcomp/index.html) Calories are calculated to the nearest whole number per 1 fluid oz.

[b] The total calories and alcohol content vary depending on the brand. Moreover, adding mixers to an alcoholic beverage can contribute calories in addition to the calories from the alcohol itself.

chapter 10



Food Safety

OVERVIEW

Avoiding foods that are contaminated with harmful bacteria, viruses, parasites, toxins, and chemical and physical contaminants are vital for healthful eating. The signs and symptoms of foodborne illness range from gastrointestinal symptoms, such as upset stomach, diarrhea, fever, vomiting, abdominal cramps, and dehydration, to more severe systemic illness, such as paralysis and meningitis. It is estimated that every year about 76 million people in the United States become ill from pathogens in food; of these, about 5,000 die. Consumers can take simple measures to reduce their risk of foodborne illness, especially in the home.

DISCUSSION

The most important food safety problem is microbial foodborne illness. All those who handle food, including farmers, food producers, individuals who work in markets and food service establishments, and other food preparers, have a responsibility to keep food as safe as possible. To keep food safe, people who prepare food should clean hands, food contact surfaces, and fruits and vegetables; separate raw, cooked, and ready-to-eat foods; cook foods to a safe internal temperature; chill perishable food promptly; and defrost food properly. For more important information on cooking, cleaning, separating, and chilling, see www.fightbac.org.

Consumers can take simple measures to reduce their risk of foodborne illness, especially in the home.

When preparing and consuming food, it is essential to wash hands often, particularly before and after preparing food, especially after handling raw meat, poultry, eggs, or seafood. A good hand washing protocol includes wetting hands; applying soap; rubbing hands vigorously together for 20 seconds; rinsing hands thoroughly under clean, running warm water; and drying hands completely using a clean disposable or cloth towel.

Washing may be the only method that consumers have to reduce pathogen load on fresh produce that will not be either peeled or subsequently cooked. A good protocol for washing fresh fruits and vegetables includes removing and discarding outer leaves, washing produce just before cooking or eating, washing under running potable water, scrubbing with a clean brush or with hands, and drying the fruits or vegetables using a clean disposable or cloth towel. Free moisture on produce may promote survival and growth of microbial populations. Therefore, drying the food is critical if the item will not be eaten or cooked right away.

People should read the labels of bagged produce to determine if it is ready-to-eat. Ready-to-eat, prewashed bagged produce can be used without further washing if kept refrigerated and used by the "use-by" date. If desired, prewashed, ready-to-eat produce can be washed again.

Raw meat and poultry should not be washed because this creates the danger of cross-contamination and is not necessary. Washing these foods can allow most bacteria that are present on the surface of the meat or poultry to spread to ready-to-eat foods, kitchen utensils, and counter surfaces.

KEY RECOMMENDATIONS

- To avoid microbial foodborne illness:
  - Clean hands, food contact surfaces, and fruits and vegetables. Meat and poultry should *not* be washed or rinsed.
  - Separate raw, cooked, and ready-to-eat foods while shopping, preparing, or storing foods.
  - Cook foods to a safe temperature to kill microorganisms.
  - Chill (refrigerate) perishable food promptly and defrost foods properly.
  - Avoid raw (unpasteurized) milk or any products made from unpasteurized milk, raw or partially cooked eggs or foods containing raw eggs, raw or undercooked meat and poultry, unpasteurized juices, and raw sprouts.

Key Recommendations for Specific Population Groups

- *Infants and young children, pregnant women, older adults, and those who are immunocompromised.* Do not eat or drink raw (unpasteurized) milk or any products made from unpasteurized milk, raw or partially cooked eggs or foods containing raw eggs, raw or undercooked meat and poultry, raw or undercooked fish or shellfish, unpasteurized juices, and raw sprouts.
- *Pregnant women, older adults, and those who are immunocompromised:* Only eat certain deli meats and frankfurters that have been reheated to steaming hot.

It is important to separate raw, cooked, and ready-to-eat foods while shopping, preparing, or storing. This prevents cross-contamination from one food to another. In addition, refrigerator surfaces can become contaminated from high-risk foods such as raw meats, poultry, fish, uncooked hot dogs, certain deli meats, or raw vegetables. If not cleaned, contaminated refrigerator surfaces can, in turn, serve as a vehicle for contaminating other foods.

Uncooked and undercooked meat, poultry and eggs and egg products are potentially unsafe. Raw meat, poultry and eggs should always be cooked to a safe internal temperature (see fig. 5). The best way to tell if meat, poultry and egg dishes are cooked safely is to use a food thermometer. Leftover refrigerator foods should also be reheated to the proper internal temperature. Bacteria grow

most rapidly in the range of 40°F and 140°F. To keep food out of this danger zone, keep cold food cold (below 40°F) and hot food hot (above 140°F). Figure 5 provides information for temperature rules for proper cooking and food handling. Proper cooking makes most uncooked foods safe.

The refrigerator should be set at no higher than 40°F and the freezer at 0°F, and these temperatures should be checked with an appliance thermometer. Refrigerated leftovers may become unsafe within 3 to 4 days. Despite the appearance of a food, it may not be safe to eat. Not all bacterial growth causes a food's surface to discolor or smell bad. It may be unsafe to taste fresh or leftover food items when there is any doubt about their safety. Safe disposal of the food is indicated if there is a question about whether or not a food is safe to eat. "If in doubt—throw it out."

Considerations for Specific Population Groups

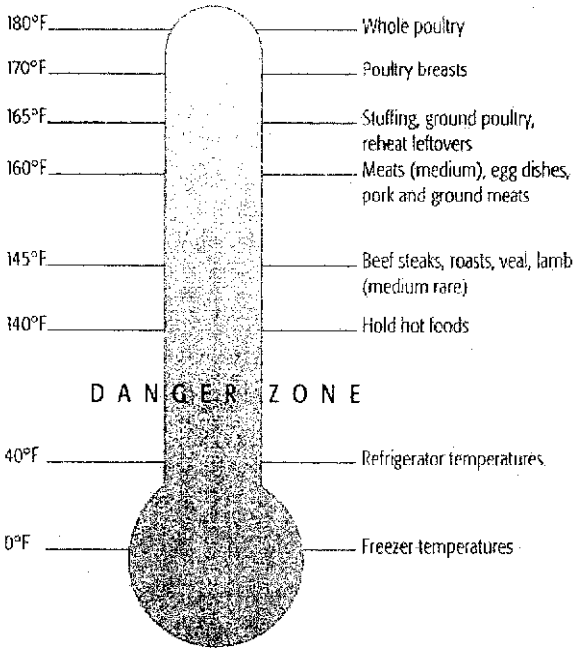
Some people may be at high risk for developing foodborne illness. These include pregnant women and their fetuses, young children, older adults, people with weakened immune systems, and individuals with certain chronic illnesses. These people should pay extra attention to food safety advice.

For example, pregnant women, older adults, and those who are immunocompromised are at risk of developing listeriosis, a potentially life-threatening illness caused by the bacterium *Listeria monocytogenes*. Some deli meats and frankfurters that have not been reheated to steaming hot and some ready-to-eat foods are associated with listeriosis and pose a high-risk to certain individuals. All these foods should be heated to a safe internal temperature. In addition, these individuals should take special care not to eat or drink raw (unpasteurized) milk or any products made from unpasteurized milk (such as some soft cheeses), raw or partially cooked eggs or foods containing raw eggs, raw or undercooked meat and poultry, unpasteurized juices, and raw sprouts. They should also avoid raw or undercooked fish or shellfish.

New information on food safety is constantly emerging. Recommendations and precautions for people at high risk are updated as scientists learn more about preventing foodborne illness. Individuals in high-risk categories should seek guidance from a healthcare provider. In addition, up-to-date information is available at the Government's food safety website at www.foodsafety.gov.

FIGURE 5.
Temperature Rules for Safe Cooking and Handling of Foods

Safe cooking and holding temperatures for foods. Bacteria multiply rapidly between 40°F and 140°F, doubling in number in as little as 20 minutes. To keep food out of this danger zone, keep cold food cold and hot food hot. Keep food cold in the refrigerator, in coolers, or on the service line on ice. Set your refrigerator no higher than 40°F and the freezer at 0°F. Keep hot food in the oven, in heated chafing dishes, or in preheated steam tables, warming trays, and/or slow cookers. Use a clean thermometer that measures the internal temperature of cooked food to make sure meat, poultry, and casseroles are cooked to the temperatures as indicated in the figure.



Appendixes

APPENDIX A. EATING PATTERNS

Appendix A-1: The DASH Eating Plan at 1,600-, 2,000-, 2600-, and 3,100-Calorie Levels[a]

The DASH eating plan is based on 1,600, 2,000, 2,600 and 3,100 calories. The number of daily servings in a food group vary depending on caloric needs (see Table 3 on page 12 to determine caloric needs). This chart can aid in planning menus and food selection in restaurants and grocery stores.

Food Groups	1,600 Calories	2,000 Calories	2,600 Calories	3,100 Calories	Serving Sizes	Examples and Notes	Significance of Each Food Group to the DASH Eating Plan
Grains[b]	6 servings	7–8 servings	10–11 servings	12–13 servings	1 slice bread, 1 oz dry cereal, ½ cup cooked rice, pasta, or cereal[c]	Whole wheat bread, English muffin, pita bread, bagel, cereals, grits, oatmeal, crackers, unsalted pretzels, and popcorn	Major sources of energy and fiber
Vegetables	3–4 servings	4–5 servings	5–6 servings	6 servings	1 cup raw leafy vegetable ½ cup cooked vegetable 6 oz vegetable juice	Tomatoes, potatoes, carrots, green peas, squash, broccoli, turnip greens, collards, kale, spinach, artichokes, green beans, lima beans, sweetpotatoes	Rich sources of potassium, magnesium, and fiber
Fruits	4 servings	4–5 servings	5–6 servings	6 servings	6 oz fruit juice 1 medium fruit ¼ cup dried fruit ½ cup fresh, frozen, or canned fruit	Apricots, bananas, dates, grapes, oranges, orange juice, grapefruit, grapefruit juice, mangoes, melons, peaches, pineapples, prunes, raisins, strawberries, tangerines	Important sources of potassium, magnesium, and fiber
Low-fat or fat-free dairy foods	2–3 servings	2–3 servings	3 servings	3–4 servings	8 oz milk 1 cup yogurt 1½ oz cheese	Fat-free or low-fat milk, fat-free or low-fat buttermilk, fat-free or low-fat regular or frozen yogurt, low-fat and fat-free cheese	Major sources of calcium and protein

Appendix A-1: Continued

Food Groups	1,600 Calories	2,000 Calories	2,600 Calories	3,100 Calories	Serving Sizes	Examples and Notes	Significance of Each Food Group to the DASH Eating Plan
Meat, poultry, fish	1–2 servings	2 or less servings	2 servings	2–3 servings	3 oz cooked meats, poultry, or fish	Select only lean; trim away visible fats; broil, roast, or boil instead of frying; remove skin from poultry	Rich sources of protein and magnesium
Nuts, seeds, legumes	3–4 servings/ week	4–5 servings/ week	1 serving	1 serving	⅓ cup or 1½ oz nuts 2 Tbsp or ½ oz seeds ½ cup cooked dry beans or peas	Almonds, filberts, mixed nuts, peanuts, walnuts, sunflower seeds, kidney beans, lentils	Rich sources of energy, magnesium, potassium, protein, and fiber
Fat and oils[d]	2 servings	2–3 servings	3 servings	4 servings	1 tsp soft margarine 1 Tbsp low-fat mayonnaise 2 Tbsp light salad dressing 1 tsp vegetable oil	Soft margarine, low-fat mayonnaise, light salad dressing, vegetable oil (such as olive, corn, canola, or safflower)	DASH has 27 percent of calories as fat (low in saturated fat), including fat in or added to foods
Sweets	0 servings	5 servings/ week	2 servings	2 servings	1 Tbsp sugar 1 Tbsp jelly or jam ½ oz jelly beans 8 oz lemonade	Maple syrup, sugar, jelly, jam, fruit-flavored gelatin, jelly beans, hard candy, fruit punch sorbet, ices	Sweets should be low in fat

[a] NIH publication No. 03-4082; Karanja NM et al. *JADA* 8:S19–27, 1999.

[b] Whole grains are recommended for most servings to meet fiber recommendations.

[c] Equals ½–1¼ cups, depending on cereal type. Check the product's Nutrition Facts Label.

[d] Fat content changes serving counts for fats and oils. For example, 1 Tbsp of regular salad dressing equals 1 serving; 1 Tbsp of a low-fat dressing equals ½ serving; 1 Tbsp of a fat-free dressing equals 0 servings.

Appendix A-2. USDA Food Guide

The suggested amounts of food to consume from the basic food groups, subgroups, and oils to meet recommended nutrient intakes at 12 different calorie levels. Nutrient and energy contributions from each group are calculated according to the nutrient-dense forms of foods in each group (e.g., lean meats and fat-free milk). The table also shows the discretionary calorie allowance that can be accommodated within each calorie level, in addition to the suggested amounts of nutrient-dense forms of foods in each group.

Daily Amount of Food From Each Group (vegetable subgroup amounts are per week)												
Calorie Level	**1,000**	**1,200**	**1,400**	**1,600**	**1,800**	**2,000**	**2,200**	**2,400**	**2,600**	**2,800**	**3,000**	**3,200**
Food Group[1]	Food group amounts shown in cup (c) or ounce-equivalents (oz-eq), with number of servings (srv) in parentheses when it differs from the other units. See note for quantity equivalents for foods in each group.[2] Oils are shown in grams (g).											
Fruits	1 c (2 srv)	1 c (2 srv)	1.5 c (3 srv)	1.5 c (3 srv)	1.5 c (3 srv)	2 c (4 srv)	2 c (4 srv)	2 c (4 srv)	2 c (4 srv)	2.5 c (5 srv)	2.5 c (5 srv)	2.5 c (5 srv)
Vegetables[3]	1 c (2 srv)	1.5 c (3 srv)	1.5 c (3 srv)	2 c (4 srv)	2.5 c (5 srv)	2.5 c (5 srv)	3 c (6 srv)	3 c (6 srv)	3.5 c (7 srv)	3.5 c (7 srv)	4 c (8 srv)	4 c (8 srv)
Dark green veg.	1 c/wk	1.5 c/wk	1.5 c/wk	2 c/wk	3 c/wk	3 c/wk	3 c/wk	3 c/wk	3 c/wk	3 c/wk	3 c/wk	3 c/wk
Orange veg.	.5 c/wk	1 c/wk	1 c/wk	1.5 c/wk	2 c/wk	2 c/wk	2 c/wk	2 c/wk	2.5 c/wk	2.5 c/wk	2.5 c/wk	2.5 c/wk
Legumes	.5 c/wk	1 c/wk	1 c/wk	2.5 c/wk	3 c/wk	3 c/wk	3 c/wk	3 c/wk	3.5 c/wk	3.5 c/wk	3.5 c/wk	3.5 c/wk
Starchy veg.	1.5 c/wk	2.5 c/wk	2.5 c/wk	2.5 c/wk	3 c/wk	3 c/wk	6 c/wk	6 c/wk	7 c/wk	7 c/wk	9 c/wk	9 c/wk
Other veg.	3.5 c/wk	4.5 c/wk	4.5 c/wk	5.5 c/wk	6.5 c/wk	6.5 c/wk	7 c/wk	7 c/wk	8.5 c/wk	8.5 c/wk	10 c/wk	10 c/wk
Grains[4]	3 oz-eq	4 oz-eq	5 oz-eq	5 oz-eq	6 oz-eq	6 oz-eq	7 oz-eq	8 oz-eq	9 oz-eq	10 oz-eq	10 oz-eq	10 oz-eq
Whole grains	1.5	2	2.5	3	3	3	3.5	4	4.5	5	5	5
Other grains	1.5	2	2.5	2	3	3	3.5	4	4.5	5	5	5
Lean meat and beans	2 oz-eq	3 oz-eq	4 oz-eq	5 oz-eq	5 oz-eq	5.5 oz-eq	6 oz-eq	6.5 oz-eq	6.5 oz-eq	7 oz-eq	7 oz-eq	7 oz-eq
Milk	2 c	2 c	2 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c
Oils[5]	15 g	17 g	17 g	22 g	24 g	27 g	29 g	31 g	34 g	36 g	44 g	51g
Discretionary calorie allowance[6]	165	171	171	132	195	267	290	362	410	426	512	648

Notes for Appendix A-2:

[1] Food items included in each group and subgroup:

Fruits	All fresh, frozen, canned, and dried fruits and fruit juices: for example, oranges and orange juice, apples and apple juice, bananas, grapes, melons, berries, raisins. In developing the food patterns, only fruits and juices with no added sugars or fats were used. *See note 6 on discretionary calories if products with added sugars or fats are consumed.*
Vegetables	In developing the food patterns, only vegetables with no added fats or sugars were used. *See note 6 on discretionary calories if products with added fats or sugars are consumed.*
• Dark green vegetables	All fresh, frozen, and canned dark green vegetables, cooked or raw: for example, broccoli; spinach; romaine; collard, turnip,and mustard greens.
• Orange vegetables	All fresh, frozen, and canned orange and deep yellow vegetables, cooked or raw: for example, carrots, sweetpotatoes, winter squash, and pumpkin.
• Legumes (dry beans and peas)	All cooked dry beans and peas and soybean products: for example, pinto beans, kidney beans, lentils, chickpeas, tofu. (See comment under meat and beans group about counting legumes in the vegetable or the meat and beans group.)
• Starchy vegetables	All fresh, frozen, and canned starchy vegetables: for example, white potatoes, corn, green peas.
• Other vegetables	All fresh, frozen, and canned other vegetables, cooked or raw: for example, tomatoes, tomato juice, lettuce, green beans, onions.
Grains	In developing the food patterns, only grains in low-fat and low-sugar forms were used. *See note 6 on discretionary calories if products that are higher in fat and/or added sugars are consumed.*
• Whole grains	All whole-grain products and whole grains used as ingredients: for example, whole-wheat and rye breads, whole-grain cereals and crackers, oatmeal, and brown rice.
• Other grains	All refined grain products and refined grains used as ingredients: for example, white breads, enriched grain cereals and crackers, enriched pasta, white rice.
Meat, poultry, fish, dry beans, eggs, and nuts (meat & beans)	All meat, poultry, fish, dry beans and peas, eggs, nuts, seeds. Most choices should be lean or low-fat. *See note 6 on discretionary calories if higher fat products are consumed.* Dry beans and peas and soybean products are considered part of this group as well as the vegetable group, but should be counted in one group only.
Milk, yogurt, and cheese (milk)	All milks, yogurts, frozen yogurts, dairy desserts, cheeses (except cream cheese), including lactose-free and lactose-reduced products. Most choices should be fat-free or low-fat. In developing the food patterns, only fat-free milk was used. *See note 6 on discretionary calories if low-fat, reduced-fat, or whole milk or milk products—or milk products that contain added sugars are consumed.* Calcium-fortified soy beverages are an option for those who want a non-dairy calcium source.

[2] Quantity equivalents for each food group:

Grains	The following each count as 1 ounce-equivalent (1 serving) of grains: ½ cup cooked rice, pasta, or cooked cereal; 1 ounce dry pasta or rice; 1 slice bread; 1 small muffin (1 oz); 1 cup ready-to-eat cereal flakes.
Fruits and vegetables	The following each count as 1 cup (2 servings) of fruits or vegetables: 1 cup cut-up raw or cooked fruit or vegetable, 1 cup fruit or vegetable juice, 2 cups leafy salad greens.
Meat and beans	The following each count as 1 ounce-equivalent: 1 ounce lean meat, poultry, or fish, 1 egg; ¼ cup cooked dry beans or tofu; 1 Tbsp peanut butter; ½ ounce nuts or seeds.
Milk	The following each count as 1 cup (1 serving) of milk: 1 cup milk or yogurt, 1½ ounces natural cheese such as Cheddar cheese or 2 ounces processed cheese. Discretionary calories must be counted for all choices, except fat-free milk.

[3] Explanation of vegetable subgroup amounts: Vegetable subgroup amounts are shown in this table as weekly amounts, because it would be difficult for consumers to select foods from each subgroup daily. A daily amount that is one-seventh of the weekly amount listed is used in calculations of nutrient and energy levels in each pattern.

[4] Explanation of grain subgroup amounts: The whole grain subgroup amounts shown in this table represent at least three 1-ounce servings and one-half of the total amount as whole grains for all calorie levels of 1,600 and above. This is the minimum suggested amount of whole grains to consume as part of the food patterns. More whole grains up to all of the grains recommended may be selected, with offsetting decreases in the amounts of other (enriched) grains. In patterns designed for younger children (1,000, 1,200, and 1,400 calories), one-half of the total amount of grains is shown as whole grains.

[5] Explanation of oils: Oils (including soft margarine with zero *trans* fat) shown in this table represent the amounts that are added to foods during processing, cooking, or at the table. Oils and soft margarines include vegetable oils and soft vegetable oil table spreads that have no *trans* fats. The amounts of oils listed in this table are not considered to be part of discretionary calories because they are a major source of the vitamin E and polyunsaturated fatty acids, including the essential fatty acids, in the food pattern. In contrast, solid fats are listed separately in the discretionary calorie table (appendix A-3) because, compared with oils, they are higher in saturated fatty acids and lower in vitamin E and polyunsaturated and monounsaturated fatty acids, including essential fatty acids. The amounts of each type of fat in the food intake pattern were based on 60% oils and/or soft margarines with no *trans* fats and 40% solid fat. The amounts in typical American diets are about 42% oils or soft margarines and about 58% solid fats.

[6] Explanation of discretionary calorie allowance: The discretionary calorie allowance is the remaining amount of calories in each food pattern after selecting the specified number of nutrient-dense forms of foods in each food group. The number of discretionary calories assumes that food items in each food group are selected in nutrient-dense forms (that is, forms that are fat-free or low-fat and that contain no added sugars). Solid fat and sugar calories always need to be counted as discretionary calories, as in the following examples:

- The fat in low-fat, reduced fat, or whole milk or milk products or cheese and the sugar and fat in chocolate milk, ice cream, pudding, etc.
- The fat in higher fat meats (e.g., ground beef with more than 5% fat by weight, poultry with skin, higher fat luncheon meats, sausages)
- The sugars added to fruits and fruit juices with added sugars or fruits canned in syrup
- The added fat and/or sugars in vegetables prepared with added fat or sugars
- The added fats and/or sugars in grain products containing higher levels of fats and/or sugars (e.g., sweetened cereals, higher fat crackers, pies and other pastries, cakes, cookies)

Total discretionary calories should be limited to the amounts shown in the table at each calorie level. The number of discretionary calories is lower in the 1,600-calorie pattern than in the 1,000-, 1,200-, and 1,400-calorie patterns. These lower calorie patterns are designed to meet the nutrient needs of children 2 to 8 years old. The nutrient goals for the 1,600-calorie pattern are set to meet the needs of adult women, which are higher and require that more calories be used in selections from the basic food groups. Additional information about discretionary calories, including an example of the division of these calories between solid fats and added sugars, is provided in appendix A-3.

Appendix A-3. Discretionary Calorie Allowance in the USDA Food Guide

The discretionary calorie allowance is the remaining amount of calories in each calorie level after nutrient-dense forms of foods in each food group are selected. This table shows the number of discretionary calories remaining in each calorie level if nutrient-dense foods are selected. Those trying to lose weight may choose not to use discretionary calories. For those wanting to maintain their weight, discretionary calories may be used to increase the amount of food selected from each food group; to consume foods that are not in the lowest fat form (such as 2% milk or medium-fat meat) or that contain added sugars; to add oil, fat, or sugars to foods; or to consume alcohol. The table shows an example of how these calories may be divided between solid fats and added sugars.

Discretionary calories that remain at each calorie level												
Food Guide calorie level	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
Discretionary calories[1]	165	171	171	132	195	267	290	362	410	426	512	648
Example of division of discretionary calories: Solid fats are shown in grams (g); added sugars in grams (g) and teaspoons (tsp).												
Solid fats[2]	11 g	14 g	14 g	11 g	15 g	18 g	19 g	22 g	24 g	24 g	29 g	34 g
Added sugars[3]	20 g (5 tsp)	16 g (4 tsp)	16 g (4 tsp)	12 g (3 tsp)	20 g (5 tsp)	32 g (8 tsp)	36 g (9 tsp)	48 g (12 tsp)	56 g (14 tsp)	60 g (15 tsp)	72g (18 tsp)	96 g (24 tsp)

[1] Discretionary calories: In developing the Food Guide, food items in nutrient-dense forms (that is, forms that are fat-free or low-fat and that contain no added sugars) were used. The number of discretionary calories assumes that food items in each food group are selected in nutrient-dense forms. Solid fat and sugar calories always need to be counted as discretionary calories, as in the following examples:

The fat in low-fat, reduced fat, or whole milk or milk products or cheese and the sugar and fat in chocolate milk, ice cream, pudding, etc.

The fat in higher fat meats (e.g., ground beef with more than 5% fat by weight, poultry with skin, higher fat luncheon meats, sausages)

The sugars added to fruits and fruit juices with added sugars or fruits canned in syrup

The added fat and/or sugars in vegetables prepared with added fat or sugars

The added fats and/or sugars in grain products containing higher levels of fats and/or sugars (e.g., sweetened cereals, higher fat crackers, pies and other pastries, cakes, cookies)

Total discretionary calories should be limited to the amounts shown in the table at each calorie level. The number of discretionary calories is lower in the 1,600 calorie pattern than in the 1,000, 1,200, and 1,400-calorie patterns. These lower calorie patterns are designed to meet the nutrient needs of children 2 to 8 years old. The nutrient goals for the 1,600 calorie pattern are set to meet the needs of adult women, which are higher and require that more calories be used in selections from the basic food groups. The calories assigned to discretionary calories may be used to increase intake from the basic food groups; to select foods from these groups that are higher in fat or with added sugars; to add oils, solid fats, or sugars to foods or beverages; or to consume alcohol. See note 2 on limits for solid fats.

[2] Solid fats: Amounts of solid fats listed in the table represent about 7 to 8% of calories from saturated fat. Foods in each food group are represented in their lowest fat forms, such as fat-free milk and skinless chicken. Solid fats shown in this table represent the amounts of fats that may be added in cooking or at the table, and fats consumed when higher fat items are selected from the food groups (e.g., whole milk instead of fat-free milk, chicken with skin, or cookies instead of bread), without exceeding the recommended limits on saturated fat intake. Solid fats include meat and poultry fats eaten either as part of the meat or poultry product or separately; milk fat such as that in whole milk, cheese, and butter; shortenings used in baked products; and hard margarines.

Solid fats and oils are separated because their fatty acid compositions differ. Solid fats are higher in saturated fatty acids, and commonly consumed oils and soft margarines with no *trans* fats are higher in vitamin E and polyunsaturated and monounsaturated fatty acids, including essential fatty acids. Oils listed in appendix A-2 are not considered to be part of the discretionary calorie allowance because they are a major source of the essential fatty acids and vitamin E in the food pattern.

The gram weights for solid fats are the amounts of these products that can be included in the pattern and are not identical to the amount of lipids in these items, because some products (margarines, butter) contain water or other ingredients, in addition to lipids.

[3] Added sugars: Added sugars are the sugars and syrups added to foods and beverages in processing or preparation, not the naturally occurring sugars in fruits or milk. The amounts of added sugars suggested in the example are NOT specific recommendations for amounts of added sugars to consume, but rather represent the amounts that can be included at each calorie level without over-consuming calories. The suggested amounts of added sugars may be helpful as part of the Food Guide to allow for some sweetened foods or beverages, without exceeding energy needs. This use of added sugars as a calorie balance requires two assumptions: (1) that selections are made from all food groups in accordance with the suggested amounts and (2) that additional fats are used in the amounts shown, which, together with the fats in the core food groups, represent about 27-30% of calories from fat.

APPENDIX B. FOOD SOURCES OF SELECTED NUTRIENTS

Appendix B-1. Food Sources of Potassium

Food Sources of Potassium ranked by milligrams of potassium per standard amount, also showing calories in the standard amount.

(The AI for adults is 4,700 mg/day potassium.)

Food, Standard Amount	Potassium (mg)	Calories
Sweetpotato, baked, 1 potato (146 g)	694	131
Tomato paste, ¼ cup	664	54
Beet greens, cooked, ½ cup	655	19
Potato, baked, flesh, 1 potato (156 g)	610	145
White beans, canned, ½ cup	595	153
Yogurt, plain, non-fat, 8-oz container	579	127
Tomato puree, ½ cup	549	48
Clams, canned, 3 oz	534	126
Yogurt, plain, low-fat, 8-oz container	531	143
Prune juice, ¾ cup	530	136
Carrot juice, ¾ cup	517	71
Blackstrap molasses, 1 Tbsp	498	47
Halibut, cooked, 3 oz	490	119
Soybeans, green, cooked, ½ cup	485	127
Tuna, yellowfin, cooked, 3 oz	484	118
Lima beans, cooked, ½ cup	484	104
Winter squash, cooked, ½ cup	448	40
Soybeans, mature, cooked, ½ cup	443	149
Rockfish, Pacific, cooked, 3 oz	442	103
Cod, Pacific, cooked, 3 oz	439	89
Bananas, 1 medium	422	105
Spinach, cooked, ½ cup	419	21
Tomato juice, ¾ cup	417	31
Tomato sauce, ½ cup	405	39
Peaches, dried, uncooked, ¼ cup	398	96
Prunes, stewed, ½ cup	398	133
Milk, non-fat, 1 cup	382	83
Pork chop, center loin, cooked, 3 oz	382	197
Apricots, dried, uncooked, ¼ cup	378	78
Rainbow trout, farmed, cooked, 3 oz	375	144
Pork loin, center rib (roasts), lean, roasted, 3 oz	371	190
Buttermilk, cultured, low-fat, 1 cup	370	98
Cantaloupe, ⅛ medium	368	47
1%–2% milk, 1 cup	366	102–122
Honeydew melon, ⅛ medium	365	58
Lentils, cooked, ½ cup	365	115
Plantains, cooked, ½ cup slices	358	90
Kidney beans, cooked, ½ cup	358	112
Orange juice, ¾ cup	355	85
Split peas, cooked, ½ cup	355	116
Yogurt, plain, whole milk, 8 oz container	352	138

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-2. Food Sources of Vitamin E

Food Sources of Vitamin E ranked by milligrams of vitamin E per standard amount; also calories in the standard amount.
(All provide ≥ 10% of RDA for vitamin E for adults, which is 15 mg α–tocopherol [AT]/day.)

Food, Standard Amount	AT (mg)	Calories
Fortified ready-to-eat cereals, ~ 1 oz	1.6–12.8	90–107
Sunflower seeds, dry roasted, 1 oz	7.4	165
Almonds, 1 oz	7.3	164
Sunflower oil, high linoleic, 1 Tbsp	5.6	120
Cottonseed oil, 1 Tbsp	4.8	120
Safflower oil, high oleic, 1 Tbsp	4.6	120
Hazelnuts (filberts), 1 oz	4.3	178
Mixed nuts, dry roasted, 1 oz	3.1	168
Turnip greens, frozen, cooked, ½ cup	2.9	24
Tomato paste, ¼ cup	2.8	54
Pine nuts, 1 oz	2.6	191
Peanut butter, 2 Tbsp	2.5	192
Tomato puree, ½ cup	2.5	48
Tomato sauce, ½ cup	2.5	39
Canola oil, 1 Tbsp	2.4	124
Wheat germ, toasted, plain, 2 Tbsp	2.3	54
Peanuts, 1 oz	2.2	166
Avocado, raw, ½ avocado	2.1	161
Carrot juice, canned, ¾ cup	2.1	71
Peanut oil, 1 Tbsp	2.1	119
Corn oil, 1 Tbsp	1.9	120
Olive oil, 1 Tbsp	1.9	119
Spinach, cooked, ½ cup	1.9	21
Dandelion greens, cooked, ½ cup	1.8	18
Sardine, Atlantic, in oil, drained, 3 oz	1.7	177
Blue crab, cooked/canned, 3 oz	1.6	84
Brazil nuts, 1 oz	1.6	186
Herring, Atlantic, pickled, 3 oz	1.5	222

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-3. Food Sources of Iron

Food Sources of Iron ranked by milligrams of iron per standard amount; also calories in the standard amount.
(All are ≥ 10% of RDA for teen and adult females, which is 18 mg/day.)

Food, Standard Amount	Iron (mg)	Calories
Clams, canned, drained, 3 oz	23.8	126
Fortified ready-to-eat cereals (various), ~ 1 oz	1.8 –21.1	54–127
Oysters, eastern, wild, cooked, moist heat, 3 oz	10.2	116
Organ meats (liver, giblets), various, cooked, 3 oz [a]	5.2–9.9	134–235
Fortified instant cooked cereals (various), 1 packet	4.9–8.1	Varies
Soybeans, mature, cooked, ½ cup	4.4	149
Pumpkin and squash seed kernels, roasted, 1 oz	4.2	148
White beans, canned, ½ cup	3.9	153
Blackstrap molasses, 1 Tbsp	3.5	47
Lentils, cooked, ½ cup	3.3	115
Spinach, cooked from fresh, ½ cup	3.2	21
Beef, chuck, blade roast, lean, cooked, 3 oz	3.1	215
Beef, bottom round, lean, 0" fat, all grades, cooked, 3 oz	2.8	182
Kidney beans, cooked, ½ cup	2.6	112
Sardines, canned in oil, drained, 3 oz	2.5	177
Beef, rib, lean, ¼" fat, all grades, 3 oz	2.4	195
Chickpeas, cooked, ½ cup	2.4	134
Duck, meat only, roasted, 3 oz	2.3	171
Lamb, shoulder, arm, lean, ¼" fat, choice, cooked, 3 oz	2.3	237
Prune juice, ¾ cup	2.3	136
Shrimp, canned, 3 oz	2.3	102
Cowpeas, cooked, ½ cup	2.2	100
Ground beef, 15% fat, cooked, 3 oz	2.2	212
Tomato puree, ½ cup	2.2	48
Lima beans, cooked, ½ cup	2.2	108
Soybeans, green, cooked, ½ cup	2.2	127
Navy beans, cooked, ½ cup	2.1	127
Refried beans, ½ cup	2.1	118
Beef, top sirloin, lean, 0" fat, all grades, cooked, 3 oz	2.0	156
Tomato paste, ¼ cup	2.0	54

[a] High in cholesterol.

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-4. Non-Dairy Food Sources of Calcium

Non-Dairy Food Sources of Calcium ranked by milligrams of calcium per standard amount; also calories in the standard amount. The bioavailability may vary. (The AI for adults is 1,000 mg/day.)[a]

Food, Standard Amount	Calcium (mg)	Calories
Fortified ready-to-eat cereals (various), 1 oz	236–1043	88–106
Soy beverage, calcium fortified, 1 cup	368	98
Sardines, Atlantic, in oil, drained, 3 oz	325	177
Tofu, firm, prepared with nigari[b], ½ cup	253	88
Pink salmon, canned, with bone, 3 oz	181	118
Collards, cooked from frozen, ½ cup	178	31
Molasses, blackstrap, 1 Tbsp	172	47
Spinach, cooked from frozen, ½ cup	146	30
Soybeans, green, cooked, ½ cup	130	127
Turnip greens, cooked from frozen, ½ cup	124	24
Ocean perch, Atlantic, cooked, 3 oz	116	103
Oatmeal, plain and flavored, instant, fortified, 1 packet prepared	99–110	97–157
Cowpeas, cooked, ½ cup	106	80
White beans, canned, ½ cup	96	153
Kale, cooked from frozen, ½ cup	90	20
Okra, cooked from frozen, ½ cup	88	26
Soybeans, mature, cooked, ½ cup	88	149
Blue crab, canned, 3 oz	86	84
Beet greens, cooked from fresh, ½ cup	82	19
Pak-choi, Chinese cabbage, cooked from fresh, ½ cup	79	10
Clams, canned, 3 oz	78	126
Dandelion greens, cooked from fresh, ½ cup	74	17
Rainbow trout, farmed, cooked, 3 oz	73	144

[a] Both calcium content and bioavailability should be considered when selecting dietary sources of calcium. Some plant foods have calcium that is well absorbed, but the large quantity of plant foods that would be needed to provide as much calcium as in a glass of milk may be unachievable for many. Many other calcium-fortified foods are available, but the percentage of calcium that can be absorbed is unavailable for many of them.

[b] Calcium sulfate and magnesium chloride.

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-5. Food Sources of Calcium

Food Sources of Calcium ranked by milligrams of calcium per standard amount; also calories in the standard amount.
(All are ≥ 20% of AI for adults 19-50, which is 1,000 mg/day.)

Food, Standard Amount	Calcium (mg)	Calories
Plain yogurt, non-fat (13 g protein/8 oz), 8-oz container	452	127
Romano cheese, 1.5 oz	452	165
Pasteurized process Swiss cheese, 2 oz	438	190
Plain yogurt, low-fat (12 g protein/8 oz), 8-oz container	415	143
Fruit yogurt, low-fat (10 g protein/8 oz), 8-oz container	345	232
Swiss cheese, 1.5 oz	336	162
Ricotta cheese, part skim, ½ cup	335	170
Pasteurized process American cheese food, 2 oz	323	188
Provolone cheese, 1.5 oz	321	150
Mozzarella cheese, part-skim, 1.5 oz	311	129
Cheddar cheese, 1.5 oz	307	171
Fat-free (skim) milk, 1 cup	306	83
Muenster cheese, 1.5 oz	305	156
1% low-fat milk, 1 cup	290	102
Low-fat chocolate milk (1%), 1 cup	288	158
2% reduced fat milk, 1 cup	285	122
Reduced fat chocolate milk (2%), 1 cup	285	180
Buttermilk, low-fat, 1 cup	284	98
Chocolate milk, 1 cup	280	208
Whole milk, 1 cup	276	146
Yogurt, plain, whole milk (8 g protein/8 oz), 8-oz container	275	138
Ricotta cheese, whole milk, ½ cup	255	214
Blue cheese, 1.5 oz	225	150
Mozzarella cheese, whole milk, 1.5 oz	215	128
Feta cheese, 1.5 oz	210	113

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-6. Food Sources of Vitamin A

Food Sources of Vitamin A ranked by micrograms Retinol Activity Equivalents (RAE) of vitamin A per standard amount; also calories in the standard amount. (All are ≥ 20% of RDA for adult men, which is 900 mg/day RAE.)

Food, Standard Amount	Vitamin A (µg RAE)	Calories
Organ meats (liver, giblets), various, cooked, 3 oz[a]	1490–9126	134–235
Carrot juice, 3/4 cup	1692	71
Sweetpotato with peel, baked, 1 medium	1096	103
Pumpkin, canned, 1/2 cup	953	42
Carrots, cooked from fresh, 1/2 cup	671	27
Spinach, cooked from frozen, 1/2 cup	573	30
Collards, cooked from frozen, 1/2 cup	489	31
Kale, cooked from frozen, 1/2 cup	478	20
Mixed vegetables, canned, 1/2 cup	474	40
Turnip greens, cooked from frozen, 1/2 cup	441	24
Instant cooked cereals, fortified, prepared, 1 packet	285–376	75–97
Various ready-to-eat cereals, with added vit. A, ~1 oz	180–376	100–117
Carrot, raw, 1 small	301	20
Beet greens, cooked, 1/2 cup	276	19
Winter squash, cooked, 1/2 cup	268	38
Dandelion greens, cooked, 1/2 cup	260	18
Cantaloupe, raw, 1/4 medium melon	233	46
Mustard greens, cooked, 1/2 cup	221	11
Pickled herring, 3 oz	219	222
Red sweet pepper, cooked, 1/2 cup	186	19
Chinese cabbage, cooked, 1/2 cup	180	10

[a] High in cholesterol.

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-7. Food Sources of Magnesium

Food Sources of Magnesium ranked by milligrams of magnesium per standard amount; also calories in the standard amount.
(All are ≥ 10% of RDA for adult men, which is 420 mg/day.)

Food, Standard Amount	Magnesium (mg)	Calories
Pumpkin and squash seed kernels, roasted, 1 oz	151	148
Brazil nuts, 1 oz	107	186
Bran ready-to-eat cereal (100%), ~1 oz	103	74
Halibut, cooked, 3 oz	91	119
Quinoa, dry, ¼ cup	89	159
Spinach, canned, ½ cup	81	25
Almonds, 1 oz	78	164
Spinach, cooked from fresh, ½ cup	78	20
Buckwheat flour, ¼ cup	75	101
Cashews, dry roasted, 1 oz	74	163
Soybeans, mature, cooked, ½ cup	74	149
Pine nuts, dried, 1 oz	71	191
Mixed nuts, oil roasted, with peanuts, 1 oz	67	175
White beans, canned, ½ cup	67	154
Pollock, walleye, cooked, 3 oz	62	96
Black beans, cooked, ½ cup	60	114
Bulgur, dry, ¼ cup	57	120
Oat bran, raw, ¼ cup	55	58
Soybeans, green, cooked, ½ cup	54	127
Tuna, yellowfin, cooked, 3 oz	54	118
Artichokes (hearts), cooked, ½ cup	50	42
Peanuts, dry roasted, 1 oz	50	166
Lima beans, baby, cooked from frozen, ½ cup	50	95
Beet greens, cooked, ½ cup	49	19
Navy beans, cooked, ½ cup	48	127
Tofu, firm, prepared with nigari[a], ½ cup	47	88
Okra, cooked from frozen, ½ cup	47	26
Soy beverage, 1 cup	47	127
Cowpeas, cooked, ½ cup	46	100
Hazelnuts, 1 oz	46	178
Oat bran muffin, 1 oz	45	77
Great northern beans, cooked, ½ cup	44	104
Oat bran, cooked, ½ cup	44	44
Buckwheat groats, roasted, cooked, ½ cup	43	78
Brown rice, cooked, ½ cup	42	108
Haddock, cooked, 3 oz	42	95

[a] Calcium sulfate and magnesium chloride.

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-8. Food Sources of Dietary Fiber

Food Sources of Dietary Fiber ranked by grams of dietary fiber per standard amount; also calories in the standard amount. (All are ≥10% of AI for adult women, which is 25 grams/day.)

Food, Standard Amount	Dietary Fiber (g)	Calories
Navy beans, cooked, ½ cup	9.5	128
Bran ready-to-eat cereal (100%), ½ cup	8.8	78
Kidney beans, canned, ½ cup	8.2	109
Split peas, cooked, ½ cup	8.1	116
Lentils, cooked, ½ cup	7.8	115
Black beans, cooked, ½ cup	7.5	114
Pinto beans, cooked, ½ cup	7.7	122
Lima beans, cooked, ½ cup	6.6	108
Artichoke, globe, cooked, 1 each	6.5	60
White beans, canned, ½ cup	6.3	154
Chickpeas, cooked, ½ cup	6.2	135
Great northern beans, cooked, ½ cup	6.2	105
Cowpeas, cooked, ½ cup	5.6	100
Soybeans, mature, cooked, ½ cup	5.2	149
Bran ready-to-eat cereals, various, ~1 oz	2.6–5.0	90–108
Crackers, rye wafers, plain, 2 wafers	5.0	74
Sweetpotato, baked, with peel, 1 medium (146 g)	4.8	131
Asian pear, raw, 1 small	4.4	51
Green peas, cooked, ½ cup	4.4	67
Whole-wheat English muffin, 1 each	4.4	134
Pear, raw, 1 small	4.3	81
Bulgur, cooked, ½ cup	4.1	76
Mixed vegetables, cooked, ½ cup	4.0	59
Raspberries, raw, ½ cup	4.0	32
Sweetpotato, boiled, no peel, 1 medium (156 g)	3.9	119
Blackberries, raw, ½ cup	3.8	31
Potato, baked, with skin, 1 medium	3.8	161
Soybeans, green, cooked, ½ cup	3.8	127
Stewed prunes, ½ cup	3.8	133
Figs, dried, ¼ cup	3.7	93
Dates, ¼ cup	3.6	126
Oat bran, raw, ¼ cup	3.6	58
Pumpkin, canned, ½ cup	3.6	42
Spinach, frozen, cooked, ½ cup	3.5	30
Shredded wheat ready-to-eat cereals, various, ~1 oz	2.8–3.4	96
Almonds, 1 oz	3.3	164
Apple with skin, raw, 1 medium	3.3	72
Brussels sprouts, frozen, cooked, ½ cup	3.2	33
Whole-wheat spaghetti, cooked, ½ cup	3.1	87

Appendix B-8: Continued

Food, Standard Amount	Dietary Fiber (g)	Calories
Banana, 1 medium	3.1	105
Orange, raw, 1 medium	3.1	62
Oat bran muffin, 1 small	3.0	178
Guava, 1 medium	3.0	37
Pearled barley, cooked, ½ cup	3.0	97
Sauerkraut, canned, solids, and liquids, ½ cup	3.0	23
Tomato paste, ¼ cup	2.9	54
Winter squash, cooked, ½ cup	2.9	38
Broccoli, cooked, ½ cup	2.8	26
Parsnips, cooked, chopped, ½ cup	2.8	55
Turnip greens, cooked, ½ cup	2.5	15
Collards, cooked, ½ cup	2.7	25
Okra, frozen, cooked, ½ cup	2.6	26
Peas, edible-podded, cooked, ½ cup	2.5	42

Source: ARS Nutrient Database for Standard Reference, Release 17. Foods are from single nutrient reports, which are sorted either by food description or in descending order by nutrient content in terms of common household measures. The food items and weights in these reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted.

Appendix B-9. Food Sources of Vitamin C

Food Sources of Vitamin C ranked by milligrams of vitamin C per standard amount; also calories in the standard amount.
(All provide ≥ 20% of RDA for adult men, which is 90 mg/day.)

Food, Standard Amount	Vitamin C (mg)	Calories
Guava, raw, ½ cup	188	56
Red sweet pepper, raw, ½ cup	142	20
Red sweet pepper, cooked, ½ cup	116	19
Kiwi fruit, 1 medium	70	46
Orange, raw, 1 medium	70	62
Orange juice, ¾ cup	61–93	79–84
Green pepper, sweet, raw, ½ cup	60	15
Green pepper, sweet, cooked, ½ cup	51	19
Grapefruit juice, ¾ cup	50–70	71–86
Vegetable juice cocktail, ¾ cup	50	34
Strawberries, raw, ½ cup	49	27
Brussels sprouts, cooked, ½ cup	48	28
Cantaloupe, ¼ medium	47	51
Papaya, raw, ¼ medium	47	30
Kohlrabi, cooked, ½ cup	45	24
Broccoli, raw, ½ cup	39	15
Edible pod peas, cooked, ½ cup	38	34
Broccoli, cooked, ½ cup	37	26
Sweetpotato, canned, ½ cup	34	116
Tomato juice, ¾ cup	33	31
Cauliflower, cooked, ½ cup	28	17
Pineapple, raw, ½ cup	28	37
Kale, cooked, ½ cup	27	18
Mango, ½ cup	23	54

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

APPENDIX C. GLOSSARY OF TERMS

Acceptable Macronutrient Distribution Ranges (AMDR)—Range of intake for a particular energy source that is associated with reduced risk of chronic disease while providing intakes of essential nutrients. If an individual consumes in excess of the AMDR, there is a potential of increasing the risk of chronic diseases and/or insufficient intakes of essential nutrients.

Added Sugars—Sugars and syrups that are added to foods during processing or preparation. Added sugars do not include naturally occurring sugars such as those that occur in milk and fruits.

Adequate Intakes (AI)—A recommended average daily nutrient intake level based on observed or experimentally determined approximations or estimates of mean nutrient intake by a group (or groups) of apparently healthy people. The AI is used when the Estimated Average Requirement cannot be determined.

Basic Food Groups—In the USDA food intake patterns, the basic food groups are grains; fruits; vegetables; milk, yogurt, and cheese; and meat, poultry, fish, dried peas and beans, eggs, and nuts. In the DASH Eating Plan, nuts, seeds, and dry beans are a separate food group from meat, poultry, fish, and eggs.

Body Mass Index (BMI)—BMI is a practical measure for approximating total body fat and is a measure of weight in relation to height. It is calculated as weight in kilograms divided by the square of the height in meters.

Cardiovascular Disease—Refers to diseases of the heart and diseases of the blood vessel system (arteries, capillaries, veins) within a person's entire body, such as the brain, legs, and lungs.

Cholesterol—A sterol present in all animal tissues. Free cholesterol is a component of cell membranes and serves as a precursor for steroid hormones, including estrogen, testosterone, aldosterone, and bile acids. Humans are able to synthesize sufficient cholesterol to meet biologic requirements, and there is no evidence for a dietary requirement for cholesterol.

- **Dietary cholesterol**—Consumed from foods of animal origin, including meat, fish, poultry, eggs, and dairy products. Plant foods, such as grains, fruits and vegetables, and oils from these sources contain no dietary cholesterol.
- **Serum cholesterol**—Travels in the blood in distinct particles containing both lipids and proteins. Three major classes of lipoproteins are found in the serum of a fasting individual: low-density lipoprotein (LDL), high-density lipoprotein (HDL), and very-low-density lipoprotein (VLDL). Another lipoprotein class, intermediate-density lipoprotein (IDL), resides between VLDL and LDL; in clinical practice, IDL is included in the LDL measurement.

Chronic Diseases—such as heart disease, cancer, and diabetes—are the leading causes of death and disability in the United States. These diseases account for 7 of every 10 deaths and affect the quality of life of 90 million Americans. Although chronic diseases are among the most common and costly health problems, they are also among the most preventable. Adopting healthy behaviors such as eating nutritious foods, being physically active, and avoiding tobacco use can prevent or control the devastating effects of these diseases.

Coronary Heart Disease—A narrowing of the small blood vessels that supply blood and oxygen to the heart (coronary arteries).

Daily Food Intake Pattern—Identifies the types and amounts of foods that are recommended to be eaten each day and that meet specific nutritional goals. (*Federal Register Notice*, vol. 68, no. 176, p. 53536, Thursday, September 11, 2003)

Danger Zone—The temperature that allows bacteria to multiply rapidly and produce toxins, between 40°F and 140°F. To keep food out of this danger zone, keep cold food cold and hot food hot. Keep food cold in the refrigerator, in coolers, or on ice in the service line. Keep hot food in the oven, in heated chafing dishes, or in preheated steam tables, warming trays, and/or slow cookers. Never leave perishable foods, such as meat, poultry, eggs, and casseroles, in the danger zone longer than 2 hours or longer than 1 hour in temperatures above 90°F.

Dietary Fiber—Nonstarch polysaccharides and lignin that are not digested by enzymes in the small intestine. Dietary fiber typically refers to nondigestable carbohydrates from plant foods.

Dietary Reference Intakes (DRIs)—A set of nutrient-based reference values that expand upon and replace the former Recommended Dietary Allowances (RDAs) in the United States and the Recommended Nutrient Intakes (RNIs) in Canada. They are actually a set of four reference values: Estimated Average Requirements (EARs), RDAs, AIs, and Tolerable Upper Intake Levels (ULs).

Discretionary Calorie Allowance—The balance of calories remaining in a person's energy allowance after accounting for the number of calories needed to meet recommended nutrient intakes through consumption of foods in low-fat or no added sugar forms. The discretionary calorie allowance may be used in selecting forms of foods that are not the most nutrient-dense (e.g., whole milk rather than fat-free milk) or may be additions to foods (e.g., salad dressing, sugar, butter).

Energy Allowance–A person's energy allowance is the calorie intake at which weight maintenance occurs.

Estimated Average Requirements–EAR is the average daily nutrient intake level estimated to meet the requirement of half the healthy individuals in a particular life stage and gender group.

Estimated Energy Requirement–The EER represents the average dietary energy intake that will maintain energy balance in a healthy person of a given gender, age, weight, height, and physical activity level.

FDAMA–The Food and Drug Administration Modernization Act, enacted Nov. 21, 1997, amended the Federal Food, Drug, and Cosmetic Act relating to the regulation of food, drugs, devices, and biological products. With the passage of FDAMA, Congress enhanced FDA's mission in ways that recognized the Agency would be operating in a 21st century characterized by increasing technological, trade, and public health complexities.

FightBAC!–A national public education campaign to promote food safety to consumers and educate them on how to handle and prepare food safely. In this campaign, pathogens are represented by a cartoon-like bacteria character named "BAC."

Foodborne Disease–Caused by consuming contaminated foods or beverages. Many different disease-causing microbes, or pathogens, can contaminate foods, so there are many different foodborne infections. In addition, poisonous chemicals, or other harmful substances, can cause foodborne diseases if they are present in food. The most commonly recognized foodborne infections are those caused by the bacteria *Campylobacter, Salmonella,* and *E. coli* O157:H7, and by a group of viruses called calicivirus, also known as the Norwalk and Norwalk-like viruses.

Heme Iron–One of two forms of iron occurring in foods. Heme iron is bound within the iron-carrying proteins (hemoglobin and myoglobin) found in meat, poultry, and fish. While it contributes a smaller portion of iron to typical American diets than non-heme iron, a larger proportion of heme iron is absorbed.

High Fructose Corn Syrup (HFCS)–A corn sweetener derived from the wet milling of corn. Cornstarch is converted to a syrup that is nearly all dextrose. HFCS is found in numerous foods and beverages on the grocery store shelves.

Hydrogenation–A chemical reaction that adds hydrogen atoms to an unsaturated fat, thus saturating it and making it solid at room temperature.

Leisure-Time Physical Activity–Physical activity that is performed during exercise, recreation, or any additional time other than that associated with one's regular job duties, occupation, or transportation.

Listeriosis–A serious infection caused by eating food contaminated with the bacterium *Listeria monocytogenes,* which has recently been recognized as an important public health problem in the United States. The disease affects primarily pregnant women, their fetuses, newborns, and adults with weakened immune systems. Listeria is killed by pasteurization and cooking; however, in certain ready-to-eat foods, such as hot dogs and deli meats, contamination may occur after cooking/manufacture but before packaging. *Listeria monocytogenes* can survive at refrigerated temperatures.

Macronutrient–The dietary macronutrient groups are carbohydrates, proteins, and fats.

Micronutrient–Vitamins and minerals that are required in the human diet in very small amounts.

Moderate Physical Activity–Any activity that burns 3.5 to 7 kcal/min or the equivalent of 3 to 6 metabolic equivalents (METs) and results in achieving 60 to 73 percent of peak heart rate. An estimate of a person's peak heart rate can be obtained by subtracting the person's age from 220. Examples of moderate physical activity include walking briskly, mowing the lawn, dancing, swimming, or bicycling on level terrain. A person should feel some exertion but should be able to carry on a conversation comfortably during the activity.

Monounsaturated Fatty Acids–Monounsaturated fatty acids (MUFAs) have one double bond. Plant sources that are rich in MUFAs include vegetable oils (e.g., canola oil, olive oil, high oleic safflower and sunflower oils) that are liquid at room temperature and nuts.

Nutrient-Dense Foods–Nutrient-dense foods are those that provide substantial amounts of vitamins and minerals and relatively fewer calories.

Ounce-Equivalent–In the grains food group, the amount of a food counted as equal to a one-ounce slice of bread; in the meat, poultry, fish, dry beans, eggs, and nuts food group, the amount of food counted as equal to one ounce of cooked meat, poultry, or fish. Examples are listed in table 1 and appendix A-1.

n-6 PUFAs–Linoleic acid, one of the n-6 fatty acids, is required but cannot be synthesized by humans and, therefore, is considered essential in the diet. Primary sources are liquid vegetable oils, including soybean oil, corn oil, and safflower oil.

n-3 PUFAs–α-linolenic acid is an n-3 fatty acid that is required because it is not synthesized by humans and, therefore, is considered essential in the diet. It is obtained from plant sources, including soybean oil, canola oil, walnuts, and flaxseed. Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are long chain n-3 fatty acids that are contained in fish and shellfish.

Pathogen–Any microorganism that can cause or is capable of causing disease.

Polyunsaturated Fatty Acids–Polyunsaturated fatty acids (PUFAs) have two or more double bonds and may be of two types, based on the position of the first double bond.

Portion Size–The amount of a food consumed in one eating occasion.

Recommended Dietary Allowance (RDA)–The dietary intake level that is sufficient to meet the nutrient requirement of nearly all (97 to 98 percent) healthy individuals in a particular life stage and gender group.

Resistance Exercise–Anaerobic training, including weight training, weight machine use, and resistance band workouts. Resistance training will increase strength, muscular endurance, and muscle size, while running and jogging will not.

Saturated Fatty Acids–Saturated fatty acids have no double bonds. They primarily come from animal products such as meat and dairy products. In general, animal fats are solid at room temperature.

Sedentary Behaviors–In scientific literature, sedentary is often defined in terms of little or no physical activity during leisure time. A sedentary lifestyle is a lifestyle characterized by little or no physical activity.

Serving Size–A standardized amount of a food, such as a cup or an ounce, used in providing dietary guidance or in making comparisons among similar foods.

Tolerable Upper Intake Level (UL)–The highest average daily nutrient intake level likely to pose no risk of adverse health affects for nearly all individuals in a particular life stage and gender group. As intake increases above the UL, the potential risk of adverse health affects increases.

***Trans* fatty acids**–*Trans* fatty acids, or *trans* fats, are unsaturated fatty acids that contain at least one non-conjugated double bond in the *trans* configuration. Sources of *trans* fatty acids include hydrogenated/partially hydrogenated vegetable oils that are used to make shortening and commercially prepared baked goods, snack foods, fried foods, and margarine. *Trans* fatty acids also are present in foods that come from ruminant animals (e.g., cattle and sheep). Such foods include dairy products, beef, and lamb.

Vegetarian–There are several categories of vegetarians, all of whom avoid meat and/or animal products. The vegan or total vegetarian diet includes only foods from plants: fruits, vegetables, legumes (dried beans and peas), grains, seeds, and nuts. The lactovegetarian diet includes plant foods plus cheese and other dairy products. The ovo-lactovegetarian (or lacto-ovovegetarian) diet also includes eggs. Semi-vegetarians do not eat red meat but include chicken and fish with plant foods, dairy products, and eggs.

Vigorous Physical Activity–Any activity that burns more than 7 kcal/min or the equivalent of 6 or more metabolic equivalents (METs) and results in achieving 74 to 88 percent of peak heart rate. An estimate of a person's peak heart rate can be obtained by subtracting the person's age from 220. Examples of vigorous physical activity include jogging, mowing the lawn with a nonmotorized push mower, chopping wood, participating in high-impact aerobic dancing, swimming continuous laps, or bicycling uphill. Vigorous-intensity physical activity may be intense enough to represent a substantial challenge to an individual and results in a significant increase in heart and breathing rate.

Weight-Bearing Exercise–Any activity one performs that works bones and muscles against gravity, including walking, running, hiking, dancing, gymnastics, and soccer.

Whole Grains–Foods made from the entire grain seed, usually called the kernel, which consists of the bran, germ, and endosperm. If the kernel has been cracked, crushed, or flaked, it must retain nearly the same relative proportions of bran, germ, and endosperm as the original grain in order to be called whole grain.[16]

[16] AACC Press Release, AACC To Create Consumer-Friendly Whole Grain Definition, March 5, 2004. http://www.aaccnet.org/news/CFWholeGrain.asp.

APPENDIX D. ACRONYMS

AI–Adequate Intakes
AMDR–Acceptable Macronutrient Distribution Range
ARS–Agricultural Research Service
BMI–Body Mass Index
CSFII–Continuing Survey of Food Intakes by Individuals
DASH–Dietary Approaches to Stop Hypertension
DFE–Dietary Folate Equivalent
DHA–Docosahexaenoic acid
DRI–Dietary Reference Intake
DV–Daily Value
EAR–Estimated Average Requirement
EER–Estimated Energy Requirement
EPA–Eicosapentaenoic acid
FDA–Food and Drug Administration
FDAMA–Food and Drug Administration Modernization Act
HDL–High-density lipoprotein
HHS–U.S. Department of Health and Human Services
IU–International unit
LDL–Low-density lipoprotein
RAE–Retinol Activity Equivalent
RDA–Recommended Dietary Allowance
USDA–U.S. Department of Agriculture

NOTES

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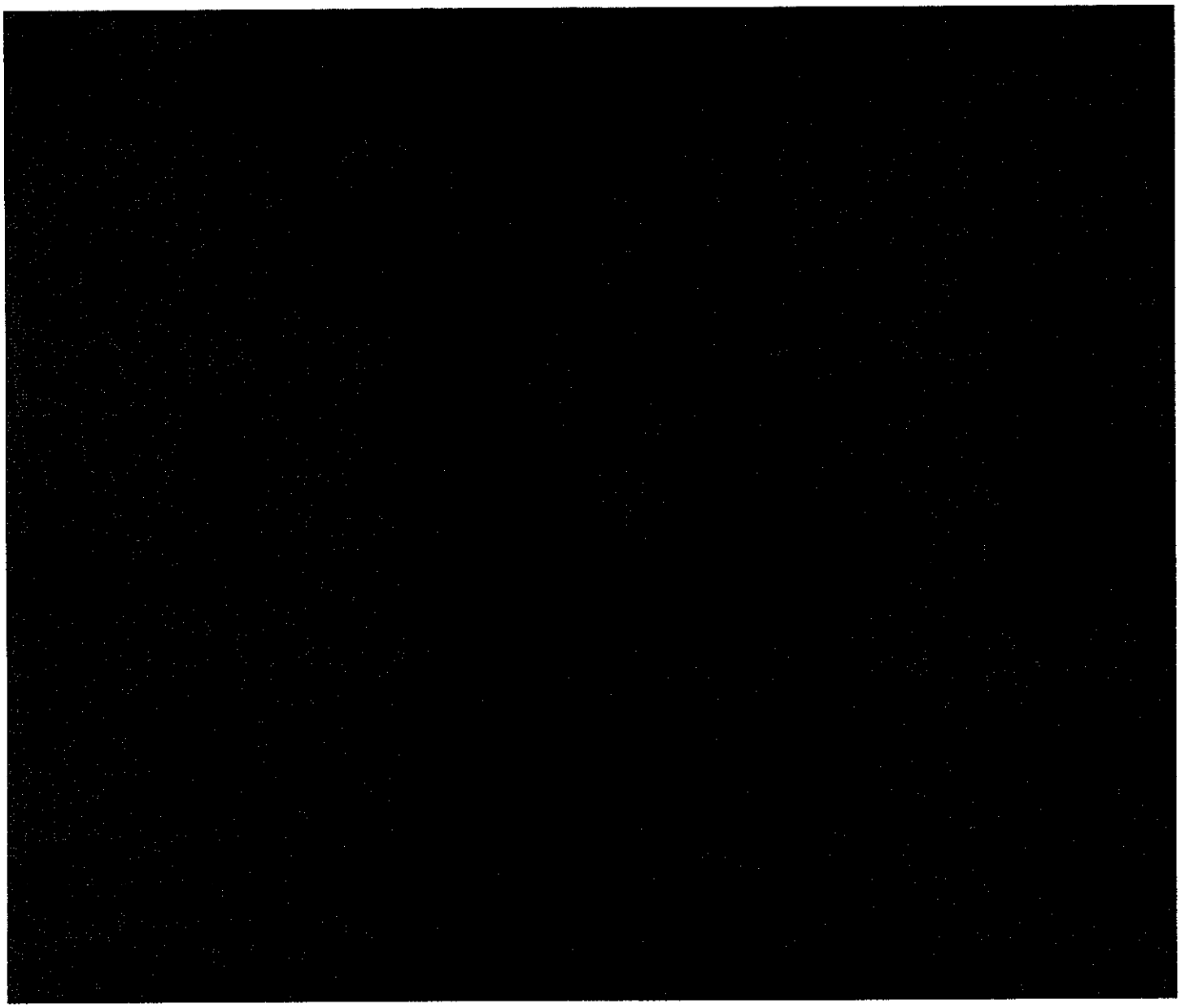

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Palm and partially hydrogenated soybean oils adversely alter lipoprotein profiles compared with soybean and canola oils in moderately hyperlipidemic subjects[1–4]

Sonia Vega-López, Lynne M Ausman, Susan M Jalbert, Arja T Erkkilä, and Alice H Lichtenstein

ABSTRACT

Background: Partially hydrogenated fat has an unfavorable effect on cardiovascular disease risk. Palm oil is a potential substitute because of favorable physical characteristics.

Objective: We assessed the effect of palm oil on lipoprotein profiles compared with the effects of both partially hydrogenated fat and oils high in monounsaturated or polyunsaturated fatty acids.

Design: Fifteen volunteers aged ≥50 y with LDL cholesterol ≥130 mg/dL were provided with food for each of 4 diets (35 d/phase) varying in type of fat (partially hydrogenated soybean, soybean, palm, or canola; two-thirds fat, 20% of energy). Plasma fatty acid profiles, lipids, lipoproteins, apolipoprotein A-I, apolipoprotein B, lipoprotein(a), glucose, insulin, HDL subfractions, and indicators of lipoprotein metabolism (HDL-cholesterol fractional esterification rate, cholesteryl ester transfer protein, phospholipid transfer protein, and paraoxonase activities) were measured at the end of each phase.

Results: Plasma fatty acid profiles reflected the main source of dietary fat. Partially hydrogenated soybean and palm oils resulted in higher LDL-cholesterol concentrations than did soybean (12% and 14%, respectively; $P < 0.05$) and canola (16% and 18%; $P < 0.05$) oils. Apolipoprotein B ($P < 0.05$) and A-I ($P < 0.05$) concentrations mirrored the pattern of LDL- and HDL-cholesterol concentrations, respectively. No significant effect on the total-to-HDL cholesterol ratio was observed for palm oil compared with the other dietary fats. HDL3 cholesterol was higher after palm oil than after partially hydrogenated and soybean oils ($P < 0.05$). Differences in measures of glucose and HDL intravascular processing attributable to dietary fat were small.

Conclusion: Palm and partially hydrogenated soybean oils, compared with soybean and canola oils, adversely altered the lipoprotein profile in moderately hyperlipidemic subjects without significantly affecting HDL intravascular processing markers. *Am J Clin Nutr* 2006;84:54–62.

KEY WORDS Cardiovascular disease, *trans* fatty acids, lipoproteins, palm oil, partially hydrogenated soybean oil, LDL cholesterol, HDL cholesterol, insulin, glucose, cholesteryl ester transfer protein, phospholipid transfer protein

INTRODUCTION

The relation between plasma lipid and lipoprotein concentrations and the risk of developing cardiovascular disease (CVD) on the basis of dietary fat type is well documented (1, 2). According to early findings in experimental animals and humans (3, 4), a population-wide recommendation was made to replace fats of animal origin, which are high in saturated fatty acids, with fats of vegetable origin, which are high in unsaturated fatty acids (1, 2). This recommendation resulted in a gradual shift in the food supply from foods made with animal fats to foods made with a wide range of vegetable oils. Over time, much of the vegetable oil that displaced the animal fat from the diet was in the hydrogenated form (5). Hydrogenation extends the shelf life of the fat and alters its physical properties such that it is more similar to animal fat than vegetable oil in the natural state. However, subsequent work suggested that *trans* fatty acids formed during the hydrogenation process, although unsaturated, resulted in plasma lipid profiles associated with an elevated risk of developing CVD (6–10). This forced a rethinking of the dietary fat recommendations intended to decrease CVD risk.

As a result of early public health recommendations to decrease the intake of saturated fatty acids, the use of palm oil dramatically decreased. Much of the palm oil was displaced with hydrogenated vegetable oils. More recently, because of concerns about the adverse effects of hydrogenated fat and the mandate by the Food and Drug Administration to include *trans* fatty acids on the Nutrition Facts panel of all packaged food by 1 January 2006, the use of palm oil by the food industry has increased (11). Palm oil is favored by food manufacturers over other vegetable oils because of its higher melting point (34.2 °C) and resistance to oxidative changes resulting from its higher content of saturated fatty acids (12).

The aim of the present study was to evaluate the effect of consuming two-thirds of total fat or 20% of energy from palm oil

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TABLE 1
Baseline characteristics of subjects[1]

Variable	All subjects (n = 15)	Women (n = 10)	Men (n = 5)
Age (y)	63.9 ± 5.7	66.7 ± 4.4[a]	58.3 ± 3.5[b]
BMI (kg/m^2)	26.0 ± 2.4	26.2 ± 2.3	25.6 ± 2.7
Systolic BP (mm Hg)	116 ± 12	120 ± 13	109 ± 5
Diastolic BP (mm Hg)	73 ± 7	74 ± 7	70 ± 7
Plasma lipids, lipoproteins, and apolipoproteins			
TC (mg/dL)	253 ± 30	245 ± 30	270 ± 26
LDL-C (mg/dL)	177 ± 30	167 ± 28	196 ± 28
VLDL-C (mg/dL)	22.2 ± 7.0	21.0 ± 7.4	24.6 ± 6.0
HDL-C (mg/dL)	54 ± 11	57 ± 12	49 ± 8
HDL2-C (mg/dL)	20.2 ± 9.3	22.4 ± 10.0	15.9 ± 6.5
HDL3-C (mg/dL)	33.9 ± 4.9	34.5 ± 5.7	32.7 ± 3.0
TG (mg/dL)	111 ± 38	111 ± 37	110 ± 44
Apo B (mg/dL)	138 ± 23	132 ± 22	150 ± 24
Apo A-I (mg/dL)	174 ± 15	178 ± 16	165 ± 10
AI-LpAI (mg/dL)	48.7 ± 14.4	51.0 ± 15.9	44.3 ± 11.0
AI-LpAIAII (mg/dL)	125 ± 14	126 ± 14	123 ± 16
Apo A-II (mg/dL)	31.1 ± 6.8	30.1 ± 6.1	33.1 ± 8.4
TC:HDL-C	4.85 ± 1.11	4.42 ± 0.79[b]	5.70 ± 1.24[a]
LDL-C:Apo B	1.29 ± 0.08	1.28 ± 0.09	1.32 ± 0.06
HDL-C:Apo A-I	0.310 ± 0.046	0.319 ± 0.050	0.292 ± 0.034
Lp(a) (mg/dL)	12.7 ± 10.7	13.9 ± 13.9	10.4 ± 2.3

[1] All values are $\bar{x}$ ± SD. Apo, apolipoprotein; AI-LpAI, apo A-I in particles containing only apo A-I; AI-LpAIAII, apo A-I in particles containing both apo A-I and apo A-II; BP, blood pressure; Lp(a), lipoprotein(a); TC, total cholesterol; LDL-C, LDL cholesterol; VLDL-C, VLDL cholesterol; HDL-C, HDL cholesterol; TG, triacylglycerol. Values in a row with different superscript letters are significantly different, $P < 0.05$ (unpaired t test).

compared with the effect of consuming partially hydrogenated soybean oil and oils high in monounsaturated (canola oil) or polyunsaturated (soybean oil) fatty acids on plasma fatty acid profiles, lipid and lipoprotein concentrations, and indicators of glucose homeostasis and HDL metabolism.

SUBJECTS AND METHODS

Study protocol

Fifteen volunteers (5 men and 10 postmenopausal women) aged ≥50 y with LDL cholesterol ≥130 mg/dL but otherwise apparently healthy were recruited from the greater Boston area. Volunteers were excluded if they had abnormal kidney, liver, thyroid, or cardiac function; had abnormal fasting glucose concentration; were taking medications known to affect blood lipid concentrations; were using dietary supplements; or smoked. All women were postmenopausal and not using hormone replacement therapy. Characteristics of the participants at baseline are summarized in **Table 1**. Except for age and the total-to-HDL cholesterol ratio (total:HDL cholesterol), the baseline characteristics were not significantly different between the men and women (Table 1). The male participants were significantly younger than were the female participants and had a significantly lower total:HDL cholesterol. All study participants gave written consent. The study protocol was approved by the Human Investigation Review Committee of the New England Medical Center and Tufts University.

All foods and beverages were provided to the study participants. Caloric intake was adjusted, when necessary, to maintain a stable body weight throughout the study period. The diets were designed to have a similar content of total fat, carbohydrate, protein, fiber, and cholesterol. This was confirmed by chemical analysis (**Table 2**), which was performed by Covance Laboratories (Madison, WI). The same foods were included in each diet. The only difference in the diets was the type of fat added to various mixed foods (partially hydrogenated soybean, soybean, palm, or canola oil). In contrast to the hydrogenated oils used by some in the food industry, which have up to 33% *trans* fatty acids (13), the partially hydrogenated soybean oil used for the present study contained 13.6% of *trans* fatty acids (10). By design, the experimental fat provided two-thirds of the total fat of the diet, which was equivalent to 20% of total energy. This resulted in a dietary intake of *trans* fatty acids of 4.15% of energy (Table 2), a level higher than the 2.6% estimated intakes in the United States (14) and comparable to that of other clinical studies (15–18). The mean (±SD) caloric intake of the participants was 2065 ± 183 kcal in the women and 3050 ± 737 kcal in the men. Initially, the participants were assigned to a sequence of six 35-d diet phases in a crossover design as described previously (10). After completing that sequence, the participants were given the option to continue for 2 additional phases, palm and canola oils, provided in random order. Previous data from our laboratory indicated that, under the specified study conditions, plasma lipid concentrations at the end of each 5-wk phase were independent of diet order or intervening diet phases (19). Additional diets were included in the original randomization scheme but were not included in the present analysis because they addressed different experimental questions (10, 20).

Fasting (14-h) blood samples were collected into EDTA-containing tubes on 3 separate days during the last week of each diet phase. Plasma was separated by centrifugation at 1100 × g at 4 °C for 20 min, divided into aliquots, and stored at −80 °C for subsequent analysis.

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TABLE 2
Composition of experimental diets[1]

Constituent	Partially hydrogenated soybean	Soybean	Palm	Canola
Protein (% of daily energy intake)	17	16	18	15
Carbohydrate (% of daily energy intake)	53	56	52	53
Fat (% of daily energy intake)	30	28	30	32
Saturated fatty acids (% of daily energy intake)	8.56	7.30	14.83	6.38
12:0 (% of daily energy intake)	0.75	0.83	0.78	0.92
14:0 (% of daily energy intake)	0.57	0.63	0.74	0.62
16:0 (% of daily energy intake)	3.91	3.65	11.11	2.84
18:0 (% of daily energy intake)	2.64	1.45	1.59	1.15
Monounsaturated fatty acids (% of daily energy intake)	9.92	8.14	10.91	15.37
18:1 (% of daily energy intake)	7.51	7.20	10.24	13.72
Polyunsaturated fatty acids (% of daily energy intake)	8.13	12.48	3.51	8.74
18:2 (% of daily energy intake)	7.22	10.74	3.26	6.54
18:3 (% of daily energy intake)	0.55	1.67	0.21	2.16
trans Fatty acids (% of daily energy intake)	4.15	0.55	0.60	0.98
Cholesterol (g/1000 kcal)	0.06	0.07	0.06	0.06
Fiber (g/1000 kcal)	13	16	16	16

[1] Macronutrients, fiber, cholesterol, and fatty acids were measured by chemical analysis of food.

Biochemical measures

Plasma lipids were measured on all 3 d, and the mean was used for the statistical analysis. VLDL was isolated from plasma by ultracentrifugation at 109 000 × *g* at 4 °C for 18 h (21). Triacylglycerol and cholesterol in plasma, VLDL cholesterol, and HDL cholesterol were measured by using a biochromatic analyzer (model CCX, Spectrum; Incstar, Stillwater, MN) with enzymatic reagents (22). The concentrations of HDL cholesterol and the subfractions of HDL2 and HDL3 cholesterol were measured in the supernatant fluid after sequential selective precipitation of apolipoprotein B–containing lipoproteins and then of HDL2 in a separate step by using a modification of the dextran sulfate-magnesium chloride method (23, 24). The concentration of HDL2 cholesterol was calculated by difference. LDL-cholesterol concentrations were calculated by subtracting VLDL- and HDL-cholesterol concentrations from the total cholesterol concentration. Lipid assays were standardized through the Lipid Standardization Program of the Centers for Disease Control and Prevention (Atlanta, GA).

Plasma concentrations of apolipoprotein A-I and apolipoprotein B were measured by immunoturbidimetric assays with a Spectrum CCX analyzer (Incstar) (25, 26). Concentrations of apolipoprotein A-II and apolipoprotein A-I in particles without apolipoprotein A-II were measured by an electroimmunodiffusion technique by using commercially available agarose gels with polyclonal apolipoprotein A-II antibodies incorporated into the gels (Laboratoires Sebia, Lisses, France) (27). Concentrations of apolipoprotein A-I in particles containing both apolipoprotein A-I and apolipoprotein A-II were calculated by difference. Lipoprotein(a) was measured as previously described (Terumo Medical, Elkton, MD) (28). Plasma lipid subfractionation and measurement of fatty acids of these subfractions were performed as previously described (29) in a subset of 10 volunteers from whom adequate sample was available.

Plasma glucose concentrations were measured by a colorimetric assay (Roche Laboratories, Nutley, NJ). Plasma insulin was measured by using a human insulin-specific radioimmunoassay kit (Linco Research, St Louis, MO) that uses the double-antibody and polyethylene glycol technique (30). Homeostatic model assessment (HOMA) was calculated as follows (31, 32):

$$\text{HOMA} = \text{glucose (mmol/L)} \times [\text{insulin } (\mu\text{U/mL})/22.5] \quad (1)$$

Cholesteryl ester transfer protein (CETP) activity and the HDL cholesterol fractional esterification rate (FER_{HDL}) were measured in plasma after the removal of endogenous VLDL and LDL by phosphotungstate and magnesium chloride precipitation, as previously indicated (33, 34). CETP activity was measured as previously described (35).

Phospholipid transfer protein (PLTP) activity in plasma was quantified by assessing the transfer of radioactively labeled phosphatidylcholine in phosphatidylcholine-liposomes to HDL3 (36–38). Paraoxonase (EC 3.1.8.1) activity was measured by using Paraoxon (diethyl-*p*-nitrophenyl phosphate; Sigma Chemicals, St Louis, MO) as a substrate, as previously reported (39).

Statistical analyses

Baseline characteristics of the male and female participants were compared by using an unpaired *t* test. A repeated-measures analysis of variance was performed to test the effects of palm, partially hydrogenated soybean, soybean, and canola oils on plasma lipids, lipoproteins, apolipoproteins, and markers of HDL metabolism and glucose homeostasis. Tukey's test was used to perform post hoc analysis. Before statistical analysis, variables with a skewed distribution [triacylglycerol, lipoprotein (a), HOMA, and CETP activity] were log-transformed to achieve normality. For plasma fatty acids, the analysis was conducted on ranked data because no transformation would normalize the data. Untransformed data are presented in the text and tables as means ± SDs. Analyses were conducted at the 0.05 α level. Statistical analyses were conducted by using SAS version 8.2 (SAS Institute Inc, Cary, NC).

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TABLE 3
Selected serum fatty acid profiles in the cholesteryl ester, triacylglycerol, and phospholipid fractions at the end of each experimental diet phase[1]

	Partially hydrogenated soybean	Soybean	Palm	Canola
Triacylglycerols (molar %)				
14:0	2.33 ± 0.56	2.27 ± 0.71	2.50 ± 0.54	2.10 ± 0.54
16:0	23.34 ± 2.55^{b}	21.95 ± 2.68^{b}	29.36 ± 3.04^{a}	21.75 ± 2.97^{b}
18:0	3.28 ± 0.93	2.80 ± 0.81	3.15 ± 0.50	2.66 ± 0.45
18:1c	32.04 ± 3.51^{b}	27.98 ± 3.64^{c}	35.53 ± 2.02^{a}	38.15 ± 2.94^{a}
18:1t	4.52 ± 0.59	3.53 ± 1.88	3.12 ± 1.26	3.17 ± 1.41
18:2n–6c	23.73 ± 3.72^{b}	29.76 ± 4.94^{a}	16.93 ± 4.26^{c}	21.44 ± 3.12^{b}
18:2t	2.60 ± 0.43^{a}	1.73 ± 0.58^{a,b}	1.47 ± 0.36^{b,c}	1.56 ± 0.60^{b,c}
18:3n–6	0.51 ± 0.21^{a,b}	0.74 ± 0.30^{a}	0.46 ± 0.11^{b}	0.53 ± 0.16^{a,b}
18:3n–3	1.31 ± 0.55^{b}	2.91 ± 0.50^{a}	0.86 ± 0.23^{c}	2.57 ± 1.00^{a}
20:4n–6	1.37 ± 0.29	1.53 ± 0.61	1.25 ± 0.39	1.35 ± 0.48
20:5n–3	0.21 ± 0.08^{b}	0.39 ± 0.17^{a}	0.22 ± 0.09^{b}	0.35 ± 0.16^{a,b}
22:6n–3	0.51 ± 0.16	0.61 ± 0.24	0.52 ± 0.17	0.55 ± 0.23
Phospholipid (molar %)				
14:0	0.52 ± 0.11	0.54 ± 0.05	0.52 ± 0.08	0.60 ± 0.13
16:0	29.65 ± 0.90^{b}	29.97 ± 1.03^{b}	33.17 ± 0.74^{a}	29.84 ± 0.54^{b}
18:0	13.64 ± 0.90^{a}	13.59 ± 1.07^{a}	12.21 ± 0.90^{c}	13.05 ± 1.02^{b}
18:1c	7.68 ± 1.44^{b}	6.97 ± 1.26^{c}	9.21 ± 1.37^{a}	9.75 ± 1.84^{a}
18:1t	2.84 ± 0.42^{a}	1.86 ± 0.65^{b,c}	1.73 ± 1.15^{c}	2.22 ± 1.32^{b}
18:2n–6c	22.22 ± 1.90^{b}	24.65 ± 2.40^{a}	20.83 ± 1.90^{c}	20.95 ± 2.10^{c}
18:2t	0.98 ± 0.17^{a}	0.70 ± 0.27^{a,b}	0.72 ± 0.40^{b}	0.76 ± 0.44^{b}
18:3n–6	0.13 ± 0.05	0.13 ± 0.04	0.19 ± 0.09	0.14 ± 0.04
18:3n–3	0.21 ± 0.03^{b}	0.34 ± 0.04^{a}	0.16 ± 0.02^{c}	0.39 ± 0.09^{a}
20:4n–6	9.01 ± 1.44	8.72 ± 1.29	8.21 ± 1.34	8.93 ± 1.19
20:5n–3	0.63 ± 0.15^{b}	0.76 ± 0.20^{a,b}	0.66 ± 0.25^{b}	0.94 ± 0.26^{a}
22:6n–3	3.74 ± 0.50	3.50 ± 0.47	3.34 ± 0.61	3.38 ± 0.38
Cholesteryl ester (molar %)				
14:0	0.77 ± 0.18^{a,b}	0.70 ± 0.18^{b}	0.98 ± 0.33^{a}	0.80 ± 0.15^{a,b}
16:0	11.30 ± 0.60^{b}	11.15 ± 0.74^{b}	13.83 ± 1.88^{a}	12.97 ± 3.25^{b}
18:0	0.98 ± 0.23	0.85 ± 0.26	1.11 ± 0.84	1.31 ± 1.74
18:1c	13.90 ± 2.20^{b}	11.66 ± 2.13^{c}	17.95 ± 2.17^{a}	18.18 ± 3.05^{a}
18:1t	1.89 ± 1.69	1.51 ± 1.06	1.88 ± 1.76	1.54 ± 0.86
18:2n–6c	56.73 ± 2.86^{b}	60.61 ± 3.02^{a}	49.58 ± 5.85^{c}	50.27 ± 6.63^{c}
18:2t	2.48 ± 0.73^{a}	1.83 ± 0.59^{a,b}	2.30 ± 1.19^{a,b}	1.71 ± 0.55^{b}
18:3n–6	0.82 ± 0.28^{a,b}	0.75 ± 0.28^{b}	0.97 ± 0.30^{a}	0.82 ± 0.30^{b}
18:3n–3	0.52 ± 0.05^{c}	0.83 ± 0.24^{b}	0.44 ± 0.05^{c}	1.11 ± 0.14^{a}
20:4n–6	6.70 ± 1.23	6.47 ± 1.23	6.08 ± 1.30	6.65 ± 1.32
20:5n–3	0.55 ± 0.13^{c}	0.71 ± 0.16^{b}	0.59 ± 0.16^{b,c}	0.98 ± 0.26^{a}
22:6n–3	0.50 ± 0.10	0.50 ± 0.09	0.45 ± 0.10	0.59 ± 0.42

[1] All values are $\bar{x}$ ± SD, n = 10. Values in a row with different superscript letters are significantly different, $P < 0.05$ (repeated-measures ANOVA with post hoc Tukey's test).

RESULTS

Fatty acid profiles in the plasma lipid subfractions (triacylglycerols, phospholipids, and cholesteryl ester) showed, for the most part, those of the predominant oil in the diet (**Table 3**). Consistent with the fatty acid composition of the different oils, the proportion of palmitic acid (16:0) in all plasma lipid fractions was higher after consumption of the diet enriched with palm oil than the diets enriched with partially hydrogenated soybean oil, soybean oil, or canola oil ($P < 0.05$). Differences in other plasma saturated fatty acids between diet phases were modest and were likely attributable to the ability of humans to synthesize saturated fatty acids (data not shown). Oleic acid (18:1c) was higher in all lipid subfractions ($P < 0.05$ for all) after the participants consumed the diets enriched with canola oil and palm oil than after the diets enriched with soybean oil or partially hydrogenated soybean oil. Linoleic acid (18:2n–6c) was highest in all 3 lipid subfractions ($P < 0.05$ for all) after the participants completed the diet phase with soybean oil, reflecting the composition of the experimental fats. A small effect of the higher intake of linolenic acid (18:3n–3) oils on eicosapentaenoic acid (20:5n–3; EPA) but not arachidonic acid (20:4n–6) or docosahexaenoic acid (22:6n–3; DHA) was observed in the phospholipid and cholesteryl ester lipid subfractions as well. The proportion of *trans* fatty acids was highest after the participants consumed the diet enriched with partially hydrogenated soybean oil. This was more pronounced in the triacylglycerol and phospholipid fractions than in the cholesteryl ester fraction ($P < 0.05$ for all). As anticipated from the fatty acid profile of the experimental fats, no significant differences in the proportion of *trans* fatty acids were observed between the diets enriched with palm, soybean, and canola oils.

Outcome measures were considered as 2 experimental questions. To assess the effect of hydrogenation, data generated at the

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TABLE 4
Plasma lipids, lipoproteins, and apolipoproteins at the end of each diet phase[1]

Variable	Partially hydrogenated soybean	Soybean	Palm	Canola
TC (mg/dL)	235 ± 31[a]	220 ± 27[b]	240 ± 36[a]	210 ± 25[b]
LDL-C (mg/dL)	162 ± 28[a]	145 ± 24[b]	165 ± 35[a]	140 ± 23[b]
VLDL-C (mg/dL)	25.0 ± 9	25.4 ± 12	24.7 ± 10.3	22.2 ± 12
HDL-C (mg/dL)	48 ± 9	49 ± 9	50 ± 8	48 ± 8
HDL2-C (mg/dL)	16.1 ± 7.4[a,b]	16.9 ± 6.4[a]	15.1 ± 6.4[a,b]	13.4 ± 4.6[b]
HDL3-C (mg/dL)	32.2 ± 4.4[b]	32.4 ± 3.7[b]	35.0 ± 3.2[a]	34.4 ± 4.0[a,b]
TG (mg/dL)	129 ± 54	123 ± 56	120 ± 63	120 ± 60
Apo B (mg/dL)	131 ± 23[a,b]	123 ± 21[b,c]	136 ± 27[a]	121 ± 22[c]
Apo A-I (mg/dL)	158 ± 18[b]	161 ± 13[b]	169 ± 15[a]	159 ± 16[b]
AI-LpAI (mg/dL)	44.3 ± 12.9	47.0 ± 14.5	46.7 ± 11.4	45.6 ± 10.3
AI-LpAIAII (mg/dL)	114 ± 14	117 ± 16	121 ± 12	114 ± 10
Apo A-II (mg/dL)	32.4 ± 7.4	34.1 ± 9.1	33.7 ± 7.4	34.3 ± 6.5
TC:HDL-C	4.99 ± 1.05[a]	4.61 ± 1.17[a,b]	4.89 ± 1.06[a,b]	4.54 ± 1.06[b]
LDL-C:Apo B	1.21 ± 0.10	1.18 ± 0.10	1.22 ± 0.11	1.17 ± 0.09
HDL-C:Apo A-I	0.304 ± 0.040	0.306 ± 0.041	0.296 ± 0.028	0.299 ± 0.031
Lp(a) (mg/dL)	13.3 ± 11.6	12.5 ± 9.3	11.1 ± 7.8	13.9 ± 10.2

[1] All values are $\bar{x}$ ± SD. Apo, apolipoprotein; AI-LpAI, apo A-I in particles containing only apo A-I; AI-LpAIAII, apo A-I in particles containing both apo A-I and apo A-II; Lp(a), lipoprotein(a); TC, total cholesterol; LDL-C, LDL cholesterol; VLDL-C, VLDL cholesterol; HDL-C, HDL cholesterol; TG, triacylglycerol. Statistical analysis of TG and Lp(a) was conducted on log-transformed data. Values in a row with different superscript letters are significantly different, $P < 0.05$ (repeated-measures ANOVA with post hoc Tukey's test).

end of the diet phases with soybean, partially hydrogenated soybean, and palm oils were compared. To evaluate the effect of degree of saturation, data generated at the end of the diet phases with soybean, palm, and canola oils were compared.

Palm, partially hydrogenated soybean, and soybean oils

Total cholesterol concentrations at the end of the diet phase with soybean oil were significantly lower than after the diet phases with partially hydrogenated soybean oil and palm oil (7% and 9%, respectively; $P < 0.05$ for both; **Table 4**). Similarly, LDL-cholesterol concentrations were 12% and 14% higher after the diet phases with partially hydrogenated soybean oil and palm oil than at the end of the diet phases with soybean oil, respectively ($P < 0.05$ for both). No significant difference was observed between palm oil and partially hydrogenated soybean oil or soybean oil on concentrations of triacylglycerol, VLDL cholesterol, HDL cholesterol, or HDL subfractions with the exception of HDL3 cholesterol, which was highest after the participants consumed the diet enriched with palm oil ($P < 0.05$). Total:HDL cholesterol was not significantly different at the end of the dietary phases in a comparison of the partially hydrogenated soybean, soybean, and palm oil phases. Similar to the response in LDL cholesterol, palm oil consumption resulted in apolipoprotein B concentrations that were 11% higher ($P < 0.05$) than at the end of the soybean oil phase (Table 4). In accordance with the response of HDL cholesterol, apolipoprotein A-I concentrations were 7% and 5% higher after the palm oil phase than after the diet phases with partially hydrogenated soybean oil and soybean oil, respectively ($P < 0.05$; Table 4). The lack of statistical differences in the LDL cholesterol-to-apolipoprotein B and HDL cholesterol-to-apolipoprotein A-I ratios suggests little effect of dietary fat type on particle composition. No significant differences in lipoprotein(a) concentrations or the distribution of apolipoprotein A-I in particles containing only apolipoprotein A-I or both apolipoprotein A-I and apolipoprotein A-II were observed as a result of consumption of diets enriched in palm, partially hydrogenated soybean, and soybean oils.

Indicators of HDL metabolism and glucose homeostasis were not significantly different when palm oil was compared with partially hydrogenated soybean oil and soybean oil (**Table 5**). The diet with partially hydrogenated soybean oil resulted in a significantly higher concentration of insulin and HOMA value than did the diet with soybean oil ($P < 0.05$). No significant differences in insulin concentration and HOMA values were observed at the end of the diet phases with partially hydrogenated soybean oil and palm oil. Mean plasma glucose concentrations were not significantly different between the diet phases. At the end of the diet phases with partially hydrogenated soybean, soybean, and palm oils, systolic blood pressures were 119 ± 15, 123 ± 14, and 120 ± 12 mm Hg and diastolic blood pressures were 76 ± 8, 77 ± 8, and 72 ± 9 mm Hg, respectively, and were not significantly different.

Palm, soybean, and canola oils

Total and LDL-cholesterol concentrations were significantly higher after the participants consumed the palm oil diet than either the soybean oil (9% and 14% higher, respectively; $P < 0.05$) or canola oil (14% and 18% higher, respectively; $P < 0.05$) diets (Table 4). No significant effect on concentrations of VLDL cholesterol, HDL cholesterol, or triacylglycerols was observed for fat type. Although HDL-cholesterol concentrations were not significantly different, significant differences were observed in both the HDL2 and HDL3 subfractions. HDL2 cholesterol was 26% higher after the consumption of soybean oil than canola oil ($P < 0.05$). HDL3 cholesterol was 8% higher after the palm oil phase than after the soybean oil phase ($P < 0.05$). Apolipoprotein A-I concentrations were significantly higher after the participants consumed the diet enriched with palm oil than after the diets enriched with soybean (5%; $P < 0.05$) or canola (6%; $P < 0.05$) oils. These differences appeared to be primarily in the

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TABLE 5
Markers of HDL and glucose metabolism at the end of each diet phase[1]

	Partially hydrogenated soybean	Soybean	Palm	Canola
FER_{HDL} (%/h)	18.1 ± 3.9	18.4 ± 6.0	20.4 ± 5.9	19.7 ± 6.4
CETP (nmol · h^{-1} · L^{-1})	14.3 ± 4.5	14.6 ± 5.4	16.3 ± 5.1	13.7 ± 3.5
PLTP (μmol · h^{-1} · L^{-1})	5707 ± 2136	5343 ± 2356	5515 ± 1777	5544 ± 1312
Paraoxonase (μmol/min)	306 ± 234	330 ± 233	297 ± 208	288 ± 177
Insulin (μU/mL)	11.51 ± 4.16[a]	9.62 ± 3.76[b]	10.54 ± 3.78[a,b]	9.31 ± 3.48[b]
Glucose (mg/dL)	89.9 ± 8.0	87.6 ± 7.7	90.6 ± 10.8	88.3 ± 8.5
HOMA	2.56 ± 0.97[a]	2.05 ± 0.79[b]	2.36 ± 0.92[a,b]	2.00 ± 0.71[b]

[1] All values are $\bar{x}$ ± SD. n = 15. CETP, cholesteryl ester transfer protein; FER_{HDL}, HDL-cholesterol fractional esterification rate; HOMA, homeostatic model assessment; PLTP, phospholipid transfer protein. Statistical analysis of CETP activity and HOMA was conducted on log-transformed data. Values in a row with different superscript letters are significantly different, $P < 0.05$ (repeated-measures ANOVA with post hoc Tukey's test).

apolipoprotein A-I and A-II particles, although the differences in this lipoprotein subfraction were not statistically significant. Consistent with the differences in LDL cholesterol, apolipoprotein B concentrations were significantly higher at the conclusion of the diet phase with palm oil than after the diet phases with soybean (11%; $P < 0.05$) and canola (12%; $P < 0.05$) oils. These differences resulted in LDL cholesterol:apolipoprotein B and HDL cholesterol:apolipoprotein A-I that were not significantly different at the end of each diet phase, suggesting a lack of difference in particle composition. No significant differences in total:HDL cholesterol were observed between the diets enriched with palm, canola, and soybean oils. No significant differences in lipoprotein(a) concentrations were observed from diets enriched in palm, soybean, and canola oils.

No significant effect of the different dietary fats on plasma FER_{HDL}, CETP, PLTP, or paraoxonase activities (Table 5) was observed. Similarly, insulin and glucose concentrations and HOMA values were not significantly different between diet phases. At the end of the diet phases with soybean, palm, and canola oils, systolic blood pressures were 123 ± 14, 120 ± 12, and 120 ± 13 mm Hg and diastolic blood pressures were 77 ± 8, 72 ± 9, and 72 ± 9 mm Hg, respectively, and were not significantly different.

DISCUSSION

It is now recognized that the type of dietary fat has a greater effect on CVD risk than does the amount of fat, and that this is, at least in part, due to the hypercholesterolemic effect of *trans* and saturated fatty acids (9, 10), which are both associated with an elevated CVD risk (7, 40, 41). Accordingly, the Food and Drug Administration has ruled that the *trans* fatty acid content of packaged foods marketed in the United States must appear on the Nutrition Facts panel by 1 January 2006. As a consequence, because of similar functional characteristics the questions arises as to whether palm oil would be a preferable substitute for partially hydrogenated fat. The present study was designed to compare the effects of palm, partially hydrogenated soybean, canola, and soybean oils on CVD risk factors.

The results suggest that, compared with canola oil or soybean oil, both partially hydrogenated soybean oil and palm oil elevate concentrations of LDL cholesterol and apolipoprotein B to a similar extent in moderately hypercholesterolemic persons. Consistent with the results of the present study, palm oil was reported to have a hypercholesterolemic effect similar to that of other saturated fats when compared with oils rich in monounsaturated or polyunsaturated fatty acids (42–46), including high oleic or linoleic acid safflower oils (42), sunflower oil (45), and high oleic acid sunflower oil (46). However, some reports have questioned this observation in humans (12, 47–50). Palm oil has a relatively low proportion of lauric (12:0) and myristic (14:0) acids and a high proportion of palmitic acid compared with other tropical oils (ie, coconut and palm kernel oils) (12). In isolation, palmitic acid is less cholesterolemic than are lauric and myristic acids (15, 51–54). Nonetheless, regardless of the potential differential effects of individual saturated fatty acids, relative to those of either soybean or canola oil, palm oil has an adverse effect on plasma lipoprotein profiles. Exceptions to this observation are usually attributable to differences in the study population, eg, focusing on normocholesterolemic adolescent males rather than on persons who may be more responsive to dietary intervention such as moderately hypercholesterolemic persons (47).

Previous data on the effects of *trans* fatty acid–containing fats compared with saturated fats on the lipoprotein profile are consistent with the present observations (44, 55). Consumption of a palm oil–based margarine or partially hydrogenated soybean oil–based margarine resulted in comparable LDL-cholesterol concentrations, both of which were higher than with a margarine high in polyunsaturated fatty acids (44). A study that compared a solid fat high in lauric acid with one rich in *trans* fatty acids reported a smaller hypercholesterolemic effect of saturated fatty acids than of *trans* fatty acids (55). Although no differences in LDL-cholesterol concentrations were reported, the higher total cholesterol concentrations after consumption of the high lauric acid fat were caused by higher HDL-cholesterol concentrations.

The present intervention resulted in small changes in the cholesterol content of HDL subfractions. These results are not consistent with previous observations in which consumption of saturated fat as butter resulted in higher concentrations of HDL2 cholesterol than with consumption of hydrogenated fat (56). However, the fatty acid composition of the individual fats used is different from those previously studied. Moreover, the implications of these findings are the subject of debate. Although an inverse association between CVD risk and HDL3 cholesterol was documented (57), it was also suggested that the redistribution of cholesterol in HDL subfractions does not provide additional cardioprotective effect compared with an increase in HDL cholesterol (58–60). The differences in total:HDL cholesterol

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observed are consistent with a previous meta-analysis (15). Mensink et al (15) calculated ≈0.14–0.15 higher total:HDL cholesterol for diets high in soybean oil than for those high in palm oil and partially hydrogenated fat. It should be noted that the statistical power for this study was based on LDL cholesterol, not on total:HDL cholesterol.

Plasma fatty acid profiles reflect short-term dietary intake of fatty acids (61, 62) and can provide an indication of dietary compliance. The fatty acid profile in the plasma lipid fractions (triacylglycerols, phospholipids, and cholesteryl ester), for the most part, reflected the compositional differences of the experimental fats. Consistent with previous reports, the dietary fatty acid composition was reflected more strongly in the triacylglycerol and phospholipid subfractions than in the cholesteryl ester subfraction (29, 63). A higher percentage of plasma EPA, but not of DHA or arachidonic acid, occurred after consumption of the linolenic acid–rich oils (soybean or canola) than of the other fats. This finding was somewhat unexpected, given the low capacity humans have for the conversion of α-linolenic acid to EPA (64). Nonetheless, findings from one study indicated an inverse association between concentrations of n−3 fatty acids in the phospholipid fraction (EPA and DHA combined) and the risk of fatal ischemic heart disease (65). Because of the small magnitude of the differences and lack of an effect on DHA, it is unlikely that these differences would contribute to risk modifications for ischemic heart disease as observed in this data set.

In the present study, both insulin concentration and the HOMA ratio, but not glucose concentrations, were higher after the participants consumed the diet with partially hydrogenated soybean oil than the diets enriched with soybean and canola oils. This pattern suggests a potential effect of this fat on insulin sensitivity. Although epidemiologic data suggested a relation between intake of *trans* fatty acid and risk of type 2 diabetes (66), in general, the clinical data have not supported this relation between *trans* fatty acids and indicators of glucose homeostasis (67–71). The differences resulting from substituting one type of fat for another were small, albeit significant, and this should be taken into consideration when interpreting the data.

Limitations of the present study include lack of generalizability because study participation was restricted to older moderately hypercholesterolemic subjects. However, dietary guidance to modify CVD risk factors is most clinically important for this group of persons. Differences in lipoprotein patterns could not be attributed to a specific fatty acid or pair of fatty acid substitutions resulting from the use of oils varying in a multiple as opposed to single fatty acids. The present study was designed to assess the effect of fat with distinct fatty acid profiles as actually consumed, not to distinguish the effects of individual fatty acids. The measures reported were restricted to intermediate markers of CVD risk. Only one type of partially hydrogenated fat was assessed; functional properties of this product may not be comparable with those of palm oil. Another limitation of the present study is that in some cases there were small shifts toward an increased risk, but of a rather modest magnitude. As noted, caution needs to be exercised in interpreting these data. Lacking at this time is an algorithm that can be applied to assess the cumulative effect of all indicators of CVD risk.

The present findings suggest that consumption of diets enriched with equivalent amounts of palm oil and partially hydrogenated soybean oil result in similar and less favorable concentrations of LDL cholesterol and apolipoprotein B than does consumption of diets enriched with unsaturated fatty acids, either monounsaturated or polyunsaturated. In practice, it is unclear whether achieving similar levels of functional characteristics in foods would require identical amounts of these 2 fats. At the levels fed, the response to dietary fats relatively high in monounsaturated and polyunsaturated fatty acids was comparable. Differences in other CVD risk factors, HDL metabolism, and glucose homeostasis between the fats assessed were small. These results do not suggest that palm oil would be a good substitute by the food industry for partially hydrogenated fat if equivalent amounts need to be used and further suggest that reliance on oils relatively high in monounsaturated and polyunsaturated fatty acids would be a preferable alternative to both.

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SV-L was involved with data interpretation and manuscript preparation. LMA performed the statistical analysis and helped with interpretation of results. SMJ performed the lipid, lipoprotein, and apolipoproteinprotein measurements. ATE performed the fatty acid analysis. AHL designed and conducted the intervention and supervised the project and manuscript preparation. None of the authors had any advisory board affiliations or financial interests in any organization sponsoring the research.

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Individual Cholesterol Variation in Response to a Margarine- or Butter-Based Diet

A Study in Families

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Context The effectiveness of dietary modification in reducing low-density lipoprotein cholesterol (LDL-C) levels can be reliably predicted for populations, but not for individuals.

Objective To determine whether individual variation in cholesterol response to dietary modification is a familial trait.

Design Two-period, outpatient crossover trial conducted from September 1997 to September 1999.

Setting and Participants Fifty-six families from the Dallas–Ft Worth, Tex, area with 2 biological parents and at least 2 children aged 5 years or older volunteered; 46 families (n=92 adults and n=134 children) completed the study.

Intervention All families followed two 5-week dietary regimens that included individualized daily dietary prescriptions and emphasized a low–saturated fat diet supplemented with specially manufactured baked goods and spreadable fat. One regimen used butter only and the other used margarine only.

Main Outcome Measure Mean LDL-C levels during the last 2 weeks of each dietary period.

Results Margarine intake compared with butter intake lowered LDL-C levels 11% in adults (95% confidence interval [CI], −13% to −9%) and 9% in children (95% CI, −12% to −6%) ($P<.001$ for both adults and children). The distribution of individual responses were peaked around the mean response. For adults and children together, family membership accounted for 19% of variability in response ($P = .007$). In children, family membership accounted for 40% of variability in response of percent change in LDL-C levels ($P = .002$). Body mass index and change in cholesterol ester (CE) 18:2/18:1 ratio accounted for 26% of variation, leaving 26% still attributable to family membership. In all participants, BMI predicted response—heavier individuals had higher LDL-C levels, less excursion in CE fatty acids, and less LDL-C response to dietary change.

Conclusions Our results suggest that individual variation in response to a cholesterol-lowering diet is a familial trait. Body weight is an important modifiable factor that influences response.

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CHOLESTEROL-LOWERING DIets have been recommended for the population at large to reduce the incidence of coronary heart disease.[1] Changes in the mean lipid[2,3] and lipoprotein[4,5] levels can be reliably predicted from changes in population intake of dietary fatty acids and cholesterol. The projected benefits of dietary modification are substantial and are directly linked to the magnitude of cholesterol level reduction.[6]

Although populational responses to diet can be reliably predicted, it is impossible to predict how much cholesterol lowering a given individual will achieve as a result of dietary modification. Individual responses follow a peaked distribution around the mean population response. Theoretically, two thirds of individuals fall within 1 SD of the mean response, with some individuals having little or no cholesterol-lowering response to diet.[7,8]

Predicting who will and will not respond to diet modification would allow the clinician to target aggressive cholesterol-lowering dietary therapy for those patients who are most responsive to diet. It also would allow the clinician to differentiate between nonresponders who are noncompliant from nonresponders who do not have the biological potential to respond to diet modification.

This study was designed to evaluate whether familial differences explain why individuals respond differently to cholesterol-lowering diets. The prevalence of individuals who do not respond to diet has been estimated at 17% of institutionalized men on a controlled diet[9] and 15% to 20% of free-

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living men,[9-11] women,[12] and children[13] on counseled diets. Although associations between specific genotypes and dietary responsiveness among unrelated individuals have been reported, no factor has been found to be consistently associated with response, and no single factor has explained more than 10% of the individual variation observed.

METHODS

The study protocol was approved by the institutional review board at the University of Texas Southwestern Medical Center and the Human Subjects Review Committee at the Veterans Health Administration North Texas Center, Dallas.

Subjects

Families from the Dallas–Ft Worth metroplex were recruited during their attendance at various museums, health fairs, and church events over 2 years (September 1997 to September 1999). Families were selected by 2 criteria only: interest in participation and having an intact family with 2 biological parents and 2 or more biologically related children aged 5 years and older. During a follow-up telephone contact, a home visit was scheduled where the study was described, and the age, height, weight, physical activity, and dietary preferences for all family members were recorded. If all family members remained interested, a date was set to draw ad libitum fasting blood samples and study initiation. Fifty-six families agreed to participate, and 46 families completed the entire diet study. Reasons for dropout included difficulty following dietary protocol restrictions (5 families), refusal of a child to have blood drawn after the study was initiated (2 families), and change in health status of parent (3 families). Of the 46 families, 39 were white, 3 African American, 2 Hispanic American, 1 American Indian, and 1 Asian American. Baseline characteristics of the 46 families are detailed in TABLE 1; the characteristics of the 10 families who dropped out were similar to those who completed the trial. All children completing the trial received a $50 payment. All family members completing a 3-day diet record received 1 movie pass (value $4) for each of the 4 requested records.

Dietary Design

The study was a 2-period, crossover, outpatient diet counseling study designed to compare the isocaloric substitution of butter for margarine as the major dietary fat intake. Each dietary period was 5 weeks in duration. Since commercial tub margarine is 60% or less fat by weight and butter is 80% fat by weight, a single batch of 80% fat by weight margarine was produced for this study (courtesy of Unilever, Baltimore, Md). This allowed for a 1-to-1 substitution of the fats for use as a spread as well as in cooking and baking. The margarine contained 38.7% *cis*-polyunsaturated fatty acids and 7.5% *trans*-fatty acids. The butter contained 50.6% saturated fatty acids, of which 8.6% was stearic acid.

Specially formulated products were produced by a local bakery for use in the study. Participants/assessors could not be blinded to the type of fat because of the inherent differences in study products (eg, margarine tub vs butter pat). To avoid accidental substitution of butter fat for margarine fat in cookies and brownies, the bakery was contracted to produce only 1 test product line at a time. Every 3 months, production was temporarily halted and switched to the other product line, making the entry date into the study the criterion that assigned diet order. Twenty-three families (n=104) had diet order butter-margarine, and 23 families (n=122) had diet order margarine-butter. The 2 diet periods were separated by at least a 1 month of ad libitum diet; families whose participation spanned the Thanksgiving-Christmas-New Year holiday had a 3-month hiatus between diet periods to avoid problems fitting traditional holiday foods into the dietary regimen.

Based on age, height, weight, physical activity profile, and food preferences, each family member received a written dietary prescription specifying the portion size and frequency of study foods, meat, starchy vegetable, regular vegetable, fruit, and dairy to be consumed every day. Dietary prescriptions were adjusted as needed during the first few weeks of each diet period to maintain a constant weight in study participants.

Table 1. Baseline Characteristics of Adults and Children From 46 Participating Families*

Characteristics	Adults (n = 92)	Children (n = 134)
Age, y†	41 (4)	12 (4)
Sex		
Males, No. (%)	46 (50)	71 (53)
Females, No. (%)	46 (50)	63 (47)
BMI, kg/m²†	28.8 (6.5)	19.3 (4.3)
Total cholesterol, mg/dL†	184 (27)	152 (25)
Triglycerides, mg/dL‡	122 (74)	74 (41)
LDL-C, mg/dL†	121 (27)	95 (22)
HDL-C, mg/dL†	44 (11)	46 (11)
ApoE, No. (%)§		
ApoE 4/4	1 (1)	1 (0.7)
ApoE 4/3	27 (29)	36 (27)
ApoE 3/3	49 (53)	77 (57)
ApoE 3/2	12 (13)	13 (10)
ApoE 4/2	3 (3)	5 (4)
ApoE 2/2	0	2 (1)

*BMI indicates body mass index; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; and ApoE, apolipoprotein E.
†Values are expressed as mean (SD). To convert mg/dL to mmol/L, multiply by 0.0259.
‡To convert mg/dL to mmol/L, multiply by 0.0113.
§Percentages may not equal 100 because of rounding.

The daily prescription was based on an intake of 25% of energy from test fat. Subjects were instructed to follow the plan as much as possible and to choose low-fat foods for their nonstudy food choices. We expected an inability to adhere to the protocol for 3 meals each week, with a projected test fat intake of 21% of calories. Families were counseled to continue a low–saturated fat diet during their meals that did not contain study products. A portable food scale was provided and household cups and bowls were used to instruct families on how to estimate portion size.

Dietary Evaluation

Compliance to diet was assessed by 3 measures:

Product Inventory for Family. During each weekly visit, sufficient study products were delivered to families by investigators to meet 100% adherence

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to the daily dietary prescription. During the delivery, an inventory of unconsumed food products was recorded. Allowing for 3 meals per week without study foods, 85% of the delivered food was expected to be consumed.

Daily Check Sheets. All family members were provided personalized daily check sheets to mark off how much of each study product they consumed each day. Sheets were collected during the weekly visit and recorded, and the grams of test fat consumed were calculated. Adherence was estimated as gram intake reported to be consumed divided by gram intake for 100% adherence. As with family inventory, the goal intake was 85%.

Three-Day Diet Records. During the third and fourth week of each diet period, each subject was asked to complete a 3-day diet record of total dietary intake during a weekend day and 2 weekdays. Records were analyzed using Nutritionist IV (San Bruno, Calif), and the gram intake of test fat was calculated. Goal intake of test fat was 21% of total energy.

Laboratory Evaluation

Subjects had blood drawn prior to initiation of the study (ad libitum) and twice during the last 2 weeks of each dietary period. Blood samples were drawn 4 to 7 days apart to minimize the influence of biological variation on mean response.[14] All blood samples were obtained after having subjects fast for 10 hours; all blood samples were stored using numeric identification code that could be decoded only by the investigators.

Lipoprotein Analysis. Lipid and lipoprotein analyses were performed on each blood sample. Plasma was separated, and plasma concentrations of total cholesterol (Roche, Indianapolis, Ind) and triglycerides (Sigma Diagnostics, St Louis, Mo) were measured using an enzymatic procedure. High-density lipoprotein cholesterol (HDL-C) level was measured as the remaining cholesterol in whole plasma after precipitating apolipoprotein B–containing lipoproteins with 6.59 mmol/L of phosphotungstic acid (Dade International, Miami, Fla). To reduce phlebotomy requirements, the LDL-C level was calculated using the Friedewald equation. If a subject had a fasting triglyceride levels greater than 4.52 mmol/L (400 mg/dL), the LDL-C levels were determined by direct assay (Sigma Diagnostics).

Dietary Response. Response to diet was defined as the difference in mean LDL-C level of the margarine intake period minus the mean LDL-C level of the butter intake period.

Cholesterol Ester and Triglyceride Fatty Acids. Plasma triglyceride and cholesterol ester (CE) fatty acids levels were determined in the last blood draw of each diet period by extracting lipids from plasma[15] and separating lipid classes by thin-layer chromatography.[16]

Genotypes for Apolipoprotein E (ApoE) and 7 α-Hydroxylase. DNA was extracted from the white blood cell pellet with DNA-zol Reagent (GIBCO-BRL, Grand Island, NY). 7 α-Hydroxylase DNA was amplified with 1 pmol/μL of each primer AP2 (5′-TGGTAGGTAAATTATTAATAGATGT-3′) and AE (5′-AAATTAAATGGATGAATCAAAGAGC-3′).[17] The polymerase chain reaction (PCR)–amplified DNA fragment was digested with 10 units of *BsaI* and was electrophoresed. Apolipoprotein E DNA was amplified by PCR in a DNA thermal cycler using oligonucleotide primers F4 (5′-ACAGAATTCGCCCCGGCCTGGTACAC-3′) and F6 (5′-TAAGCTTGGCACGGCTGTCCAAGGA-3′).[18]

Reproducibility of Response

To evaluate the reproducibility of individual dietary response, each of the first 20 families that completed the study were asked at the time of their sign-out interview to consider repeating the entire diet study. Two families agreed (n=4 adults and n=8 children). The first family began the second dietary trial 5 months later and received the study foods in the same diet order as their original study. The second family repeated the study 3 months later, receiving the opposite diet order. Body mass index (BMI; calculated as weight in kilograms divided by the square of height in meters) measurements prior to each study were fairly comparable except in 2 members of the first family who gained 9 kg (20 lb) during the interval between their dietary trials.

Statistical Methods

The primary analysis was dietary response, which by definition could be determined only in those families who completed the trial. To avoid underestimating SEs because of correlations between family members, generalized estimating equations (GEEs) were used to compare the 2 diets and construct confidence intervals (CIs) to adjust for the lack of independence within families.[19] Triglycerides levels were log transformed because of skewness; both untransformed and transformed data gave similar results so only untransformed data are reported. Also, GEE was used to assess the reproducibility among the 2 families who agreed to repeat the study.

Mixed linear models were used to assess covariates and variance components.[20,21] In these models, family membership was included as a random effect. Bakery run or diet order did not contribute to observed variance. Individual level covariates considered for the model were either clinically relevant or significantly associated with dietary response by univariate analysis. These covariates included age, BMI, ad libitum LDL levels, ApoE genotype, and change in serum fatty acid CE levels. Because of significant interrelationships among these covariates, all possible interactions between these covariates also were considered. Apolipoprotein E genotype was evaluated by combining several genotypes into 3 categories: ApoE 2,2 plus 2,3; ApoE 3,3 plus 2,4; and ApoE 3,4 plus 4,4. Comparison of these 3 categories was made using 2 dummy variables in the models. Variance components were used to estimate family intraclass correlation. Separate regressions also were estimated for adults and children. One extreme outlier, a child with a dietary response of −109 mg/dL

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(−2.8 mmol/L), was not included in regression models.

Statistical analysis was performed using SAS version 8.0 (SAS Institute, Cary, NC). Because of the multiple testing, a $P<.01$ was assigned as significant.

RESULTS

Dietary Adherence

By all measures, compliance to the dietary protocol was excellent. According to food inventory, families consumed a mean (SD) of 88% (12%) and 83% (16%) of test fat delivered during the margarine or butter intake periods, respectively. Daily check sheets showed consistently lower mean (SD) intakes of 75% (18%) and 77% (17%), respectively. The consistently lower intakes of test fat recorded on daily check sheets may reflect some days in which subjects consumed test fat but did not record their consumption.

The mean intake of macronutrients recorded on the 3-day food records is listed in TABLE 2. The goal of test fat intake of 21% of energy was achieved for the margarine intake period but was significantly lower for the butter intake period (18% of calories, $P < .01$). The lower intake of test fat in the butter intake period was accounted for by an unanticipated preference for the margarine bread compared with the butter croissants. The 3% less energy from test fat during the butter intake period was offset by small increases in calories from protein ($P<.01$) and saturated fat ($P<.01$) from other sources (eg, whole milk and ice cream). Dietary cholesterol was significantly higher ($P<.01$) for the butter intake period. The overall dietary goal—to achieve a clinically significant difference in intake of cholesterol-raising fatty acids for the 2 diets—was achieved.

Table 2. Daily Dietary Intake Calculated From Mean of Paired, 3-Day Food Records*

Nutrient	Margarine Intake Period	Butter Intake Period
Total energy, mean (SD), cal	2164 (524)	2186 (587)
Dietary cholesterol level, mean (SD), mg/d	249 (111)	330 (119)†
Energy, mean % (SD), from		
Carbohydrate	50 (5)	50 (5)
Protein	14 (3)	15 (3)‡
Fat	37 (4)	35 (5)†
Test fat	21 (5)	18 (6)‡
Saturated fat	9 (2)	16 (4)‡
Monounsaturated fat	14 (2)	14 (2)
Polyunsaturated fat	10 (2)	3 (1)†
Trans-fat	1.5 (0.4)	0.5 (0.1)‡
Cholesterol-raising fatty acids§	10 (2)	15 (4)†

*Sixteen subjects failed to complete a food record for a single period, and 1 subject failed to complete a food record for both periods. Data shown are for the 209 remaining paired records.
†$P<.001$ (using generalized estimating equation that adjusted for family membership).
‡$P<.01$ (using generalized estimating equation that adjusted for family membership).
§Cholesterol-raising fatty acids are defined as the sum of all saturated fatty acids plus *trans*-fatty acids minus stearic acid (18:0), a saturated fatty acid known to be neutral in its effects on low-density lipoprotein cholesterol levels.

Table 3. Body Weight, Lipids, and Lipoproteins for Each Dietary Period*

	Margarine	Butter	Δ (95% CI)	*P* Value†
Adults (n = 92)				
Weight, lb	186 (44)	186 (44)	−0.5 (−0.4 to 1.4)	.30
Cholesterol, mg/dL	181 (28)	199 (34)	−17.6 (−21.0 to −14.0)	<.001
Triglycerides, mg/dL	125 (76)	135 (95)	−10.8 (−20.7 to −0.9)	.03
LDL-C, mg/dL	116 (27)	131 (32)	−15.7 (−18.8 to −12.6)	<.001
HDL-C, mg/dL	46 (12)	46 (12)	−0.1 (−1.2 to 0.9)	.83
Children (n = 134)				
Weight, lb	104 (39)	104 (38)	−0.37 (−1.3 to 0.6)	.43
Cholesterol, mg/dL	150 (25)	161 (32)	−11.3 (−15.4 to −7.2)	<.001
Triglycerides, mg/dL	66 (27)	68 (22)	−1.8 (−6.6 to 2.9)	.45
LDL-C, mg/dL	93 (23)	104 (30)	−11.2 (−14.6 to −7.7)	<.001
HDL-C, mg/dL	48 (10)	48 (11)	0.15 (−1.0 to 1.3)	.80

*LDL-C indicates low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; and CI, confidence interval. Values are expressed as mean (SD). To convert mg/dL to mmol/L for cholesterol, LDL-C, and HDL-C, multiply by 0.0259, for triglycerides multiply by 0.0113, and lb to kg, multilpy by 0.45.
†Using the generalized estimating equation, the *P* value was adjusted for family membership.

Mean Lipoprotein Response to Diet

Consistent with the reported intake, there was no change in body weight between the 2 diet periods (TABLE 3). Margarine intake produced significantly lower total LDL-C levels than butter intake ($P<.001$). Adults were more responsive than children on the basis of levels (0.41 mmol/L [16 mg/dL] vs 0.28 mmol/L [11 mg/dL], $P = .03$) but not when considered as percent reduction of LDL-C levels (11%; 95% CI, −13% to −9% mg/dL vs 9%, 95% CI, −12% to −6%; $P = .17$).

No significant differences in HDL-C levels were seen in adults ($P=.83$) and children ($P=.80$). A trend for an increase in triglycerides during the butter intake period was seen in adults ($P = .03$) but not in children ($P=.45$).

Changes in CE fatty acids mirrored changes in dietary intake, with significant increases in CE 18:2 content and decreases in CE 16:0 content in the margarine intake period compared with the butter intake period ($P<.005$). The primary change in CE content was a substitution for the CE 18:1 content by CE 18:2 content during the margarine intake period, which expressed as a ratio fell from percent (SD) of 5.7% (0.9%) in the margarine intake period to 4.9% (0.8%) in the butter intake period ($P<.001$).

Dietary Responsiveness

Dietary responsiveness was defined as the mean margarine LDL-C level minus the mean butter LDL-C level. This

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value was expressed as either an absolute value (mmol/L [mg/dL]) or percentage change from the LDL-C value achieved in the margarine intake period.

Individual Variation in Dietary Responsiveness. The frequency distribution of individual responses to diet shows that 81% of subjects had lower LDL-C levels in the margarine intake period compared with the butter intake period, and 76% had a 3% or greater reduction in LDL levels (FIGURE).

Reproducibility of Individual Variation in Dietary Responsiveness. Two families (family 1 and family 2) repeated the diet study and 2 members of family 1 gained 9 kg (20 lb) between dietary challenges. Mean LDL-C levels and the ratio of CE 18:2/18:1 content obtained in the initial butter or margarine intake period were compared with those values obtained in the repeat period. The mean difference in change in LDL-C levels between the 2 trials was 0.01 mmol/L (0.5 mg/dL) ($P = .78$; 95% CI, −0.08 mmol/L (−3.3 mg/dL) to 0.11 mmol/L [4.4 mg/dL]). Results were fairly reproducible with low responders in the initial period having low response in the repeat period and vice versa; those subjects who gained weight were less responsive in the second dietary challenge, but their overall response remained in the same rank order.

Familiality Evaluation Using Intraclass Correlation

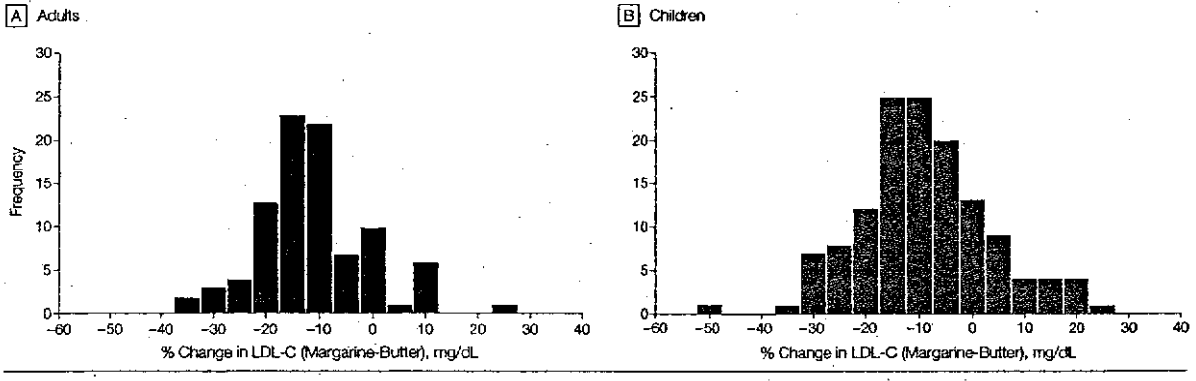
Self-reported paternity/maternity status was verified with ApoE and 7 α-hydroxylase genotypes expected/observed in the children compared with their parents. Estimates for proportion of variance explained by family membership were made using mixed linear models. Considering adults and children in the same model, family membership accounted for 19% of variability in percent change LDL-C levels ($P = .007$). When children were considered separately (TABLE 4), 40% of the variability in percent change in LDL-C levels was explained by family membership ($P = .002$).

Predictors of Responsiveness to Diet

No significant correlations were observed between variations in compliance (estimated by family inventory, daily check sheet, and food record) and variation in response to diet. No significant correlations were found between dietary responsiveness and changes in body weight, diet order, age, 7 α-hydroxylase genotype, or sex. Significant associations were found between dietary responsiveness and BMI, ad libitum LDL-C levels, ApoE genotype, CE 18:2 content, CE 18:1 content, and changes in CE 18:2/18:1 ratio. These variables, in turn, were significantly intercorrelated, making it difficult to quantify how much each factor influenced response. Separate prediction models for adults (not genetically related) and children (2-9 per family genetically related) were as follows: Among children, family membership explained 42% of the variation in percentage change in LDL-C levels ($P = .002$) (Table 4). Significant covariates of response were BMI and change in CE ratio, explaining 26% of variation and leaving 26% still attributable to family membership. The importance of BMI was even more striking considering the relative leanness of the children compared with the adults. Among adults, family membership accounted for 0% of variation in percentage change LDL-C levels; BMI, ApoE genotype, and a BMI × ApoE interaction accounted for 14% of the variation observed.

The interrelationship between ad libitum LDL-C levels (a significant predictor in children) and ApoE genotype (a significant predictor in adults), the relationship between ApoE genotype, ad libitum LDL-C levels, and percentage change in LDL-C levels were further evaluated. The ApoE genotype was significantly associated with ad libitum LDL-C levels when comparing either ApoE 2,2 plus 3,2 vs 4,4 plus 4,3 or ApoE 3,3 plus 2,4 vs 4,4 plus 4,3 (both $P = .002$). However, ApoE genotype accounted for only 4% of the variation in ad libitum LDL-C levels. Although ApoE genotype contributed

Figure. Frequency of Percent Change in Low-Density Lipoprotein Cholesterol Levels in Adults and Children



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more than ad libitum LDL-C levels to dietary response in adults, in children the model including ad libitum LDL-C levels accounted for 7% additional variance than the model including ApoE genotype (data not shown).

Since BMI was the only factor consistently appearing in all models, the relationship between BMI and response was examined further. Compliance to diet was not associated with BMI, and differences in compliance were not seen across categories of BMI (data not shown). Surprisingly, the change in CE ratio paralleled the change in LDL-C levels; obese persons had approximately half the response in LDL-C levels and CE ratio than leaner persons (mean [SD] change in LDL-C levels and change in CE 18:2/18:1 ratio for BMI<21, −13 [17] and 0.85 [0.82], and for BMI ≥30, −9 [17] and 0.42 [0.75]).

COMMENT

The substitution of margarine for butter creates 3 simultaneous changes in dietary intake that, in turn, alter total cholesterol and LDL-C levels.[22] Two changes—reductions in saturated fatty acids and dietary cholesterol intake—lower LDL-C levels. A third change—increases in *trans*-fatty acid intake—raises LDL-C levels and also may lower HDL-C levels.[23] Increases in *trans*-fatty acid intake could potentially mitigate the benefits of a margarine-based diet.[24] In our study, a low *trans* margarine-based diet achieved 11% lower LDL-C levels than a butter-based diet, without differences in HDL-C levels. Our findings agree with those from metabolic diet studies evaluating greater[25] and lesser[26] percentages of energy from butter vs margarine, confirming the long-standing advice to the public at large to choose a tub margarine over butter.[27]

Translating the public benefits of dietary modification to a given individual are difficult because of individual variation in response to dietary change. As previously reported, we found the distribution of dietary response to peak around the mean: 19% of individuals had either no change or a paradoxical increase in LDL-C levels in the margarine intake period compared with the butter intake period. The differences in responsiveness to diet could be attributable to genetic factors.[28] In our study, we tested this hypothesis by evaluating how individual family members responded to both a cholesterol-lowering and cholesterol-raising diet. Family dietary responsiveness data allowed for an estimation of the contribution of family membership (shared genes plus shared environment) on responsiveness. A margarine vs butter comparison was chosen since these 2 types of fats lend themselves to simple substitution in both baking and spreads, and previous studies suggested that the response to dietary cholesterol and saturated fat appear congruent.[29]

Ideally, a study of dietary responsiveness would be conducted under

Table 4. Predictive Models Evaluating the Contribution of Family Membership to the Variability in Dietary Responsiveness With or Without Inclusion of Significant Covariates*

	Children (n = 133)†				Adults (n = 92)	
	Δ LDL-C Levels		Percent Δ LDL-C Levels		Δ LDL-C Levels	Percent Δ LDL-C Levels
Variation explained by family membership, %	42 (*P* = .002)		40 (*P* = .002)		3 (*P* = .42)	0

Model Including Significant Covariates‡

	Children (n = 128)§						Adults (n = 92)					
	ΔLDL-C Levels			Percent Δ LDL-C Levels			Δ LDL-C Levels			Percent Δ LDL-C Levels		
Variable	Coefficient	SE	*P* Value	Coefficient	SE	*P* Value	Coefficient	SE	*P* Value	Coefficient	SE	*P* Value
Intercept	−9.71	−1.58	<.001	−6.56	1.39	<.001	−24.99	2.91	<.001	−16.93	2.33	<.001
BMI, kg/m²	0.63	0.23	.008	0.60	0.21	.005	0.60	0.24	.01	0.48	0.30	.11
Δ CE 18:2/18:1	−5.97	1.23	<.001	−5.54	1.13	<.001	...	...	...	...	...	...
Ad libitum LDL-C, mg/dL	−0.15	0.045	.001	...	...	...	...	...	...	...	...	...
ApoE 2→4	...	...	...	...	...	...	10.96	4.91	.03	11.78	4.59	.01
ApoE 3→4	...	...	...	...	...	...	7.94	3.36	.02	2.71	2.98	.37
BMI × APoE 2→4	...	...	...	...	...	...	...	...	...	−1.17	0.63	.07
BMI × ApoE 3→4	...	...	...	...	...	...	...	...	...	0.19	0.36	.60
Total variation explained by model covariates, %	31 (*P*<.001)			26 (*P*<.001)			12 (*P* = .003)			14 (*P* = .002)		
Remaining variation explained by family membership, %	24 (*P* = .03)			26 (*P* = .02)			0			0		

*LDL-C indicates low-density lipoprotein cholesterol; BMI, body mass index; CE, cholesterol ester; and ApoE, apolipoprotein E. To convert mg/dL to mmol/L of LDL-C, multiply by 0.0259. Ellipses indicate that this factor was not a significant contributor to the model.
†One outlier with a change (margarine-butter) in LDL-C of −109 mg/dL (−2.8 mmol/L) was excluded.
‡Regression estimates are computed with random coefficient models to account for correlation among family members; ApoE 2 includes subjects with 2,2 and 3,2; ApoE 3 includes subjects with 3,3 and 4,2; ApoE 4 includes subjects with 3,4 and 4,4 genotypes.
§Five children with missing covariate data and the outlier were excluded from regression models.

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more strict metabolic control to ensure standard intake of fats. For the number of subjects in our study, a metabolic diet study would have been unwieldy and costly. Using resources available, we taught families how to measure portion sizes at home and provided detailed low-fat dietary prescriptions for each family member. This base diet was supplemented with baked goods and spreadable fats that were provided to the families. Subjects were given an explicit daily and weekly goal for consumption of test fat and test fat products, and this goal and their progress was reviewed during a weekly home visit. Compliance was excellent, and the lipid lowering that was achieved matched that of the predicted data derived from other metabolic diet studies.

The primary literature linking genetic factors with dietary responsiveness in humans are reports from studies in unrelated individuals in which the genetic analysis occurred after the dietary trial was completed.[30] One study in which subjects were preselected based on their genotype, the Apo A-IV allele was associated with variation in response to dietary cholesterol.[31] Our study approached the issue of variability in dietary responsiveness from a different angle: we evaluated dietary responsiveness in families who shared lifestyle and dietary habits as well as genetic background.

ApoE and 7 α-hydroxylase are excellent candidate genes for dietary responsiveness, since both influence LDL-C levels,[17,32] and dietary responsiveness is known to be influenced by baseline LDL-C levels.[33] We did not find a significant association between 7 α-hydroxylase genotype and dietary responsiveness, but we did observe a small effect for ApoE genotype on the dietary response in adults but not in children. Our failure to confirm an association between ApoE genotype and responsiveness in children may be because of inadequate power or age differences in the expression of ApoE, since not all studies in children have found an ApoE influence on ad libitum LDL-C cholesterol levels[34-36] Similar to studies finding an association between ApoE genotype and response, only 5% to 10% of variance could be attributed to ApoE variation.[30]

The observation that obese persons are less responsive to diet modification adds to a growing literature linking body weight to lipids and to dietary response. The linear and positive relationship between body weight and LDL-C levels is present in younger persons but appears blunted by age.[37,38] In children with familial hypercholesterolemia, body fat is a significant predictor of ad libitum LDL-C levels.[36] Thus, it should not be surprising that body weight, like ApoE genotype, is an excellent candidate factor for predicting responsiveness. Several studies have observed that obese women compared with lean women are less responsive to a cholesterol-lowering diet.[39,40] One study found no difference in response between obese and nonobese men,[41] but another observed that nonobese, overweight men achieved only half of the LDL-C level reduction by diet achieved by lean men.[41] Our findings confirm and extend the notion that body weight predicts dietary responsiveness in children as well as adults and for body weight differences even among those who are lean. Excess body weight has no age or sex bias—people who are overweight achieve less of a cholesterol reduction by diet than people who are lean.

We measured CE fatty acids as a biological marker of adherence.[42,43] In our study, the 18:2 content of the margarine diet was far greater than that of the butter diet. The expected increase in the CE content of 18:2 was observed, confirming adherence. Besides a marker of adherence, we did not anticipate the contribution that other factors make in determining CE content. The CE fatty acid content varies within a relatively narrow range,[44] does not predict serum cholesterol levels,[45] and may be subject to genetic regulation. In a study of 69 twin pairs and their brothers, monozygotic twins had smaller differences in CE fatty acid content compared with dizygotic twins and brothers.[46] Body weight can alter CE fatty acid content. In the Atherosclerosis Risk in Communities study, even after stratifying for dietary intakes, the CE saturated fatty acid levels were higher and the CE content 18:2 was lower in overweight men and women than lean men and women.[47]

When all subjects are stratified by categories of BMI, clear differences in the change in CE fatty acid levels by diet were observed. Although a relative increase in CE 18:2 content in the margarine intake period was seen in every category of BMI, obese and overweight persons had less excursion in the CE fatty acid levels during dietary modification than more lean persons. The strong interrelationships between dietary responsiveness, CE ratio, and BMI raise the hypothesis that the influence of dietary fatty acids on serum cholesterol levels is tempered by the pool of endogenous fatty acids held in adipose tissue. If relatively fixed concentrations of fatty acids in adipose tissue[48] mix with dietary fatty acids and compete for hepatic uptake, even on a low saturated fatty acid diet an obese person's liver is exposed to more saturated fatty acid flux than a lean person's liver. One can only speculate whether differences in fatty acid flux can explain the observations that obese persons are less responsive to diet and have higher cholesterol levels than lean persons.

The unimodal distribution of dietary responses observed in our study are consistent with our failure to identify a single genetic factor that accounts for variation in dietary response. By studying families, we could determine that 40% of the variability in response to a cholesterol-lowering diet is due to shared traits, whether these are heritable or habitual. Furthermore, our study underscores the nearly universal response to a cholesterol-lowering diet in both children and adults. This finding confirms the long standing recommendation promoting a cholesterol-lowering diet for the population at large.

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Author Contributions: Dr Denke designed and executed this investigation; Ms Adams-Huet performed all statistical analysis in all phases of the investigation; Ms Nguyen performed phlebotomy, delivered food, divided samples, and performed the assays for lipids and lipoproteins, cholesterol ester fatty acids, plasma triglyceride fatty acids, free fatty acids, as well as genotype assays for ApoE and 7 α-hydroxylase genotypes.
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Disclaimer: The United Soybean Board and National Association of Margarine Manufacturers were influential in the basic dietary comparison of the study (butter vs soybean margarine) but had no other input regarding the design of the study, its execution, interpretation, analysis of the data, writing of the manuscript, or approval of the manuscript text prior to submission.
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October 9, 2003

Dockets Management Branch (HFA-305)
Food and Drug Administration
5630 Fishers Lane, rm. 1061
Rockville, MD 20852

RE: [Docket No. 03N-0076]

Dear Sir/Madam:

The North American branch of the International Life Sciences Institute (ILSI N.A.), respectfully submits the following comments directed to the Federal Register notice on July 11, 2003 (68 FR 41507) regarding the advance notice of proposed rulemaking (ANPR) on Food Labeling: *Trans* Fatty Acids in Nutrition Labeling; Consumer Research to Consider Nutrient Content Claims and Health Claims and Possible Footnote or Disclosure Statements.

ILSI N.A., a public, non-profit scientific foundation, advances the understanding and application of scientific issues related to the nutritional quality and safety of the food supply, as well as health issues related to consumer self-care products. The organization carries out its mission by sponsoring relevant research programs, professional education programs and workshops, seminars, and publications, as well as providing a neutral forum for government, academic, and industry scientists to discuss and resolve scientific issues of common concern for the well-being of the general public. ILSI N.A.'s programs are supported primarily by its industry membership.

The comments submitted address the request for information from scientific bodies concerning *trans* fatty acids (TFA) in nutrition labeling. In response to this request, members of the ILSI N.A. Technical Committee on Dietary Lipids (ILSI Lipids Committee) reviewed various intervention studies cited by the Food and Drug Administration (FDA) in the final rule on Food Labeling: *Trans* Fatty Acids in Nutrition labeling, Nutrient Content Claims, and Health Claims (68 FR 41434) and the proposed rule on Food Labeling: *Trans* Fatty Acids in Nutrition labeling, Nutrient Content Claims, and Health Claims (64 FR 62746).

Data from 16 intervention trials were reviewed, in which 17 control/comparison (control) and 27 treatment TFA intake levels were identified (**1-16**). One study (**9**) not cited by FDA in the ANPR has been included due to its inclusion in the Ascherio et al (**17**) analysis. All fatty acid intakes, when not reported as %En, were converted to %En, thereby permitting study comparisons on a similar basis. Also, LDL-C and HDL-C values expressed as mg/dL were converted to mM. The fatty acid intake and serum lipid data are summarized in **table 1**.

As a result of this review, ILSI N.A. respectfully submits that:

1) There is sufficient variation in the intake levels of TFA and SFA, across the numerous intervention trials, to allow modeling of fatty acid intake and its impact on serum cholesterol levels;

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2) It does not seem possible to make a meaningful distinction between the intake of *trans* fatty acids and saturated fatty acids (SFA) with respect to any differential impact on LDL cholesterol (LDL-C);
3) It does not seem possible to make a meaningful distinction between the intake of TFA and SFA with respect to any differential impact on HDL cholesterol (HDL-C), when TFA intake is less than 5% of total energy intake (5% En);
4) Published data suggest that the 90th percentile of TFA intake falls below 5%En in the North American diet ;
5) The most effective manner to predict changes in serum cholesterol levels, explaining the majority of the variance, is to consider the sum of TFA and SFA intake.

These conclusions are based on observations of the dietary levels of TFA and other fatty acids such as linoleic acid (LA) that were tested in the intervention trials, their associations with serum LDL-C and HDL-C, and how TFA intakes compare to those estimated from representative samples of the U.S. population.

It must be acknowledged that differences exist among the studies in design, objectives, test products, and populations, and that these studies have not been subjected to a rigorous meta-analysis. ILSI N.A. has undertaken to examine these studies through a thorough meta-analysis, with completion expected in early December, 2004.

Nonetheless, these datasets represent controlled studies of the relation between TFA intake, SFA intake, and serum lipids. As such conclusions drawn from these observations may assist the FDA in deliberations regarding TFA and food labeling.

- **Sufficient variation in TFA, SFA, and LA intakes across intervention trials exists to model intake effects on serum lipids**

TFA intakes ranged from 0 to 10.9%En. Control TFA intakes in the intervention studies ranged from 0 to 2.4%En, with 14 of 17 control TFA intakes being less than 1%En. TFA added to the diet for treatment ranged from 0 to 10.9%En, with 19 of 27 being greater than 3%En. The SFA and linoleic acid (LA) intakes across and within studies also varied. In the 44 control plus treatment diets, SFA ranged from 3.1 to 22.9%En, with 23 diets containing 10%En or more and 16 diets containing between 7 and 10%En. LA ranged from 0.8 to 15.6%En, with 31 diets containing at least 4%En and 9 diets having at least 10%En.

Changes in intake (treatment minus control) ranged from -1.2 to +10.9%En for TFA, -10.3 to +4.3%En for SFA, and -12.2 to +13.0%En for LA. The changes in TFA intakes were associated with little change in SFA intake (**figure 1**) but significant decreases in LA intakes (**figure 2**).

- **Intake of TFA do not differentially impact serum LDL-C compared to similar intakes of SFA**

Figures 3 and 4, respectively, plot changes in TFA intake (%En) against changes in LDL-C in relative (%) and absolute terms. Figures 5 and 6, respectively, plot changes in SFA intake (%En) against changes in LDL-C in relative (%) and absolute terms. There are two key points to note.

First, in all cases the slopes of the lines are similar. This strongly suggests that the impact on serum LDL-C of TFA intake and SFA intake are essentially indistinguishable. Second, higher order predictive equations provide very little additional explanation of the variance, suggesting that a linear regression is a reasonable model for these data (r^2 coefficients are provided for first, second and fourth order equations as examples, though the biological relevance of a fourth order equation may be difficult to interpret).

In summary, the data do not permit a meaningful distinction between the intake of *trans* fatty acids and saturated fatty acids (SFA) with respect to any differential impact on LDL cholesterol (LDL-C).

- **Intake of TFA do not differentially impact serum HDL-C compared to similar intakes of SFA, when TFA intakes are less than 5%En**

Figures 7 and 8, respectively, plot changes in TFA intake (%En) against changes in HDL-C in relative (%) and absolute terms. However in contrast to plots of LDL-C, higher order equations provide significantly greater predictive value, explaining a greater proportion of the variance. Most intriguing is the finding that there appears to be little impact on serum HDL-C when TFA intake is less than 5% En, when a second or fourth order equation is employed. Above this threshold, there is a clear inverse relationship, with increasing TFA intakes resulting in decreased serum HDL-C. Not surprisingly, a simple linear regression has negative slope, but this is a poor model of the data.

SFA intake (%En) appears to show no such threshold effect on serum HDL-C, in fact showing very little effect at all (figures 9 and 10).

In summary, the data do not permit a meaningful distinction between the intake of TFA and SFA with respect to any differential impact on HDL cholesterol (HDL-C), when TFA intake is less than 5% of total energy intake (5% En).

- **Mean population TFA intakes are below levels that significantly affect HDL-C**

The difficulties and limitations associated with estimating the TFA intake of free-living individuals, as well as FDA's caution to avoid over-interpreting dietary intake estimates and relationships to TFA intake levels used in intervention trials, must be acknowledged. (68 FR 41434 at 41446) Nonetheless, we believe the following observations may be useful to FDA in order to place these conclusions within the context of the North American diet.

TFA intakes have been estimated from food disappearance and availability data, diet records and food frequency questionnaires from various populations, chemical analysis of formulated or duplicate diets, and chemical analysis of adipose tissue. We believe that TFA intakes estimated from the CSFII are useful for drawing observations because they are derived from a representative sample of the U.S. population and are based on 24-hour recalled food intake, with or without 2-day recorded food intake. Energy intakes from the CSFII are likely to be underestimated by approximately 20 to 40% (18). However, the TFA data expressed as %En represent a reasonable, if not conservative, estimate of intake.

Allison et al estimated the mean TFA intake from the 1989-1990 CSFII for the total U.S. population aged 3 years and older to be 2.6%En, and from 2.6 to 2.8%En across various age and gender groups (**18**). FDA estimated the mean TFA intake for adults to be 2.91%En from the 1994-1996 CSFII. (8 FR 41434 at 41468) These population mean intakes are below the 5% En levels in the intervention trials associated with significant decreases in HDL-C. In addition, further inspection of Allison et al's results suggest that even the 90th percentile intake of TFA would fall below 5% En, in this population.

In summary, published data show that TFA intake, even at the 90th percentile, fall below the 5% En threshold when TFA significantly, and negatively, impact serum HDL-C.

- **The sum of TFA and SFA intakes provides the most robust predictor of changes in serum LDL-C**

When TFA and SFA intakes are combined, the most robust predictor of serum LDL-C is obtained, with an r^2 coefficient approximately 0.83. This is true when considering either relative (%) or absolute (mM) changes in serum LDL-C (figures 11 and 12 respectively). It is once again very interesting to note that higher order equations do not provide any significant improvement in explaining the variance, indicating that a linear regression presents a viable model of the data.

Since there is very little, if any, relation between SFA intake and HDL-C in these intervention trials, and the same is true for TFA intake below 5% En, summing the intake of these two fatty acids did not prove to be an effective predictor of serum HDL-C.

In summary, TFA and SFA intakes, when considered together, prove to be the most robust predictor of serum LDL-C.

- **TFA and SFA intakes must be considered together when examining their impact on serum cholesterol levels, and one is not distinguishable from the other within the context of the North American diet**

In conclusion, ILSI N.A. respectfully suggests that the data reviewed support the following:

1) Sufficient data exists to model the impact of TFA and SFA intake on serum cholesterol levels;
2) No meaningful distinction can be made between the intake of TFA and SFA with respect to impact on LDL-C;
3) No meaningful distinction can be made between the intake of TFA and SFA with respect to impact on HDL-C, when TFA intake is less than 5% En;
4) Published data indicate that the 90th percentile of TFA intake falls below 5% En
5) The sum of TFA and SFA intake is the most effective predictor of changes in serum lipid profile, explaining the majority of the variance.

ILSI N.A. encourages FDA to consider the observations presented regarding TFA and SFA intakes tested in intervention trials and how these intakes relate to changes in the intakes of other fatty acids, to changes in LDL-C and HDL-C, within the context of TFA intakes estimated from representative samples of the U.S. population.

Sincerely,

Richard M. Black, Ph.D.
Executive Director, ILSI North America

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Table 1. Fatty Acid Intakes and Serum LDL Cholesterol and HDL Cholesterol

Table 1. Fatty Acid Intakes and Serum LDL Cholesterol and HDL Cholesterol

Reference	Treatment	TFA (%En)	SFA (%En)	LA (%En)	LDL-C (mM)	HDL-C (mM)	Δ TFA (%En)	Δ SFA (%En)	Δ LA (%En)	Δ LDL-C (mM)	Δ HDL-C (mM)	Δ LDL-C (%)	Δ HDL-C (%)
Aro 1997 (1)	TFA	8.7	7.1	2.7	3.13	1.22	8.3	-7.9	-0.4	0.24*	-0.20*	8.3*	-14.1*
	STE†	0.4	15.0	3.1	2.89	1.42							
De Roos 2001	TFA	9.2	12.9	4.1	3.04	1.48	8.9	-10.0	-1.8	-0.01	-0.39*	-0.3	-20.9*
	SFA†	0.3	22.9	5.9	3.05	1.87							
Judd 1994 (3)	TFA (moderate)	3.8	13.0	6.0	3.54	1.40	3.1	-0.4	-0.1	0.20*	-0.02	6.0*	-1.4
	TFA (high)	6.6	12.7	6.2	3.60	1.38	5.9	-0.7	0.1	0.26*	-0.04*	7.8*	-2.8*
	OL†	0.7	13.4	6.1	3.34	1.42							
Judd 2002 (4)	TFA (moderate)	4.2	16.9	4.3	3.32	1.17	4.1	4.3	0.5	0.37*	-0.07*	12.5*	-5.6*
	TFA (high)	8.3	12.9	4.0	3.36	1.16	8.2	0.3	0.2	0.41*	-0.08*	13.9*	-6.5*
	OL†	0.1	12.6	3.8	2.95	1.24							
Lichtenstein 1993 (5)	Margarine	4.2	7.7	7.9	3.49	1.11	3.8	1.3	-0.6	0.26#	-0.03	8.0#	-2.6
	CO†	0.4	6.4	8.5	3.23	1.14							
Lichtenstein 1999 (6)	Semiliquid margarine	0.9	8.6	12.1	4.01	1.11	0.3	1.3	1.4	0.03	0.00	0.8	0.0
	Butter	1.3	16.7	2.1	4.58	1.16	0.7	9.4	-8.6	0.60*	0.05	15.1*	4.5
	Soft margarine	3.3	8.4	10.0	4.11	1.11	2.7	1.1	-0.7	0.13	0.00	3.3	0.0
	Shortening	4.2	8.6	7.2	4.24	1.11	3.6	1.3	-3.5	0.26*	0.00	6.5*	0.0
	Stick margarine	6.7	8.5	5.6	4.34	1.09	6.1	1.2	-5.1	0.36*	-0.02	9.0*	-1.8
	SBO†§	0.6	7.3	10.7	3.98	1.11							
Mensink 1990 (7)	TFA	10.9	10.0	4.2	3.04	1.25	10.9	0.5	0.2	0.37*	-0.17*	13.9*	-12.0*
	OL†	0.0	9.5	4.0	2.67	1.42							
Nestel 1992 (8)	TFA	6.7	10.0	6.6	4.27	0.98	4.3	1.0	1.3	0.37*	0.00	9.5*	0.0
	OL†	2.4	9.0	5.3	3.90	0.98							
Sundram 1997 (9)	TFA	6.9	7.4	5.3	3.81	1.05	6.9	-2.1	1.4	0.64*	-0.20*	20.2*	-16.0*
	OL†	0.0	9.5	3.9	3.17	1.25							
Wood 1993 (10)	Hard margarine	6.3	5.0	3.4	3.36	1.00	6.3	1.9	-12.2	0.13	0.00	4.0	0.0
	SO†	0.0[a]	3.1	15.6	3.23	1.00							
Zock 1992 (11)	TFA	7.7	10.3	3.8	3.07	1.37	7.6	-0.7	-8.2	0.24*	-0.10*	8.5*	-6.8*
	LA†	0.1	11.0	12.0	2.83	1.47							
Almendingen 1995 (12)	PHSBO	8.5	11.0	5.4	3.58	1.05	7.6	-5.4	0.0	-0.23*	0.00	-6.0*	0.0
	PHFO	8.0	11.3	5.3	3.94	0.98	7.1	-5.1	-0.1	0.13	-0.07	3.4	-6.7*
	Butter†	0.9	16.4	5.4	3.81	1.05							
Denke 2000 (13)	Margarine	1.5[b]	9.0	10.0[c]	3.00	1.19	1.0	-7.0	7.0	-0.39*	0.00	-11.5*	0.0
	Butter†	0.5	16.0	3.0	3.39	1.19							
Judd 1998 (14)	TFA margarine	3.9[d]	7.9[d]	2.7[d]	3.27	1.24	1.2	-3.3	1.6	-0.17*	-0.03	-4.9*	-2.4

Table 1. Fatty Acid Intakes and Serum LDL Cholesterol and HDL Cholesterol

Reference	Treatment	TFA (%En)	SFA (%En)	LA (%En)	LDL-C (mM)	HDL-C (mM)	Δ TFA (%En)	Δ SFA (%En)	Δ LA (%En)	Δ LDL-C (mM)	Δ HDL-C (mM)	Δ LDL-C (%)	Δ HDL-C (%)
	PUFA margarine	2.4[d]	8.3[d]	4.9[d]	3.21	1.24	-0.3	-2.9	3.8	-0.23*	-0.03	-6.7*	-2.4
	Butter†	2.7[d]	11.2[d]	1.1[d]	3.44	1.27							
Noakes 1998 (15)	Canola+TFA	2.1[d]	8.9[d]	5.8[cd]	3.64	1.19	1.4	-6.6	3.0	-0.50*	-0.01	-12.1*	-0.8
	Canola-TFA	0.0[d]	8.7[d]	6.0[cd]	3.61	1.28	-0.7	-6.8	3.2	-0.53*	0.08	-12.8*	6.7
	Butter†	0.7[d]	15.5[d]	2.8[cd]	4.14	1.20							
Noakes 1998 (15)	PUFA+TFA	2.1[d]	10.2[d]	10.4[cd]	4.23	1.17	1.4	-7.5	7.3	-0.47*	-0.10	-10.0*	-7.9
	PUFA-TFA	0.0[d]	10.3[d]	10.5[cd]	3.98	1.23	-0.7	-7.4	7.4	-0.72*	-0.04	-15.3*	-3.1
	Butter†	0.7[d]	17.7[d]	3.1[cd]	4.70	1.27							
Wood 1993 (16)	Hard margarine	6.7[d]	5.0[d]	0.8[d]	3.47	1.16	5.5	-10.3	0.0	-0.31*	-0.06	-8.2*	-4.[illegible]
	Soft margarine	0.0[d]	5.0[d]	13.8[d]	3.26	1.16	-1.2	-10.3	13.0	-0.52*	-0.06	-13.8*	-4.[illegible]
	Butter†ϕ	1.2[d]	15.3[d]	0.9[d]	3.78	1.22							

Abbreviations: TFA, trans fatty acids; SFA, saturated fatty acids; LA, linoleic acid; LDL-C, LDL cholesterol; HDL-C, HDL cholesterol; %En, percent of energy; STE, stearic acid; OL, oleic acid; SBO, soybean oil; SO, sunflower oil; PHSBO, partially hydrogenated soybean oil; PHFO, partially hydrogenated fish oil; PUFA, polyunsaturated fatty acid

* $p \leq 0.05$
† Comparison diet
# $p < 0.058$
§ Authors used butter as the control diet. For this analysis, treatments were compared to SBO
ϕ Authors compared test fats with each other. For this analysis, test fats were compared to butter

[a] Not reported for nontest fat foods common to all diets
[b] Fatty acid intakes based on 3-day food records
[c] Total PUFA
[d] Fatty acid values apply to test fat, not total fatty acids in diet

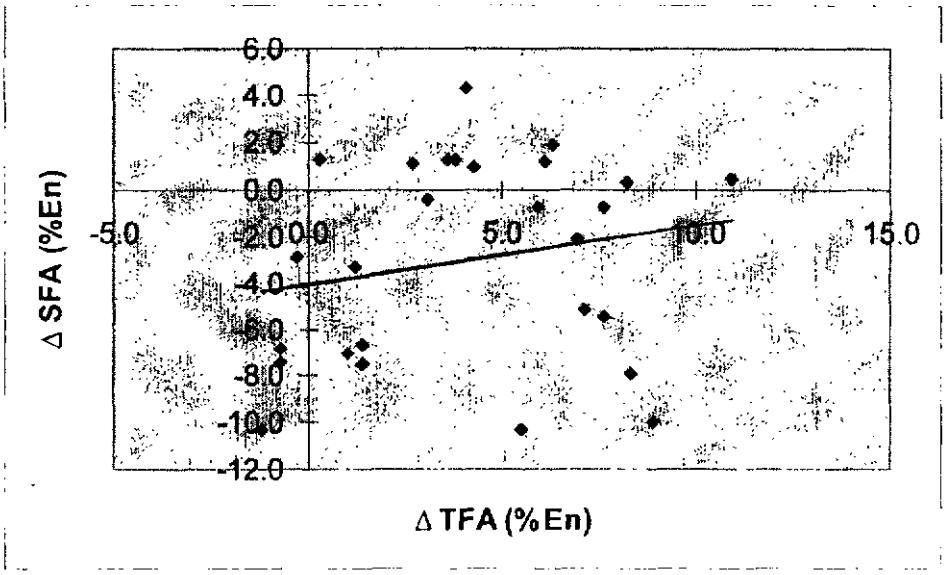

Figure 1. Change in saturated fatty acid intake vs. change in trans fatty acid intake from treatments listed in table 1.

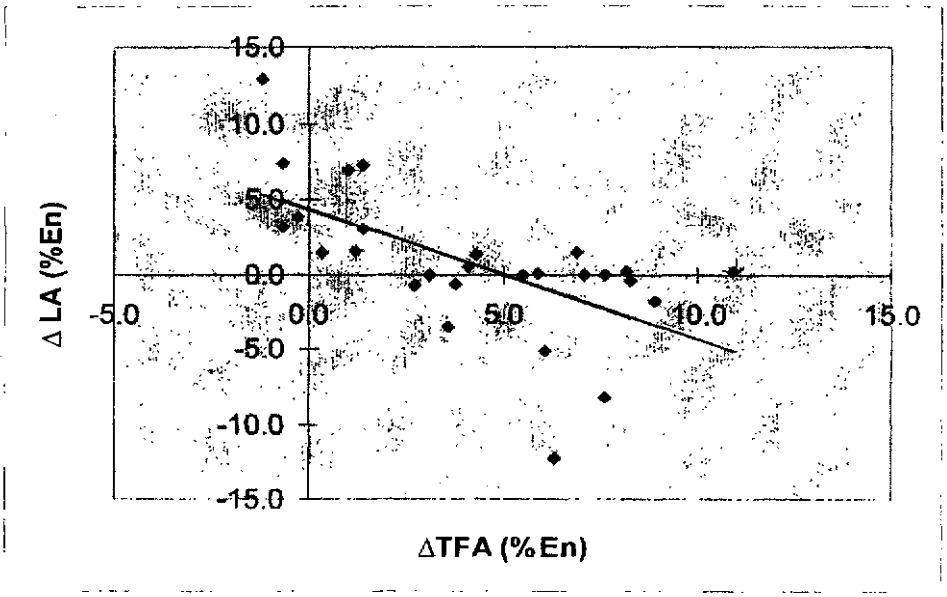

Figure 2. Change in linoleic acid intake vs. change in trans fatty acid intake from treatments listed in table 1.

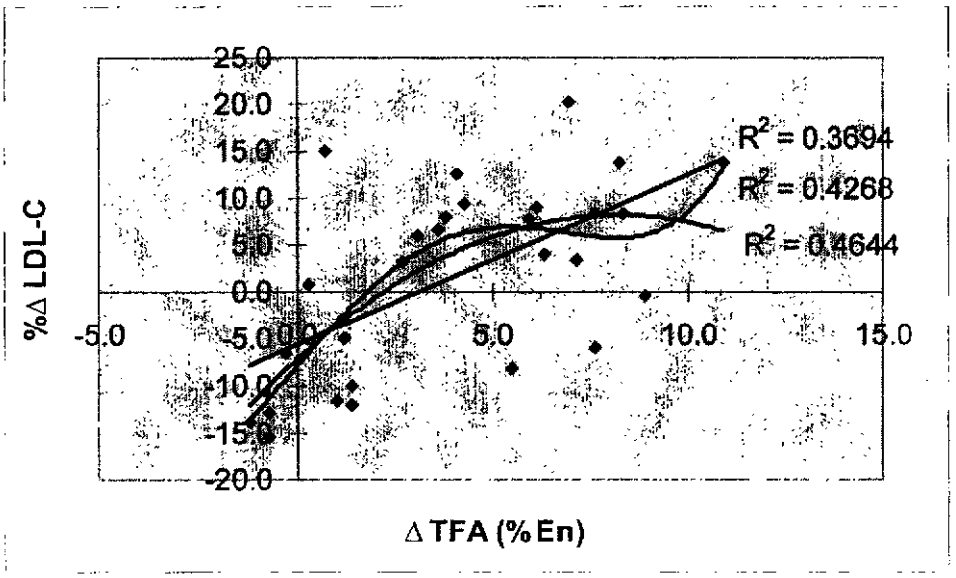

Figure 3. Percent change in LDL cholesterol vs. change in trans fatty acid intake from treatments listed in table 1. Lines plotted represent first, second and fourth order equations, with r^2 coefficients presented in that order.

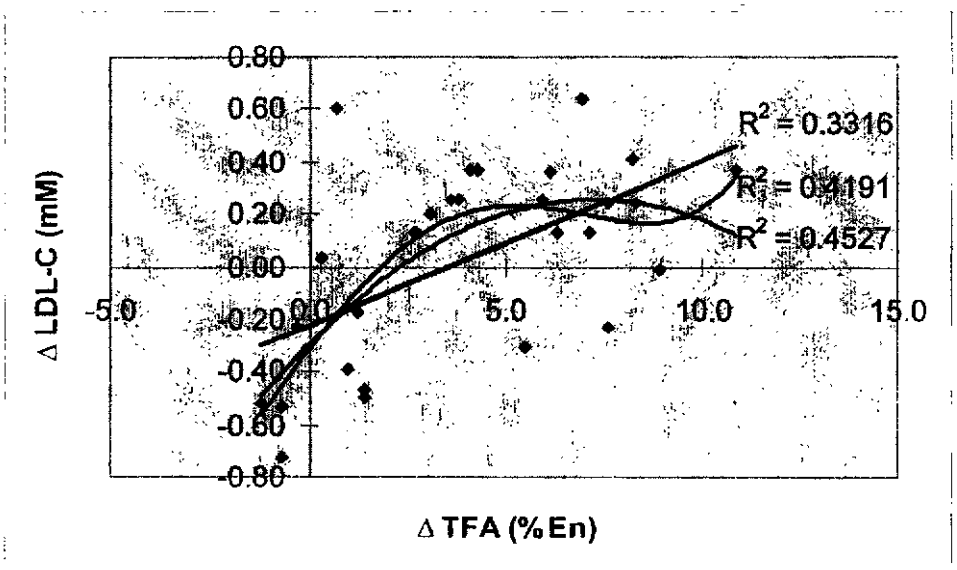

Figure 4. Absolute change in LDL cholesterol vs. change in trans fatty acid intake from treatments listed in table 1. Lines plotted represent first, second and fourth order equations, with r^2 coefficients presented in that order.

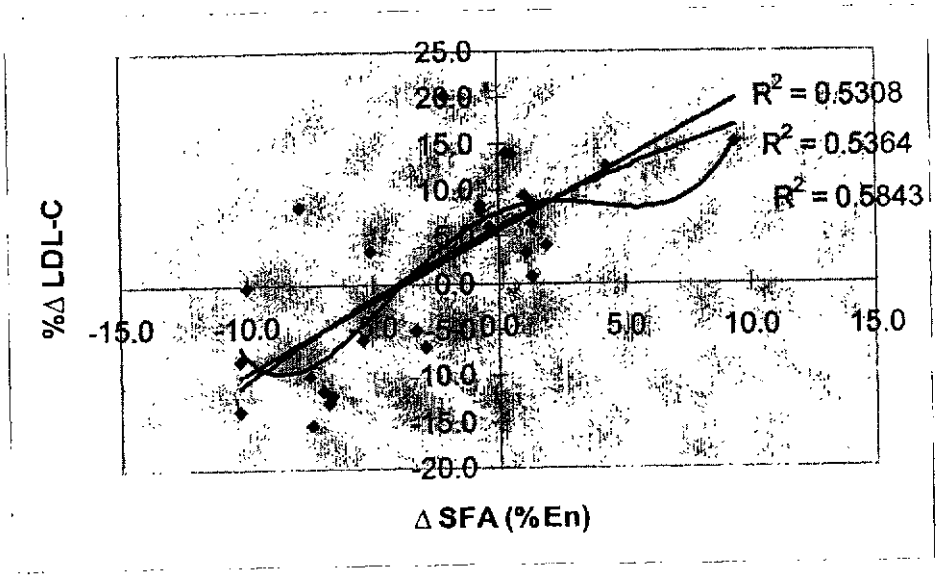

Figure 5. Percent change in LDL cholesterol vs. change in saturated fatty acid intake from treatments listed in table 1. Lines plotted represent first, second and fourth order equations, with r^2 coefficients presented in that order.

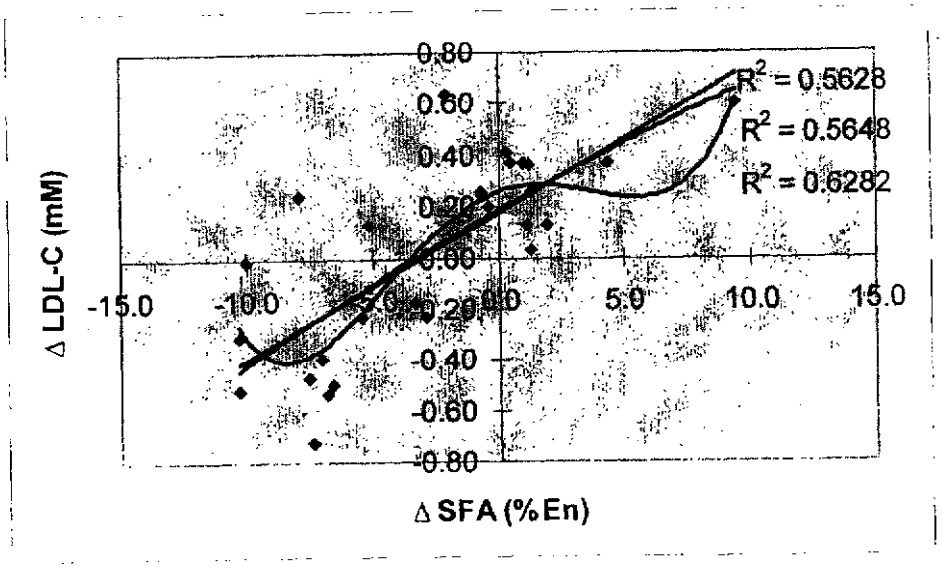

Figure 6. Absolute change in LDL cholesterol vs. change in saturated fatty acid intake from treatments listed in table 1. Lines plotted represent first, second and fourth order equations, with r^2 coefficients presented in that order.

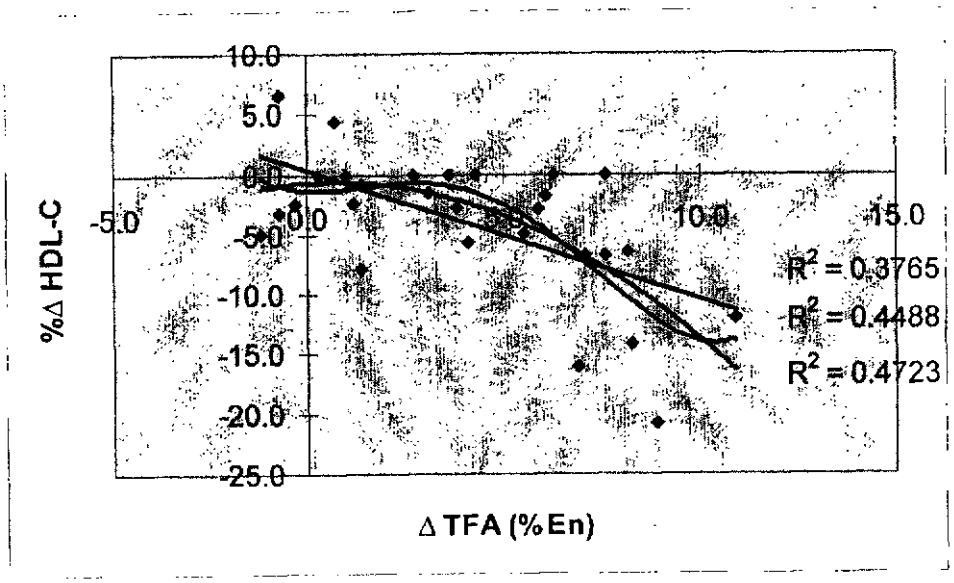

Figure 7. Percent change in HDL cholesterol vs. change in trans fatty acid intake from treatments listed in table 1. Lines plotted represent first, second and fourth order equations, with r^2 coefficients presented in that order.

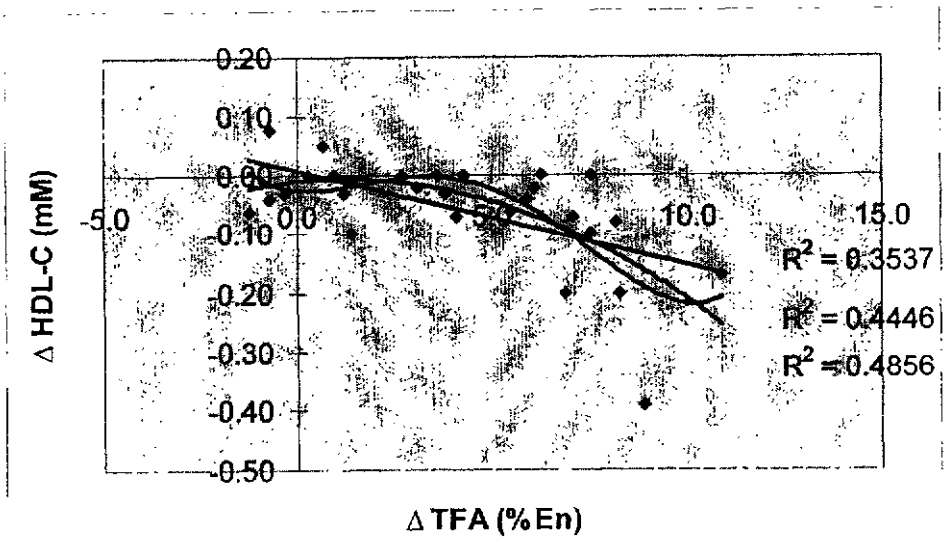

Figure 8. Absolute change in HDL cholesterol vs. change in trans fatty acid intake from treatments listed in table 1. Lines plotted represent first, second and fourth order equations, with r^2 coefficients presented in that order.

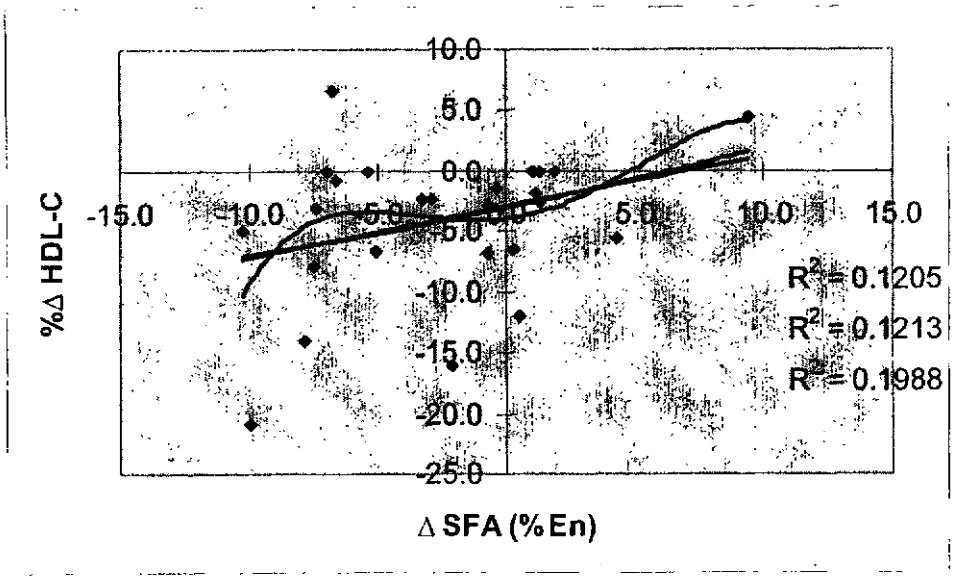

Figure 9. Percent change in HDL cholesterol vs. change in saturated fatty acid intake from treatments listed in table 1. Lines plotted represent first, second and fourth order equations, with r^2 coefficients presented in that order.

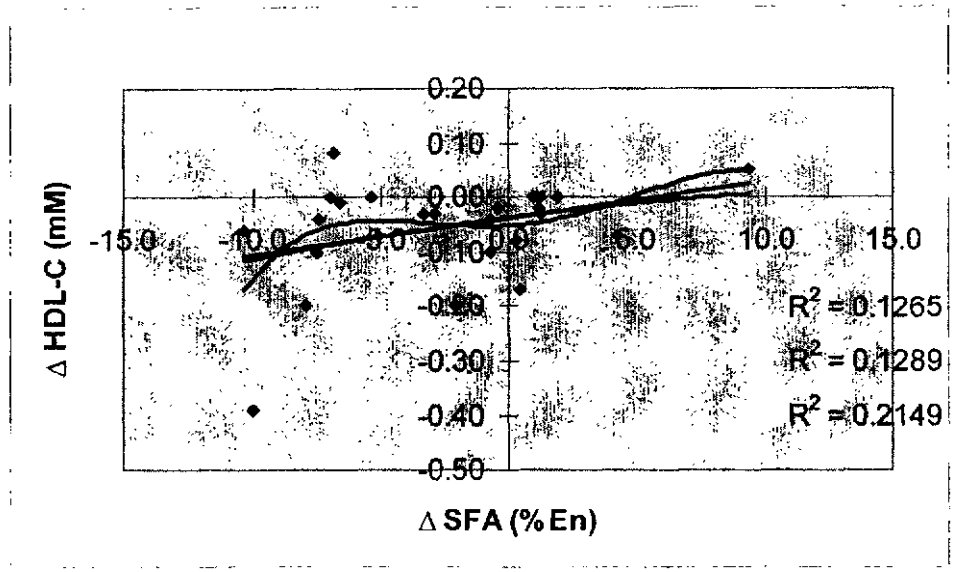

Figure 10. Absolute change in HDL cholesterol vs. change in saturated fatty acid intake from treatments listed in table 1. Lines plotted represent first, second and fourth order equations, with r^2 coefficients presented in that order.

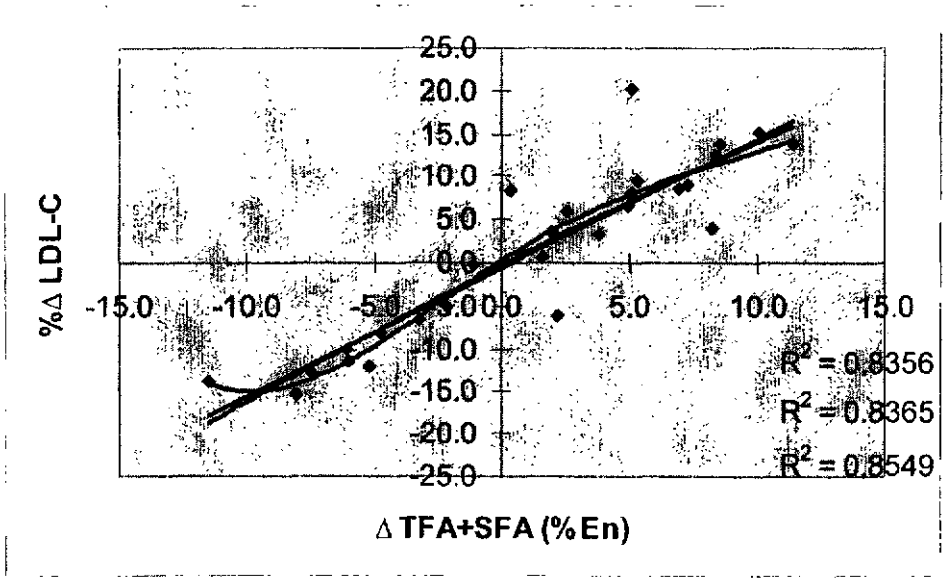

Figure 11. Percent change in HDL cholesterol vs. change in sum of trans and saturated fatty acid intake from treatments listed in table 1. Lines plotted represent first, second and fourth order equations, with r^2 coefficients presented in that order.

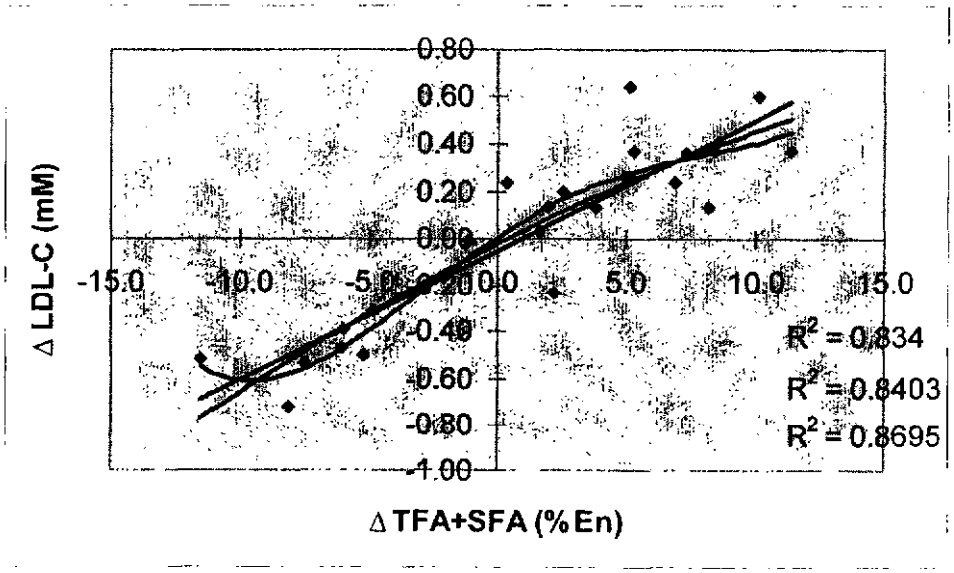

Figure 12. Absolute change in HDL cholesterol vs. change in sum of trans and saturated fatty acid intake from treatments listed in table 1. Lines plotted represent first, second and fourth order equations, with r^2 coefficients presented in that order.

PART E: TRANSLATING THE SCIENCE INTO DIETARY GUIDANCE

The purpose of this part of the report is to identify content needed to translate the Committee's findings into policy and dietary guidance for consumers. This information should be useful to nutrition-related program providers, healthcare providers, and educators as well as to the groups charged with the responsibility of producing policy statements and the 2005 edition of *Dietary Guidelines for Americans.* The Committee provides specific recommendations for the content of main messages and supporting details, but we leave the wording of consumer documents to communication experts.

Good nutrition is vital to good health—both in the present and the distant future. Good nutrition is absolutely essential for the healthy growth and development of children and adolescents. A basic premise of the Committee is that nutrient needs should be met primarily through consuming foods. Foods provide an array of nutrients and of other compounds that may have beneficial effects on health. In some cases, fortified foods may be useful sources of one or more nutrients that otherwise might be consumed in less than recommended amounts. Nutrient supplements cannot replace a healthy diet. Supplements are useful when they fill a specific identified nutrient gap that cannot or is not otherwise being met by the individual's intake of food. Individuals who are already consuming the recommended amount of a nutrient will not achieve any recognized health benefit if they also take the nutrient as a supplement. In fact, in some cases, supplements and fortified foods may cause intakes to exceed the Tolerable Upper Intake Level for nutrients.

In brief, the Committee's findings support nine major messages:

- Consume a variety of foods within and among the basic food groups while staying within energy needs.
- Control calorie intake to manage body weight.
- Be physically active every day.
- Increase daily intake of fruits and vegetables, whole grains, and nonfat or low-fat milk and milk products.
- Choose fats wisely for good health.
- Choose carbohydrates wisely for good health.
- Choose and prepare foods with little salt.
- If you drink alcohol, do so in moderation.
- Keep food safe to eat.

All these topics are important to promote day-to-day health and to reduce the risk for major chronic diseases. The topics are not listed in order of priority. In fact, they are closely interrelated. Consuming a variety of foods from the basic food groups and controlling calorie intake are two major themes—themes that are intertwined. To achieve weight control, for example, guidance to increase one's intake of certain food groups must go hand in hand with guidance to decrease intake of added sugars and solid fats. At the same time, being physically active increases energy expenditure and makes it easier to meet recommended intakes for nutrients and to control weight. The Committee

believes these messages should be conveyed in *Nutrition and Your Health: Dietary Guidelines for Americans, 2005*.

The list of major messages includes a major departure from previous editions of *Dietary Guidelines for Americans* in that it does not include a message specifically directed toward sugars. This omission does not mean that the current Committee views the topic of sugars as unimportant. On the contrary, the Committee provides a strong rationale for limiting one's intake of added sugars. The Committee's intent is to make this point clearly under the new topic "Choosing Carbohydrates Wisely for Good Health" and under the first and second topics that address energy needs and controlling calorie intake, respectively.

CONSUME A VARIETY OF FOODS WITHIN AND AMONG THE BASIC FOOD GROUPS WHILE STAYING WITHIN ENERGY NEEDS

Overview

Many Americans consume more calories than they need without meeting recommended intakes for a number of nutrients. This circumstance means that most people need to choose meals and snacks that are high in nutrients but low to moderate in energy content; that is, meeting nutrient recommendations must go hand in hand with keeping calories under control. Doing both offers important benefits—normal growth and development of children, health promotion for people of all ages, and reduction of risk for a number of chronic diseases that are major public health problems.

Dietary data suggest that, in general,

- Adults do not consume enough vitamins A, C, and E; calcium; magnesium; potassium; and fiber.[1]
- Children do not consume enough vitamin E, calcium, magnesium, potassium, and fiber.

At the same time, in general, Americans consume too many calories and too much saturated and *trans* fat, cholesterol, added sugars, and salt.

Key Messages

- Eating a variety of food within and among the basic food groups helps one achieve recommended nutrient intakes while maintaining appropriate energy intake.
- Adults who consume the amounts of fruits and vegetables, whole grains, and nonfat or low-fat milk and milk products that are recommended in the U.S. Department of Agriculture (USDA) food intake pattern (see Table D1-13 and the Dietary Approaches To Stop Hypertension (DASH) diet, Table D1-18) will achieve the levels of intake of these foods that are associated with a reduced risk of chronic disease.

[1] Folate also was identified as a shortfall nutrient by the studies cited in Part D; however, the data used were for these studies were collected prior to the mandatory fortification of enriched grains with folate. See further discussion in Part D, Section 1, "Aiming To Meet Recommended Intakes of Nutrients."

- Diets can be planned to meet recommended nutrient intakes while considering the food preferences of different racial/ethnic groups, vegetarians, and others.
- A few special nutrient recommendations apply to the elderly, women in the childbearing years, and groups susceptible to vitamin D insufficiency.
- Combining a physically active lifestyle with an eating pattern that features foods high in nutrient density helps to achieve recommended nutrient intake without excess calorie intake.

Additional Important Information

Meeting Recommended Intakes Within Energy Needs

- It is essential to convey the concept "a variety of foods from within each of the basic food groups" accurately to consumers. The food groups consist of fruits, vegetables, grains, milk, and meat and beans. The term ***foods*** refers to agricultural commodities such as wheat, corn, green beans, oranges, beef, eggs, fish, poultry, milk, and cheese. A meal that includes salmon, brown rice, spinach, sliced tomatoes, and nonfat milk includes five different food commodities. Bread, pasta, crackers, bulgar, and wheat cereal represent only one food commodity (wheat). Consuming different forms of the same commodity has not been associated with improved nutrient intake.
- The recommended nutrient intakes that are based on Dietary Reference Intakes are listed in Table D1-1. The calorie level that is generally appropriate for each age/gender group at a specified physical activity level is shown in Table D8-1.
- The use of the revised USDA food intake pattern is one method to plan to meet recommended nutrient intakes considering age, gender, and physical activity level. The food intake pattern in Table D1-13 includes suggested amounts to eat from each of the basic food groups and subgroups. Oils and *trans* fat free soft margarines also are included in the food intake pattern to provide essential fatty acids and vitamin E.
- When using the food intake pattern to plan diets, one must pay close attention to the forms of food described in footnote 1 to Table D1-13 and to Table D1-14, which provides additional information about discretionary calories. The pattern assumes that the meats and poultry are in their lowest fat form, the milk is nonfat, and the foods from all of the food groups contain no added sugars or fats. These are not the forms of food eaten by most Americans. Discretionary calorie values listed in Table D1-13 and D1-14 are the maximum amounts that can be accommodated at each calorie level. Discretionary calories are available to use for increasing variety, for example, having more fruits or vegetables or having medium-fat meat or cheese sometimes—or low-fat or whole milk, sweetened low-fat yogurt, sweetened cereal, or cake. Most people will exceed calorie recommendations if they consistently choose medium-fat meat and full-fat milk products in the amounts specified in the table—even if they do not have dessert, sweetened beverages, or alcoholic beverages.
- Eating the amounts of foods from each food group listed in the food intake pattern table each day (or averaged over a week in the case of vegetable subgroups) will enable most people to meet their recommended nutrient intakes at a calorie level

that does not exceed their energy needs. Eating in accordance with the food intake pattern also will keep intakes of saturated fat, total fat, and cholesterol within the limits recommended below under "Choosing Fats Wisely for Good Health".

- The food intake pattern that is designed to meet currently recommended nutrient intakes differs in important ways from commonly consumed food patterns. In general, they include

  —**More** dark green vegetables, bright orange vegetables, legumes, fruits, whole grains, and milk

  —**Less** enriched grains, total fats (especially solid fats), added sugars, and calories

- Americans need to increase their consumption of vitamin E- (α-tocopherol-) rich foods while decreasing their intake of foods high in energy but low in nutrients. The USDA food intake pattern does not provide for meeting the recommended intake of vitamin E unless vitamin E-rich sources are selected. Foods that can help increase vitamin E intake are listed in Table D1-8a along with their calorie content. Breakfast cereal that is fortified with vitamin E is an option for individuals seeking to increase their vitamin E intake while consuming a low-fat diet.
- Most Americans of all ages also need to increase their fiber intake. Diets rich in fiber help reduce the risk of coronary heart disease (CHD) and promote healthy laxation. Table D1-11a identifies foods that help increase fiber intake. Substituting whole grains for refined grains is a good way to increase fiber intake without increasing energy intake.
- Most Americans of all ages need to increase their potassium intake. Diets rich in potassium can lower blood pressure, lessen the adverse effects of salt on blood pressure, may reduce the risk of developing kidney stones, and possibly decrease bone loss. Blacks have a lower intake of potassium than do whites and a higher prevalence of elevated blood pressure and salt sensitivity. Thus, this subgroup of the population especially would benefit from an increased intake of potassium. Table D1-10a identifies foods that can help increase potassium intake and provides information about their calorie content.
- Many Americans need to increase their intake of vitamins A and C and/or magnesium. Tables D1-5a through D1-7a identify foods that help increase the intake of each of these nutrients along with their calorie content.

Flexibility

A number of approaches can be used to increase the flexibility of the meal pattern while still meeting the recommended intake values. Such flexibility is to be encouraged to accommodate individual preferences, cultural preferences, cost, and availability.

- ***Vegetarian Choices.*** Vegetarians can achieve recommended nutrient intakes through careful selection of foods, especially if they give special attention to their intakes of protein, iron, vitamin B_{12}, and calcium and vitamin D (if they avoid milk products). One way for a lacto-ovo vegetarian who needs 2,200 kcal to make daily selections from the meat and beans group would be to eat 1 egg, 1.5

oz nuts, and 2/3 cup legumes instead of 6 ounces of meat, poultry, and/or fish (further information is available in Appendix 2).

—1 egg

—1.5 oz of nuts

—2/3 cup of legumes

- ***Enriched Grain Substitutions.*** Whole grains can be substituted for enriched grains on an ounce-for-ounce basis. They are comparable in energy content and will provide for meeting nutrient recommendations nutrient adequacy in the food intake pattern. (Further information is available in Appendix G-2.)
- ***Legume Substitutions.*** For people who don't like legumes, several other food choices can be substituted in the food intake pattern and still provide for meeting nutrient recommendations. (See Appendix G-2).
- ***Substitutions for Milk and Milk Products.*** Since milk and milk products provide more than 70 percent of the calcium consumed by Americans, guidance on other choices of dietary calcium is needed for those who choose not to consume the recommended amount of milk products. (Tables D1-9a and D1-19 include information on calcium content and bioavailability from a variety of foods). Those who avoid milk may need to choose rich sources of the nutrients shown in Table D1-20 as well. Foods that can help increase intake of some of the nutrients provided by milk appear in Tables D1-5a, D1-7a, D1-9a, and D1-10a.

  Those who avoid milk because of its lactose content may obtain all the nutrients provided by the milk group by using lactose-reduced or low-lactose milk products, taking small servings of milk a number of times a day, taking the enzyme lactase before consuming milk products, or eating other calcium-rich foods such as calcium-fortified orange juice, fortified soy milk, broccoli and oranges. For additional information, see Tables D1-9a through D1-19 and http://digestive.niddk.nih.gov/ddiseases/pubs/lactoseintolerance/index.htm.

Meeting Nutrient Needs of Special Groups

- Women of childbearing age can reduce the risk of iron deficiency by eating foods high in iron (preferably meat, poultry, fish, shellfish) and/or consuming iron-rich plant foods, such as iron-fortified breakfast cereals, with a food rich in vitamin C (e.g., orange juice). Table D1-22a lists foods that can help increase iron intake and gives their calorie content.
- To reduce the risk of a pregnancy being affected by a neural tube defect, daily intake of 400 μg of synthetic folic acid (from supplements or fortified food) is recommended for women who are capable of becoming pregnant and those in the first trimester of pregnancy.
- Because many persons over age 50 have reduced ability to absorb naturally occurring vitamin B_{12}, consuming vitamin B_{12} in its crystalline form is recommended for this age group. The goal for those over age 50 is to eat foods fortified with vitamin B_{12}, such as fortified breakfast cereals, or to take vitamin

B_{12} supplements to achieve a B_{12} intake of at least 2.4 mcg per day. (This equals about 40 percent of the Daily Value expressed on food labels.)

- The elderly, persons with dark skin, and persons exposed to insufficient ultraviolet band (UVB) radiation are at risk of being unable to maintain vitamin D status. Persons in these groups may need substantially more than the 1997 Adequate Intake (AI) for vitamin D from vitamin D-fortified foods and/or vitamin D supplements. Three cups of vitamin D-fortified milk (300 IU), one cup of vitamin D-fortified orange juice (100 IU), and 600 IU of supplemental vitamin D would provide 1,000 IU of vitamin D daily.

Nutrient Density

- Nutrient-dense foods are those that provide substantial amounts vitamins and minerals and relatively fewer calories. Foods that are low in nutrient density are foods that supply calories but relatively small amounts of micronutrients (sometimes none at all).
- The greater the consumption of foods or beverages that are low in nutrient density, the more difficult it is to consume enough nutrients without gaining weight, especially for sedentary individuals.
- The consumption of added sugars, solid fats, and alcohol provides calories while providing little, if any, of the essential nutrients.

CONTROL CALORIE INTAKE TO MANAGE BODY WEIGHT

Overview

The prevalence of obesity has doubled in the past two decades. Nearly one-third of adults have a body mass index (BMI) in the obese range of 30 or greater. The prevalence of overweight among both children and adolescents has increased substantially as well. A high prevalence of overweight and obesity among adults is of great public health concern because excess body fat leads to a much higher risk for premature death, diabetes mellitus, hypertension, dyslipidemia, cardiovascular disease, stroke, gall bladder disease, respiratory dysfunction, gout, osteoarthritis, and certain kinds of cancers. Ideally, the goal for adults is to achieve and maintain a BMI in the healthy weight range. However, even modest weight loss (e.g., 10 pounds) has health benefits, and the prevention of further weight gain is very important. For overweight children and adolescents, the goal is to slow the rate of weight gain to achieve healthy growth. Maintaining a healthy weight throughout childhood will reduce an individual's risk of becoming an overweight or obese adult. Eating fewer calories is a key method of controlling body weight. Increasing physical activity also is very helpful in weight control, but because physical activity has additional beneficial effects on nutrition and health, it is covered separately. (See below—"Be Physically Active Every Day.")

Key Messages

- Persons who follow typical American eating and activity patterns have used up all their discretionary calories and are likely to be consuming diets well in excess of their energy requirements for their age, gender, and physical activity level. To stem the obesity epidemic, most Americans need to reduce the amount of calories

they consume. When it comes to weight control, calories *do* count—not the proportions of carbohydrate, fat, and protein in the diet.

- Since many adults gain weight slowly over time, even small decreases in calorie intake can help avoid weight gain. Decreasing intake or increasing expenditure by 50 to 100 calories per day would enable many adults to maintain their weight rather than continuing to gain weight each year. For children who are gaining excess fat, a similar small decrease in energy intake can reduce the rate at which they gain weight so as they age they will grow into a healthy weight.
- Focusing on the prevention of overweight is critical because the behaviors required to lose weight are more challenging than the behaviors required to prevent weight gain. For most people, a reduction of 50 to 100 calories per day will prevent weight gain, but a reduction of 500 calories or more per day is a common goal in weight loss programs. Similarly, 30 to 60 minutes of moderate physical activity per day is recommended to prevent weight gain, but up to 60 to 90 minutes of physical activity per day is recommended to sustain weight loss among persons who have been overweight. (See below—"Being Physically Active Every Day.")
- Weight maintenance depends on balancing energy consumed and energy expended. Weight loss requires taking in fewer calories than expended. Small decreases in calorie intake can lead to big benefits if sustained over time, especially if accompanied by increased physical activity. (See "Essential Elements for Weight Loss" in Table E-1.)
- Calories come from fat, carbohydrate, protein, and alcohol. The healthiest way to reduce calorie intake is to reduce one's intake of added sugars, solid fat, and alcohol—they all provide calories, but they do not provide essential nutrients. Table E-2 gives some examples of how calories can be decreased by choosing foods that are lower in saturated fats. Table E-3 gives examples of how calories can be decreased by decreasing alcoholic beverage intake.
- When making changes to improve nutrient intake, one needs to take care to make substitutions to avoid excessive calorie intake. For example, foods such as fruits, vegetables, and whole grains—all of which provide fiber—might be eaten in place of more refined foods such as fruit drinks and refined grain products.
- Monitoring body weight regularly is a useful strategy for identifying weight changes and the need to decrease one's energy intake, increase physical activity, or both. Such changes are fundamental to controlling one's weight.
- Reduced calorie diets that provide fat, carbohydrate, and protein within the recommended ranges can be safe and efficacious for weight loss. Diets that provide very low or very high amounts of protein, carbohydrate, or fat are likely to provide low amounts of a number of nutrients and are not advisable for long-term use.

Additional Important Information

- Eating foods that are high in calories and low in volume may make it hard to avoid excessive calorie intake. Eating foods that are low in calories and high in volume (such as many kinds of vegetables and fruits and some soups) may be a useful strategy to reduce energy intake.

- Controlling portion sizes helps limit calorie intake, especially when eating energy-dense foods (foods that are high in calories for a given amount). Table E-4 provides information on how portion sizes have grown over the past 20 years.
- Diets rich in whole grains, fruits, and vegetables may help with weight maintenance.
- It is unclear whether consuming milk products helps control body weight, but consuming three servings of milk products daily is not associated with increased body weight.
- Table E-5 gives examples of some simple ways to cut calories from your diet.
- Use the BMI chart (Figure E-1) to determine your BMI using your height and weight. If your BMI does not fall into the "Healthy Weight" section, set your weight goal as a weight corresponding to your height and "Healthy Weight" on the BMI chart.
- Table D3-1 will help you estimate your current energy requirements on the basis of your gender, age, and physical activity level so that you can know what your caloric intake limit is to maintain a healthy weight.

BE PHYSICALLY ACTIVE EVERY DAY

Overview

Americans tend to be relatively inactive. In 2002, 38 percent of adult Americans engaged in no leisure-time physical activity, and in 1999, 43 percent of students in grades 9 through 12 viewed television nearly 3 hours per day. Regular physical activity and physical fitness make a big contribution to one's day-to-day health and sense of well-being. Lack of physical activity puts many people at risk. In particular, a sedentary lifestyle poses risks for coronary artery disease, hypertension, type 2 diabetes, overweight and obesity, osteoporosis, certain types of cancer, anxiety, depression, decreased health-related quality of life, and decreased cardiorespiratory, metabolic, and musculoskeletal fitness. All-cause mortality rates are lower in physically active than in sedentary persons.

Key Messages

- Thirty minutes of at least moderate physical activity on most days provide important health benefits in adults in part by reducing the risk of chronic disease. More than 30 minutes of moderate to vigorous physical activity on most days provide even more health benefits.
- Participating in up to 60 minutes of moderate to vigorous physical activity on most days is recommended to prevent unhealthy weight gain among adults. After losing weight, adults who obtain 60 to 90 minutes of moderate physical activity daily are more successful at maintaining their reduced weight than those who rely only on limiting calorie intake.
- The recommendation for children and adolescents is at least 60 minutes of moderate to vigorous physical activity on most days to maintain good health and fitness and for healthy weight during growth. Increasing physical activity can lower the BMI of overweight children.
- Regular physical activity is essential to the maintenance of a healthy weight for children and adults and a useful component of weight control programs. Physical

activity increases total energy expenditure and thus the number of calories needed in a day. Energy expenditure increases with increases in both the duration and the intensity of physical activity. Table E-6 provides examples of physical activities and the calories expended by performing these physical activities.

- Physical fitness requires regular physical activity that involves cardiovascular conditioning, stretching exercises to enhance flexibility, and weight work or calisthenics to develop strength and muscle endurance.
- Vigorous-intensity physical activity (e.g., jogging or other aerobic exercise) provides greater benefits for physical fitness than moderate physical activity, and it burns more calories per unit time.
- During leisure time, it is advisable for all individuals to limit sedentary behaviors, such as television watching and video viewing, and replace them with activities that require more movement. Engaging in physical activity will increase a person's caloric requirement for weight maintenance. Therefore, a person who engages in regular physical activity may have more discretionary calories available to him or her than a sedentary individual.

Additional Important Information

- Activity counted toward the 30 minutes should not include usual activities at work or at home.
- The physical activity counted may include short bouts (e.g., 10-minute bouts) of moderate activity. The accumulated total is what is important—both for health and for burning calories. Setting aside 30 to 60 consecutive minutes for planned exercise is one way to obtain physical activity, but it is not necessary. Physical activity can be accumulated through three to six 10-minute bouts over the course of a day. The *accumulated total* is what is important—both for health and for burning calories
- The body adapts to physical activity by building muscle and by increasing the maximum amount of work than can be done and the use of oxygen. Regular aerobic exercise improves the cardiovascular system.
- Two steps help avoid dehydration during prolonged physical activity in conditions of heat stress, whether for work or leisure: (1) consuming fluid regularly during the activity and (2) drinking several glasses of water or other fluid after the physical activity is completed.
- Most persons can safely increase their physical activity without consulting with a healthcare provider. However, it is advisable for men over age 40, women over age 50, and those with a personal history of chronic diseases such as heart disease or diabetes to consult with a healthcare provider before starting an exercise program.
- Resistance exercise (such as weight training, using weight machines and resistance band workouts) increases muscular strength and endurance and maintains or increases lean body weight. These benefits are seen in adolescents, adults, and older adults who perform 8 to 10 resistance exercises 2 or more days per week.
- Exercise that loads the skeleton has the potential to reduce the risk of osteoporosis by increasing peak bone mass during growth, maintaining peak bone mass during

adulthood, and reducing the rate of bone loss during aging. Regular exercise can help prevent falls.

INCREASE DAILY INTAKE OF FRUITS AND VEGETABLES, WHOLE GRAINS, AND NONFAT OR LOW-FAT MILK AND MILK PRODUCTS

Overview

Increased intakes of fruits, vegetables, whole grains, and milk products are likely to have important health benefits for Americans. Compared with the many persons who consume only small amounts of fruits and vegetables, those who eat more generous amounts are likely to have reduced risk of chronic diseases, including stroke and perhaps other cardiovascular diseases, type 2 diabetes, and cancers in certain sites (oral cavity and pharynx, larynx, lung, esophagus, stomach, and colon-rectum). Diets rich in dietary fiber and in whole grains can reduce the risk of coronary heart disease. Diets rich in milk and milk products can reduce the risk of low bone mass throughout the life cycle, but many Americans have low intakes of milk products. The consumption of milk products is especially important for children and adolescents who are building their peak bone mass and developing lifelong habits.

Key Messages

- Fruits, vegetables, whole grains, and milk products are all important to a healthy diet and are a good source of the shortfall nutrients.
- A range of 5 to 13 servings (2½ to 6½ cups) of fruits and vegetables each day is recommended for daily energy intakes of 1,200 to 3,200 calories[2]. For a 2,000-calorie daily energy intake, 9 servings (4½ cups) are recommended, with increases or decreases depending on energy intake. Table E-7 provides the daily amounts of fruits and vegetables by calorie level.
- One goal is to consume a *variety* of fruits and vegetables each day. Over a week, eating vegetables from all five vegetable subgroups (dark green, bright yellow, legumes, starchy vegetables, and other vegetables) is recommended. For persons who require 2,000 calories daily to meet their energy needs, the recommended combined intake is 4½ cups (or the equivalent) of fruits and vegetables each day. Greater amounts are recommended for those with higher calorie requirements, and somewhat smaller amounts are recommended for those with lower calorie requirements. Table E-8 provides a list of fruits and vegetables that are the best sources of vitamins A and C, folate, and potassium. Table E-9 provides recommendations for ways to increase fruit and vegetable intake.
- The goal for whole-grain intake is at least three servings (approximately 3 ounces) per day, preferably by eating whole grains in place of refined grains. Table E-10 lists the whole grains that are widely available in the United States.
- For people who require 1,600 kcal per day or more, the goal for milk and milk products is three servings (3 cups) of nonfat or low-fat milk or milk products or the equivalent per day. The goal is 2 cups per day for those with lower calorie

[2] See tables D1-13 and D1-16 for information on 2-3 year olds.

needs. Table E-11 provides recommendations for ways to increase milk and milk product consumption.

Additional Important Information

- When increasing intake of fruits, vegetables, whole grains, and nonfat or low-fat milk and milk products, it is important to decrease one's intake of other less-nutrient-dense foods to control calorie intake.
- As illustrated by the comparison of whole wheat and enriched white flours in Table E-12, whole grains are richer in many nutrients, but they are not richer in folate unless they have been fortified with folic acid, which currently is allowed for only a few types of whole grain products. Enriched refined grains are required to be fortified with folic acid. Label reading is important.
- Young children and others with low energy needs are encouraged to include three servings of whole grains daily, one of which is a folic acid-fortified breakfast cereal.
- One cannot identify whole grains by the color of the food; label-reading skills are needed. Table E-10 identifies names of whole grains that are widely available in the United States. Table E-13 provides tips to consumers for obtaining information about whole grains from food labels.
- The strength of the evidence for the association between increased intake of fruits and vegetables and reduced risk of chronic diseases is variable and depends on the specific disease, but a wide array of evidence points to beneficial health effects.
- Adults and children should not avoid nonfat or low-fat milk and milk products because of concerns that these foods are "fattening." Even the lowest calorie (1,000 calorie) USDA food pattern includes them.
- When considering milk alternatives, the most reliable and easiest way to derive the health benefits associated with dairy consumption is to choose alternatives within the dairy food group, such as lactose-free milk or yogurt.
- Fruits, vegetables, whole grains, and milk products contain sugars and/or starches. These sugars and starches (like those provided by added sugars and refined cereals) provide fermentable substrates for bacteria that, in turn, can cause dental caries. However, good oral hygiene and fluoridation protect against caries.

CHOOSE FATS WISELY FOR GOOD HEALTH

Overview

Fats and oils are a part of a healthy diet, but the type of fat makes a difference to heart health, and the amount of fat consumed also is important. High intakes of saturated fats, *trans* fats, and cholesterol increase the risk of unhealthy blood lipid levels, which, in turn, may increase the risk of coronary heart disease. A high intake of fat (greater than 35 percent of energy) generally increases saturated fat intake and makes it more difficult to avoid consuming excess calories. A low intake of fats and oils (less than 20 percent of energy) increases the risk of inadequate intakes of vitamin E and of essential fatty acids and may contribute to unfavorable changes in high-density lipoprotein (HDL) cholesterol and triglycerides. Fish contains oils that may have beneficial effects on mortality from coronary artery disease.

Key Messages

- To decrease their risk of an elevated low-density lipoprotein (LDL) cholesterol, most Americans need to decrease their intakes of saturated fat and *trans* fat, and many (especially men because of their high cholesterol intake) need to decrease their dietary intake of cholesterol.
- Recommended goals are less than 10 percent of calories from saturated fat and less than 300 mg of cholesterol per day for adults with an LDL cholesterol less than 130 mg/dL. Even lower intakes (less than 7 percent of calories from saturated fat and less than 200 mg of cholesterol) are recommended for adults with an elevated LDL cholesterol (greater than 130 mg/dL). Persons with an elevated LDL cholesterol value should be under the care of a healthcare provider.
- *Trans* fatty acid consumption should be kept as low as possible—about 1 percent of energy intake or less.
- Decreasing one's intake of saturated fat and of *trans* fat is the recommended way to reduce fat intake so that total fat intake does not exceed 35 percent of calories.
- Consuming two servings of fish per week (approximately 8 ounces total) may reduce the risks from cardiovascular disease, especially mortality from coronary heart disease. The intake of salmon, trout, light tuna, mackerel, or other fish that are high in eicosapentaenoic acid (EPA) and docosahexanoic acid (DHA) may be especially beneficial. Other sources of EPA and DHA may provide similar benefits; however, more research is needed.

Additional Important Information

- Recommended total fat intake is between 20 and 35 percent of energy for adults. Few Americans consume less than 20 percent of calories from fat.
- General information about fatty acids appears at the beginning of Part D, Section 4, "Fats."
- Because dietary intake of saturated fat is much higher than that of *trans* fat and cholesterol, it is most important to decrease one's intake of saturated fat. However, intake of all three should be decreased. Table E-14 shows, for selected calorie levels, the maximum amounts of saturated fat to consume to keep saturated fat intake below 10 percent of total calorie intake. This box may be useful combined with label reading guidance. Table E-2 gives a few practical examples of the differences in the saturated fat content of different forms of commonly consumed foods.
- Table E-15 provides the dietary sources of saturated fats in the U.S. diet, listed in decreasing order. Table E-16 provides strategies for decreasing saturated fat intake.
- Since *trans* fatty acids are produced in the hydrogenation of vegetable oils and account for more than 80 percent of total intake, the food industry has a large role to play in helping consumers decrease their *trans* fat intake. Table E-17 provides dietary sources of *trans* fat, listed in decreasing order.
- Table E-18 provides dietary sources of cholesterol.
- Consumer advisories provide current information about lowering exposure to environmental contaminants, such as methylmercury, in fish. For more

information on the latest methylmercury advisory, see www.fda.gov/bbs/topics/news/2004/NEW01038.html.

CHOOSE CARBOHYDRATES WISELY FOR GOOD HEALTH

Overview

Carbohydrates are part of a healthy diet. Sugars and starches supply energy to the body in the form of glucose, which is the only energy source for red blood cells and is the preferred energy source for the brain, central nervous system, placenta, and fetus. Dietary fiber has been shown to have a number of beneficial effects including decreased risk of type 2 diabetes and of coronary heart disease, and improvement in laxation. Although the body's response to sugars does not depend on whether they are naturally present in a food (such as the fructose in fruit or the lactose in milk) or added to the food, there is a concern that people should not consume excessive amounts of foods that supply calories but few or no nutrients. This is the case for many foods that contain added sugars.

Key Messages

- As described above under "Increasing Daily Intake of Fruits and Vegetables, Whole Grains, and Nonfat or Low-Fat Milk and Milk Products," consuming foods from the basic food groups that provide carbohydrates can promote health and reduce chronic disease risk. Foods in these groups are important sources of many nutrients.
- When selecting foods from the fruit, vegetable, and grains groups, it is beneficial to make fiber-rich choices often. This means, for example, choosing whole fruits rather than juices and whole grains rather than refined grains. Table D1-8 lists some of the best sources of dietary fiber.
- Reducing intake of added sugars (especially sugar-sweetened beverages) may be helpful in achieving recommended nutrient intakes and weight control.
- A combined approach of reducing the frequency of consuming sugars and starches (e.g., limiting snacking on foods that contain these carbohydrates) and optimizing oral hygiene practices is advised to reduce caries incidence.

Additional Important Information

- The concern about added sugars is not the sugar itself but rather with many of the foods in which added sugars are found. Individuals who consume food or beverages high in added sugars tend to consume more calories than those who consume low amounts of added sugars, and also tend to consume lower amounts of micronutrients.
- The major sources of added sugars are listed in Table E-19. Decreased intake of such foods is recommended.
- Moderate amounts of sugars added to nutrient-dense foods such as breakfast cereals and reduced-fat milk products may increase a person's intake of such foods and thus improve nutrient intake without contributing excessive calories.
- Table E-20 lists ingredients that are included in the term ***added sugars***. Nutritional labels list the amount of total sugars, but not added sugars. To find

out whether a food contains added sugars, one must examine the ingredient list (Table E-21).

CHOOSE AND PREPARE FOODS WITH LITTLE SALT

Overview

On average, the higher one's salt intake, the higher one's blood pressure. Keeping blood pressure in the normal range reduces one's risk of coronary heart disease, stroke, congestive heart failure, and kidney disease. Nearly all American adults will develop hypertension (high blood pressure) during their lifetime. Lifestyle changes can prevent or delay the onset of high blood pressure and can lower elevated blood pressure. These lifestyle changes include reducing salt intake, increasing potassium intake, losing excess body weight, increasing physical activity, and eating an overall healthy diet (such as diets based on the revised USDA food intake pattern or the DASH diet described in this report).

Key Messages

- Nearly all Americans consume substantially more salt than they need. Decreasing salt (sodium chloride) intake is advisable to reduce the risk of elevated blood pressure. Expressed in terms of sodium, the general goal is for adults to aim to consume less than 2,300 mg of sodium per day.
- Many persons will benefit from reducing their salt intake even more. Such persons include hypertensive individuals, blacks, and middle- and older-aged adults.
- At the same time, individuals are encouraged to increase their consumption of foods rich in potassium. Potassium lowers blood pressure and blunts the effects of salt on blood pressure.
- Since sodium added during the processing of foods provides more than three-fourths of total intake, the food industry has a large role to play in helping consumers decrease their sodium intake.

Additional Important Information

- Salt is sodium chloride.
- Food labels list sodium rather than salt content. Sources of sodium in the food supply are provided in Figure E-2.
- Many processed foods and foods served by food establishments are high in sodium. See Table E-22 for examples of these foods and Table E-23 for examples of strategies to decrease sodium intake.
- One's preference for salt is not fixed. After consuming foods low in salt for a period of time, one's taste for salt tends to decrease. Alternative flavorings may help. Table E-24 provides examples of alternative flavorings and foods to pair with seasonings.

IF YOU DRINK ALCOHOLIC BEVERAGES, DO SO IN MODERATION

Overview

The consumption of alcohol can have beneficial or harmful effects depending on the amount consumed, the age and other characteristics of the person consuming the alcohol, and specific situations. The lowest all-cause mortality occurs at an intake of one to two drinks per day. The lowest coronary heart disease mortality also occurs at an intake of one to two drinks per day. Morbidity and mortality are highest among those drinking large amounts of alcohol.

Key Messages

- Those who choose to drink alcoholic beverages should do so sensibly, and in moderation.
- Abstention is an important option; approximately one in three American adults do not drink alcohol.
- Moderation is defined as the consumption of up to one drink per day for women and up to two drinks per day for men. One drink is defined as 12 ounces of regular beer, 5 ounces of wine (12 percent alcohol), or 1.5 ounces of 80-proof distilled spirits.
- Drinking alcoholic beverages should be avoided before or when driving, or whenever it puts anyone at risk.

Additional Important Information

- The definition of moderation, including the size of one drink, requires emphasis. (Some investigators and apparently many individuals interpret "moderate drinking" to cover higher levels of intake than shown in Table E-25. Many mixed drinks actually provide several servings of alcohol per drink. (See Table E-3.)
- Studies suggest adverse effects even at moderate alcohol consumption levels in specific individuals and situations.
    - —Some people should not drink alcohol (e.g., individuals who cannot restrict alcohol intake, children and adolescents, individuals taking medications that can interact with alcohol, and individuals with specific medical conditions).
    - —In some situations, alcohol should be avoided (e.g., women who may become or are pregnant; women who are breastfeeding; and individuals who plan to drive, operate machinery, or take part in other activities that require attention, skill, or coordination).
- Factors other than moderate alcohol consumption that may reduce the risk of chronic disease include a healthy diet (see above), physical activity, avoidance of smoking, and maintenance of a healthy weight.
- Compared with nondrinkers, women who consume one drink per day appear to have a slightly higher risk of breast cancer.
- The consumption of one to two alcoholic beverages per day is not associated with macronutrient or micronutrient deficiencies or with overall dietary quality. Nonetheless, the calorie content of alcoholic beverages should be considered. (See Table E-3.)

KEEP FOOD SAFE TO EAT

Overview

Foodborne illness results from eating food contaminated with bacteria (or their toxins) or other pathogens such as parasites or viruses. The signs and symptoms range from upset stomach to diarrhea, fever, vomiting, abdominal cramps, and dehydration. It is estimated that every year about 76 million people in the United States become ill from pathogens in food; of these, about 5,000 die. The foodborne illness listeriosis, although rare, has very serious public health consequences—it can be life threatening for vulnerable groups. Consumers can take simple measures to reduce their risk of foodborne illness, especially in the home.

Key Messages

- The most important food safety problem is microbial foodborne illness. The behaviors in the home that are most likely to prevent a problem with foodborne illnesses are
  - —Cleaning hands, contact surfaces, and fruits and vegetables. (This does not apply to meat and poultry, which should not be washed.)
  - —Separating raw food from cooked and ready-to-eat foods while shopping, preparing, or storing
  - —Cooking foods to a safe temperature
  - —Chilling (refrigerating) perishable foods promptly
- Avoiding higher-risk unsafe foods also is an important protective measure, especially for high-risk groups (the very young, pregnant women, elderly, and those who are immunocompromised).

Additional Important Information

- For more information on cleaning, separating, cooking, chilling, and consumer messages, see www.fightbac.org.).
- Table D9-1 provides a protocol for washing hands.
- Table D9-2 provides a protocol for washing fruits and vegetables.
- Figure E-3 provides information for temperature rules for proper cooking.
- Refrigerated leftovers may become unsafe within 3 to 4 days. Despite the appearance of a food, it may not be safe to eat. Not all bacterial growth causes a food's surface to discolor or smell bad. It may be unsafe to taste fresh or leftover food items when there is any doubt about their safety. Safe disposal of the food is indicated if there is a question about whether or not a food is safe to eat.
- Those at risk of listeriosis (pregnant women, the elderly, and those who are immunocompromised) should avoid high-risk foods, including deli meats and frankfurters that are not reheated to a safe temperature. See Table E-26 for tips for those at increased risk of foodborne illness.
- Guidance is evolving on reducing dietary exposure to environmental contaminants, including methylmercury in fish. Thus, referring to consumer advisories is recommended to obtain updates on this topic. (For more information

on the latest methylmercury advisory, see www.fda.gov/bbs/topics/news/2004/NEW01038.html.)

- Refrigerator surfaces can become contaminated from contact with high-risk foods such as raw meats, poultry, fish, uncooked hotdogs, certain deli meats, or raw vegetables. If not cleaned, affected refrigerator surfaces can, in turn, serve as a vehicle for contaminating other foods.
- Chilling should take place at any stage of food handling during which raw foods are not being cleaned or cooked. For example, when shopping, it is advisable to buy perishable foods last, take them straight home, and chill them. Until cooking takes place (e.g., while other foods are being prepared), chilling is indicated after handling or preparing perishable foods (especially raw meat, poultry, fish, shellfish, or eggs).

CFSAN Office of Nutritional Products, Labeling and Dietary Supplements
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Questions and Answers about *Trans* Fat Nutrition Labeling

Disclaimer

Section 1 - Fat, Trans Fatty Acid (Trans Fat), and Cholesterol

Q: What are fats and fatty acids?
Q: What are the main types of fatty acids?
Q: What is *trans* fat?
Q: What is the role of fat in the diet?
Q: Are all fats the same?
Q: What about cholesterol?

Section 2 - Foods that Contain Trans Fat, Saturated Fat, and Cholesterol

Q: What is the daily *trans* fat intake of Americans?
Q: What foods contain saturated fat, *trans* fat, and cholesterol?
Q: Should *trans* fat be eliminated from the diet?
Q: What actions can consumers take to lower their intake of saturated fat, *trans* fat, and cholesterol?
Q: Do dietary supplements contain *trans* fat?

Section 3 - FDA's Regulation on Trans Fat Labeling

Q: How will the nutrition label be different?
Q: Why is there no %DV for *trans* fat?
Q: Is it possible for a food product to list the amount of *trans* fat as 0 g on the Nutrition Facts panel when the ingredient list indicates that it contains "partially hydrogenated vegetable oil?"
Q: What about nutrient content claims for *trans* fat?
Q: What are the highlights of the *trans* fat rule?
Q: It is after January 1, 2006. Why do some products not declare *trans* fat on their labels?
Q: I am a food manufacturer. Can I use my old label stock that does not include *trans* fat after the compliance date of January 1, 2006?
Q: What is the scientific evidence that supports this rule?

Q: How do I find more detailed information about this rule?
Q: Is the FDA considering any other regulations about nutrition labeling of *trans* fatty acids?

Section 4 - Diet and Coronary Heart Disease

Q: How do saturated and *trans* fats, unsaturated fats, and dietary cholesterol relate to heart disease?
Q: Do saturated and *trans* fats affect blood cholesterol in different ways?
Q: Is it better to eat butter instead of margarine to avoid *trans* fat?
Q: Is there a shortage of oils that do not contain *trans* fat?
Q: When I eat or order out, how do I know if the food contains saturated and *trans* fats?

Section 5 - Background about FDA's Trans Fat Regulation

Q: What is the history of the *trans* fatty acid nutrition labeling regulation?
Q: What legal authority does FDA have to require *trans* fatty acids in nutrition labeling?
Q: Why is FDA addressing *trans* fat?
Q: Does this rule mean that FDA is banning *trans* fat from food?
Q: What are the public health benefits and costs of the *trans* fat final rule?

Section 1 - Fat, Trans Fatty Acid (Trans Fat), and Cholesterol

Q: What are fats and fatty acids?

A: Fats are a group of chemical compounds that contain fatty acids. Energy is stored in the body mostly in the form of fat. Fat is also needed in the diet to supply essential fatty acids that are substances essential for growth but not produced by the body itself. The terms fat and fatty acids are frequently used interchangeably.

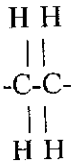
Q: What are the main types of fatty acids?

A: There are three main types of fatty acids: saturated, monounsaturated and polyunsaturated. All fatty acids are chains of carbon atoms with hydrogen atoms attached to the carbon atoms. A saturated fatty acid has the maximum possible number of hydrogen atoms attached to every carbon atom. It is therefore said to be "saturated" with hydrogen atoms, and all of the carbons are attached to each other with single bonds.

In some fatty acids, a pair of hydrogen atoms in the middle of a chain is missing, creating a gap that leaves two carbon atoms connected by a double bond rather than a single bond. Because the chain has fewer hydrogen atoms, it is said to be "unsaturated." A fatty acid with one double bond is called "monounsaturated" because it has one gap. Fatty acids having more than one gap are called "polyunsaturated."

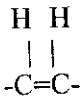
The fat in foods contains a mixture of saturated, monounsaturated and polyunsaturated fatty acids. In foods of animal origin, a large proportion of fatty acids are saturated. In contrast, in foods of plant origin and some seafood, a large proportion of the fatty acids are monounsaturated and polyunsaturated. The structure of saturated and unsaturated chemical bonds looks like the diagram below.

Saturated Fat (i.e., saturated fatty acid)



Carbon-Carbon Single Bond

Unsaturated Fat (i.e., unsaturated fatty acid)



Carbon-Carbon Double Bond

Q: What is *trans* fat?

A: *Trans* fat (also known as *trans* fatty acids) is a specific type of fat formed when liquid oils are made into solid fats like shortening and hard margarine. However, a small amount of *trans* fat is found naturally, primarily in some animal-based foods.

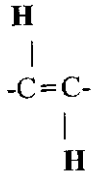
Trans fat behaves like saturated fat by raising low-density lipoprotein (LDL or "bad") cholesterol that increases your risk of coronary heart disease (CHD). *Trans* fat can be found in some of the same foods as saturated fat, such as vegetable shortenings, some margarines, crackers, candies, cookies, snack foods, fried foods, baked goods, and other processed foods made with partially hydrogenated vegetable oils.

Where will I find *trans* fat?

Vegetable shortenings, some margarines, crackers cookies, snack foods, and other foods made with or fried in partially hydrogenated oils.

Trans fat is made when hydrogen is added to vegetable oil -- a process called hydrogenation. Hydrogenation increases the shelf life and flavor stability of foods containing these fats. Usually the hydrogen atoms at a double bond are positioned on the same side of the carbon chain. However, partial hydrogenation reconfigures some double bonds and the hydrogen atoms end up on different sides of the chain. This type of configuration is called "*trans*" (means "across" in Latin). The structure of a *trans* unsaturated chemical bond looks like the diagram below.

***Trans* Fat (i.e., *trans* fatty acids)**



Hydrogen atoms are on opposite sides of the chain of carbon atoms at the carbon-carbon double bond.

As stated in FDA's labeling regulations, if a fat or oil ingredient is completely hydrogenated, the name in the ingredient list will include the term "hydrogenated." Or, if partially hydrogenated, the name in the ingredient list will include the term "partially hydrogenated." As stated above, oil that is partially hydrogenated is a source of *trans* fat.

Q: What is the role of fat in the diet?

A: Fat is a major source of energy for the body and aids in the absorption of vitamins A, D, E, and K, and carotenoids. Both animal and plant-derived food products contain fat, and when eaten in moderation, fat is important for proper growth, development, and maintenance of good health. As a food ingredient, fat provides taste, consistency, and stability and helps us feel full. In addition, parents should be aware that fats are an especially important source of calories and nutrients for infants and toddlers (up to 2 years of age), who have the highest energy needs per unit of body weight of any age group.

Q: Are all fats the same?

A: Simply put: no. While **un**saturated fats (monounsaturated and polyunsaturated) are beneficial when consumed in moderation, saturated fat and *trans* fat are not. Saturated fat and *trans* fat raise LDL ("bad") cholesterol. Therefore, it is advisable to choose foods low in both saturated and *trans* fats as part of a healthful diet.

Q: What about cholesterol?

A: Cholesterol is a waxy substance that occurs naturally in the tissues of all animals. The human body needs cholesterol to function properly, such as producing vitamin D, bile acids to digest fat, and many hormones. Given the capability of all tissues to synthesize sufficient amounts of cholesterol for their needs, there is no evidence for a biologic requirement for dietary cholesterol. Scientific evidence indicates a positive linear trend between cholesterol intake and LDL-cholesterol levels, and therefore, an increased risk of CHD.

Section 2 - Foods that Contain Trans Fat, Saturated Fat, and Cholesterol

Q: What is the daily *trans* fat intake of Americans?

A: FDA estimates that the average daily intake of *trans* fat in the U.S. population is about 5.8 grams or 2.6% of calories per day for individuals 20 years of age and older. On average, Americans consume approximately 4 to 5 times as much saturated fat as *trans* fat in their diet.

Trans fat can be found in vegetable shortenings, some margarines, crackers, candies, cookies, snack foods, fried foods, baked goods, and other processed foods made with partially hydrogenated vegetable oils. Small amounts of naturally occurring *trans* fat can be found in

some animal products, such as butter, milk products, cheese, beef, and lamb.

Estimates of the average trans fat intake of U.S. adults from food groups (e.g., cakes, cookies, shortening, etc.) are described in the economic analysis for FDA's final trans fatty acid labeling rule, *Trans* Fatty Acids in Nutrition Labeling, Nutrient Content Claims, and Health Claims published July 11, 2003 (68 FR 41434 at 41468-41470). FDA based its estimates on USDA's 1994-96 Continuing Survey of Food Intakes by Individuals and on the special 1995 USDA database of *trans* fat content of selected foods.

Q: What foods contain saturated fat, *trans* fat, and cholesterol?

A: Saturated and *trans* fats can be found in some of the same foods, such as vegetable shortenings, some margarines (especially margarines that are harder), crackers, candies, cookies, snack foods, fried foods, baked goods, and other processed foods made with partially hydrogenated vegetable oils. High amounts of saturated fat are found in animal products, such as beef and pork, chicken skin, butter, whole milk, and cheese. Foods high in cholesterol include liver, other organs meats, egg yolks, and dairy fats.

It is important to choose foods with the lower combined amount of saturated fat and *trans* fat and the lower amount of cholesterol.

Q: Should *trans* fat be eliminated from the diet?

A: No. According to experts, eliminating *trans* fat completely from the diet would require such extraordinary dietary changes (e.g., elimination of foods, such as dairy products and meats that contain *trans* fatty acids) that eliminating *trans* fat could cause an inadequate intake of some nutrients and create health risks.

Q: What actions can consumers take to lower their intake of saturated fat, *trans* fat, and cholesterol?

A: Here are some actions you can take every day to keep your consumption of both saturated and *trans* fats and cholesterol low while consuming a nutritionally adequate diet.

- Check the Nutrition Facts panel to compare foods because the serving sizes are generally consistent in similar types of foods. Choose foods lower in saturated fat, *trans* fat, and cholesterol. For saturated fat and cholesterol, use the Quick Guide to %DV: 5%DV or less is low and 20%DV or more is high. (Remember, there is no %DV for *trans* fat.)

- Choose Alternative Fats. Replace saturated and *trans* fats in your diet with mono- and polyunsaturated fats. These fats do not raise LDL (or "bad") cholesterol levels and have health benefits when eaten in moderation. Sources of monounsaturated fats include olive and canola oils. Sources of polyunsaturated fats include soybean, corn, sunflower oils, and foods like nuts.

- Choose vegetable oils (except coconut and palm kernel oils) and soft margarines (liquid, tub, or spray) more often because the combined amount of saturated and *trans* fats is lower than the amount in solid shortenings, hard margarines, and animal fats, including

butter.

- Consider Fish. Most fish are lower in saturated fat than meat. Some fish, such as mackerel, sardines, and salmon, contain omega-3 fatty acids that are being studied to determine if they offer protection against heart disease.
- Limit foods high in cholesterol such as liver and other organ meats, egg yolks, and full-fat dairy products, like whole milk.
- Choose foods low in saturated fat such as fat free or 1% dairy products, lean meats, fish, skinless poultry, whole grain foods, and fruit and vegetables.

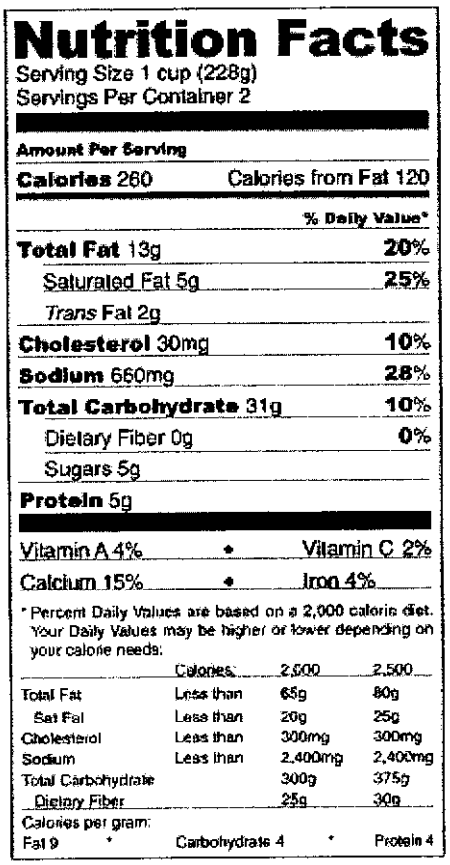
Q: Do dietary supplements contain *trans* fat?

A: Yes, some dietary supplements contain ingredients that also include partially hydrogenated vegetable oil or *trans* fat as well as saturated fat and cholesterol. As a result of FDA's new label requirement, if a dietary supplement contains a reportable amount of *trans* fat, which is 0.5 gram or more, dietary supplement manufacturers must list the amounts on the Supplement Facts panel. Examples of dietary supplements that may contain saturated fat, *trans* fat, and cholesterol include energy and nutrition bars.

Section 3 - FDA's Labeling of Trans Fatty Acids

Q: How will the nutrition label be different?

A: The FDA final rule on *trans* fatty acids (also called "*trans* fat") requires that the amount of *trans* fat in a serving be listed on a separate line under saturated fat on the Nutrition Facts panel (see figure). However, *trans* fat does not have to be listed if the **total** fat in a food is less than 0.5 gram (or 1/2 gram) per serving and no claims are made about fat, fatty acids or cholesterol content. If it is not listed, a footnote will be added stating that the food is "not a significant source of *trans* fat."



Nutrition Facts

Serving Size 1 cup (228g)
Servings Per Container 2

Amount Per Serving

Calories 260 Calories from Fat 120

	% Daily Value*
Total Fat 13g	**20%**
Saturated Fat 5g	**25%**
Trans Fat 2g	
Cholesterol 30mg	**10%**
Sodium 660mg	**28%**
Total Carbohydrate 31g	**10%**
Dietary Fiber 0g	**0%**
Sugars 5g	
Protein 5g	

Vitamin A 4% • Vitamin C 2%
Calcium 15% • Iron 4%

* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Q: Why is there no %DV for *trans* fat?

A: Although the updated Nutrition Facts panel will now list the amount of *trans* fat in a product, be aware that it does not have a %Daily Value (%DV) for *trans* fat. While scientific reports have confirmed the relationship between *trans* fat and an increased risk of CHD, none has recommended an amount of *trans* fat that FDA could use to establish a Daily Value (DV). Without a DV, a %DV cannot be calculated. As a result, *trans* fat will be listed with only a gram amount.

But saturated fats do have a %DV. To choose foods low in saturated fat and cholesterol, use the Quick Guide to %DV - **5%DV or less is low and 20%DV or more is high.** You can also use the %DV to make dietary trade-offs with other foods throughout the day. You don't have to give up a favorite food to eat a healthy diet. When a food you like is high in any of these cholesterol-raising components, balance it with foods that are low in them at other times of the day.

The following graphic of the Nutrition Facts panel illustrates which nutrients experts recommend you limit and which they recommend you consume in adequate amounts.

Sample Label for
Macaroni and Cheese

Start Here

Limit these Nutrients

Get Enough of these Nutrients

Footnote

Quick Guide to % DV

5% or less is low

20% or more is high

Nutrition Facts

Serving Size 1 cup (228g)
Servings Per Container 2

Amount Per Serving

Calories 250 Calories from Fat 110

% Daily Value*

Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 1.5g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%

* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Q: Is it possible for a food product to list the amount of *trans* fat as 0 g on the Nutrition Facts panel if the ingredient list indicates that it contains "partially hydrogenated vegetable oil?"

A: Yes. Food manufacturers are allowed to list amounts of *trans* fat with less than 0.5 gram (1/2 g) as 0 (zero) on the Nutrition Facts panel. As a result, consumers may see a few products that list 0 gram *trans* fat on the label, while the ingredient list will have "shortening" or "partially hydrogenated vegetable oil" on it. This means the food contains very small amounts (less than 0.5 g) of *trans* fat per serving.

Q: What about nutrient content claims for *trans* fat?

A: Nutrient content claims are statements that are made on the food label package that indicate that the product contains a range from low to high of the amount of a specific nutrient. Examples: "Low Fat" and "High in Fiber." At this time, FDA has insufficient scientific information to establish nutrient content claims for *trans* fat. Such claims are permitted, however, for saturated fat and cholesterol.

Q: What are the highlights of the *trans* fat rule?

A: This final rule is the first significant change to the Nutrition Facts panel since the Nutritional, Labeling, and Education Act regulations were finalized in 1993. Some significant highlights are:

- This final rule requires manufacturers of conventional foods and some dietary supplements to list *trans* fat on a separate line, immediately under saturated fat on the nutrition label.
- As of January 1, 2006, food manufacturers must list *trans* fat on the nutrition label. The phase-in period, from the date the final rule issued (July 2003) to the effective date (January 2006), minimized the need for multiple labeling changes, allowed small businesses to use current label inventories, and provided economic savings.
- FDA's regulatory chemical definition for *trans* fatty acids is all unsaturated fatty acids that contain one or more isolated (i.e., nonconjugated) double bonds in a *trans* configuration. Under the Agency's definition, conjugated linoleic acid would be excluded from the definition of *trans* fat.
- Dietary supplement manufacturers must also list *trans* fat on the Supplement Facts panel when their products contain reportable amounts (0.5 gram) of *trans* fat. Examples of dietary supplements with *trans* fat are energy and nutrition bars.

Q: It is after January 1, 2006. Why do some products not declare *trans* fat on their labels?

A: There may be two reasons why you are not seeing *trans* fat on a product's label.

First, products entering interstate commerce on or after January 1, 2006 must be labeled with *trans* fat. As this is happening, FDA realizes that it will take some time for food products to move through the distribution chain to a store shelf. Thus, it may take a few months for products that are listing *trans* fat on their label to show up on a store shelf. However, you will see many products with *trans* fat listed since companies have already begun to declare *trans* fat on their products' labels.

Second, FDA has granted enforcement discretion to some firms to use old label stock that do not declare *trans* fat after the effective date of January 1, 2006. In these cases, food firms followed the required process described in FDA's guidance for industry and FDA entitled, "Guidance for Industry and FDA: Requesting an Extension to Use Existing Label Stock after the *Trans* Fat Labeling Effective Date of January 1, 2006 (Revised)". For each request, FDA is considering whether the declared label value for *trans* fat is 0.5 g or less per serving. This information is important because lower amounts of *trans* fat would have less impact on public

health than higher amounts of *trans* fat. Thus, *trans* fat information in the Nutrition Facts panel will be missing on some products (that contain lower amounts of *trans* fat) throughout the next year.

If *trans* fat is not declared on the label and you are curious about the *trans* fat content of a product, contact the manufacturer listed on the label.

Q: I am a food manufacturer. Can I use my old label stock that does not include *trans* fat after the compliance date of January 1, 2006?

FDA understands that some businesses may experience hardship in meeting the compliance date for *trans* fat labeling. Thus, FDA is allowing firms to request enforcement discretion to use existing label stock that does not include *trans* fat after January 1, 2006. See "Guidance for Industry and FDA: Requesting an Extension to Use Existing Label Stock after the Trans Fat Labeling Effective Date of January 1, 2006 (Revised)."

Q: What is the scientific evidence that supports this rule?

A: In finalizing this rule, FDA relied on scientific reports, expert panels, and studies from the Institute of Medicine/National Academies of Science (IOM/NAS), the National Cholesterol Education Program, and DHHS and USDA (Dietary Guidelines for Americans 2000). These reports concluded that consumption of *trans* fatty acids contribute to increased LDL ("bad") cholesterol levels, which increase the risk of coronary heart disease.

The IOM/NAS report on macronutrients recommended that "trans fatty acid consumption be as low as possible while consuming a nutritionally adequate diet."

An expert panel for the National Cholesterol Education Program (NCEP) Report for persons with high risk of CHD in 2001 recommended that intakes of *trans* fatty acids should be kept low and encouraged the use of liquid vegetable oil and soft margarine instead of butter, stick margarine, and shortening.

The Dietary Guidelines for Americans 2000 makes the following statements regarding *trans* fatty acids and food sources of *trans* fat: "Foods high in *trans* fatty acids tend to raise blood cholesterol. These foods include those high in partially hydrogenated vegetable oils, such as many hard margarines and shortenings. Foods with a high amount of these ingredients include some commercially fried foods and some bakery good. Aim for a total fat intake of not more than 30 percent of calories, as recommended in previous Guidelines. If you need to reduce your fat intake to achieve this level, do so primarily by cutting back on saturated and *trans* fats."

Findings from human feeding studies and epidemiological studies show a positive association between the intake of *trans* fatty acids and the incidence of CHD. These studies are described in the *trans* fat final rule. For more detailed information on these studies, see the *trans* fatty acid final rule.

Q: How do I find more detailed information about this rule?

A: The full text of this rule is available online (*Trans* Fatty Acids in Nutrition Labeling,

Nutrient Content Claims, and Health Claims) or on display at the FDA's Dockets Management Branch (Dockets Management Branch, HFA-305, Food and Drug Administration, 5630 Fishers Lane, Room 1061, Rockville, MD 20852).

Q: Is the FDA considering any other regulations about nutrition labeling of *trans* fatty acids?

A: Yes, the Food and Drug Administration (FDA) issued an advance notice of proposed rulemaking (ANPRM) in the Federal Register (Food Labeling: *Trans* Fatty acids in Nutrition Labeling; Consumer Research to Consider Nutrient Content and Health Claims and Possible Footnote or Disclosure Statements) to solicit information and data that potentially could be used to establish new nutrient content claims about *trans* fat, to establish qualifying criteria for *trans* fat in current nutrient content claims for saturated fat and cholesterol, lean and extra lean claims, and health claims that contain a message about cholesterol raising fats, and, in addition, as disclosure and disqualifying criteria to help consumers make heart-healthy food choices. The agency is also requesting comments on whether to consider statements about *trans* fat, either alone or in combination with saturated fat and cholesterol, as a footnote in the Nutrition Facts panel or as a disclosure statement in conjunction with claims to enhance consumers' understanding about such cholesterol-raising lipids and how to use the information to make healthy food choices. Information and data obtained from comments and from consumer studies conducted by FDA may be used to help draft a proposed rule that would establish criteria for certain nutrient content or health claims or require the use of a footnote, or other labeling approach, about one or more cholesterol-raising lipids in the Nutrition Facts panel to assist consumers in maintaining healthy dietary practices.

Section 4 - Diet and Coronary Heart Disease

Q: How do saturated and *trans* fats, unsaturated fats, and dietary cholesterol relate to heart disease?

A: Higher intakes of saturated and *trans* fats, and dietary cholesterol raise low density lipoprotein (LDL or "bad") cholesterol in the blood. An elevated LDL cholesterol increases the risk of developing coronary heart disease (CHD). To decrease LDL cholesterol and the risk of CHD, substitute monunsaturated and polyunsaturated fats for saturated and *trans* fats and decrease the intake of cholesterol.

Q: Do saturated and *trans* fats affect blood cholesterol in different ways?

A: Yes. Like saturated fat, *trans* fat also raises the low density lipoprotein (LDL or "bad") cholesterol in the blood. But, unlike saturated fat, *trans* fat lowers high density lipoprotein (HDL or "good") cholesterol in the blood. An elevated LDL cholesterol increases the risk of developing coronary heart disease.

Q: Is it better to eat butter instead of margarine to avoid *trans* fat?

A: No, because the combined amount of saturated fat and *trans* fat (the cholesterol-raising fats) and cholesterol for butter is usually higher than margarine, even though some margarines contain more *trans* fat than butter.

It is better to eat softer or liquid margarines that contain a lower combined amount of saturated fat and *trans* fat and a lower amount of cholesterol. For a healthful alternative, nonstick cooking spray can be substituted for other fats when "greasing" the pan.

The table compares the amounts and types of fats and amount of cholesterol in butter and some margarines.

FAT TYPE PER SERVING (*)
(Serving Size - 1 tbsp.)

Product	Total Fat g	Saturated Fat g	*Trans* Fat g	Combined Saturated and *Trans* Fats g	Cholesterol mg
Butter*	10.8	7.2	0.3	7.5	31.1
Margarine, stick†	11	2.1	2.8	4.9	0
Margarine, spread†	9.7	1.8	2.7	4.5	0
Margarine, tub†	6.7	1.2	0.6	1.8	0.1
Margarine, bottle‡	0.4	0.1	0	0.1	0.2

(*) Butter values from FDA Table of *trans* Values, dated 1/30/95.
† Values derived from 2002 USDA National Nutrient Database for Standard Reference, Release 15.
‡ Prerelease values derived from 2003 USDA National Nutrient Database for Standard Reference, Release 16.

Answer: Choose the product with the lower combined amount of saturated fat and *trans* fat and the lower amount of cholesterol. In this case, the correct answer is margarine in a bottle.

Q: Is there a shortage of oils that do not contain *trans* fat?

A: Based on informal reports from industry, the requirement to declare *trans* fat on product labeling is already changing consumer demand and prompting product reformulation, which was anticipated by FDA. Representatives from industry have indicated to FDA that the transition from use of oils containing *trans* fats to healthier oils that are both suitable for various processing techniques and continue to meet consumer taste preferences will take time as supplies of healthier oils catch up with demand. High consumer demand for healthier oils, and the accompanying industry response, is a testament to the success of the agency's *trans* fat labeling rule and industry's move to using healthier oils.

Q: When I eat or order out, how do I know if the food contains saturated and *trans* fats?

A: You may not know unless you ask. Restaurants are not required to provide full nutrition

labeling for their food products, unless nutrient claims are made, such as "Low Fat" or "Low Sodium." To know which fats are being used in the preparation of the food you're eating or ordering, a good tip to remember is **"ask before you order"**. Also, many fast food or chain restaurants have tables of the nutritional content of their food products that they will provide upon request.

Section 5 - Background about FDA's Trans Fat Regulation

Q: What is the history of the *trans* fatty acid labeling regulation?

A: In 1994, the Center for Science in the Public Interest (CSPI), a consumer advocacy organization, filed a petition (amended in July 1998) with the FDA requesting that the agency take steps to require *trans* fat to be listed on nutrition labels and claims.

In response to the CSPI petition, FDA issued a proposed rule in the Federal Register on November 17, 1999. In that proposed rule, FDA proposed to amend the regulations to require that *trans* fat be listed on nutrition labels.

On December 5, 2000, FDA reopened the comment period for the rule to obtain comments about "reduced claims." FDA reopened another comment period on November 15, 2002, to receive comments about use of footnote with the statement "Intake of *trans* fat should be as low as possible." In total, FDA received over 2,700 comments that addressed the scientific, economic, policy and legal basis for the rule.

In finalizing this rule, FDA relied on scientific reports, expert panels, and studies from the Institute of Medicine/National Academies of Science, 2001 Report of the National Cholesterol Education Program, and the 2000 Dietary Guidelines for Americans.

Q: What legal authority does FDA have to require *trans* fatty acids in nutrition labeling?

A: The Food, Drug and Cosmetic Act (FD&C Act) provides the FDA with statutory authority to require food and nutrition labeling. Specifically, two sections of the FD&C Act provide the legal authority, as follows:

> **Sec. 403(a) of FD&C Act** - requires foods to be adequately labeled and that material facts be disclosed to consumers.
>
> **Sec. 403(q)(2)(A) of FD&C Act** - gives the Secretary authority to require additional nutrients to be included in nutrition labeling if such information will "assist consumers to maintain healthy dietary practices."

Q: Why is FDA addressing *trans* fat?

A: The *trans* fat nutrition labeling rule responds, in part, to a citizen petition from the Center for Science in the Public Interest (CSPI), and is based on recently published human studies and health expert advice on *trans* fat.

Recently the Institute of Medicine, National Academies of Science (IOM/NAS) published a

report that found that *trans* fatty acids increase low density lipoprotein (LDL or "bad") cholesterol, thereby increasing the risk of coronary heart disease. The IOM/NAS report recommended that "*trans* fat consumption be as low as possible while consuming a nutritionally adequate diet." Similar recommendations are made for saturated fat and cholesterol.

This regulation will provide information on food labels about the amount of *trans* fat in foods so that consumers can select foods with lower levels of *trans* fat and thereby lower their intake of *trans* fat as part of a heart-healthy diet. FDA estimates that 3 years after the effective date, *trans* fat labeling would prevent from 600 to 1,200 cases of CHD and 250-500 deaths each year. It takes about 3 years for lower LDL-cholesterol to result in lower CHD risk.

Q: Does this rule mean that FDA is banning *trans* fat from food?

A: No, FDA is not banning food manufacturers from using *trans* fat in packaged foods. FDA is requiring food manufacturers, processors, and distributors to label the amount of *trans* fat in a serving of food on the Nutrition Facts panel. As a result, Americans will have information they need to reduce their intake of *trans* fat, saturated fat, and cholesterol.

Q: What are the public health benefits and costs of the *trans* fat final rule?

A: FDA estimates that 3 years after the effective date, January 2006, *trans* fat labeling would annually prevent from 600 to 1,200 heart attacks and save 250-500 lives. Based on this estimate, this rule will realize a cost savings of $900 million to $1.8 billion per year in medical costs, lost productivity, and pain and suffering.

FDA estimates that industry will incur a one-time cost of approximately $140 to $250 million. These costs include: determining the amount of *trans* fat in the food products, relabeling the Nutrition Facts panel to add *trans* fat, and reformulating products voluntarily to decrease the amount of *trans* fat.

If You Need More Information?

- Federal Register Final Rule: *Trans* Fatty Acids in Nutrition Labeling, Nutrient Content Claims, and Health Claims (July 11, 2003)
- FDA Acts to Provide Better Information to Consumers on Trans Fats
- Guidance on How to Understand and Use the Nutrition Facts Panel on Food Labels.
- Advanced Notice of Proposed Rule Making: Food Labeling: *Trans* Fatty acids in Nutrition Labeling; Consumer Research to Consider Nutrient Content and Health Claims and Possible Footnote or Disclosure Statements (July 11, 2003)

Disclaimer: FDA is issuing this document as general information for the public. FDA intends this document to aid the public in understanding how to use the declaration of *trans* fatty acids in the nutrition label of conventional foods and dietary supplements.

This document was issued in July 2003 and updated March 2004, June 2004, August 2005, September 2005, and January 2006
For more information on Food Labeling
See http://www.cfsan.fda.gov/label.html

Food Labeling and Nutrition

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FDA/Center for Food Safety & Applied Nutrition
Hypertext updated by kwg/las/dms/dav/cjm January 1, 2006.

Why the Health Department Proposes That Restaurants Phase Out Artificial Trans Fat

PROPOSAL OPEN FOR PUBLIC COMMENT

Artificial trans fat is unhealthy.

Artificial trans fat is invisible and dangerous. While today we are protected from environmental hazards such as lead paint and asbestos, artificial trans fat remains a common hazard in our food. Trans fat increases the risk of heart disease, a leading cause of death among New Yorkers. *There is no safe level of trans fat in our diets.*

Based on the most conservative estimates, artificial trans fat kills at least 500 New Yorkers each year, more than the number killed each year in motor vehicle crashes.

Leading health organizations – including the American Heart Association, the National Academy of Sciences, the Institute of Medicine, the World Health Organization, and the U.S. Department of Health and Human Services – recommend that people strictly limit consumption of trans fat.

We can lower the risk of heart attacks by replacing artificial trans fat with healthier alternatives.

Restaurants are a major source of trans fat.

New Yorkers dine out a lot – more than a third of our daily calories come from food eaten away from home. On average, Americans consume almost 6 grams of trans fat each day. A single fast food meal can contain more than 10 grams of trans fat!

Restaurant customers have no practical way to know whether food they order contains artificial trans fat or not.

To protect the health of New Yorkers and save lives, the Health Department is proposing a partial phase-out of artificial trans fat in restaurants.

The proposal allows restaurants 6 months to switch to oils, margarines, and shortening that have less than 0.5 grams of trans fat per serving. After 18 months, all food products must contain less than 0.5 grams of trans fat per serving. Packaged food items still in the manufacturer's original packaging when served to consumers will be exempt.

This proposal follows a one-year education campaign to help restaurants voluntarily reduce trans fat. Despite this effort, trans fat use remains widespread.

Trans fat is replaceable.

Artificial trans fat can be replaced with readily available heart-healthy oils (such as corn, canola, and soy), without changing the taste of foods.

Federal regulations have led to widespread reformulation of packaged foods, demonstrating the feasibility of removing trans fat from virtually all foods.

Many companies and restaurants have already made the switch.

Major food companies such as Kraft, Frito-Lay, Smuckers, and Tyson Foods already have trans fat-free product lines on supermarket shelves. For example, Oreo cookies, Goldfish crackers, and Fritos corn chips now have *0 grams of trans fat*. Consumers still enjoy the taste, and the market for trans fat-free foods continues to grow.

Some nationwide restaurant chains have already reduced or eliminated artificial trans fat. For example, all Wendy's restaurants now fry with trans fat-free oil. Many New York City restaurants also have cut trans fat out of their oils and spreads – or never used it in the first place.

Food will taste the same — but your heart will know the difference.

09.06

NYC Health
nyc.gov/health

THE NEW YORK CITY DEPARTMENT
of HEALTH and MENTAL HYGIENE
Michael R. Bloomberg, Mayor
Thomas R. Frieden, MD, MPH, Commissioner

TAKE CARE NEW YORK

Letter Report on Dietary Reference Intakes for *Trans* Fatty Acids

Drawn from the Report on

Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids

A Report of the
Panel on Macronutrients,
Subcommittees on Upper Reference Levels of Nutrients
and on Interpretation and Uses of Dietary Reference Intakes, and the
Standing Committee on the Scientific Evaluation
of Dietary Reference Intakes

Food and Nutrition Board

INSTITUTE OF MEDICINE

NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the committee responsible for the report were chosen for their special competences and with regard for appropriate balance.

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This letter report has been posted as a pdf file on the National Academies websit at **www.iom.edu/fnb**. It is excerpted from the full report, *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids*, which will be available for sale in late summer from the National Academy Press, 2101 Constitution Avenue, N.W., Box 285, Washington, DC 20055; call (800) 624-6242 or (202) 334-3313 (in the Washington metropolitan area), or visit the NAP's on-line bookstore at **http://www.nap.edu**.

For more information about the Institute of Medicine, visit the IOM home page at **www.iom.edu.**

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The serpent has been a symbol of long life, healing, and knowledge among almost all cultures and religions since the beginning of recorded history. The serpent adopted as a logotype by the Institute of Medicine is a relief carving from ancient Greece, now held by the Staatliche Museen in Berlin.

Knowing is not enough; we must apply.
Willing is not enough; we must do.
—Goethe

INSTITUTE OF MEDICINE

Shaping the Future for Health

THE NATIONAL ACADEMIES

National Academy of Sciences
National Academy of Engineering
Institute of Medicine
National Research Council

The **National Academy of Sciences** is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Bruce M. Alberts is president of the National Academy of Sciences.

The **National Academy of Engineering** was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. Wm. A. Wulf is president of the National Academy of Engineering.

The **Institute of Medicine** was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Harvey Fineberg is president of the Institute of Medicine.

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PANEL ON DIETARY REFERENCE INTAKES FOR MACRONUTRIENTS

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DIETARY REFERENCE INTAKES FOR *TRANS* FATTY ACIDS

ORIGIN OF THIS REPORT

At the request of the U.S. Food and Drug Administration (FDA), the Food and Nutrition Board of the Institute of Medicine (IOM) has prepared this letter report on *trans* fatty acids. It is based on part of the chapter, Dietary Fats: Total Fat and Fatty Acids, contained in the forthcoming IOM report, *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids*.

We hope this letter report will be helpful to FDA as it considers a petition to label foods with their *trans* fatty acid content. While this report might not be identical to the corresponding section of the full report once it is released, any changes will be editorial in nature. The findings in this letter report have full standing as an IOM report.

BACKGROUND ON *TRANS* FATTY ACIDS

Trans fatty acids are unsaturated fatty acids that contain at least one double bond in the *trans* configuration. The *trans* double bond configuration results in a greater bond angle than the *cis* configuration. This results in a more extended fatty acid carbon chain more similar to that of saturated fatty acids rather than that of *cis* unsaturated double bond containing fatty acids. The conformation of the double bond(s) impacts on the physical properties of the fatty acid. Those fatty acids containing a *trans* double bond have the potential for closer packing or aligning of acyl chains, resulting in decreased mobility; hence fluidity is reduced when compared to fatty acids containing a *cis* double bond. Partial hydrogenation of polyunsaturated oils causes isomerization of some of the remaining double bonds and migration of others, resulting in an increase in the *trans* fatty acid content and the hardening of fat. Hydrogenation of oils, such as corn oil, can result in both *cis* and *trans* double bonds, anywhere between carbon 4 and carbon 16. A major *trans* fatty acid is elaidic acid (9*trans* 18:1), but during hydrogenation of polyunsaturated fatty acids, small amounts of several other *trans* fatty acids (9*trans*,12*cis* 18:2; 9*cis* and 12*trans* 18:2) are produced. In addition to these isomers, dairy fat and meats contain 9*trans* 16:1 and conjugated dienes (9*cis*,11*trans* 18:2). Foods containing hydrogenated oils tend to have a higher *trans* fatty acid content than those that do not contain hydrogenated oils (Emken, 1995).

Conjugated linoleic acid (CLA) is a collective term for a group of geometric and positional isomers of linoleic acid in which the *trans/cis* double bonds are conjugated; that is, the double

bonds occur without an intervening carbon atom not part of a double bond. At least nine different isomers of CLA have been reported as minor constituents of food (Ha et al., 1989), but only two of the isomers, *cis*-9,*trans*-11 and *trans*-10,*cis*-12, possess biological activity (Pariza et al., 2001). There is limited evidence to suggest that the *trans*-10,*cis*-12 isomer reduces the uptake of lipids by the adipocyte and that the *cis*-9, *trans*-11 isomer is active in inhibiting carcinogenesis. Similarly, there are limited to data to show that *cis*9,*trans*11 and *trans*10,*cis*12 isomers inhibit atherogenesis (Kritchevsky et al., 2000).

CLA is naturally present in dairy products and ruminant meats as a consequence of biohydrogenation in the rumen. *Butyrivibrio fibrisolvens*, a ruminant microorganism, is responsible for the production of the *cis*-9,*trans*-11 CLA isomer that is synthesized as a result of the biohydrogenation of linoleic acid (Noble et al., 1974). The *cis*-9,*trans*-11 CLA isomer may be directly absorbed or further metabolized to *trans*-11 octadecenoic acid (vaccenic acid) (Pariza et al., 2001). After absorption, vaccenic acid can then be converted back to *cis*-9,*trans*-11 CLA within mammalian cells by Δ9 desaturase (Adlof et al., 2000; Chin et al., 1994; Griinari et al., 2000; Santora et al., 2000). Additionally, the biohydrogenation of several other polyunsaturated fatty acids has been shown to produce vaccenic acid as an intermediate (Griinari and Bauman, 1999), thus providing additional substrate for the endogenous production of *cis*-9,*trans*-11 CLA. Griinari and coworkers (2000) estimate that approximately 64 percent of the CLA in cow milk is of endogenous origin.

Verhulst and coworkers (1987) isolated a microorganism, *Propionibacterium acnes*, that appears to have the ability to convert linoleic acid to *trans*-10,*cis*-12 CLA, an isomer of CLA that is found in rumen digesta (Fellner et al., 1999). *Trans*-10 octadecenoic acid is formed in the rumen via biohydrogenation of *trans*-10,*cis*-12 CLA, and both have been reported to be found in cow milk (Griinari and Bauman, 1999). However, endogenous production of *trans*-10,*cis*-12 CLA from *trans*-10 octadecenoic acid does not occur because mammalian cells do not posses the Δ12 desaturase enzyme (Adlof et al., 2000; Pariza et al., 2001). Therefore, any *trans*-10,*cis*-12 CLA isomer that is reported in mammalian tissue or sera would likely originate from gastrointestinal absorption.

Small amounts of *trans* fatty acids and CLA are present in all diets. They can serve as a source of fuel energy for the body. However, there are no known requirements for *trans* fatty acids and CLA for specific body functions.

Absorption

Similar to other fatty acids, the coefficient of absorption of elaidic acid (18:1*t*) is about 95 percent (Emken, 1979). Studies in humans using pure triacylglycerols containing deuterated *cis* and *trans* octadecenoic acid isomers varying in melting point and double bond position suggest that the presence of *trans* double bond(s) in the fatty acyl chain has no measurable effect on efficiency of absorption (Emken, 1979, 1984).

Transport

Trans fatty acids are transported similarly to other dietary fatty acids and are distributed within the cholesteryl ester, triacylglycerol, and phospholipid fractions of lipoproteins (Vidgren et al., 1998). Platelet lipids also contain *trans* fatty acids, and their composition reflects *trans* fatty acid intake as do other tissues, with the exception of the brain (Mensink and Hornstra, 1995).

Metabolism

The *trans* isomers of oleic acid and linoleic acid that are formed during partial hydrogenation of unsaturated vegetable oils have been suggested to have potential adverse effects in fetal and infant growth and development through inhibition of the desaturation of linoleic acid and α-linolenic acid to arachidonic acid and docosahexaenoic acid (DHA), respectively (Koletzko, 1992; van Houwelingen and Hornstra, 1994). Many animal and in vitro studies, however, have involved much higher amounts of *trans* than all *cis* polyunsaturated fatty acids (Hwang et al., 1982; Shimp et al., 1982). Other animal studies have suggested that the deleterious effects seen with high intakes of *trans* fatty acid intake do not occur with amounts comparable to those consumed in a normal human diet containing sufficient amounts of linoleic acid (Bruckner et al., 1982; Zevenbergen et al., 1988).

Available animal and human data indicate that adipose tissue *trans* fatty acid content reflects the content of the diet, and that selective accumulation does not occur (Emken, 1984). More recent attention has been focused on validating the use of adipose *trans* fatty acid content as a measure of long-term dietary intake. In a study of Canadian subjects, Chen and colleagues (1995b) reported that adipose tissue *trans* fatty acid patterns, particularly those isomers found in partially hydrogenated vegetable fat, reflected dietary sources. Garland and coworkers (1998) also reported that adipose tissue *trans* fatty acid patterns correlated with intake and noted a stronger relationship with the isomers found in vegetable rather than animal fat. The authors cautioned that the later conclusion may have been due to the smaller between-person variability with animal versus vegetable *trans* fatty acid intake. In a letter to the editor regarding this study, Aro and Salminen (1998) suggested that the stronger correlation between adipose tissue *trans* fatty acid isomers found in hydrogenated vegetable rather than animal fat may be attributable to different rates of metabolism of the *trans* isomers. Two groups have used adipose tissue *trans* fatty acid to corroborate dietary *trans* fatty acid intake derived from food frequency questionnaires and found a strong relationship (Lemaitre et al., 1998; London et al., 1991). Despite these observations, it should be noted that adipose tissue *trans* fatty acid profiles can be confounded by the retention of intermediate products of β-oxidation (Emken, 1995).

Excretion

Trans fatty acids are completely catabolized to carbon dioxide and water.

Impact of *Trans* Fatty Acids on *n*-6 and *n*-3 Metabolism

The *trans* isomers of oleic acid and linoleic acid, which are present in hydrogenated vegetable oils and meats, have been suggested to have adverse effects on growth and development through inhibition of the desaturation of linoleic acid and α-linolenic acid to arachidonic acid and DHA, respectively (Sugano and Ikeda, 1996). Desaturation and elongation of *trans* linoleic and α-linolenic acid isomers containing a double bond at the *cis*-12 and *cis*-15 position, respectively, with formation of 20 and 22 carbon chain metabolites that could be incorporated into membrane lipids, has also been suggested. In vitro studies and studies with animals fed diets high in *trans* fatty acids have found evidence of reduced essential *n*-6 and *n*-3 fatty acid desaturation (Cook, 1981; Rosenthal and Doloresco, 1984). An inverse association between total *trans* fatty acids and arachidonic acid and DHA concentrations in plasma cholesteryl esters, and between plasma cholesteryl esters, elaidic acid (18:1*trans*), and birth

weight of premature infants has been reported (Koletzko, 1992). Studies in term infants found no relation between *trans* fatty acids and length of gestation, birth weight, or birth length (Elias and Innis, 2001). Similarly, an inverse association between plasma phospholipid *trans* fatty acids and arachidonic acid has been found for children aged 1 to 15 years (Decsi and Koletzko, 1995). The industrial hydrogenation of vegetable oils results in destruction of *cis* essential *n*-6 and *n*-3 fatty acids and the formation of *trans* fatty acids (Valenzuela and Morgado, 1999). It is not clear if differences in dietary intakes of *n*-6 and *n*-3 fatty acids, rather than inhibition of linoleic acid and α-linolenic acid desaturation by *trans* fatty acids, explains the statistical inverse associations between *trans* and *n*-6 and *n*-3 fatty acids reported in some studies (Craig-Schmidt, 2001). Based on the much greater affinity of the Δ6 desaturase for *cis n*-3 and *n*-6 fatty acids than monounsaturated fatty acids (Brenner, 1974; Castuma et al., 1977) and experimental work to show inhibition of the Δ6 desaturation of linoleic acid is not of concern with linoleic acid intakes above about 2 percent of energy (Zevenbergen et al., 1988), it seems unlikely that inhibition of essential fatty acid metabolism by *trans* fatty acids is of concern for practical human diets.

FINDINGS BY LIFE STAGE AND GENDER GROUP

There are no data available to indicate a health benefit from consuming *trans* fatty acids. Therefore, an Adequate Intake, Estimated Average Requirement, and Recommended Dietary Allowance are not established for *trans* fatty acids.

FOOD SOURCES OF *TRANS* FATTY ACIDS

Reports listing the *trans* fatty acid level in selected food items are available from the United States (Enig et al., 1990; Litin and Sacks, 1993; Michels and Sacks, 1995), Canada (Ratnayake et al., 1993), and Europe (Aro et al., 1998a, 1998b, 1998c; Michels and Sacks, 1995; van Erp-baart et al., 1998; van Poppel et al., 1998). More recently, a comprehensive U.S. database was compiled by the U.S. Department of Agriculture's Agricultural Research Service (ARS, 2001), which included a description of the methodology used to formulate the nutrient values (Schakel et al., 1997). *Trans* fatty acids are present in foods containing traditional stick margarine (3.04 g *trans* fatty acids/serving) and vegetable shortenings (2.54 g/serving) that have been subjected to hydrogenation, as well as in milk (0.22 g/serving), butter (0.40 g/serving), and meats (0.01 to 0.21 g/serving) (Emken, 1995). Therefore, foods that are contributors of *trans* fatty acids include pastries, fried foods (e.g., doughnuts and french fries), dairy products, and meats. Human milk contains approximately 1 to 5 percent of total energy as *trans* fatty acids (Table 1).

DIETARY INTAKE OF *TRANS* FATTY ACIDS

Estimating the amount of *trans* fatty acids in the food supply has been hampered by the lack of an accurate and comprehensive database on which to derive the data and the trend towards the reformulation of products over the past decade to reduce levels. This later issue complicates analysis of historical food intake data. Additionally, the variability in the *trans* fatty acid content of foods within a food category is extensive and can introduce substantial error when the calculations are based on food frequency questionnaires that heavily rely on the grouping of similar foods (Innis et al., 1999). *Trans* fatty acid intake is not currently collected in U.S. national surveys.

TABLE 1 *Trans* Fatty Acid Content in Term Human Milk of Women in the United States and Canada

Reference	Study Population/Stage of Lactation[a]	*Trans* Fatty Acid	Content in Human Milk	
			% of Total Fatty Acids	% of Total Energy[b]
Gibson and Kneebone, 1981	120 women, 40–45 d pp	16:1	Trace	Trace
		18:1	~10	~5.46
Chappell et al., 1985	7 women, 1–37 d pp	18:1(9)	2.6 ± 0.4	1.42
		18:1(7)	0.1 ± 0.03	0.05
		18:1(5)	0.1 ± 0.04	0.05
		18:2(6) c,t + t,c[c]	0.1 ± 0.4	0.05
		Total	2.9	1.57
Chen et al., 1995a	198 samples, 3–4 weeks pp	Total *trans*	7.19 ± 3.03	3.92
Innis and King, 1999	103 women, 2 mo pp	Total *trans*	7.1 ± 0.32	3.88

[a] pp = postpartum.
[b] Calculated using the following values: 40g fat/L milk, 8.87 kcal/g fat, 650 kcal/L milk.
[c] c,t + t,c = *cis, trans* and *trans, cis*.

Early reports suggested a wide range of *trans* fatty acid intakes, 2.6 to 12.8 g/day (Emken, 1995). The lower estimated intakes tended to be derived from food frequency data, whereas the higher estimated intakes tended to be derived from food availability data. More recent data from food frequency questionnaires collected in the United States suggest average *trans* fatty acid intakes of 1.5 to 2.2 percent of energy (Ascherio et al., 1994; Hu et al., 1997) or 5.2 percent of total dietary fat (Lemaitre et al., 1998). Intakes of about 1 to 2 percent of energy have been reported for women in Canada, although the range of intake was wide (Elias and Innis, 2001, 2002). Most recently, *trans* fatty acid intake was estimated using data from the Continuing Survey of Food Intakes by Individuals (Allison et al., 1999). The mean *trans* fatty acid intake for the U.S. population aged 3 years and older was 2.6 percent of total energy intake.

ADVERSE EFFECTS OF *TRANS* FATTY ACIDS

Hazard Identification

Total and Low-Density Lipoprotein Cholesterol Concentrations

Prior to 1980 there was generally little concern about the trend toward increased consumption of hydrogenated fat in the U.S. diet, especially when the hydrogenated fats displaced fats relatively high in saturated fatty acids (Denke, 1995). During the early 1980s studies showed a hypercholesterolemic effect of *trans* fatty acids in rabbits (Kritchevsky, 1982; Ruttenberg et al., 1983). Renewed interest in the topic of hydrogenated fat in human diets, or more precisely *trans* fatty acid intake, started in the early 1990s. The availability of a methodology able to distinguish the responses of individual lipoprotein classes to dietary

modification expanded the depth to which the topic could be readdressed. A report from the Netherlands suggested that a diet enriched in elaidic acid (a subfraction of 18:1 *trans*), compared to one enriched in oleic acid (18:1 *cis*), increased total and low-density lipoprotein (LDL) cholesterol concentrations and decreased high-density lipoprotein (HDL) cholesterol concentration, hence resulting in a less favorable total cholesterol/HDL cholesterol ratio (Mensink and Katan, 1990). Consumption of a diet enriched with saturated fatty acids resulted in LDL cholesterol concentrations similar to those observed after subjects consumed a diet high in elaidic acid, but HDL cholesterol concentrations were similar to those observed after subjects consumed the diet high in oleic acid. A number of studies on the topic have been published since then and have reported that hydrogenated fat/*trans* fatty acid consumption increases LDL cholesterol concentrations (Aro et al., 1997; Judd et al., 1994, 1998; Louheranta et al., 1999; Müller et al., 1998; Sundram et al., 1997) (Tables 2, 3, and 4). Recent data have demonstrated a dose-dependent relationship between *trans* fatty acid intake and the LDL:HDL ratio and when combining a number of studies, the magnitude of this effect is greater for *trans* fatty acids compared to saturated fatty acids (Figure 1) (Ascherio et al., 1999).

Similar to the metabolic/clinical trial data, studies in free-living subjects asked to substitute hydrogenated fat for other fat in their habitual diet resulted in higher concentrations of total and LDL cholesterol (Table 4) (Nestel et al., 1992b; Noakes and Clifton, 1998; Seppänen-Laakso et al., 1993).

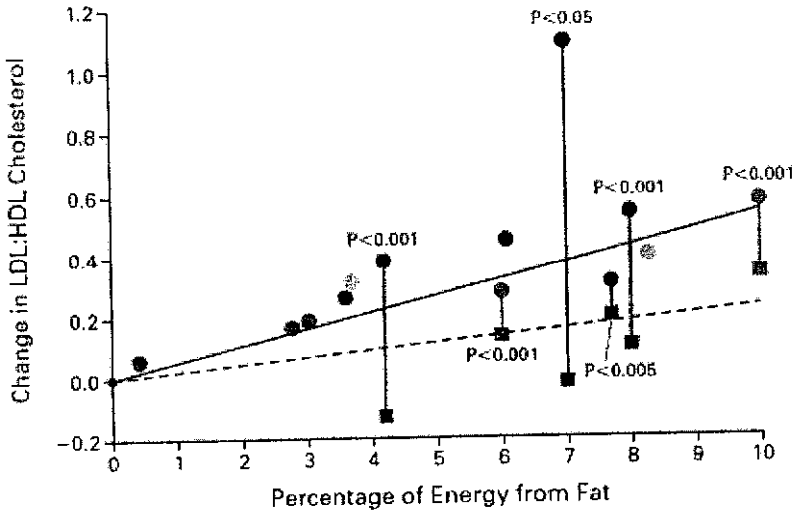

FIGURE 1 Change in the low-density lipoprotein (LDL):high-density lipoprotein (HDL) cholesterol concentration with increasing energy intake from saturated and *trans* fatty acids. Solid line represents the best-fit regression for *trans* fatty acids. Dotted line represents the best-fit regression for saturated fatty acids. Reprinted, with permission, from Ascherio et al. (1999). Copyright 1999 by the Massachusetts Medical Society.

TABLE 2 Dietary *Trans* Fatty Acids (TFA) and Blood Lipid Concentration: Controlled Feeding Trials

Reference	Study Population	Diet[a]	TFA (% of energy)	Blood Lipid Concentrations[b] LDL-C (mmol/L)	HDL-C (mmol/L)	Lp(a) (mg/L)
Mensink and Katan, 1990; Mensink et al., 1992	79 men and women, avg 25–26 y	3-wk crossover, 40% fat				
		10% 18:1	0	2.67[c]	1.42[c]	32[c]
		10% SFA	1.8	3.14[d]	1.42[c]	26[d]
		10% TFA	10.9	3.04[e]	1.25[d]	45[e]
Zock and Katan, 1992	56 healthy men and women	3 wk crossover, 41% fat				
		18:2	0.1	2.83[c]	1.47[c]	
		18:0	0.3	3.00[d]	1.41[d]	
		TFA	7.7	3.07[d]	1.37[d]	
Judd et al., 1994	58 men and women	6-wk crossover, 40% fat				
		18:1	0.7	3.34[c]	1.42[c]	
		SFA	0.7	3.64[d]	1.40[c,d]	
		moderate TFA	3.8	3.54[e]	1.47[e]	
		high TFA	6.6	3.60[d,e]	1.38[d]	
Aro et al., 1997	80 healthy men and women, 20–52 y	5-wk intervention, 33% fat				
		18:0	0.4	2.89[c]	1.42[c]	270[c]
		TFA	8.7	3.13[d]	1.22[d]	308[d]
Sundram et al., 1997	27 men and women, 19–39 y	4-wk crossover, 31% fat				
		18:1	0	3.17	1.25	128.3
		16:0	0	3.15	1.26	122.0
		12:0 + 14:0	0	3.57	1.18	134.3
		TFA	6.9	3.81	1.05	153.3
Louheranta et al., 1999	14 healthy women, avg 23 y	4-wk crossover, 37% fat				
		18:1	0	2.53	1.37	225 (units/L)
		TFA	5.1	2.64	1.31	220 (units/L)

[a] SFA = saturated fatty acid.
[b] LDL-C = low-density lipoprotein cholesterol, HDL-C = high-density lipoprotein cholesterol, Lp(a) = lipoprotein(a).
[c,d,e] Different lettered superscripts within each study indicates values were significantly different.

TABLE 3 Hydrogenated Fat Intake and Blood Lipid Concentrations: Controlled Feeding Trials

Reference	Study Population	Diet[a]	TFA[b] (% of energy)	Blood Lipid Concetrations[c] LDL-C (mmol/L)	HDL-C (mmol/L)	Lp(a) (mg/L)
Lichtenstein et al., 1993	14 men and women, 44–78 y	32-d crossover, 30% fat				
		Baseline	0.77	3.96[d]	1.24[d]	140[d]
		Corn oil	0.44	3.23[e]	1.14[e]	160[d]
		Corn oil margarine	4.16	3.49[e]	1.11[e]	130[d]
Almendingen et al., 1995	31 men, 21–46 y	3-wk crossover, 33–36% fat				
		Butter	0.9	3.81[d]	1.05[d]	194[d]
		PHFO	8.0	3.94[d,f]	0.98[e]	234[e]
		PHSO	8.5	3.58[e]	1.05[d]	238[e]
Judd et al., 1998	46 men and women, 28–65 y	5-wk crossover, 34% fat				
		PUFA-M	2.4	3.21[d]	1.24[d]	197[d]
		Butter	2.7	3.44[e]	1.27[d]	186[e]
		TFA-M	3.9	3.27[f]	1.24[d]	202[d]
Müller et al., 1998	16 healthy females, 19–30 y	14-d crossover, 31–32% fat				
		Vegetable oil	1.1	2.63[d]	1.32[d]	212[d]
		PHFO	7.7	2.87[e]	1.28[d]	225[d]
Lichtenstein et al., 1999	36 men and women, > 50 y	35-d crossover, 30% fat				
		Soybean oil	0.55	3.98[d]	1.11[d,e]	230
		Semiliquid margarine	0.91	4.01[d,e]	1.11[d,e]	230
		Butter	1.25	4.58[f]	1.16[e]	220
		Soft margarine	3.30	4.11[d,e]	1.11[d,e]	240
		Shortening	4.15	4.24[e]	1.11[d,e]	240
		Stick margarine	6.72	4.34[e]	1.01[d]	240

[a] PHFO = partially hydrogenated fish oil, PHSO = partially hydrogenated soybean oil, PUFA-M = margarine containing polyunsaturated fatty acids, TFA-M = margarine containing *trans* fatty acids.
[b] TFA = *trans* fatty acids.
[c] LDL-C = low-density lipoprotein cholesterol, HDL-C = high-density lipoprotein cholesterol, Lp(a) = lipoprotein(a).
[d,e,f] Different lettered superscripts within each study indicates values were significantly different.

High-Density Lipoprotein Cholesterol Concentrations

The data related to the impact of hydrogenated fat/*trans* fatty acids compared to unhydrogenated oil /*cis* fatty acids on HDL cholesterol concentrations are less consistent than for LDL cholesterol concentrations (Tables 2, 3 and 4). As reported for LDL cholesterol concentrations, the effect of hydrogenated fat/*trans* fatty acids on HDL cholesterol concentrations, if present, is likely to be dose dependent (Judd et al., 1994). The preponderance of the data suggest that hydrogenated fat/*trans* fatty acids, relative to saturated fatty acids, result in lower HDL cholesterol concentrations (Ascherio et al., 1999; Zock and Mensink, 1996; Zock et al., 1995). Because of the potentially differential effects of hydrogenated fat/*trans* fatty acids on LDL and HDL cholesterol concentrations, concern has been raised regarding their effect on the total cholesterol or LDL cholesterol:HDL cholesterol ratio (Ascherio et al., 1999). However, with respect to dietary fat recommendations, the strategy to improve the total cholesterol or LDL cholesterol:HDL cholesterol ratio would not be different from that to decrease LDL cholesterol concentrations.

Lipoprotein(a) Concentrations

Lipoprotein(a) (Lp(a)) concentrations in plasma have been associated with increased risk for developing cardiovascular and cerebrovascular disease, possibly via inhibition of plasminogen activity (Lippi and Guidi, 1999; Nielsen, 1999; Wild et al., 1997). Lp(a) is a lipoprotein particle similar to LDL with respect to its cholesterol and apolipoprotein B100 content, but it also contains an additional apolipoprotein termed apo(a) (Lippi and Guidi, 1999; Nielsen, 1999). Lp(a) concentrations have been reported by some investigators to be increased after the consumption of diets enriched in hydrogenated fat/*trans* fatty acids (Tables 2, 3, and 4) (Almendingen et al., 1995; Aro et al., 1997; Lichtenstein et al., 1999; Mensink et al., 1992; Nestel et al., 1992b; Sundram et al., 1997), but not all (Chisholm et al., 1996; Judd et al., 1998; Lichtenstein et al., 1993; Louheranta et al., 1999; Müller et al., 1998). The magnitude of the mean increases in Lp(a) concentrations associated with *trans* fatty acid intake would not have a physiologically significant effect on cardiovascular disease risk. However, an unresolved issue at this time is the potential effect of relatively high levels of *trans* fatty acids in individuals with initially high concentrations of Lp(a).

Hemostatic Factors

The effect of *trans* fatty acids on hemostatic factors has been assessed by a number of investigators (Almendingen et al., 1996; Mutanen and Aro, 1997; Sanders et al., 2000; Turpeinen et al., 1998; Wood et al., 1993b) (see Table 5). In general, these researchers have concluded that hydrogenated fat/*trans* fatty acids had little effect on a variety of hemostatic variables. Similarly, Müller and colleagues (1998) reported that hemostatic variables were unaffected by the substitution of a vegetable oil-based margarine relatively high in saturated fatty acids when compared to a hydrogenated fish oil-based margarine.

Susceptibility of Low-Density Lipoprotein to Oxidation

Hydrogenated fat/trans fatty acids have consistently been reported to have little effect on the susceptibility of LDL to oxidation (Cuchel et al., 1996; Halvorsen et al., 1996; Nestel et al., 1992b; Sørensen et al., 1998) (Table 5).

TABLE 4 Dietary *Trans* Fatty Acids (TFA), Hydrogenated Fat, and Blood Lipid Concentrations: Free Living Trials

Reference	Study Population	Diet[a]	TFA (% of energy)	Blood Lipid Concentrations[c] LDL-C (mmol/L)	HDL-C (mmol/L)	Lp(a) (units/L)
Nestel et al., 1992a	26 mildly hypercholesterolemic men, 27–57 y	4-wk crossover, 42% fat				
		Control 1	3.8	4.13[c]	1.11[c]	
		Control 2	3.7	4.03[c,d]	1.15[c]	
		Blend 1	6.7	3.92[d,e]	1.10[c]	
		Blend 2	6.6	3.83[e]	1.11[c]	
Nestel et al., 1992b	27 mildly hypercholesterolemic men, 30–63 y	3-wk crossover, 36–37% fat				
		Control	< 1	4.22[c]	0.98[c]	235[c]
		18:1	1.4	3.90[d]	0.98[c]	236[c]
		TFA	5.7	4.27[c]	0.98[c]	296[d]
		16:0	< 1	4.16[c]	1.09[d]	249[e]
Seppänen-Laakso et al., 1993	57 men and women, middle-aged	12-wk crossover to 1 of 2 diets, 39–43% fat		Change from baseline	Change from baseline	
		Margarine	2.9	–0.20	+0.05	
		Rapeseed	0	–0.30	–0.01	
		Olive oil	0	–0.32	0.00	
Wood et al., 1993a	38 healthy men, 30–60 y	6-wk crossover, 38% fat				
		Butter	2.1	3.78[c]	1.22[c]	
		Butter-sunflower	1.0	3.49[d]	1.19[c]	
		Butter-olive	1.0	3.59[d]	1.22[c]	
		Hard margarine	11.1	3.47[d]	1.16[c]	
		Soft margarine	0	3.26[e]	1.16[c]	
Wood et al., 1993b	29 healthy men, 30–60 y	6-wk crossover, 37% fat				
		Butter	0.2	3.52[c]	1.03[c]	
		Crude palm	0	3.36[c]	1.03[c]	
		Margarine	3.0	3.36[c]	1.00[c]	
		Refined palm	0	3.41[c]	1.06[d]	
		Refined palm+sunflower	0	3.41[c]	1.03[c]	
		Sunflower oil	0	3.23[d]	1.00[c]	

Chisholm et al., 1996	49 hypercholesterolemic men and women, avg 47 y	6-wk crossover, 26–27% fat				
		Butter	1.4	4.21[c]	1.26[c]	223[c]
		Margarine	3.6	3.82[d]	1.24[c]	249[c]
Noakes and Clifton, 1998	38 mildly hyperlipidemic men and women	3-wk crossover, 2 groups, 31–35% fat				
		Canola + TFA	3.3	3.64[c]	1.19[c]	
		TFA-free canola	0	3.61[c]	1.28[c]	
		Butter	1.1	4.14[d]	1.20[c]	
		PUFA + TFA	3.6	4.23[c]	1.17[c]	
		TFA-free PUFA	0	3.98[d]	1.23[c]	
		Butter	1.2	4.70[e]	1.27[c]	

[a] PUFA = polyunsaturated fatty acids
[b] LDL-C = low-density lipoprotein cholesterol, HDL-C = high-density lipoprotein cholesterol, Lp(a) = lipoprotein(a).
[c,d,e] Different lettered superscripts within each study indicates values were significantly different.

TABLE 5 *Trans* Fatty Acid (TFA) Intake and Blood Clotting, Blood Pressure, and Low-Density Lipoprotein (LDL) Oxidation

Reference	Study Population	Diet[a]	TFA (% of energy)	Results[b]		Comments
Clotting						
Wood et al., 1993b	29 men, 30–60 y	6-wk crossover, 37% fat		TXB_2 (pg/mL)	6-keto-$PGF_{1\alpha}$ (pg/mL)	
		Butter	0.2	35[c]	89[d]	
		Crude palm oil	0	41[c]	94[c]	
		Margarine	3.0	40[c]	86[d]	
		Refined palm oil	0	40[c]	87[d]	
		Refined palm+sunflower	0	36[c]	100[c]	
		Sunflower oil	0	62[c]	95[c]	
Almendingen et al., 1996	31 men, avg 27 y	3-wk crossover, 33–36% fat		Fibrinogen (g/L)	PAI-1 activity (units/mL)	For PHSO, greater PAI-1 activity than PHFO or butter
		PHSO	8.5	3.0	13.5	Increased fibrinogen with butter diet
		PHFO	8.0	2.9	10.7	No significant difference in factor VII, fibrinogen peptide A, β-thromboglobulin, or tissue plasminogen activator
		Butter	0.9	3.1	8.8	
Mutanen and Aro, 1997	80 men and women, 20–52 y	5-wk crossover to 1 of 2 diets, 33–34% fat		Fibrinogen (g/L)		No marked difference in factor VII coagulation activity, tissue type plasminogen activity, or PAI-1 activity
		High 18:0	0.4	3.62		
		High TFA	8.7	3.61		
Turpeinen et al., 1998	80 men and women, 20–52 y	5-wk crossover to 1 of 2 diets, 32–34% fat				No difference in TXB_2 production or adenosine diphosphate-induced platelet aggregation in vitro
		18:0	0.4			Significant increase in collagen induced aggregation with 18:0 diet
		TFA	8.7			
Sanders et al., 2000	16 men and women, 18–32 y	1 test-meal crossover, 7% or 65% fat		$FVII_c$ (% standard)	$FVII_a$ (ng/mL)	No significant differences in factor VII coagulation activity; factor VII-activated concentrations were significantly higher with 18:1, 18:1 *trans*, 18:0, and 16:0 diets
		18:1	0.1	124	2.7	
		18:1 *trans*	24.7	122	1.9	
		18:0	0	114	1.9	

		16:0	0.2	112	2.1	
		MCT	0	112	1.5	
		Low fat	0	99	1.4	
Oxidation						
Cuchel et al., 1996	14 men and women, 44–78 y	32 d crossover, 30% fat				No difference in susceptibility to LDL oxidation
		Corn oil	0.44			
		Corn oil+margarine	4.16			
Halvorsen et al., 1996	29 men, 21–46 y	19-d crossover, 33–36% fat		Dienes (nmol/mg LDL)	Formation rate (nmol/mg LDL × min)	No significant differences in conjugated dienes, lipid peroxides, uptake by marcophages, or electrophoretic mobility of LDL
		Butter	0.9	1,020	10	TFA does not alter susceptibility to LDL oxidation
		PHSO	8.5	1,034	10	
		PHFO	8.0	1,107	10	
Sørensen et al., 1998	47 men, 29–60 y	4 wk, consumed 30 g/d of 1 of 2 margarines	(mol % of fat)	Dienes (nmol/g)	Oxidation rate (nmol/mg × min)	Fish oil consumption compared with sunflower oil margarine had no effect on LDL size and led to minor changes in LDL oxidation resistance
		Sunflower oil	0.79	445	10.4	
		Fish-oil, enriched	0.98	468	10.2	
Blood Pressure						
Mensink et al., 1991	59 men and women, 19–57 y, normo-tensive	3-wk crossover, 39–40% fat		SBP (mmHg)	DBP (mmHg)	No effect of TFA intake on blood pressure
		18:1	0	113	66	
		TFA	10.9	112	67	
		SFA	1.8	112	67	
Zock et al., 1993	55 men and women, 19–49 y	3-wk crossover, 40–43% fat		SBP (mmHg)	DBP (mmHg)	No effect of TFA intake on blood pressure
		18:2	0.1	114	68	
		18:0	0.3	113	70	
		TFA	7.7	113	69	

[a] PHSO = partially hydrogenated soy bean oil, PHFO = partially hydrogenated fish oil, MCT = medium-chain triacylglycerol, SFA = saturated fatty acid.
[b] TXB_2 = thromboxane B_2, 6-keto-$PGF_{1\alpha}$ = 6-keto-prostaglandin $F_{1\alpha}$, PAI-1 = plasminogen activator inhibitor type 1, $FVII_c$ = factor VII coagulant activity, $FVII_a$ = factor VII activated, SBP = systolic blood pressure, DBP = diastolic blood pressure.
[c,d] Different lettered superscripts within each study indicates values were significantly different.

Blood Pressure

A few reports addressed the issue of trans fatty acid intake and blood pressure (Mensink et al., 1991; Zock et al., 1993) (Table 5). The authors concluded that consumption of diets high in saturated, monounsaturated, or trans fatty acids resulted in similar diastolic and systolic blood pressures.

Coronary Heart Disease

Similar to saturated fatty acids, there is a positive linear trend between *trans* fatty acid intake and LDL cholesterol concentrations (Judd et al., 1994; Lichtenstein et al., 1999; Zock and Katan, 1992). Some evidence also suggests that *trans* fatty acids result in lower HDL cholesterol concentrations (Table 6). Hence, the net result is a higher total cholesterol (or LDL cholesterol):HDL cholesterol ratio (Judd et al., 1994; Lichtenstein et al., 1999; Zock and Katan, 1992). This finding, combined with data from prospective cohort studies (Ascherio et al., 1996; Gillman et al., 1997; Hu et al., 1997; Pietinen et al., 1997; Willett et al., 1993) (Table 6), has lead to the concern that dietary *trans* fatty acids are more deleterious with respect to coronary heart disease than saturated fatty acids (Ascherio et al., 1999).

Summary

There is a positive linear trend between *trans* fatty acid intake and total and LDL cholesterol concentration, and therefore increased risk of CHD, thus suggesting a Tolerable Upper Intake Level (UL) of zero. Because *trans* fatty acids are unavoidable in ordinary diets, achieving such a UL would require extraordinary changes in patterns of dietary intake. Such extraordinary adjustments may introduce other undesirable effects (e.g., elimination of foods, such as dairy products and meats, that contain *trans* fatty acids may result in inadequate intakes of protein and certain micronutrients) and unknown and unquantifiable health risks may be introduced by any extreme adjustments in dietary pattern. For these reasons, no UL is proposed. Nevertheless, it is recommended that *trans* fatty acid consumption be as low as possible while consuming a nutritionally adequate diet.

TABLE 6 Dietary *Trans* Fatty Acids (TFA): Epidemiological Studies

Reference	Study Design[a]	Dietary and Other Information	Results[b]			Comments
Lipoprotein concentration						
Siguel and Lerman, 1993	47 CAD cases 56 controls Case-control	No dietary intake information	Plasma TFA (%) HDL (mmol/L) LDL (mmol/L) TAG (mmol/L)	Case 1.38 0.88 3.78 1.78	Control 1.11 1.34 2.97 0.97	TFA negatively associated with HDL TFA positively associated with LDL and TAG
Coronary heart disease (CHD)						
Hudgins et al., 1991	76 men, 23–78 y Cross sectional	No dietary intake information	Total TFA in adipose tissue was 4.4% of total fatty acids			Total TFA content in adipose tissue was not significanlty related to risk factors of CHD (e.g, age, body mass index, LDL, cholesterol, blood pressure)
Troisi et al., 1992	748 men, 43–85 y Cross sectional	Food frequency questionnaire, multivariate analysis	TFA intake was directly related to total (r = 0.07, P = 0.04) and LDL (r = 0.09, P = 0.01) cholesterol			An increased TFA intake from 2.1 to 4.9 g/d increased the risk of MI by 27%
Willett et al., 1993	Women, 431 CHD cases Cohort, 8-y follow-up,	Food frequency questionnaire, multivariate analysis	TFA intake (% energy) 1.3 1.8 2.2 2.6 3.2		RR of CHD 1.0 1.4 1.25 1.55 1.8	Positive association with TFA intake and risk of CHD
Ascherio et al., 1994	239 MI cases 282 controls Case-control	Food frequency questionnaire, multivariate analysis	TFA intake (g/d) 1.69 2.48 3.35 4.52 6.51		RR of MI 1.0 0.73 1.24 1.63 2.28	Positive association of TFA intake and risk of myocradial infarction

continues

TABLE 6 Continued

Reference	Study Design[a]	Dietary and Other Information	Results[b]			Comments
Kromhout et al., 1995	12,763 men, 40–59 y Cohort, 25-y follow-up	Weighed food record	Correlation between 18:1*trans* intake and CHD mortality is 0.78 ($p < 0.001$)			
Ascherio et al., 1996	43,757 men, 40–75 y Cohort, 6-y follow-up	Food frequency questionnaire, multivariate analysis	TFA intake (g/d) 1.5 2.2 2.7 3.3 4.3	RR of MI 1.0 1.20 1.24 1.27 1.40		TFA intake directly associated with risk of MI
Hu et al., 1997	Women, 34–59 y 939 MI cases Cohort, 14-y follow-up	Food frequency questionnaire, multivariate analysis	TFA intake (% energy) 1.3 1.7 2.0 2.4 2.9	RR of MI 1.0 1.07 1.10 1.13 1.27		RR for 2% increment in energy from TFA intake was 1.93
Gillman et al., 1997	Men, 45–64 y 267 CHD cases Cohort, 21-y follow-up	24-h recall, multivariate analysis	Margarine intake (tsp/d) 0 1–4 ≥ 5	No. of events (/1,000) Period 1 77 42 18	 Period 2 65 35 30	RR for CHD for each increment of 1 tsp/d was 0.99 for follow-up period 1 and 1.12 for period 2 Modest risk of CHD with increasing margarine intake
Pietinen et al., 1997	Smoking men, 50–69 y 1,399 coronary events 635 coronary deaths Cohort, 6.1-y follow-up	Food frequency questionnaire, multivariate analysis	TFA intake (g) 1.0 1.7 2.0 2.7 6.2	RR of major coronary event 1.00 1.10 0.97 1.07 1.14		Positive association between TFA intake and risk of coronary death

			TFA intake (g) 1.0 1.7 2.0 2.7 6.2	RR of coronary death 1.00 1.05 1.12 0.90 1.39	
Tavani et al., 1997	Women, 18–74 y 429 MI cases 866 controls Case-control	Questionnaire on selected indicator foods, multivariate analysis	Margarine intakes No or low Medium or high	RR of MI 1.0 1.5	The association with margaine could explain about 6% of MI in this population
Cancer					
Kohlmeier et al., 1997	Women, 50–74 y 291 breast cancer cases 407 controls Case-control	No diet information	Adipose TFA concentration TFA TFA within lowest PUFA tertile TFA within highest PUFA tertile	OR of breast cancer 1.46 3.65 0.97	Risk for breast cancer is based on the relative concentration of TFA and PUFA
Tuyns et al., 1988	35–75 y 453 colon cancer cases 365 rectal cancer cases 2,851 controls Case-control	Dietary history			There was no increased risk of either cancers from with increased consumption of margarine

[a] CAD = coronary artery disease, MI = myocardial infarction.
[b] HDL = high-density lipoprotein cholesterol, LDL = low-density lipoprotein cholesterol, TAG = triacylglycerol, RR = relative risk, OR = odds ratio, PUFA = polyunsaturated fatty acid.

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Chapter 5

Dietary Guidelines, Processing, and Reformulation for *Trans* Reduction

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Introduction

In 1990, the United States Congress passed the Nutrition Labeling and Education Act (NLEA). The Food and Drug Administration (FDA) established regulations in 1993 pursuant to NLEA basically revising the mandatory information required on food labels. The main elements of these regulations were nutrition labeling, nutrient content descriptors and health messages. In November, 1999, FDA proposed regulations which would include *trans* fat in the "saturated fat" column of the nutrition facts panel of food labels. However, on November 15, 2002, FDA revised its proposed rule on trans fat labeling by proposing to declare *trans* fat individually in the nutrition facts panel and link it to a footnote stating "Intake of *trans* fat should be as low as possible." The final regulation was announced on July 11, 2003 which required a quantitative declaration of *trans* fat in the nutrition facts panel, however no footnote was required nor were nutrient content claims (e.g., "no *trans* fat," "reduced *trans* fat") approved at this time. Foods containing less than 0.5g *trans* fat per serving must declare the amount as "0." No percent daily value (%DV) was established for *trans* fats due to a lack of scientific information. The effective date of the rule was January 1, 2006. This chapter will review the methods by which the food industry is reformulating foods in order to reduce *trans* fats in the U.S. diet, be in compliance with FDA's regulation, and provide foods that are consistent with the U.S. Dietary Guidelines for Americans, 2005.

Dietary Guidelines

The Dietary Guidelines for Americans 2005 were jointly announced on 1-12-05 by the Departments of Health and Human Sciences (HHS) and Agriculture (USDA) (Anon 2005). These guidelines have been updated every five years since 1975 as a means for health, nutrition and medical professionals to provide advice to Americans regarding the promotion of health and reducing the risk of chronic disease through nutrition and physical activity.

The Dietary Guidelines offer recommendations in several important areas including weight management, physical activity, food safety and consumption of macronutrients (e.g., fat, carbohydrates, and protein). Although dietary fat management is addressed in the Dietary Guidelines, this chapter will focus particularly on the current actions being taken by the food industry to reduce *trans* fat in the diet.

The Dietary Guidelines 2005 make the following recommendations on fat consumption: (i) consume less than 10% calories from saturated fats and less than 300 mg/d of cholesterol and keep *trans* fat consumption as low as possible; (ii) keep total fat intake between 20-35% of calories (mostly poly- and monounsaturated fats); (iii) make meat, poultry, dry bean and milk product choices "lean," "low fat," or "fat free;" and (iv) limit intakes of fats and oils high in saturated and/or *trans* fats.

In making its recommendations on dietary fat intake, the Dietary Guidelines authors reviewed many recent scientific documents and studies. Perhaps one of the more important scientific references used in guiding the establishment of the Dietary Guidelines, 2005 is the Institute of Medicine/National Academies of Science Report on Macronutrients, published September 5, 2002 (Anon 2002). It states "most Americans need to decrease their intakes of saturated fat and *trans* fats, and many need to decrease their dietary intake of cholesterol." The report further points out that the food industry has an important role in decreasing *trans* fat content in foods since about 80% are accounted for in foods containing partially hydrogenated oils while the remaining 20% are supplied by ruminant animals (i.e., beef and dairy products).

Trans Fat Reduction in Foods/Oils

The reduction of *trans* fats in foods has been influenced by many factors. One major factor is FDA's *trans* fat labeling regulation, which will require the inclusion of *trans* fats within the nutrition facts panel of the food label by 1-1-06 (Anon 2003). The agency is also considering the use of nutrient content claims such as "*trans* fat free" and "reduced *trans* fat" to further guide consumers in their choice of foods.

The food industry is also assuming its responsibility to the American public by providing them with more healthful foods that can fit into a daily diet. American consumers are becoming more health conscious and are increasingly interested in food products of increased healthfulness. Consumer advocacy groups have also called for the labeling of *trans* fats and their reduction in the diet.

The attempts by the food industry to reduce dietary *trans* fats have largely resulted in food manufacturers seeking reformulated food ingredients that are lower or devoid of *trans* fat. Restaurants are similarly switching to deep frying oils with reduced *trans* fat. Some retail food markets have even attempted to market only foods containing "low" or "no" *trans* fats.

Challenges

There are many challenges that food manufacturers have faced during the development of new *trans* fat alternatives. Any replacement ingredient must provide the functional characteristics of the material being replaced. In other words, the alternative ingredient must provide the functionality of flakiness, firmness of texture, crispness or desired appearance in the finished product or it is likely to be rejected by the consumer. The stability or shelf life of the finished product must also be maintained to ensure consumer acceptability.

Another major factor involved in the development of *trans* fat alternatives is the assurance that such products will be available in adequate commercial quantities. For example, a major restaurant chain must be assured that any new food product or frying medium will be available in sufficient quantities to satisfy anticipated demand. In some cases, this may mean very large commercial quantities. Similarly suppliers of *trans* fat alternatives (e.g., vegetable oils derived from oilseed varieties having unique fatty acid profiles) may require commitments from restaurant chains or food manufacturers to purchase sufficient amounts of the alternative ingredient to justify the major capital investment necessary to bring the alternative product to the marketplace. Newer oilseed varieties containing oil of increased stability, thus having less need for partial hydrogenation, may take six to seven years to commercially develop in a best-case scenario.

Alternatives to Hydrogenation

There are currently four main sources of *trans* fat alternatives: naturally stable oils/fats, interesterified oils, "modified" partially hydrogenated oils and trait-enhanced oils from newer oilseed varieties.

The more common oils or fats that are relatively stable and requiring little or no partial hydrogenation for most food product applications thus containing no *trans* fats include palm, corn and cottonseed oils. Also used to a lesser extent are palm kernel, coconut, high oleic canola, high oleic safflower, mid and high oleic sunflower, and low linolenic soybean oils as well as animal fats.

A second source of relatively stable oils is through the use of oils that have undergone the process of "interesterification." This process rearranges the fatty acids in a fat molecule resulting in customized melting characteristics.

A third method that may be used to reduce *trans* fats is by modifying the process of partial hydrogenation. Alteration of the variables influencing the hydrogenation process (e.g., time, temperature, catalyst) can result in a partially hydrogenated product of significantly reduced *trans* fat content (List 2004a).

The fourth method of reducing *trans* fats in the diet is to use oils from "trait enhanced" oilseed varieties specifically designed to have increased stability. These newer oilseed varieties are usually bred to have either lower amounts of relatively unstable fatty acids (e.g., linolenic) or higher amounts of more stable fatty acids (e.g., oleic). Such oilseed varieties currently available or soon to be introduced commercially include mid oleic sunflower and soybean, low linolenic soybean and canola, and high oleic sunflower and canola. Such varieties may be derived from either traditional plant breeding practices or biotechnological methods.

The newer technologies required to develop many *trans* fat alternatives are relatively expensive. These costs are likely to be passed on to consumers in the form of higher food prices. If foods become too expensive, consumers may not purchase them regardless of their nutritional value or functionality.

Another challenge to suppliers of *trans* fat alternatives is the logistics of physically providing them to end users. There is no single solution to solving food manufacturer needs in a variety of products. Multiple ingredient alternatives require multiple inventories and often times multiple suppliers. Also a major source of a *trans* fat alternative may be limited to only one or perhaps a few regional supply sources, placing major demands on supply systems attempting to service geographically diverse and numerous receivers of such products. Significant "lead time" may be required from the time of ordering to the time of delivery.

The search for oils that may be used in *trans* fat alternative products has had certain effects on the edible oils marketplace. Palm oil imports in 2003-04 were about 220,000 metric tons, in 2004-05 they were about 408,200 metric tons (375,000 in food use), and estimates are that about 600,000 metric tons will be imported in 2005-06. Other relatively stable oils that will be available in commercial quantities in the future include low linolenic soybean (2005-2008), low linolenic, mid oleic soybean (2009-2012), high stearic soybean (2008-2012) and high stearic canola (2008-2012). Low linolenic acid soybeans are expected to be the next variety of significant consequence with about 80 million pounds of oil available by fall of 2005 and about 2 billion pounds available in 2008 (Anon 2004a). The mid oleic variety of soybean is expected to be commercially available in 2007 (40 million pounds) with an expected availability of 2 billion pounds by 2010.

In summary, the food industry has faced several major challenges in bringing to the marketplace acceptable food products that are lower in or free of *trans* fats. They include: (i) insuring the availability of *trans* fat replacements in adequate quantities to satisfy the marketplace, (ii) achieving the functional characteristics of the product being replaced (i.e., texture, crispness, appearance, stability), (iii) minimizing the costs of *trans* fat replacements, and (iv) managing the logistics of preparing *trans* fat replacements (e.g., utilizing existing manufacturing facilities) and delivering them efficiently to food processors. The food industry has been working diligently to meet these challenges in order to provide *trans* fat alternatives that will meet the objectives of the Dietary Guidelines 2005 and provide the desirable characteristics in many foods demanded by consumers. A variety of such products are currently available in the marketplace and many others are on the horizon.

Reformulation

A variety of processing methods are available to reduce the *trans* acid content of edible fats and oils including chemical/enzymatic interesterification, fractionation, modified hydrogenation, blending of hard and soft feed stocks and genetic/plant breeding techniques. These techniques may be used singly or in combination with each other.

Interesterification

A review of the interesterification process is beyond the scope of this chapter. The reader is referred to a recent review (Rozendall and MaCrae 1997). Aside from hydrogenation, interesterification is the oldest fat modification method used to prepare plastic fats and was practiced in the United States on a commercial scale in the 1950's to improve the crystal habits of lard. Today, this technology is highly developed in Europe and is used to prepare a wide variety of margarine/spreads, shortenings and baking fats.

Application to Zero/Low trans *Spreads/Shortening Oils*

The patent literature is replete with information on interesterification as a route to low *trans* fats and oils. An excellent resource covers the patent literature from 1960 to 1974 (Gillies 1974). A further search of the patent literature using margarine/shortening and interesterification as key words yields over 46,000 references since 1976 alone. Thus a comprehensive review would not be practical. A summary is shown in Table 5.1. Instead, several examples will be given from the author's laboratory. Random interesterification of 80% liquid soybean oil with 20% completely hydrogenated soybean oil provides a route to soft margarine oil having suitable solid fat and crystal structure (List *et al.* 1977). Further work, in which the interesterified oils were formulated into soft margarines in the pilot plant, demonstrated that the 80:20 blend produced margarine that was harder and more difficult to spread than hydrogenated controls but an additional 20% liquid oil was required in the formulation. The product had suitable spreadability, sensory properties and resistance to oil/water loss (List *et al.* 1995a).

Random interesterification of other liquid oils including corn, peanut, cottonseed, canola and palm oil with completely hydrogenated soybean or cottonseed flakes yields basestocks suitable for formulation of zero *trans* margarines and shortenings (List *et al.* 1995b).

Shortening oils require higher, flatter solid fat curves and melting points than margarine oils. In order to obtain these properties, it is necessary to incorporate more stearine with the interesterified blend. The desired solid fat and melting point points are achieved by blending the interesterified basestock with additional liquid oil. The effect is shown in Figure 5.1 where the solid fat indexes of a 50:50 mixture of interesterified soybean oil and soybean stearine (IV 0) are shown along with mixtures (5-50%) of the basestock and liquid oil. Typically, all-purpose shortening prepared from hydrogenated components show SFI values at 50, 70, 92 and 104°F of 18-23, 14-19, 13-14 and 7-11 respectively. The 50:50 blend of interesterified and liquid soybean oil closely match these values and the drop melting point of 42.2°C is close to the 45-47 value observed for commercial products. Fluid shortenings can be prepared by blending 35% of the basestock with 65% soybean, corn, peanut, cottonseed or canola oils.

Enzymatic Interesterification

Production of *trans*-free fats via enzyme catalyzed interesterification became a commercial reality in 2004 (Anon 2004b). The process involves passage of blended liq-

TABLE 5.1
U.S. Patents Relating to Interesterification, Partial Hydrogenation and Blending of Fats and Oils for Low/Zero *trans* Acids Products.

Subject	Oil Components	Inventor	Patent No.	Year
Margarine	Lauric acid oils	Lindsay	2,996,388	1961
Margarine	Lauric/non-lauric acid oils	Bahayan	3,268,340	1966
Margarine	Long and short chain fatty acids	Sieden	3,353,964	1967
Margarine	Palm kernal oil	Calenkamp	3,210,197	1965
Margarine	Lauric acid oils	Sieden	3,592,661	1971
Margarine	High PUFA, low *trans*	Melnick	2,921,855	1960
Margarine	Cottonseed stearine	Gooding	3,099,564	1963
Margarine	Safflower, peanut oil	Schmidt	3,240,608	1966
Margarine	High PUFA	Westenberg	3,600,195	1971
Margarine	High PUFA, tropical oil	Fondu	3,634,100	1972
Margarine	High PUFA	McNaught	3,746,551	1973
Low calorie fats	Medium + long chain fatty acids	Sieden	5,288,512	1994
Shortening, filler fat	Hyd. oil, tallow, lard	Kidger	3,244,536	1966
Confectionary	Lauric acid oils, long chain alcohols	Brown	3,512,994	1970
Cake shortening	Lard, vegetable oil, itaconic acid	Cleason	2,966,412	1960
Cake shortening	Animal/vegetable fats, hydroxy carboxylic acids	Cleason	2,970,055	1961
Plastic shortening	Liquid oil, interesterified hardstock	Thompson	3,102,814	1963
All purpose shortening	low *trans* hydrogenated oil, hardstock	Scavone	US95/02745	1995
Plastic shortening	Liquid oil, hyd. oil, esterified propoxylated glycerine	Mazurek	6,495,188	2002
All purpose shortening	Canola oil, hardstock	Robert	V594/0594	1994
Cake shortening	Animal fats	Steffen	2,855,310	1958
Plastic shortening	lard, palm oil, vegetable oils	Nelson	2,855,311	1958
Margarine	low *trans*, High in PUFA	Melnick	2,921,855	1960
Cholesterol lowering spread	Palm, soy, canola, olive	Sundram	5,578,334	1996
Cholesterol lowering spread	Canola, hyd. soy	Metteucn	5,502,045	1996
Sterol fortified food	Sunflower, rapeseed, palm, palm kernal	Amerongon	6,117,475	2000
Margarine hardstock	Soy, canola, sunflower, palm, palm kernal	Huizinga	6,156,370	2000

Fig. 5.1. Solid fat indexes of a 50:50 mixture of interesterified soybean oil and soybean stearine (IV 0), along with mixtures (5-50%) of the basestock and liquid oil.

uid oil and hardstock (IV = 0-5) in a ratio of 4:1 through a series of reactors holding an immobilized enzyme. Four reactors, holding from 100-400 kg of enzyme each, can produce 20-100 tons of fat per day. The enzyme is heat stable and may be reused and, since no side products are formed, no post processing is required. Both margarine and shortening bases are in the marketplace.

Fractionation

Rapid growth of the palm industry, beginning in the mid 1970's, prompted development of improved fractionation technology. Historically, solvent and detergent processes had been used, but today physical or dry fractionation is the industry standard. Palm oil (IV 51-53) is fractionated into olein (IV 56-59) and stearine fractions (IV 32-36). The olein fraction is further fractionated into mid-fractions and super oleins and top oleins. The palm mid fractions (IV 42-48) is further processed into harder fractions (IV 32-36. Fractionation of the stearine (IV32-36) yields soft and super stearines, IV 40-42 and 17-21 respectively (Tirtiaux 1998).

A discussion of the fractionation process is beyond the scope of this paper. The reader is referred to a number of reviews (Krishnamurthy and Kellens 1996, Timms 1997, Deffense 1995) covering both the theoretical and practical aspects of fractionation technology.

Zero *trans* margarine fats can be prepared via random interesterification of soybean oil with palm stearine or fully hydrogenated soybean oil in ratios of 80:20 and they concluded that increasing the amount of fully hydrogenated soy to 30 parts produced zero *trans* oils suitable for shortening. 40 parts palm stearine randomized with 60 parts soybean oil also produced shortening oil very similar to commercial products (Petrauskaite *et al.* 1998).

Ozay *et al.* (1996) described the formulation of *trans* free margarines prepared from sunflower and cottonseed oils interesterified with palm oil, palm kernal oil, palm stearine and palm kernal olein and compared them to products made by simply blending the components in various ratios. Palm oil crystallizes slowly compared to other fats and oils leading to a phenomenon known as post hardening in which products become harder upon storage. The authors observed minimal post hardening in their study and reported that the use of skim in preparing the emulsions prior to crystallization was effective in retarding post hardening in blends high in palm and palm kernal oil.

Yusoff *et al.* 1996 reported formulation of *trans* free tub, pastry and bakery margarines from palm oil, palm olein, palm stearine, palm kernal olein interesterified with soybean and rapeseed oil. The normal level of palm oil in commercial soft tub products was reported to be 25% but palm olein can be used up to a level of 40%.

Studies on the use of palm olein in milk fat blends as baking shortenings have been reported (Noraini *et al.* 1998). Blends consisting of 80% palm olein, 60% palm olein and 40% palm olein with hard milk fat fraction and processed in a pilot plant. Baking and sensory tests were compared against a commercial shortening. Noraini *et al.* (1989) studied shortenings formulated from hydrogenated palm oil and palm sterine blended with liquid oils, blends of palm stearine with liquid oils and interesterified (100%) palm oil. They concluded that high palmitic acid oils is best for aeration of fat sugar mixtures but there is no direct relationship between creaming and baking performance. Palm stearine blended with cottonseed oil in a 3:2 ratio produced shortening best suited for aerated fillings. Palm stearine (IV 44) and low eurucic acid rapeseed (11:1) is best in cake baking. For applications in both cream fillings and baking, interesterified palm is the most suitable.

Berger 1998 reported studies on palm oil usage in food products including margarine, vanaspati (a food oil product used extensively in India and Pakistan), baking shortenings, frying fats and dairy products, i.e. whipped toppings, ice cream and cheese. Vanaspati, a butter-like product (melting point 37-38°C) is manufactured with a granular structure and a minimum of free oil at room temperatures. In the early 1980s the product (1,000,000 tons/year), produced in Pakistan from hydrogenated components, contained about 30% *trans* acids. After reformulation with 80% palm oil and 20% liquid vegetable oil, *trans* acids were reduced to less than 4%. However, the saturated acid content would be of the order of 40%.

Analysis of frying oils prepared from rapeseed, sunflower, soybean, peanut and olive blended with 30% palm olein (iodine value minimum 56) show improvement over the 100% liquid oils. Analytical tests (including rancimat at 100 °C, cloud point, free fatty acids, viscosity, polymers, oxidized acids, color and smoke point) were made after 3 days of use. Since extended shelf life is an important consideration in packaged snack foods, the improved oxidative stability of palm oil containing blends has prompted use in Europe and Asia for preparation of instant and fried noodles (Berger 1998).

Oils With Modified Composition

Over the past several decades a number of oilseeds with modified fatty acid compositions have been developed and commercialized. Most have resulted from traditional plant breeding techniques (Lui 1999, Gunstone 2001, Loh 2000, Wilson 1999). These include high and mid-level oleic sunflower oil, high oleic corn, soybean and safflower oil, low linolenic canola and soybeans oils and high oleic/low linolenic canola oil. A number of laboratory frying studies have demonstrated superiority ever commodity oils (Warner and Gupta 2003, Warner and Knowlton 1997, Warner *et al.* 1997, Mounts *et al.* 1994, Warner and Mounts 1993, Su *et al.* 2003). A frying study comparing low linolenic soybean, hydrogenated low linolenic soybean, and high low oleic sunflower against liquid, opaque and heavy duty oils formulated with hydrogenated soybean oils showed that the former group compared well in both fry life and flavor evaluations. Other tests showed that high oleic sunflower and low linolenic soybean oils compare well to hydrogenated oils in spray oil applications and non-dairy creamer formulations. Other applications include fluid margarines/spreads and dressings (Erickson and Frey 1994). Although low linolenic canola and soybeans oils have reached commercialization, costs and production problems have impeded their success in the marketplace (Krawczyk 1999). However, the new labeling regulations may provide new markets and demands for modified composition oils.

The A90, A6 and HS-1 developed by Pioneer, Iowa State University and Hartz Seed Company respectively represent the high saturate soybean oils in which the normal 15% saturated acids have been elevated to as high as 40%. In their natural states these oils lack sufficient solids at temperatures required of a margarine/spread oil. Addition of harder components such as palm oil, interesterified palm oil or cottonseed/soybean stearines shows potential in soft margarine applications (List *et al.* 1996). Owing to the symmetrical nature of their triglyceride structures, the high saturate lines are low, sharply melting materials that, upon random interesterification, melt over a wide range rendering them more amenable to utilization in soft margarine formulation (Kok *et al.* 1999, List *et al.* 1997, List *et al.* 2001). Typically, soft margarines formulated from hydrogenated and liquid soybean oils contain about 10% *trans* fatty acids and about 20% saturated acids. Studies have shown that approximately 25-30% saturated acids are required to formulate zero *trans* soft mar-

garine oils from soybean oil based components (Kok *et al.* 1999, List *et al.* 1995a, List 2001 *et al.*). Thus, any reduction in the *trans* fatty acids will be achieved at the expense of increased saturated acids.

Fluid Shortenings

Fluid shortenings are stable suspensions of 2-20% hard fat in liquid vegetable oil which may or not be hydrogenated (Herzing 1996, Andre and Going 1957, Holman and Quimby 1950, Mitchell 1950). Fluid shortenings have been used in the baking industry for many years where high solids are not required such as fillings, cakes and breads. They serve the same function as solid shortenings by imparting tenderness and lubricity as well as serving as carrier for emulsifiers needed for aerating cake batter of giving crumb strength to bread. Other advantages include the fact that, since they are liquid and pumpable, they can be easily metered into batch and continuous processes. Some reduction of *trans* acids might be achieved by substituting liquid or hydrogenated oil in formulations where hydrogenated oils have been traditionally used.

High Stability Oils

High Stability Oils (HSO) were developed over 30 years ago (Gooding 1972). Compared to commodity oils they are expensive, extremely stable, yet fill definite needs for the food industry. They are liquids at ambient temperature and perform well as spray oils and in applications in products with large surface areas and or where long shelf life is required.

HSO are at least four times more resistant to oxidation and hydrolysis than commodity salad oils which translates in to slower development of off-flavors and color stability shows marked improvements. Typical applications include roasting of nuts, carriers of flavors, use as moisture barriers, as viscosity modifiers, glass enhancers, lubricating/releasing agents, anti-dusting agents and frying operations. The market for HSO use is estimated at 45-57 thousand metric tons in the year 2000 with a breakdown as 70% low-end HSO, 10% mid-range and 20% high-end. These designations refer to their relative stability under active oxygen method conditions (100°C) or hours to reach a peroxide value of 100. Low, mid-range and high-end oils have values of 50-100, 100-300 and >300 respectively (Lampert 2000).

HSO can be processed from both commodity and genetically/plant breeding modified oils. High oleic corn, soybean and sunflower oils meet requirements for low-end HSO without processing beyond refining, bleaching and deodorizing, whereas soybean oil requires partial hydrogenation and dry fractionation as well. Both medium and high-end HSO can be prepared from both commodity and genetically/structurally modified oils. However, light, partial or heavy hydrogenation and dry fractionation must be employed along with the usual refining, bleaching and deodorization steps.

Low-end HSO prepared from hydrogenated, dry fractionated soybean oil contains 15% saturates and 32% *trans*, whereas high oleic sunflower contains 9.5% saturates and 1% *trans*. Canola and high oleic canola based HSO offer opportunity for *trans* reduction in mid-range applications compared to soybean oil. Canola HSO shows *trans* values of 18-29% compared to 51% for soy based oil. Similarly, high oleic based, high-end oils have 33% *trans* compared to 48% for cottonseed/soybean based oils (Lampert 2000).

HSOs are liquids at ambient temperature, highly functional and convenient to use. They are used at low levels often between 0.2 and 1% and are most commonly sprayed onto the surface of the food or ingredient. Although more expensive than commodity oils, processing costs are reduced making final pricing comparable.

It is expected that increased use of HSOs will occur in the future to achieve fat reduction in foods, to improve shelf life and to improve health and nutrition.

Trans Reduction by Modified Hydrogenation

A recent report suggests that existing limitations on current equipment is a major obstacle limiting the production of low *trans* oils via hydrogenation (Beers and Mangus 2004a). They indicate that pressures of 50-60 bar (735-882 psi) are needed, while most existing equipment can handle pressures only up to 5 bars (73.5 psi) Hydrogenation at very high pressure, 500-1000 psi (34-60 bars), have been shown to be disadvantageous because significant amounts of high melting triglycerides are formed under these conditions which produce high, flat solid fat index curves (List *et al.* 2000). The insolubility of these highly saturated triglycerides in soybean or other liquid oils render them unsuitable in spreads and of limited use in baking shortening formulations. Most likely, such fats might find use in frying operations (King *et al.* 2001). More recent studies conducted in the author's laboratory have shown, at hydrogenation temperature ranging from 140-170°C and at pressure of 13.6 bar (200 psi), the *trans* fatty acid content can be reduced significantly. At an iodine value of 65 about 17% TFA are produced compared to nearly 40% in commercial hydrogenation. Blending of the IV 65 oil with 70% liquid oil results in spread oils meeting FDA requirements for TFA labeling in the U.S. (Eller *et al.* 2004). Refitting commercial hydrogenation connectors to handle 200 psi pressures should not be difficult.

Over the past decade, catalyst manufacturers have studied *trans* reduction In edible oils (Hasman 1995, Berben *et al.* 1994, Ariaansz and Okonek 1998, Beers and Mangus 2004a, Beers *et al.* 2004b) using both conventional nickel and noble metals such as platinum, palladium and ruthenium. Platinum modified/ammonia catalysts show promise in both TFA reduction and minimization of saturated acids (Berben *et al.* 1994). The use of noble metal catalysts may be limited by cost. Hasman (1995) showed that significant *trans* reduction can be obtained with both canola and soybean oils. However, the rather high catalyst levels required may discourage commercial acceptance along with pressure limitations on equipment.

Several other technologies offer possibilities to reduce TFA during hydrogenation. Harrod and Moller (1999, 2001) and King *et al.* (2001) have reported that hydrogenation in critical fluids such as propane and carbon dioxide produces oils

with lowered TFA content. Electrochemical hydrogenation also shows promise for TFA reduction (Warner *et al.* 2000).

About a decade ago it was estimated that about 90% of the world's edible oils were processed by hydrogenation with the remainder by interesterification, fractionation or a combination thereof (Hauman 1994). Recent TFA labeling requirements in the U.S. most likely will result in increased use of alternatives to hydrogenation or modifications of existing hydrogenation methods (Hunter 2004). Since about the year 1998 a number of low/zero *trans* shortenings and spreads have appeared in U.S. markets. Some have been produced by random chemical interesterification of canola oil and fully hydrogenated soybean oil. Others have been produced by enzymatic interesterification of soybean and cottonseed oils. At least one line of products has been produced by modified hydrogenation technology. A number of functional cholesterol lowering spreads have been introduced based on hydrogenation or simple blending of liquid vegetable oils with tropical fats (List 2004b). Thus, it would appear that hydrogenation will continue to be a prominent oil processing technology.

Reformulation for Reduced TFA Content

As discussed in the introduction, reformulation of food products for nutrition labeling presents a number of challenges of both a technical and economic nature. Traditionally, catalytic hydrogenation is the predominant technology of choice. Ideally, reformulation will not increase costs and, in order to meet a zero-gram *trans* fat/serving claim, TFA content must be below 0.5 g. Reformulation must not impair functionality or performance. In order to accomplish this, solid fat and melting points must be maintained. Ideally, replacement of *trans* should not increase saturated acid content. Maintaining oxidative stability and/or shelf life of frying oils and fried foods is an important consideration. Maintaining a consumer friendly label (no hydrogenation) and no cholesterol claim is important, as well as maintaining a major lipid component (i.e. corn, olive) on a label may be important. In addition, maintaining a high level of polyunsaturates (essential, omega 3) is desirable. Last, but not least, it would be desirable to accomplish reformulation with commodity oils or animal fats.

Over the period 1996-2003, soybean oil has averaged slightly over 20 cents/pound, canola 24 cents/pound, cottonseed 25.5 cents/pound and sunflower and corn at about 23 cents/pound. Most of the commodity oils are low in saturated acids (6-15%) with the exception of cottonseed (26%). Lard and beef tallow are cheaper than commodity vegetable oils (15-17% cents/pound) but contain cholesterol and 40-48% saturated acids. Palm oil compares price wise with soybean oil but is high in saturated acids (48%).

Domestic usage of commodity oils over the 1996-2003 period has been dominated by soybean oil, with over 17 billion pounds going into spreads, baking/frying fats and salad/cooking oils. Soybean oil commands over 93% of the spread market, over 88% of the baking/frying market and 73% of the salad/cooking oil market. Traditionally, formulation of soybean oil based products requires hydrogenation for both functionality and oxidative stability as does canola oil.

Applications

The TFA contents of typical food products formulated from hydrogenated soybean oil are given in Table 5.2. The *trans* content of margarines and spreads are taken from the author's laboratory, while the other data comes from technical data sheets supplied by the edible oil processing industry. Soft margarine/spreads and dual purpose salad cooking oils are the lowest in TFA. Stick and hydrogenated clear frying oils are intermediate, while baking and heavy duty frying fats are the highest in TFA content.

Soft margarine (80% fat) requires that the TFA content of the hydrogenated component be slightly less than 5% to meet a zero g/ 14 oz serving claim. Experience has shown that IV 65 soybean oil, produced by hydrogenation under selective conditions, contains about 40% TFA. In order to meet solid fat and melting point requirements for soft margarine (80% fat), about 75% liquid oil is needed, yielding a final TFA content of 10%. Thus, in order to meet the labeling claim, the fat content must be reduced to slightly less than 40%. Such products must be labeled as spreads rather than margarine and may perform poorly in frying and baking. Thus, while reformulation of spreads (less than 80% fat) may be accomplished using traditional hydrogenation methods, soft and stick margarine will require modified methods or other processing techniques such as chemical or enzymatic interesterification, fractionation of tropical oils or trait enhanced oils. Other options include use of multiple processing tools for production of fat blends with the desired physical and functional properties. To date, a number of spreads have been reformulated to meet nutrition labeling requirements for TFA. With the exception of one line of products employing a blend of tropical and unhydrogenated commodity oils, have been reformulated by the aforementioned techniques.

The baking industry employs a number of shortenings whose TFA content varies from 11-25%. Unlike margarine/spreads, these products require higher, flatter solid fat index properties. The industry employs an IV 80 hydrogenated basestock (32-35%) for shortening formulation. Blending with liquid and/or soybean/cottonseed flakes (IV>5%) allows products with varying solid fat profiles required for dif-

TABLE 5.2
Trans TFA and Saturated Acid Content of Hydrogenated Soy Oil Based Food Oils

		g Fat/Serving		
Food	TFA	TFA	Saturated	Saturated + TFA
Soft Margarine	10	1.1	1.6	2.7
Stick Margarine	20	2.2	2.2	4.4
Salad/Frying Oil	10–20	1.0–1.2	2.2–2.5	3.0
Hydro Clear Frying	18	2.5	2.5	5.0
All-Purpose Baking	21	2.9	3.7	6.6
Heavy-Duty Frying	42	5.0	3.0	8.0
Heavy-Duty (Donut Frying)	46	5.5	2.2	7.7

ferent needs. Reformulation of baking shortenings with traditional hydrogenated basestocks will be very difficult. However, it has been reported that hydrogenation of soybean oil with modified nickel catalysts at low temperature and higher pressure yields shortening oils with markedly reduced TFA content meeting the nutrition labeling requirements.

A zero-*trans*, low saturate, all purpose shortening has reached the retail market and has been formulated from liquid sunflower and soybean oils with fully hydrogenated cottonseed oil serving as the hardstock (Scavone 1995). Prior to reformulation, the shortening contained 3.0 g of saturates and 1.9 g of *trans* compared to 2.1 and 0.08 g respectively. Heavy duty and donut-frying shortenings are the highest in TFA content. Not only must they resist oxidation at high temperatures, these fats must contain solids in order to assure that icings and sugars perform on the donuts as intended. Obviously, reformulation of these products for TFA reduction will be extremely difficult.

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Chapter 6

Communicating with Consumers About *trans* Fat: The Importance of Consumer Research

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Introduction

In recent years, media coverage about the link between *trans* fat and cardiovascular health has increased (ANON, 2004a) and, in preparation for the FDA requirement that the *trans* fat content of packaged foods appear on the Nutrition Facts label by January 1, 2006, many food companies already list this information on food labels. These factors are contributing to a heightened awareness of *trans* fat among consumers.

However, while qualitative research with consumers indicates that they identify *trans* fat as a type of fat to limit, even those identifying themselves as "nutritionally savvy" are unable to specify why some fats are more healthful than others. In fact, consumers generally are overwhelmed and confused about different types of fat (ANON, 2004b). When asked how knowledgeable they consider themselves to be about *trans* fat, 63% of consumers said they consider themselves "not at all knowledgeable" and 22% consider themselves "a little knowledgeable." Only 13% consider themselves "somewhat knowledgeable" and 2% consider themselves "very knowledgeable" about *trans* fat (ANON, 2003b).

One important goal of including information about *trans* fat on the Nutrition Facts label is to help consumers choose a more healthful diet. Yet, consumers may not interpret or apply information on the food label as intended, as indicated by research that investigated consumers' understanding of a proposed food label footnote on *trans* fat.

Testing Consumer Understanding of a *trans* Fat Footnote on the Nutrition Facts Label

In addition to FDA's rule to include *trans* fat on the Nutrition Facts label of food packages as a separate line item, the agency explored including a footnote to explain *trans* fat in the context of the diet. The proposed footnote read, "Intake of *trans* fat should be as low as possible" (ANON, 2004a). This statement was based upon the Institute of Medicine's 2002 report on dietary reference intakes for macronutrients, which did not provide quantitative dietary guidance for *trans* fat, but instead recommended that

NATIONAL
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November 22, 2004

Division of Dockets Management (HFA-305)
Food and Drug Administration
5630 Fishers Lane
Room 1061
Rockville, MD 20852

Re: Docket No. 2004P-0236; Petition for Rulemaking to Revoke the Authority for Industry to Use Partially Hydrogenated Vegetable Oil in Foods

Dear Sir or Madam:

On behalf of the Trans Fat Industry Coalition further identified in the attachment, we submit the attached comments in response to the above noted petition.

Should FDA have questions or otherwise wish to contact the Coalition, I will be pleased to coordinate a response.

Sincerely,

Richard E. Cristol
President

2004P-0236 C 2

Trans Fat Industry Coalition
C/o 1156 Fifteenth Street
Suite 900
Washington, DC 20005

November 22, 2004

Division of Dockets Management (HFA-305)
Food and Drug Administration
5630 Fishers Lane
Room 1061
Rockville, MD 20852

Re: Docket No. 2004P-0236; Petition for Rulemaking to Revoke the Authority for Industry to Use Partially Hydrogenated Vegetable Oil in Foods

The Trans Fat Coalition (the Coalition) offers these comments concerning the May 18, 2004 petition submitted by the Center for Science in the Public Interest (CSPI) to address the legal status of partially hydrogenated oils under the Federal Food, Drug, and Cosmetic Act (FFDCA). The Coalition is a confederation of industry associations whose memberships have considerable technical expertise regarding *trans* fat and a significant interest in Food and Drug Administration (FDA) regulation of food products that contain *trans* fat, including partially hydrogenated oils.

SUMMARY

The petition asks FDA to initiate rulemaking to revoke the authority for industry to use partially hydrogenated vegetable oils in food. In doing so, the petition takes the position that such oils no longer may be considered as generally recognized as safe (GRAS), and thus exempt from the premarket clearance requirements for "food additives" under section 201(s) of the FFDCA.

The petition is a transparent attempt to use the GRAS standard to inappropriately and unnecessarily force reformulation of food products to remove partially hydrogenated oils. The petitioner relies heavily on factors not properly considered as part of a GRAS determination and offers no compelling scientific evidence to refute the GRAS status of partially hydrogenated oils. Significantly, the petitioner largely ignores industry's aggressive and ongoing efforts to reformulate products to reduce or remove *trans* fat, which are and will continue to result in lower *trans* fat intakes. The petition also fails to

acknowledge that intake of saturated fat is much higher than intake of *trans* fat, and therefore is of greater public health significance.

The food industry is addressing *trans* fat in a serious way, both through product reformulation and through preparations to provide quantitative labeling by January 1, 2006. Industry has made considerable investments in finding alternative ingredients that reduce or eliminate trans fat without increasing saturated fat in any meaningful way. These efforts seek to merge the health benefits of alternative ingredients with necessary functional elements such as taste, texture, structure, and shelf stability, and take time—indeed, years—to complete successfully. The action requested by CSPI would drive companies to eliminate *trans* fat before acceptable substitutes are developed and become available commercially, thereby leading to significantly higher levels of saturated fat in the diet. Such an action would be a major step backwards for public health and an enormous disservice to American consumers—the opposite effect of that intended by CSPI.

THE CSPI PETITION IS DEFICIENT AS A MATTER OF LAW

Although the petition purports to address the GRAS status of partially hydrogenated oils, much of CSPI's request is largely based upon factors that are outside the scope of a GRAS evaluation. For this reason, the CSPI petition is deficient as a matter of law.

In particular, CSPI relies heavily on its assumption that *trans* fat may be easily removed from the food supply. CSPI asserts, for example, that "numerous alternatives" to partially hydrogenated oils exist or are being developed for virtually all commercial food applications. The petition also relies on a characterization of partially hydrogenated oils as "industrial" products, as opposed to "naturally occurring" *trans* fat in meat or dairy products. CSPI suggests that these factors are pertinent to the GRAS analysis. We disagree.

CSPI's reliance on its belief that partially hydrogenated oils can be easily replaced by "healthier oils" is both legally inappropriate and factually inaccurate. FDA's legal requirements under the GRAS provision of the Act are limited to review of scientific issues with regard to safety; the technological need for a substance has never been part of FDA's criteria for GRAS status (other than to confirm that a substance is used at a level no greater than that needed to achieve its intended technical effect in a particular food product).

FDA would never base a safety review of, for example, an artificial sweetener on the fact that other alternatives exist. Each GRAS substance must stand or fall on its scientific merits. Moreover, as described in more detail below, CSPI fails to appreciate that the marketplace currently has a limited supply of alternative oils that are not also high in saturated fat; and, even when commercially available, these alternative oils may not meet the technological needs of many food products, particularly baked goods.

Classification of a substance as "industrial" or "natural" also has never been part of a GRAS evaluation. Numerous "non-natural" substances (i.e., substances produced by chemical synthesis or similar means) have been determined to be GRAS or are approved food additives, including such diverse substances as synthetic lycopene, ammonium bicarbonate, folic acid, and synthetic flavors. The status of a substance as "natural" or manmade has nothing to do with its safety.

In short, the petition's focus on feasibility and the manner in which partially hydrogenated oils are produced is misplaced and irrelevant to a GRAS analysis. Contrary to the analysis suggested in the petition, consideration of GRAS status requires a science-based evaluation of (among other factors) a substance's estimated daily intake, its acceptable daily intake, and whether the critical data establishing safety are generally available and accepted by experts qualified by training to evaluate ingredient safety. The petition overlooks critical elements of the GRAS standard, such as dietary exposure (which is decreasing for *trans* fat), and fails to present compelling new information to call into question the GRAS status of partially hydrogenated vegetable oils.

THE CSPI PETITION IS ALSO DEFICIENT AS A MATTER OF SCIENCE

CSPI has not provided compelling scientific evidence demonstrating that partially hydrogenated vegetable oils are no longer GRAS. As a result, the CSPI petition is clearly deficient as a matter of science.

To support its assertion that partially hydrogenated oils are no longer GRAS, CSPI relies on three primary lines of argument:

- *Trans* fat increases LDL cholesterol levels and therefore increases the risk of heart disease;

- *Trans* fat "may be" more harmful than saturated fat because *trans* fat may reduce HDL cholesterol levels; and

- *Trans* fat "may be" more harmful than saturated fat through mechanisms other than effects on blood lipids.

In offering these arguments, CSPI provides no information that is fairly characterized as novel or unavailable to FDA or other authoritative bodies that have assessed the health effects of *trans* fat. Moreover, as explained more fully below, CSPI dramatically oversimplifies the science concerning *trans* fat and health. In no respect does CSPI offer data or information sufficient to demonstrate that partially hydrogenated oils are no longer GRAS for their intended conditions of use—particularly since those intended conditions of use will continue to involve lower and lower levels of intake.

Effects on LDL Cholesterol

The Coalition does not dispute that *trans* fat, when consumed at sufficient levels, can adversely affect LDL cholesterol levels and risk of coronary heart disease (CHD). In this regard, *trans* fat is no different from saturated fat. To properly evaluate the effect of *trans* fat on public health, it is necessary to consider (1) the level of *trans* fat intake that may be associated with adverse health effects, independent of saturated fat intake, and (2) the health effects of the combined intake of *trans* and saturated fat, including the likely effect on saturated fat intake of any proposed restrictions for *trans* fat-containing ingredients. The petition provides little to no analysis of these important considerations.

Level of Concern. The intake levels at which *trans* fat may adversely affect LDL cholesterol are not clear. Significantly, most data concerning the effects of *trans* fat consumption address levels in excess of intakes that are typical in the United States (e.g., at or near 2.6% of total energy, or approximately 5.8 g for a 2000 calorie diet),[1] meaning that the studies conducted to date do not adequately address the health effects of *trans* fat at the lower intake levels. More extensive data, including controlled clinical trials at these lower intake levels, would be necessary to support any conclusion that *trans* fat in foods such as partially hydrogenated oils fails to meet FDA criteria for GRAS status under the intended conditions of use.

Moreover, even authoritative bodies that have hypothesized that *trans* fat may be harmful at lower levels of intake, on the basis of an assumed linear relationship between *trans* fat intake and CHD risk, have not proposed complete elimination of dietary *trans* fat. Indeed, the IOM reasoned that such drastic measures could themselves lead to "undesirable effects" and "unknown and unquantifiable health risks":

> Because *trans* fatty acids are unavoidable in ordinary, non-vegan diets, consuming 0% of energy would require significant changes in patterns of dietary intake. Such adjustments may introduce undesirable effects (e.g., elimination of commercially prepared foods, dairy products, and meats that contain *trans* fatty acids, may result in inadequate intakes of protein and certain micronutrients) and unknown and unquantifiable health risks. Nevertheless, it is recommended that *trans* fatty acid consumption be as low as possible while consuming a nutritionally adequate diet.[2]

In light of these concerns, the IOM expressly rejected establishment of a tolerable upper intake level (UL) for *trans* fat.

Significance of Saturated Fat. The health effects of *trans* fat—and any proposed restrictions on the use of products such as partially hydrogenated oils—cannot be considered independent of saturated fat. The relationship between *trans* fat and LDL cholesterol (as well as *trans* fat and heart disease) has been examined extensively by FDA in the proposed and final rules on *trans* fat labeling, by federal advisory committees such as the Nutrition Subcommittee of the Food Advisory Committee, and by numerous authoritative scientific groups, such as the IOM. These numerous reviews reveal an expert consensus that the combined intake of saturated fat and *trans* fat is of central importance in assessing the relationship between dietary lipids and LDL cholesterol. Indeed, the IOM applied precisely the same analysis to saturated fat as it did to *trans* fat: namely, that intake of both should be as low as possible within a nutritionally adequate diet. Even the Dietary Guidelines Advisory Committee, which offered a scientifically unsupportable

recommendation that fewer than 1% of calories should be obtained from *trans* fat, acknowledged that saturated fat is the most important:

> Because dietary intake of saturated fat is much higher than that of *trans* fat and cholesterol, it is most important to decrease one's intake of saturated fat. However, intake of all three should be decreased.[3]

The central significance of the combined intake of saturated and *trans* fat is further confirmed by a recent review of the International Life Sciences Institute (ILSI) of data from 16 intervention trials examining the health effects of *trans* fat, which ILSI submitted to FDA in October 2003 (copy attached).[4] ILSI concluded, in pertinent part, that the available data do not permit a meaningful distinction between intake of *trans* fat and saturated fat with respect to any differential impact on LDL cholesterol, and that the sum of *trans* fat and saturated fat intakes is the most likely predictor (within the limits of clinical trial data) of changes in serum LDL cholesterol.

Despite the obvious focus on saturated fat in the scientific community, saturated fat warrants little more than a footnote in the CSPI petition. CSPI does not address the likely effects of its proposal on intake of saturated fat, nor does CSPI propose that FDA revoke the GRAS status of animal fats or vegetable oils high in saturated fat that are used as food ingredients.

Significantly, most consumers will benefit from reduced *trans* fat intake only if the reduction in *trans* fat is accompanied by a decrease in the sum of saturated plus *trans* fat. With respect to saturated fat intake, CSPI fails to address the saturated fat content of many readily available fats, and the dietary implications of replacing partially hydrogenated oils with such ingredients. When substituting saturated fat for *trans* fat in some foods requiring solid fats, the ratio could be as high as 2:1. For example, a food containing 1 gram of *trans* fat may require up to 2 grams of saturated fat to achieve the required functionality in the finished product. Thus, it is not unreasonable to anticipate that the total content of saturated and *trans* fat may, in some products, increase if immediate reformulation is required. By

failing to address the safety of *trans* fat under realistic conditions and actual product formulations, the petition does not adequately address this possibility.

The Coalition is also concerned that CSPI's campaign to revoke the GRAS status of *trans* fat could easily distract attention from saturated fat and prompt consumers to make poor dietary choices. CSPI has provided no data or analysis as to how its proposal would affect consumer behavior and intake of saturated fat.

In summary, CSPI's focus on partially hydrogenated oils is unscientific and unjustified. It is also unworkable: if FDA were to accept CSPI's logic, the GRAS status of many products that are high in saturated fat, such as butter, would be called into question. Indeed, it is hard to fathom how FDA could accept CSPI's analysis of *trans* fat and not apply it to saturated fat, as well.

Effects on HDL Cholesterol

CSPI also asserts that *trans* fat "may be" more harmful than saturated fat because *trans* fat may reduce HDL cholesterol levels as well as increasing LDL cholesterol. CSPI concedes that support for this assertion falls well short of scientific consensus, characterizing the body of evidence as "growing" and "not conclusive." The petition relies heavily on conclusory quotations concerning the suggested relationship, including quotations from FDA's economic analysis and review articles, and does not offer a comprehensive review of the scientific literature or the primary references.

CSPI suggests that a regression analysis can be used to demonstrate a linear relationship between *trans* fat intake and CHD risk in the range of typical U.S. intakes. This analysis is scientifically problematic. Although it is possible to plot a straight line through data points drawn from the many clinical trials of *trans* fat intake and impact on HDL cholesterol, such an exercise is simplistic to the point of being misleading. As explained in the Coalition's comments on the Dietary Guidelines Advisory Committee Report (copy attached), this regression line analysis is heavily influenced by data from high intakes of *trans* fat because the weight of experimental data is towards the higher intake levels.

In addition, as explained in ILSI's comments to FDA (cited previously), there is credible evidence of a threshold below which *trans* fat intake does not adversely affect HDL levels. ILSI undertook a thorough review of the scientific literature that clearly suggested that intakes of *trans* fat do not differentially impact serum HDL cholesterol compared to similar intakes of saturated fat, when *trans* fat intakes are less than 5% of energy (i.e., approximately 11 grams of *trans* fat daily on a 2000 calorie diet). 1/ Published data show that *trans* fat intakes, even at the 90th percentile, are below this apparent threshold. Assumptions of a linear relationship necessarily presume the absence of a threshold, and likely fail to account for the complexities of the underlying biology. By utilizing a curvilinear relationship (i.e., higher order equations) to model the relationship between *trans* fat intake and plasma cholesterol, a much better line fit can be obtained, explaining a greater proportion of the variance, and improving the predictive ability of the model.

The uncertainty concerning the relationship between *trans* fat intake and HDL cholesterol is reflected in FDA's final rule on *trans* fat labeling. In the scientific analysis accompanying that rule, FDA advised that—

> [I]t is not known whether lowering HDL-C is related to CHD risk in a cause and effect manner. Until this relationship is confirmed by appropriate study designs, the use of HDL-C as a surrogate biomarker for CHD risk must be done with caution and clear recognition of the uncertainty surrounding this use.[5]

In quoting portions of FDA's economic analysis that necessarily address theoretical effects on HDL cholesterol, the petition takes FDA's analysis wholly out of context, ignoring this finding by FDA scientists.

1/ It must be acknowledged that differences exist among the studies reviewed by ILSI in terms of design, objectives, test products, and populations. ILSI North America has undertaken an effort to examine the studies through a rigorous meta-analysis, with completion expected in the near future.

Evidence for Other Effects

CSPI's third and final scientific analysis suggests that *trans* fat "may be" more harmful than saturated fat through mechanisms other than effects on blood lipids. Again, by CSPI's own description of the data in such terms as "initial" and "certainly not conclusive," these data are very preliminary and are not rigorous from an evidentiary perspective. For example, CSPI admits that the evidence for such other effects consists of epidemiological studies that "cannot be considered definitive because of possible uncontrolled, confounding factors." Accordingly, absent controlled clinical trials, such additional adverse effects cannot be demonstrated, and cannot serve as the basis for a GRAS review.

In summary, the GRAS status of *trans* fat-containing foods cannot be considered independently of the likely health effects of saturated fat, nor may GRAS issues be evaluated without regard to levels of concern that are both science-based and compelling. The CSPI petition is fundamentally flawed because it fails to adequately address these important scientific aspects of the GRAS status of partially hydrogenated oils.

THE AMOUNT OF TRANS FAT IN THE FOOD SUPPLY IS DECLINING AND WILL CONTINUE TO DO SO

In addition to oversimplifying the potential effects of *trans* fat on public health, the petition largely ignores the critical issue of dietary exposure. The amount of *trans* fat in the diet is steadily decreasing due to aggressive reformulation efforts by industry—a trend that is expected to continue over the next several years.

To date, numerous companies have recently reduced or eliminated *trans* fat from widely consumed products, including snack foods, crackers, cookies, margarines, and shortening (including baking and frying fats). These changes undoubtedly have led to meaningful reductions in *trans* fat intake that far exceed the estimated reformulation that FDA anticipated to occur for the entire food supply as a result of its quantitative labeling rule for *trans* fat.

Moreover, considerable research and development efforts are still underway in the industry. The pace of continued reformulation will depend in large measure upon the availability of healthful fats and oils, time needed to

make and test product conversions, and technological advances in key food product areas. As *trans* fats decrease in the diet, health concerns associated with their consumption will similarly decline.

IF GRANTED, CSPI'S PETITION WOULD RESULT IN UNINTENDED CONSEQUENCES IN PRODUCT REFORMULATION, A MAJOR STEP BACKWARD FOR PUBLIC HEALTH

As noted previously, CSPI places great weight on the purported feasibility of removing partially hydrogenated oils from the food supply, in an apparent attempt to distinguish *trans* fat from saturated fat and to obscure the flaws in its scientific analysis. A cornerstone of the feasibility argument is that healthy oils are available in abundance. In support of this point, the petition cites efforts of seed companies, oil producers, and others to develop substitutes for animal fats, vegetable oils that are high in saturated fat, and partially hydrogenated oils through breeding and chemistry, and provides several examples of alternative fats and oils that are presently marketed. CSPI implies that the identified fats and oils are appropriate for a wide range of products and are available at levels adequate for commercial purposes. The petition also provides several examples of major food companies that have completed or initiated product reformulations to reduce or eliminate *trans* fat content.

CSPI fails to understand the complexities of product reformulation in the food industry. Reformulation is driven by four considerations of equal importance: supply, infrastructure, functionality, and consumer acceptance of alternative oils. All of these considerations must be addressed before a reformulated product may be successfully developed and brought to market.

Supply considerations stem from the commodity level, where development of seeds with desirable fatty acid compositions can take several years, and may be driven by such diverse factors as agronomic considerations (e.g., a need for drought tolerance as well as nutritional properties), yield requirements, farm support programs (which encourage certain crops, such as soybeans), contract growing (farmers often must be secured by contract 1-2 years in advance of growing), and the need for non-oil components (e.g., meal or starch, which frequently drive demand). In addition, identity preservation programs must be in place at all levels of the supply chain.

The proper infrastructure is also essential. Depending upon the situation, new or modified equipment and/or processing aids may be required to receive, store, and use alternative oils. Capital investment and time to scale up from the research and development phase, to the pilot phase, to semi-production, to full production, must be planned for. Assurances that adequate supplies of alternative oils will be available commercially are necessary throughout the supply chain.

The functionality of alternative fats and oils in particular products must be thoroughly assessed. Partially hydrogenated oils provide important properties that affect product taste, appearance, mouthfeel, performance, and stability. The effects of alternative fats and oils on these and other properties must be assessed, through analytical testing, consumer use testing, and other means. Certain products, such as baked goods, can pose substantial challenges from a functionality perspective, while for other products, appropriate functionality is relatively easy to obtain with alternative oils. It cannot be assumed that a particular fat or oil, even if available at commercially appropriate levels, will be sufficient to meet the needs of all applications.

In all, the process of exploring functionality, building infrastructure, and developing adequate supply can take a number of years. As an example, the timeframe for building Nusun® sunflower oil to "credible" production volumes was approximately four years, and even now, supply remains inadequate for most large-scale commercial applications. One processor has reported that conversion of a single brand of snack foods to Nusun® would reasonably be expected to require all of the current U.S. production of this oil. Thus, alternatives to partially hydrogenated oils are in development, but adequate supply may still be years away.

In light of the commercial realities, it is also unreasonable to assume that because some processors have completed successful reformulation efforts, that all processors may do so easily. In fact, the opposite is true—the more processors that seek to reformulate in a short timeframe, the tighter the supply, at least until adequate commercial levels can be reached at the commodity and oil processing stage.

In summary, CSPI is simply incorrect in its assertions that there is an adequate supply of "healthy oils" to serve all of industry's reformulation needs. If granted, the action CSPI requests would have the undesirable effect

of driving industry to reformulate abruptly. Such a result would, in turn, force use of highly saturated fats and oils, and would not create a healthier food supply. This is a simple commercial reality.

The proper path forward is clear: FDA needs to embrace and encourage the industry's concerted and reasoned reformulation strategy, as described above. The scientific case for revoking the GRAS status of partially hydrogenated oils is simply not there, and the case gets weaker every day as reasoned reformulation efforts continue.

* * *

The Trans Fat Coalition appreciates FDA's consideration of these comments, and would be pleased to discuss the information and points provided herein upon request.

Sincerely,

Trans Fat Coalition:

American Bakers Association
American Soybean Association
Biscuit and Cracker Manufacturers Association
Grocery Manufacturers of America
Institute of Shortening and Edible Oils
National Association of Margarine Manufacturers
National Restaurant Association
Snack Food Association

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[1] Allison DB, et al. Estimated intakes of trans-fatty acid and other fatty acids by the U.S. population. J Am Diet Assoc 1999;99:166-174.

[2] NAS/IOM, *Dietary Reference Intakes: Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids* (National Academy Press 2002), at 8-2.

[3] Dietary Guidelines Advisory Committee Report, *Nutrition and Your Health: Dietary Guidelines for Americans*, Part E, p. 12 (2004). The mean intake of *trans* fat has been reported to be approximately 2.6% to 2.9% of calories, which corresponds to 5.77 to 6.4 g per 2000 calories. Published data suggest that the 90th percentile intake for *trans* fat falls below 5% of energy (i.e., approximately 11 g daily, on a 2000 calorie diet). In comparison, for all ages of the U.S. population over 2 months, the daily mean percentage of calories from saturated fat was 11.2%, corresponding to approximately 25 g on a 2000 calorie diet. *Id.* Part D, p. 13 (citing Briefel RR

and Johnson CL. Secular trends in dietary intake in the United States. *Annu Rev Nutr* 24:401-431, 2004).

[4] North American Branch, International Life Sciences Institute, Docket No. 03N-0076 (Oct. 9, 2003).

[5] 68 Fed. Reg. 41448.

USDA
United States Department of Agriculture

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Soybean Backgrounder

Mark Ash, Janet Livezey, and Erik Dohlman

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Approved by USDA's World Agricultural Outlook Board

Abstract

U.S. soybean plantings peaked at 75.2 million acres in 2004, pushing output and use to record levels. Future increases in acreage and production, however, could be limited by competition for area from other U.S. crops, possible constraints on yield growth from changing rotations and new diseases, and increasing foreign competition. The U.S. share of global soybean and soybean product exports has steadily diminished due to the phenomenal growth of foreign soybean output and exports, particularly by Brazil and Argentina. The development of nontraditional soybean uses (such as biodiesel) and growth in demand for food use could provide some support to the U.S. soybean sector. In 2004, at least three-quarters of all soybean-producing farms had farm operations that were considered profitable. Since 2002, government payments to the soybean sector have been relatively small, consisting primarily of fixed direct payments. Domestic market conditions, Federal budget deficits, and multilateral trade negotiations will be important considerations for new farm legislation.

Keywords: United States, soybeans, demand, supply, trade, policy, trade agreements, biodiesel, income, expenses.

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Introduction

Over the past decade, U.S. soybean production has climbed steadily, responding to increased domestic and global demand for the coproducts of soybean crushing—high-protein soybean meal for animal feed, and soybean oil for edible and inedible uses. During the same period, policy changes have allowed soybean producers to respond to market signals, especially with nearly complete planting flexibility following the 1996 Farm Act.

By the 2004/05 crop year, U.S. soybean output and consumption had both achieved record levels. However, the U.S. soybean sector faces unprecedented competition in export markets. Future soybean acreage could also be constrained by the market and policy developments affecting demand for other crops. In particular, a mandate for increased production of renewable fuels (mainly ethanol, which is primarily derived from corn) will have a major impact on the economics of growing soybeans.

Growth prospects for domestic per capita soybean oil consumption, soybean meal demand, and exports are considered relatively stable, so U.S. revenues from soybeans may increasingly rely on the expansion of less traditional sources of demand. In particular, policies and market factors affecting biodiesel demand could have a significant impact on soybean consumption. Food uses (e.g., protein supplements, soy beverages) also show promise as niche markets for soybeans.

Soybeans are among the key crops covered by the main government commodity programs (marketing loans, direct payments, and countercyclical payments) of the Farm Security and Rural Investment Act of 2002 (2002 Farm Act). Consequently, soybean producers and Direct and Countercyclical Payment Program (DCP) participants with soybean base acres have a strong interest in future farm policies. Government payments to soybean producers have been relatively modest since 2002 due to high prices, but future funding of domestic farm programs may be influenced by projected Federal budget deficits. Trade policy and domestic support issues—particularly related to the World Trade Organization's (WTO) ongoing Doha Round negotiations—are also likely to factor into new farm legislation. A WTO agreement may require some redesign of U.S. commodity policies.

U.S. Market Background

Soybeans account for about 90 percent of U.S. oilseed production. In 2005, planted soybean acreage was 72.1 million acres and farm production value was nearly $17 billion, trailing only corn in U.S. crop area and production value (fig. 1).

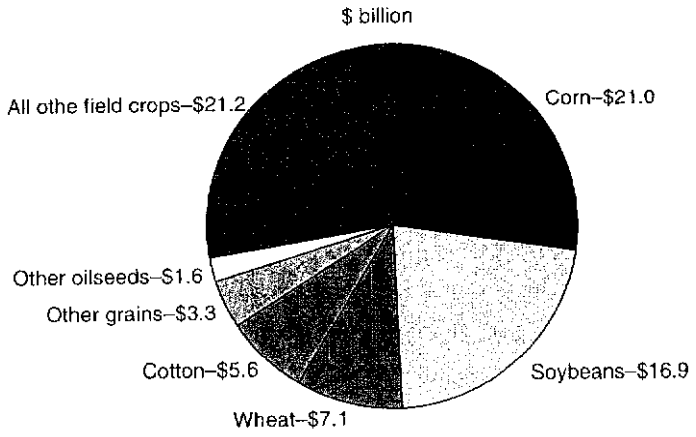
In the United States, soybeans are most commonly grown in rotation with corn. More than 80 percent of soybean acreage is in the upper Midwest, with significant acreage in the Delta and Southeast (fig. 2). Acreage is concentrated where soybean yields are highest. (For more information on the characteristics of U.S. soybean farms, see appendices 1 and 2). Nearly all soybeans are either crushed domestically (to separate and extract the oil and high protein meal) or sold for export. Domestic soybean processors sell soybean oil and meal for domestic use and in global markets for these products. A small amount of whole soybeans are used for seed, roasted for snacks or onfarm dairy feed, or processed into traditional soyfoods such as tofu. New uses for soybeans and their derivatives, such as biodiesel made from soybean oil, show promise due to recent energy market and public policy developments.

Since it accounts for nearly 80 percent of the physical output from processing soybeans, meal is typically the most valuable end product. Depending on the prices of soybean meal versus soybean oil, soybean meal can range from 50 to 75 percent of the processing value. Soybean meal is by far the world's most important protein feed, accounting for nearly 65 percent of world protein feed supplies. Livestock feeds account for 98 percent of U.S. soybean meal consumption, with the remainder used in human foods such as bakery ingredients and meat substitutes.

Soybean oil generally contributes less than soybean meal to the value of processed soybean products, as it constitutes just 18-19 percent of the

Figure 1

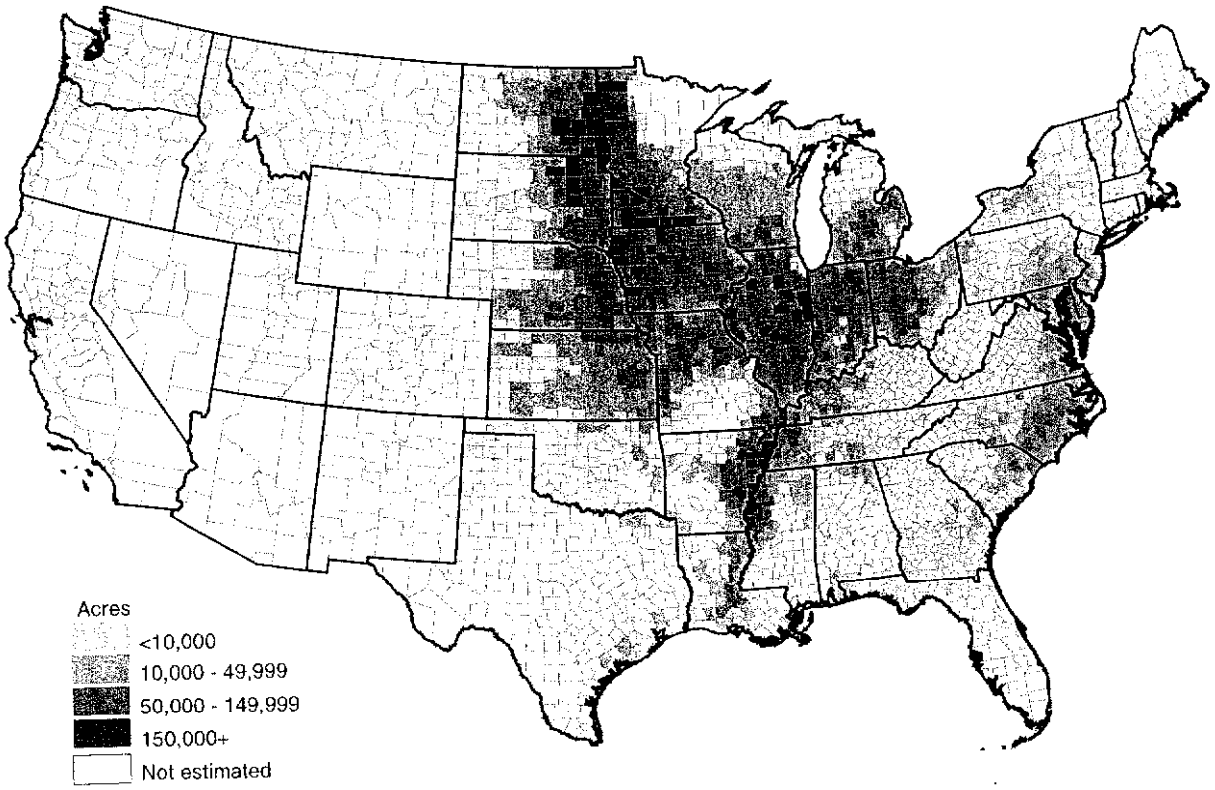
Soybeans ranked second among U.S. crops in farm value in 2005



Source: U.S. Department of Agriculture, National Agricultural Statistics Service, Quick Stats data base.

Figure 2

Soybean planted acres by county, 2004



Source: www.ers.usda.gov/data/baseacres/

weight of soybeans. The oil yield of soybeans is considerably lower than oilseeds such as sunflowerseed and canola. However, the dominance of soybeans in crop production allows soybean oil to account for about two-thirds of total U.S. consumption of vegetable oils and rendered animal fats. It is mainly used in salad and cooking oil, bakery shortening, frying fat, and margarine, as well as in a number of industrial applications.

Domestic Supply Developments and Prospects

Planting Flexibility and Yield Growth Have Propelled Soybean Production Since 1990

Compared with corn, wheat, and some other crops, soybeans were a minor U.S. crop until after the Second World War, when demand for vegetable oil and meat consumption rose rapidly with increasing incomes and population. Soybean acreage rose rapidly after 1945, but after surpassing 71 million acres in 1979, generally declined. In spite of several years of high prices during the 1980s, U.S. soybean acreage stagnated largely due to farm programs for other crops.

During this period, farmers were reluctant to risk future government payments for "program" crops (such as corn, wheat, upland cotton, and rice) for any temporary advantage in market returns from planting soybeans. Deficiency payments to producers were determined by historical plantings and yields of specific crops, which did not include soybeans or minor oilseeds. In fact, when some program crops were in oversupply during the 1980s and the government implemented its acreage reductions for these crops, soybean plantings would often slip as farmers attempted to preserve their program base acreage. U.S. farm programs tended to support soybean prices, encouraging an expansion in South American soybean acreage.

Beginning in the early 1990s, soybean planting decisions became more market oriented, and acreage generally increased. The Food, Agriculture, Conservation, and Trade Act of 1990 (1990 Farm Act) allowed up to 15 percent of crop base acres to be planted to any crop without affecting crop bases or deficiency payments. After 1996, the Federal Agriculture Improvement and Reform Act (1996 Farm Act) eliminated nearly all planting restrictions on crop bases (except provisions excluding fruit and vegetable plantings). Consequently, when soybean prices increased because of rising world consumption or smaller foreign harvests, U.S. producers could respond to these higher prices with increased soybean plantings. Low prices have had a lesser impact on soybean plantings because the marketing loan program ensures a minimum revenue per bushel for soybeans. Soybean expansion also occurred as the number of Corn Belt farmers adopting half-corn/half-soybean rotations increased and acreage shifted from wheat and small grains in the Plains. These changes were facilitated by the growing availability of herbicide-tolerant soybean varieties, which lowered production costs and improved weed control in the rotation crops. U.S. soybean plantings peaked at 75.2 million acres in 2004, a 30-percent increase from the 57.8 million acres planted in 1990. In contrast, the total acreage planted to wheat declined by 17.4 million acres over the same period.

In addition to an increase in acreage, steadily rising yields also contributed to the growth in soybean production through 2004. New seed varieties, improved fertilizer and pesticide applications, and new management practices have all contributed to higher yields. For example, the adoption of narrow-row planting (7- to 8-inch rows vs. 30-inch rows) benefited soybean

yields throughout the 1990s as it usually increased the number of pods per acre. Many producers adopted conservation tillage to meet conservation compliance requirements enacted in farm legislation, but the practice also contributed to higher yields from improved retention of soil moisture.

Higher yields reduce per-bushel production costs and enhance profitability. Soybean production costs and returns vary significantly across regions (www.ers.usda.gov/data/CostsandReturns/testpick.htm). Midwestern soybean producers generally have higher yields and lower cash costs per acre than Southern and Eastern producers.

Future Production Gains for Soybeans Hinge on Yield Growth

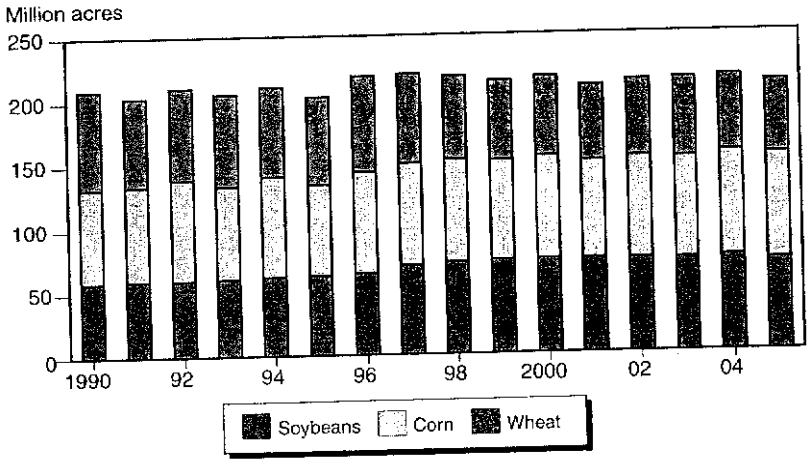
Although U.S. soybean acreage expanded strongly over the past decade, the extent of future acreage and production increases could be limited by several factors, particularly competition for area from other crops (primarily corn) and possible constraints on yield growth.

During the past 15 years, aggregate acreage sown to the three primary U.S. field crops (corn, soybeans, and wheat) has tended to be very stable, consistently hovering within 5 percent of 212 million acres (fig. 3). Higher soybean acreage was mainly possible due to an expansion into areas formerly dominated by wheat. However, a rapid rise in corn demand for conversion into ethanol production could gradually squeeze the acreage available for both soybeans and wheat. A conversion of marginally productive (and more fragile) farmland currently under Conservation Reserve Program contracts back into cropland might ease the acreage constraint, but that would require modifying environmental goals articulated by Congress two decades ago. The return of this marginal farmland could also slow growth in soybean yields, particularly if higher corn prices, boosted by ethanol demand, allowed corn to displace soybeans on higher yielding soils.

The limits on acreage mean that the potential for expanding U.S. soybean output will depend heavily on the ability to improve yields. Over the last 2 years, soybean yields have been record-high due mainly to favorable weather (fig. 4). Yet, to meet the projected increase in demand for corn to produce ethanol, some corn-soybean rotations in the Midwest may evolve toward planting soybeans every 3 years instead of every 2. Even if soybean acreage increases elsewhere, the advance of corn onto the most productive lands in the Midwest may make it harder to sustain the long-term growth of soybean yields and production (fig. 5).

Figure 3

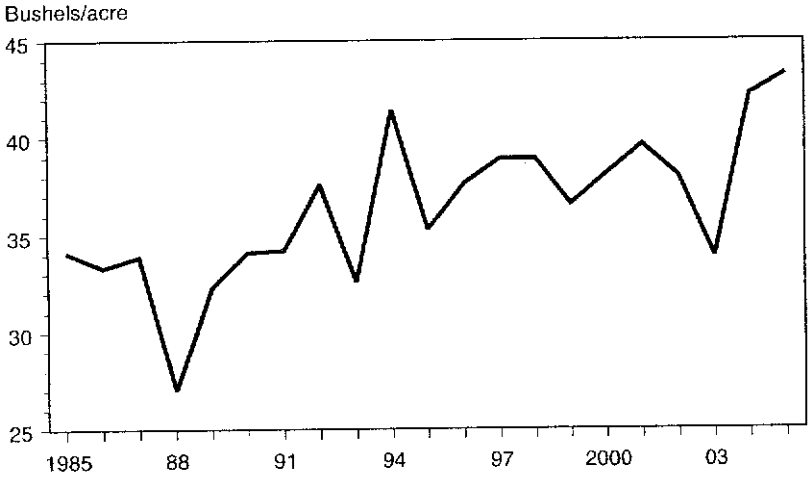
Land allocated to major U.S. crops remains stable



Source: U.S. Department of Agriculture, National Agricultural Statistics Service, Quick Stats data base.

Figure 4

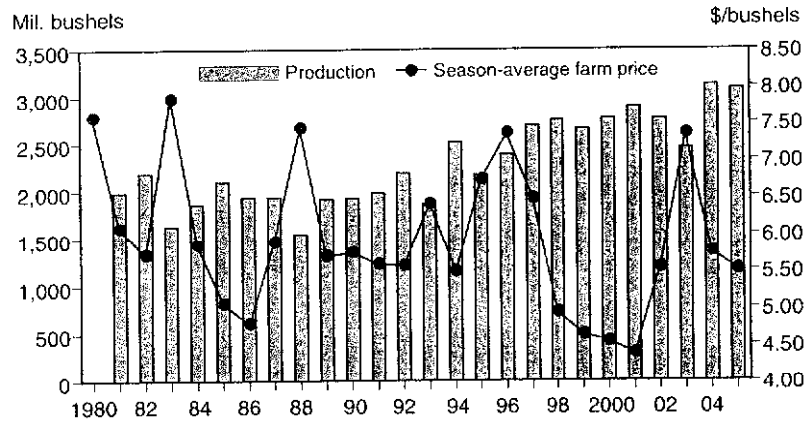
Recent U.S. soybean yield gains set basis for future growth



Source: U.S. Department of Agriculture, National Agricultural Statistics Service, Quick Stats data base.

Figure 5

U.S. soybean production gains help temper price increases



Source: U.S. Department of Agriculture, National Agricultural Statistics Service, Quick Stats data base.

Another potentially long-term problem for soybean yields is Asian soybean rust, which was discovered in Louisiana in November 2004 and later detected in nearly a dozen Southern States. Soybean rust has been endemic throughout South America for several years, but had not previously been found in North America. Soybean rust is a windborne fungal disease that attacks many legumes and other plant species. If left untreated, the highly pathogenic disease can cause severe losses through rapid defoliation of a crop. A soybean variety resistant to soybean rust is not currently available, although an array of fungicides proved effective in reducing its damage in South America. The typically aggressive progression of soybean rust can require repeated (and costly) chemical applications. The most persistent threat of soybean rust may be in the Gulf Coast States, where conditions

most favor its survival over the winter on other live plant hosts. In 2005, the disease was detected in more than 100 counties in 7 Southern States, yet it caused relatively little damage because of quick detection and effective treatment on limited soybean acres. Nevertheless, the random and opportunistic nature of soybean rust (its severity can vary with humidity, temperature, and stage of crop development at infection) could threaten major U.S. soybean production areas in any given year.[1]

The upward trend in soybean yields is largely the result of new varieties that perform better under climate and pest pressures. New lines are now being introduced that tolerate the soybean cyst nematode, the most destructive of the current crop pests. Varieties that resist soybean aphids are expected within 3 years. Research is underway to find varieties with tolerance for Asian soybean rust, as is government research to map the entire genetic sequence of the soybean.

[1] See *Economic and Policy Implications of Wind-Borne Entry of Asian Soybean Rust into the United States,* www.ers.usda.gov/publications/OCS/Apr04/OCS04D02/OCS04D02.pdf.

Revenue Outlook Also Tied to Foreign Developments

Over the coming decade, relatively stable growth in U.S. soybean production is anticipated, so revenue prospects may depend on changes in domestic use, as well as supply and demand developments abroad. One factor limiting domestic use is a rapid expansion in supplies of distillers' grains (a byproduct of ethanol production). This mid-protein feed is substituting for a portion of the soybean meal used in domestic feed rations. Provided there is solidly growing demand for soybean oil, there could be a surplus of soybean meal, allowing U.S. meal exports to stay competitive. While U.S. exports have generally trended upward, the rate of growth will increasingly depend on foreign demand and competition from several key regions and countries. Over time, the U.S. soybean industry could become more domestically oriented since foreign suppliers may be better able to expand production and capture an increasing share of the global soybean market.

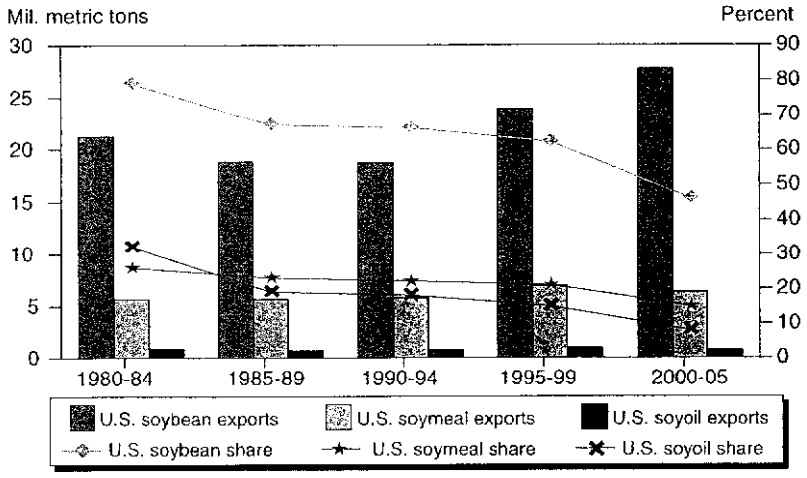
U.S Dominance of Global Soybean Markets Has Eroded

The 2002/03 marketing year was the first under the current 2002 Farm Act. In many respects, it was also a watershed year for international soybean trade. It was the first year that soybean exports from South America exceeded U.S. shipments. It also marked the emergence of China as the dominant force in global imports, which helped U.S. soybean exports reach a near-record in 2002/03.

The U.S. position in the world soybean market has undergone a major transformation since the early 1990s. Despite substantial output growth for soybeans and soybean products and steady gains in export volume, the U.S. share of global exports has steadily diminished (fig. 6). During the 1970s,

Figure 6

U.S. export volumes for soybeans and soybean products edge higher, but market shares decline



Source: U.S. Department Agriculture, Foreign Agricultural Service, PS&D database.

Transportation Infrastructure Improvements May Shape Competitiveness

The capacity of the U.S. bulk transportation system has been tested by the record-large domestic harvests of recent years. Bulk transportation costs for barges, rail, and ships can all affect the local price basis that soybean merchandisers offer to farmers. More than half of U.S. soybean exports traverse some portion of the Mississippi River system. A modernization of the locks on this system would reduce barge rates. Most of the locks on the Upper Mississippi and Illinois Rivers have 600-foot locking chambers that require tows to be split, locked through as separate sections, and then reconfigured. The replacement of these older locks with 1,200-foot chambers would reduce transit times and lower costs for shippers, but it would also require substantial public investment for construction and environmental mitigations.

The increased use of container shipments for soybean exports, mainly to Asian markets, is also an important development. Steep discounts for backhauls in freight containers are encouraging the trend. Containers can be loaded at any shipping port and do not require a bulk grain loading facility. Wider use of this method could help lessen demands upon the Mississippi River system.

The cost of rail grain shipping has risen with higher fuel costs and greater competition for rail capacity from other classes of traffic. Railroads have passed on their higher fuel costs to shippers through fuel surcharges. Capacity constraints are reflected in higher prices for guaranteed car service during grain shipping peaks, which cause shippers to bid lower for soybeans from farmers.

the United States accounted for more than 95 percent of world soybean trade. While U.S. exports have gradually increased, foreign exports have grown even faster. The U.S. share of global soybean trade is now below 50 percent, with less than 15 percent of the export market in soybean meal and less than 8 percent of the soybean oil market.[2]

Competition From Brazil and Argentina Intensifies

The decline in the U.S. share of global exports has been hastened by the phenomenal growth of foreign soybean production and exports, particularly by Brazil and Argentina (fig. 7). Foreign soybean production now exceeds that of the United States, and soybean exports from South America have exceeded U.S. exports since 2002/03 (including 2004/05, despite a record U.S. harvest and export volume).[3] With increased foreign production, and more rapid expansion of trade in soy products than unprocessed soybeans, Brazil and Argentina have each surpassed the United States in soybean meal and soybean oil exports.[4]

Brazil has massive growth potential in agriculture due to the availability of virgin lands in its vast interior. Under the right economic circumstances, much

[2] If one included all oilseeds and oilseed products, the U.S. share of global production and trade would be even smaller. U.S. soybeans account for about 35 percent of world soybean production, but no more than 21 percent of global oilseed production. Other oilseeds that compete with soybeans include rapeseed (canola), cottonseed, peanuts, copra, palm kernel, and sunflowerseed.

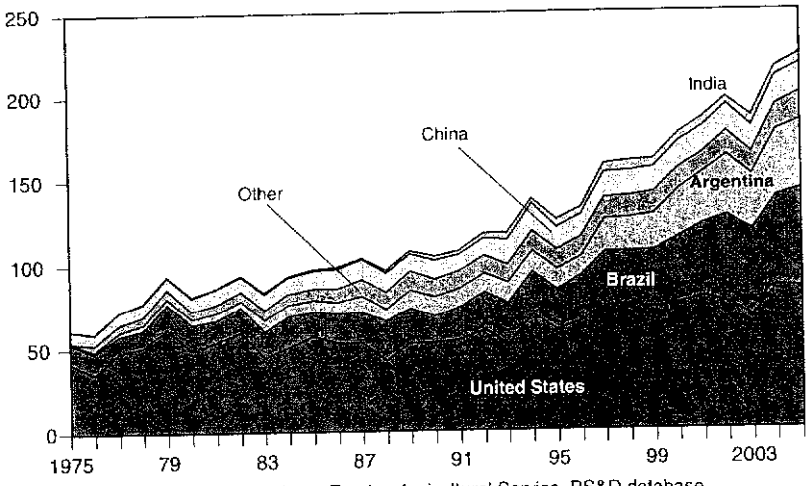
[3] For more background on the factors that have encouraged production growth in these countries, see "Agriculture in Brazil and Argentina: Developments and Prospects for Major Field Crops," www.ers.usda.gov/publications/wrs013.

[4] Another factor that has restrained U.S. soybean and product exports over the last 10 years is the general expansion of U.S. meat production and exports. By raising domestic meal consumption, exports of meat products are indirectly replacing the exports of soybeans and soybean meal.

Figure 7

South American soybean production has grown rapidly since 1980

Mil. metric tons



Source: U.S. Department Agriculture, Foreign Agricultural Service, PS&D database.

more of that land could be converted to soybean production. Brazilian soybean producers have proven to be remarkably competitive in terms of relative production costs, and Brazil's average soybean yield has exceeded the U.S. average in some years. Once the newly cultivated areas have been conditioned, overall yields have also tended to rise. Yet, the country's production growth has stagnated since 2002/03 due to two consecutive severe droughts, a widespread invasion of soybean rust, and a strengthening of its exchange rate against the U.S. dollar. The latter has lowered soybean values within Brazil, exacerbating the effects of recent drought-reduced soybean yields and higher production costs. This combination of factors has left Brazil's farmers with a large accumulation of unpaid debts.

In Argentina, a financial crisis in early 2002 forced the government to abandon its fixed exchange rate regime. The peso subsequently depreciated by more than two-thirds, instantly improving the country's competitiveness in agricultural commodities. Even when the Argentine government substantially increased its soybean export tax to 23.5 percent, devaluation greatly improved the financial condition of farmers. They paid down their debts and there has since been a strong recovery in farmland prices. Recent growth in Argentine soybean yields, production, and exports has been very robust. Still, Argentina's potential to raise soybean output is more limited than Brazil's due to fewer opportunities for cropland expansion. A rise in Argentine soybean production would have to rely mainly on improving yields (which are already comparable with U.S. yields) or attracting area away from other crops. Exports of soybeans from Argentina have surged recently due to rising imports by China, but the country remains predominantly an exporter of soybean meal and soybean oil.[5]

While South American soybeans and soybean products are likely to capture larger export market shares, their growth potential is not unlimited. Recent global trade has been influenced by South American soybean yields, costs

[5] A lower export tax for soybean products (20 percent) versus soybeans (23.5-percent) favors the exports of soybean products from Argentina. While the tax itself is a major cost to the industry, the tax differential and currency devaluation have enhanced the country's dominance of international oilseed product exports. Consequently, Argentine crushing capacity has expanded substantially since 2002. In contrast, the Brazilian soybean processing industry is disadvantaged by domestic sales taxes imposed on soybean shipments between states. The country's crushing capacity is concentrated in the south, so it depends on acquiring soybean supplies from the distant locations (in the interior center-west) for filling deficits in local supplies. Foreign buyers of soybeans are exempt from the taxes, giving them an edge in bidding for supplies against domestic processors.

Exports Vital to Soybean Sector

International market developments are extremely important to the U.S. soybean sector. Oilseed and oilseed product exports, particularly soybeans, represent a significant source of demand for U.S. producers and make a large net contribution to the U.S. agricultural trade balance. Soybean and soybean product exports account for 40-45 percent of U.S. soybean production. U.S. exports are also critical to the world market, accounting for 35-40 percent of global trade in soybean and soybean products. Processed soybeans are the largest source of protein feed and second largest source of vegetable oil in the world.

Among all U.S. agricultural products, only grains and grain products outrank the oilseed sector in total export value and net exports. In the past 5 years, the average value of U.S. oilseed and product exports exceeded $9 billion, nearly half the farm-level value of oilseed production (Economic Research Service/FATUS). Main export destinations for U.S. oilseeds, oilseed meal, and vegetable oil include the European Union (EU), Japan, Mexico, China, and Taiwan. Other important markets include South Korea, Indonesia, and Thailand. The Philippines, Saudi Arabia, and Venezuela usually import significant quantities of U.S. oilseed meals. U.S. vegetable oil exports are more widely dispersed and are heavily influenced by food aid to developing nations through the P.L. 480 program.

In the first half of this decade, U.S. imports of oilseeds and oilseed products averaged over $2 billion annually, comprised primarily of canola seed, canola meal, and canola oil from Canada. The other main imported oilseeds and oilseed products include olive oil from Europe and tropical oils from the Philippines, Indonesia, and Malaysia.

of production, transportation, and exchange rates. A critical challenge for raising Brazil's export potential will be to expand the capacity of its transportation infrastructure, especially rail and barge systems. Currently, the country's soybean exports depend heavily on high-cost truck shipments. Most of Brazil's soybean crop must be moved hundreds of miles over roads that are unimproved or in poor condition. The trucks then face long backlogs at ports that need new investment in storage and loading capacity. New road projects, designed to shorten the distances to river ports, have been delayed by a lack of capital and by environmental considerations. Also moderating the short-term expansion of soybean area in Brazil is a relatively flat trend for domestic prices (due to exchange rate appreciation against the U.S. dollar) and rising fungicide costs for the control of Asian soybean rust.

U.S. Trade Also Affected by Developments in Other Major Markets

Brazil and Argentina have been the main competition in global export markets, but supply and demand developments in other markets can also influence global trade and prices.

China and Southeast Asia

China and Southeast Asia have been among the strongest import markets for soybeans and soybean meal in recent years and should continue to be growth markets over the next decade. Even though China is the world's fourth largest producer of soybeans and the second largest producer of oilseeds, the rapid growth of its economy has spurred food consumption and demand for higher protein foods. To meet its rising vegetable oil and animal feed demand, China now must import 55-60 percent of its total consumption of soybeans.

In a very short time, changes in China's agricultural and trade policies have greatly transformed world oilseed markets. Prior to 1995, China imported very little soybeans or soybean products but has now become the world's leading soybean importer. More than 40 percent of current world trade in soybeans goes to China. In 2002, the country joined the World Trade Organization (WTO) and its accession agreement eliminated quantitative restrictions on imports and stipulated a progressive reduction of import tariffs for vegetable oil. Afterward, the country avoided massive imports of vegetable oils by accelerating an expansion of its oilseed crushing capacity. Thus, China's soybean imports more than doubled in a single year—to 21.4 million metric tons (mmt) in 2002/03 from 10.4 mmt in 2001/02—with more than a third coming from the United States. The 2002/03 marketing year was the first that China's soybean imports had exceeded its own domestic production. Despite massive soybean imports, China also vies with India as the world's leading importer of soybean oil.

Despite comparatively strong growth in China's domestic consumption of meal and oil, overcapacity has come to plague its oilseed crushing industry. Efficient new coastal mills operated by private-government ventures have taken business away from uneconomic state-owned enterprises. Many of the latter faced default in mid-2004 when soybean prices suddenly collapsed, making the imports en route to China worth much less than their contracted price. Most were spared from the financial consequences of this price collapse when China's inspection agency determined that cargoes of Brazilian soybeans were contaminated by a prohibited fungicide. On this occasion, few U.S. soybean exports were affected, although for a time China used the previously unannounced phytosanitary standard to ban all shipments by most Brazilian exporters. The interruption slashed 2003/04 soybean imports into China to 16.9 mmt. The supply glut eased quickly and imports recovered in 2004/05 to a record-high 25.8 mmt.

For China and Southeast Asia, the robust growth of soybean meal demand has been led by a rapidly expanding poultry sector, with significant gains for hog feeding and aquaculture as well. A continuation of soybean meal use there, however, could depend on the region's ability to control avian influenza, one of the factors that precipitated the sharp reduction in China's 2003/04 soybean imports. This highly pathogenic disease has depressed poultry trade in recent years due to import bans on uncooked poultry products from affected countries. Limiting the rapid spread of the virus is difficult because populations of migratory birds can infect the many backyard poultry flocks in Asia. Similarly, any widening of the disease in Europe,

India, the Middle East, or Africa could fundamentally alter production practices and poultry demand, and therefore the worldwide demand for feed protein. Consumers switching to other meats, such as pork, could offset some of the impact on soybean meal demand.

India

India was the world's fifth leading producer of oilseeds in 2005. In the past decade, Indian production of soybeans and other traditionally grown oilseeds—such as peanuts, rapeseed, and cottonseed—has increased slowly. However, due to the poor use of farm inputs, Indian oilseed production is hampered by yields that are among the world's lowest. With its large population and rising incomes, India is unable to meet its vegetable oil needs through domestic oilseed production. India imposes prohibitive barriers on oilseed imports, so its deficit is met by large imports of vegetable oil. Even with relatively high tariffs (at or above 45 percent), India is now among the world's largest importers of vegetable oil. In contrast, India is a minor consumer of soybean meal, so it has historically exported surpluses of domestically crushed oilseed meals to other Asian countries. However, more of the country's domestic soybean meal output is being fed to poultry, eroding the supplies available for export.

The European Union (EU-25)

For decades, a large deficit between the European Union's domestic oilseed output and its consumption has kept it the world's top importer of soybean meal and second-leading importer of soybeans (recently surpassed by China). Yet, modest projected growth rates for EU-25 income, population, and livestock production will limit future import increases. Margins for EU-25 processors of imported soybeans are under increasing pressure due to ever cheaper soybean meal imports from South America. Also, EU-25 soybean crushers are handicapped by a lack of demand for soybean oil in food uses, due to the deterrent of required labeling for any foods derived from biotech ingredients. Now, with legal approval to sow biotech varieties in Brazil, costs to obtain biotech-free soybeans in the EU-25 will likely rise even higher.

In contrast, the world vegetable oil market, particularly within the EU-25, is undergoing a pivotal structural change with a growing demand for biodiesel. EU-25 processors' demand for domestically grown rapeseed has never been better due its utility as an oil source for biodiesel. The costs for petrodiesel have nearly doubled over the past 2 years, making biofuel alternatives much more attractive. EU-25 policymakers are clearly committed to reducing carbon emissions into the atmosphere and supporting the incomes of oilseed farmers by exempting biodiesel production from fuel taxes. The European Commission has set an ambitious goal for biofuels (including ethanol) to account for 5.75 percent of member states' fuel supply by 2010.

A long-term constraint in Europe and elsewhere is the lack of available farmland to produce biomass crops sufficient to meet the huge energy requirements. The deficit is already leading to record-high EU-25 imports of palm oil, with several new refineries being constructed primarily for producing biofuels from it. EU-25 demand for food oil might see a substan-

tial shift toward sunflowerseed oil imports, which could stimulate more output from processors in Argentina, Ukraine, and Russia. Until now, technical standards for biodiesel have limited the use of soybean oil, although a relaxation of its allowance in fuel blends may soon be prompted by a rising domestic deficit in vegetable oil.

NAFTA Partners

Under the North American Free Trade Agreement (NAFTA), Mexico immediately reduced its soybean tariff on NAFTA partners to 10 percent, and phased it out completely by 2003. With reforms in Mexico's domestic crop support programs, imports have virtually displaced domestic soybean production, with nearly all imports coming from the United States. As a consequence, U.S. soybean exports to Mexico have doubled since 1993 to over $900 million. Strong income growth among Mexican consumers has boosted consumption of meat and vegetable oils and increased demand for soybeans. Improvements in Mexico's rail links at the border have also expedited soybean and soybean meal trade. Likewise, the value of U.S. oilseed and product exports to Canada has more than doubled (to approximately $1 billion) since NAFTA was signed, while U.S. imports from Canada (mostly canola and canola products) have grown at a slightly slower pace. U.S. exports of soybeans and soybean meal have a dominant transportation advantage over competing suppliers in both markets.

Malaysia and Indonesia

U.S. exporters of soybean oil face competitive challenges not only from South American producers but also from palm oil producers in Southeast Asia. For the first time in 2004/05, world output of palm oil surpassed soybean oil production. The attractiveness of palm oil prices keeps pressure on the soybean oil market.[6] Palm oil shipments also benefit from lower freight costs to the primary Asian import markets.

The land available for additional palm acreage in Malaysia (currently the world's leading palm oil producer) is being depleted, and production gains will depend on the replacement of trees with higher-yielding varieties. Thus, growing demand in the food and biodiesel markets is mainly helping to promote an expansion of Indonesian palm area. Indonesia is richly endowed with available land and labor for palm oil production, and Malaysian-owned companies are investing capital and technical expertise there. But it will take several years for newly planted trees to bear fruit. Considerable investment in infrastructure will also be needed to deliver output from the new plantations to market. Some environmental organizations are opposed to expansion of Indonesian oil palm area, concerned that the necessary land clearing may damage wildlife habitat.

[6] Producers of palm oil in Indonesia and Malaysia also have a large stake in the international development of biodiesel markets. Palm plantations yield around four times more oil per acre than soybeans, and palm oil is less expensive than other vegetable oils. Exports of palm oil for biodiesel production or direct exports of biodiesel could become a major source of earnings in these countries. By 2007, Malaysia—to save on consumer fuel subsidies—will mandate use of a 5-percent palm-oil-based biodiesel blend in its domestic fuel supply.

Domestic Use of Soybeans for Bioenergy and Food To Expand

In coming years, the traditional (feed and food) uses for soybean meal and soybean oil are expected to rise gradually, roughly at the pace of U.S. population growth. In contrast, soybeans for nontraditional uses such as renewable fuels and bioproducts are expected to increase more quickly. Ethanol produced from corn has long been at the forefront of U.S. biofuels production. But, commercial development of a biodiesel industry has recently built up considerable momentum, and is becoming an important new source of demand for soybeans. Although biodiesel can be made from other oils and fats, soybean oil is the predominant raw material currently used in U.S. biodiesel production. More industrial applications or food uses (e.g., soy isoflavones, soy beverages) for soybeans hold some promise for supporting prices through higher overall demand and/or premiums for value-enhanced characteristics.

Bioenergy

The technical process (transesterification) for converting a vegetable oil or fat source into biodiesel is fairly straightforward. The normal conversion process for the fuel uses a ratio of 100 pounds of oil to 10 pounds of methanol (or ethanol) plus a catalyst (such as sodium hydroxide) that accelerates a chemical reaction. The end product is 100 pounds of a fatty ester (i.e., biodiesel) and 10 pounds of the byproduct glycerine. While there are minor performance differences, engines in current use can run well on a blend containing 20 percent biodiesel (B20) without any major modifications. Biodiesel has modestly lower fuel efficiency per gallon than regular diesel (Radich, 2004).

The main hurdle for biodiesel as a viable substitute for petroleum diesel has been its production economics. The cost of its feedstock relative to petroleum diesel is a primary determinant of the feasibility for producing biodiesel. Until recently, the cost of producing 100-percent biodiesel exceeded petrodiesel prices by $1.00-$1.50 per gallon, but a sharp rise in petrodiesel costs has narrowed its price advantage. Further cost improvements might be achieved through a promising new production technique that converts biodiesel directly from soybeans, instead of the conventional process using solvent-extracted soybean oil.[7] With the goals of environmental benefits and less U.S. dependence on foreign energy sources, a combination of government-mandated uses, tax subsidies, and procurement preferences has further brightened the outlook for biodiesel.

A desire to use more soybean oil for biofuels could spur research toward enhancing the oil content of soybeans. An increase in the oil extraction rate of just 1 percentage point would expand domestic soybean oil production by 1 billion pounds, or around 5 percent of current yearly use.

Currently, U.S. production capacity dedicated solely to biodiesel is more than 200 million gallons, with many new plants scheduled to open over the next year. In addition, the oleochemical industry could provide another 110

[7] Also needed are more buyers (domestic or export) for the joint products from the output of soybean oil and biodiesel (soybean meal and glycerine). Unless new markets are found for rising supplies of glycerine, the lower byproduct value could also constrain the profitability of biodiesel production. Traditional uses for glycerine are in toothpaste, cosmetics, and pharmaceuticals. Research for new glycerine applications include windshield fluid, antifreeze, and airplane de-icing products.

million gallons if the value of methyl esters for biodiesel were to exceed its value in other current uses. Actual U.S. biodiesel production may double in 2006 (from approximately 66 million gallons in 2005), but this is still less than capacity and far less than on-road diesel consumption of approximately 40 billion gallons per year.

The Environmental Protection Agency (EPA) describes biodiesel as a higher-oxygen fuel whose combustion creates fewer pollutants than petro diesel. Emission tests on B20 indicate average reductions of 21 percent for hydrocarbons, 11 percent for carbon monoxide, and 10 percent for particulate matter, compared with regular diesel fuel. As part of the 1990 Clean Air Act amendments, EPA will implement a lower standard on the sulfur content of fuels. Beginning June 1, 2006, a new standard will be established for ultra-low sulfur diesel.[8] The transition will be phased in, with up to 20 percent of diesel production allowed to meet the current sulfur standard through May 2010.

Just to meet the lower sulfur standard alone could require an annual biodiesel output of up to 400 million gallons, assuming it was used as the sole fuel additive and at a moderate additive rate of 1 percent by volume. Assuming that biodiesel produced from soybean oil were to account for all of the fuel additives, the soybean oil requirement could eventually be more than 3 billion pounds, or nearly 15 percent of current domestic supply. But other chemical additives can provide lubricity, so biodiesel must compete on cost-effectiveness.

The U.S. Energy Policy Act of 2005 sets a national renewable fuels (a combination of ethanol and biodiesel) standard of 4 billion gallons for 2006. This will increase to 7.5 billion gallons by 2012, although ethanol alone can likely fulfill the mandate. The first statewide mandate for biodiesel use was implemented in Minnesota during 2005, upon meeting a statutory minimum for production capacity. The law requires a 2-percent biodiesel blend for all diesel fuel sold in Minnesota, although implementation has been temporarily suspended due to initial failures in meeting fuel quality specifications.

The Federal Government is now providing a tax incentive for biodiesel production, and many States are considering them, too. The Federal tax incentive began January 1, 2005, and has been extended through 2008. It provides a Federal excise tax credit (at 1-cent-per-gallon per percent of inclusion) to biodiesel producers using new vegetable oil. Biodiesel producers using recycled vegetable oils can claim a tax credit at a half-cent-per-gallon.[9] With 2005 retail prices for petrodiesel rising as high as $3.00 per gallon and biodiesel production costs approaching that, the tax credit provides biodiesel producers the means to be more price competitive.

Biodiesel production has also been encouraged by USDA's Bioenergy Program, which subsidized purchases of soybean oil and animal fats for producing biodiesel. In fiscal year 2005, 66 million gallons of biodiesel (92 percent derived from soybean oil) were produced under the program. Subsidies averaged $0.63 per gallon on the additional production above the previous year's base amount, with much lower subsidies for production within the base. Program funding was originally capped at $150 million per fiscal year. Budgetary appropriations limited the program to $100 million

[8] Sulfur is a lubricity agent in diesel fuel, providing internal lubrication to engine parts as the fuel is consumed. With lower lubricity, ultra-low sulfur diesel fuel could add to mechanical wear in engines not designed to run on it. Biodiesel has good lubricity properties and could have potential as a fuel additive in older engines not designed for the new fuel standards.

[9] Recycled feedstocks (such as yellow grease), despite getting only half the tax credit of new oil, have a large cost discount that could gain them share increases in the future. The Internal Revenue Service interprets current law to permit biodiesel made from imported oils such as palm oil to also qualify for the full credit.

for fiscal year 2005 and $60 million for fiscal year 2006. Available funds cover only the first three quarters of fiscal year 2006, and program provisions are set to expire at the end of the fiscal year.

Procurement practices by government agencies have been another element in inaugurating a biodiesel market. Since the 1992 Energy Policy Act, the Federal Government has required portions of its vehicle fleet to operate on alternative fuels. Beginning in March 2005, the U.S. Navy requires use of B20 for all of its nontactical vehicles. Numerous Federal, State, and local government agencies are following suit. In 2005, California began to use biodiesel in all its government-owned vehicles. Distribution of biodiesel has been mostly limited to government truck-bus fleets and corporate users. Eventually, greater availability of the fuel should lead to wider retail distribution.

The transportation uses of biofuels have been studied far more extensively than their use as home heating oil, but its potential for oil furnaces and boilers could be just as great. USDA's Agricultural Research Service estimates that 50 million gallons of heating oil could be saved annually if all oil furnaces in the Northeast used a 5-percent biodiesel blend.

Bioproducts

Many manufactured products can be made from soybeans and soybean oil. These include nontoxic plastics, printing inks, lubricants, waxes, hydraulic fluids, electric transformer fluids, and solvents. The volume of soybeans being used in these applications is still small, but (compared with traditional uses) can be much more valuable on a per-pound basis. Many of the business ventures now producing bioproducts are operated by or in conjunction with farm cooperatives in rural areas. They not only can provide a market for farmers' output but could provide rural households with off-farm employment. To encourage commercial development, the 2002 Farm Act provided for preferential procurement of specified biobased products by all Federal agencies. The law also set aside $1 million annually for bioproduct testing.

Technology advances also promise more uses for soybean products. A major impediment to commercialization of soy-based industrial lubricants has been its low oxidative stability. The oil will oxidize rapidly during use (if untreated with antioxidants) and thicken toward a plastic-like consistency. Most soybean yield and quality improvements still come through conventional breeding, although biotechnology may accelerate the release of new varieties. A recent biotechnology breakthrough created a soybean variety with a high oleic content that is naturally stable and costs less to process. However, any soybean variety derived from biotechnology (either for its improved yield or use properties) must undergo an extensive approval process before commercially released both in the United States and soybean-importing countries.

Expanding Food Uses

Currently, U.S. soybean use in soy beverages, soyflour, and other foods is small, but these uses are growing rapidly. U.S. sales of soyfoods and supplements grew 5 percent in 2004 to $4 billion, with U.S. sales of soymilk

growing 16 percent to $917 million. Even a moderate increase in soyfood intake could eventually have a substantial impact on U.S. soybean demand. If every American consumed the U.S. recommended daily allowance (RDA) of 25 grams of soy protein, current U.S. soybean meal use (34 million tons) would expand by approximately 6 percent.

One factor spurring the use of soy protein in foods (both in this country and abroad) is the evidence of its health benefits. The FDA now allows any food containing a 5-gram serving of soy protein to carry a health claim on its label stating it could reduce the risk of heart disease. Use of soy isoflavones (a more concentrated product) is growing rapidly in fortified foods and nutritional supplements for the prevention of osteoporosis. One challenge has been to make soyfoods taste better, which may require further product innovations. Another is to remove the allergens that affect many children.[10]

Proponents of good diets have focused on making soybean oil a better food ingredient, particularly with regard to trans-fatty acids—a type of fat primarily created through partial hydrogenation of vegetable oils.[11] Medical studies have shown that trans-fatty acids in food can raise the LDL and lower the HDL cholesterol levels in the blood, both indicators of a higher cardiovascular risk. These concerns prompted FDA to require, as of January 1, 2006, food manufactures to disclose the number of grams of trans-fatty acids a food contains within the nutrition facts panel on every food label. Nutrition panels for foods with less than 0.5 gram of trans-fatty acids per serving can declare zero-percent content. In response, food manufacturers are seeking out vegetable oils that are low in trans-fatty acids. One way to do this is by using oils other than soybean oil, although current domestic output of these oils (sunflowerseed, canola, corn) is limited.

Instead, new methods of processing soybean oil are producing lower levels of trans-fatty acids. One involves a new technological advance that reduces the creation of trans-fatty acids while retaining the same product functionality for margarine and shortenings. Another technique uses lower temperatures during hydrogenation, which can greatly reduce the creation of trans-fatty acids. Scientists could also entirely eliminate the need to hydrogenate soybean oil through genetics, by altering the fatty acid profile of soybeans. Conventionally bred, low-linolenic soybean varieties, for example, were grown on 300,000 acres nationally in 2005, and could expand to nearly 1 million acres in 2006. Oil processors are currently offering growers production contracts for low-linolenic soybeans that pay price premiums of 35-40 cents per bushel over conventional varieties. Value-enhanced soybeans such as these require additional farm management. Yet, the advance guarantees on prices and markets may help producers reduce their financial risks.

[10] Beginning on January 1, 2006, FDA implemented a new requirement for all packaged foods that contain any of 8 major food allergens (including soy protein) to explicitly note its presence on the label.

[11] Hydrogenation is a process that saturates and hardens the fatty acids in liquid oils, enabling them to be used in solid products such as margarine, shortening, and fillings. The process also stabilizes soybean oil used for deep-fat frying.

Domestic and Trade Policy Issues

Specific changes in program provisions affecting soybeans are deliberated within the larger context of budget priorities, international obligations, market conditions, and policy developments. The Farm Security and Rural Investment Act of 2002 (2002 Farm Act) provisions were being considered at a time when projected budget surpluses allowed for increased spending on domestic farm programs. However, for the upcoming legislative review of farm programs, concerns over projected Federal budget deficits could affect future funding. Funding levels, types of support, and program eligibility are all sources of uncertainty for soybean producers and Direct and Countercyclical Program Payment participants with soybean base acres. Trade policy and domestic support issues—particularly related to ongoing Doha Round World Trade Organization (WTO) negotiations—will also shape discussions.

Overview of 2002 Farm Act Commodity Provisions

The 2002 Farm Act (http://www.ers.usda.gov/features/farmbill) governs Federal farm programs for the 2002-2007 crops and includes the following provisions for the soybean sector:

Marketing assistance loans—Soybean producers are eligible for marketing loans for current production at a U.S.-average $5.00 per bushel. Marketing assistance loans are intended to provide short-term liquidity until the farmer's crop is marketed, and also provide guaranteed minimum revenue for production. Marketing assistance loans first became available for soybeans under the 1990 Farm Act, starting with the 1991 crop, and continued in the 1996 and 2002 Farm Acts. The producer may settle the 9-month loan any day before maturity at an alternative loan repayment rate, known as the posted county price (PCP), if the PCP is below the loan rate. This benefit is known as a marketing loan gain (MLG). Another way to receive the marketing loan benefit is through a loan deficiency payment (LDP). These direct cash payments are made to producers who are eligible to receive a marketing loan, but agree to forgo one. The LDP payment rate equals the difference between the loan rate and the market-determined PCP. Thus, although market prices are not supported, farmers are guaranteed a minimum per-bushel revenue regardless of how low market prices fall.[12] USDA's Commodity Credit Corporation (CCC) absorbs the cost of these marketing loan benefits.

Direct and countercyclical payments (DCP)—Under the 2002 Farm Act, farmers could establish soybean base acres for the first time. Farmers who established soybean base acres (53.7 million acres) are now eligible for fixed direct payments based on a share of historical production. Soybean direct payments are the product of the 44-cent-per-bushel payment rate, 85 percent of the farm's soybean base acres, and the farm's direct payment yield.

Depending on market prices, farmers and DCP participants with soybean base can also receive countercyclical payments (CCPs) that can range from

[12] When marketing loan benefits are available, many farmers have even been able to achieve per bushel returns somewhat above the loan rate. This can occur through timing of the LDP when the PCP is the lowest relative to the loan rate, and by having either forward-contracted prior to harvest at a higher price or selling it after harvest once the price has risen.

0 to 36 cents per bushel. CCPs are the product of the national payment rate, 85 percent of the farm's base acres, and the farm's countercyclical payment yield. The payment rate for a soybean CCP is the difference between the target price ($5.80 per bushel) and, if lower, the "effective price"—which is the direct payment rate plus the higher of the national season-average farm price or the soybean marketing loan rate. Benefits are tied to historical plantings (soybean base acres) rather than current soybean plantings. The CCP rate was zero for the 2002 and 2003 crops. An initial CCP installment was paid out in the fall of 2004, but a subsequent rise in the market price eliminated the CCP for the 2004 crop, requiring a full reimbursement of the advance. Currently, no CCPs are expected for the 2005 crop.

Payment limitations—Annual limits on farm program payments per person have been a feature of U.S. farm policy since 1971. Changes in subsequent legislation have specified which types of payments are covered, and the dollar limits for each type of payment. Also, a "person" and that person's required contribution to one or more farm entities has been redefined. Under current law, a person is allowed to receive up to $40,000 in direct payments, $65,000 in countercyclical payments, and up to $75,000 in LDPs and MLGs per crop year. An individual can also receive half of their payment limits for their interests in two other farm entities, for a maximum total payment per person of $360,000.

Payment limits are designed to target farm payments toward smaller producers. A 2003 congressionally mandated report by the Commission on the Application of Payment Limitations for Agriculture[13] concluded that, regardless of their level, payment limitations for LDPs and MLGs have had little effect on payments, farm income, farmland values, or markets. Few producers reach the current limits, and the largest producers often can restructure their farms to lessen the effects of payment limitations. Producers can also pledge a portion of their crop as collateral for a 9-month nonrecourse loan, wait the full 9 months until loan maturity, and forfeit the commodity used as collateral. To discourage the CCC's accumulation of forfeited commodities, the law permits a producer who takes out a loan to exchange the commodity (prior to maturity) and purchase commodity certificates at that day's posted county price. The producer later exchanges the commodity certificates with CCC to re-establish control over the original collateral. No payment limits currently exist on either the amount of forfeiture gains or commodity certificate exchange gains a producer may receive, even though such gains provide essentially the same benefits to producers as LDPs or MLGs.

[13] www.usda.gov/agency/oce/reports/payment_limits/paymentLimitsAll.pdf

Risk Management Policies

Over the last decade, U.S. farmers have acquired a variety of new instruments for controlling their production and price risks. The Federal Crop Insurance Corporation offers two ways to minimize crop yield risk: (1) multiple-peril crop insurance (coverage based on farm-level yields), or (2) a group risk plan with coverage based on county-level yields. The rates for these policies, which are sold by private insurance companies, are federally subsidized. Currently, the government covers the full premium cost for catastrophic yield losses (exceeding 50 percent), with buy-up coverage available to guarantee a higher

percentage of the expected yield. Many farmers were encouraged last spring to increase insurance coverage for soybean acreage because of the new risk for Asian soybean rust. Another alternative for producer risk management is a variety of crop revenue insurance plans. Each plan differs on the specifics of how losses are determined, but all pay indemnities to farmers based on a shortfall in a crop's gross revenue rather than yield.[14]

[14] For more information, see the ERS briefing room on Farm Risk Management, www.ers.usda.gov/Briefing/RiskManagement

Despite the wide availability of yield and revenue insurance, Congress regularly passes disaster relief legislation to compensate producers for yield and quality losses. Previous Administration proposals would have encouraged higher levels of insurance coverage and reduced government costs. These included requiring farmers to purchase crop insurance as a condition to receive commodity payments, reducing the government's subsidy at lower coverage levels, assessing higher fees for only catastrophic coverage, and a lower reimbursement for the administrative costs of private crop insurers. Such changes would also be consistent with the U.S. position in world trade negotiations to reduce non-commodity specific, trade-distorting spending. Some producers may prefer a more comprehensive insurance product that covers whole-farm revenue instead of separate coverage for individual commodities.

Farm Program Costs and Budget Issues

During crop years 2002-04, the marketing loan benefits and direct/countercyclical payments for all eligible crops amounted to about $31 billion, or 15 percent of production value for those crops.[15] Soybean producers and DCP participants with soybean base acres received $2.1 billion over the same period in marketing loan benefits, direct payments, and CCPs. Of this amount, soybean producers received $315 million on LDPs, MLGs, and gains from certificate exchanges for soybeans, considerably less than the $8.3 billion received for the 1999-2001 crops.

[15] Source: Government payments from Commodity Estimates book for the President's FY 2007 Budget (February 2006). See Output 16, 18, 50. Production value from USDA-NASS "*Crop Values: 2005 Summary*" (February 2006).

The 2002-04 payments represent a relatively small share (4 percent) of the production value for soybeans (fig. 8), and are lower per base acre than some other crops. The maximum payment per base acre for soybeans ranked seventh out of the nine crops eligible for direct and countercyclical payments (fig. 9). Nevertheless, soybean outlays could increase substantially if soybean prices decline.[16]

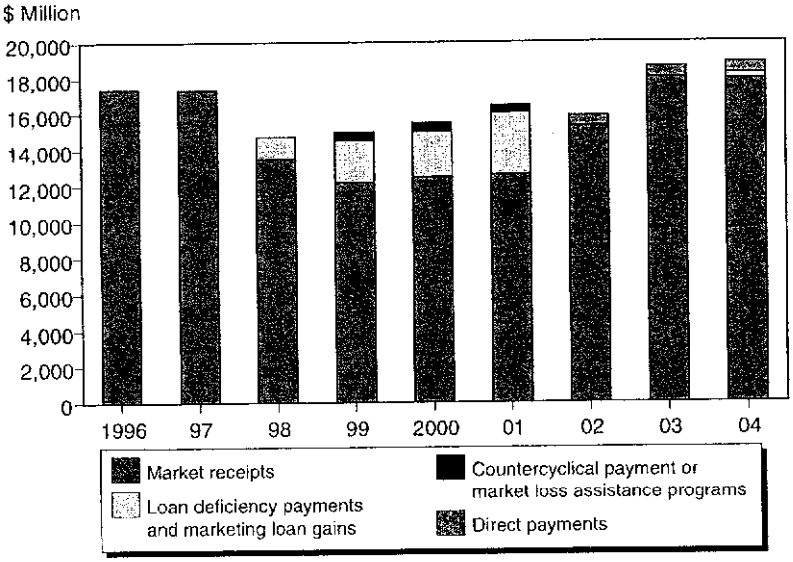
[16] LDPs and MLGs were particularly important in providing income support following sharp price declines in crop years 1999 and 2000, when soybean producers received $2.3 billion and $2.5 billion. Payments were also higher in these years because the soybean loan rate was $5.26 per bushel, 5 percent above the current $5.00 rate.

Although actual and projected commodity program outlays under the 2002 Act have been generally lower than the average spending during 1999-2001 (when emergency payments were high), they are higher than levels that prevailed throughout most of the 1990s (fig. 10). Commodity programs constitute a large share of projected spending on non-nutritional programs, and were expected to account for 62.7 percent of total non-nutrition program spending under the 2002 Farm Act, based on Congressional Budget Office estimates at the time (fig. 11).

New farm legislation might consider ways to alter the overall level of spending through changes in the basic structure of commodity programs or by modifying the parameters of existing programs. For example, loan rates, direct and countercyclical payment rates, the percentage of base acres

Figure 8

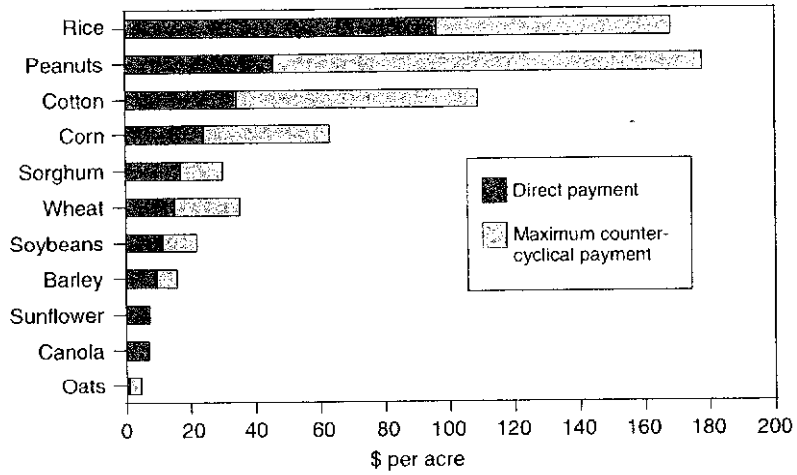
Government payments and market receipts for soybeans



Sources: Government payments: U.S. Department of Agriculture, Farm Service Agency, unpublished data: Market receipts: U.S. Department of Agriculture, National Agricultural Statistics Service, Quick Stats data base.

Figure 9

Value of direct and countercyclical payments per base acre[1]



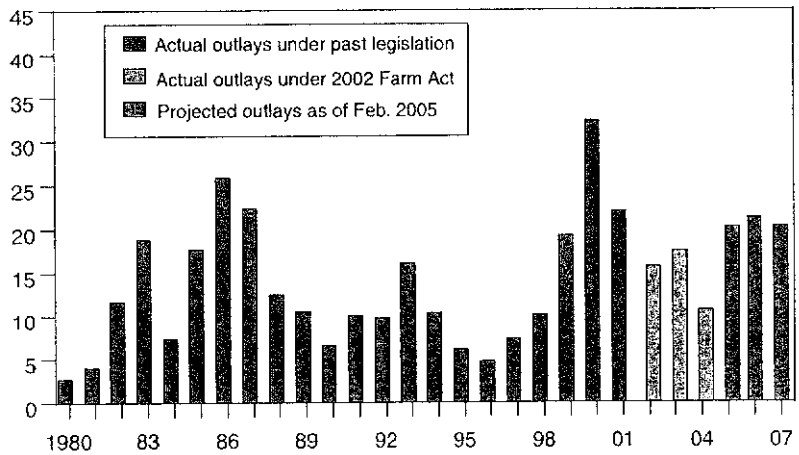
[1]Assumes national average payment yields and maximum countercyclical payments.

Source: Young et al, 2005.

covered by payments, the use of commodity certificates, payment limitations, and crop insurance provisions could be reconsidered. Funding for crops currently supported by commodity programs could compete with proposals to expand support for conservation programs or to provide support for other commodities. The latter condition could arise from a potential

Figure 10

Commodity Credit Corporation (CCC) net outlays*

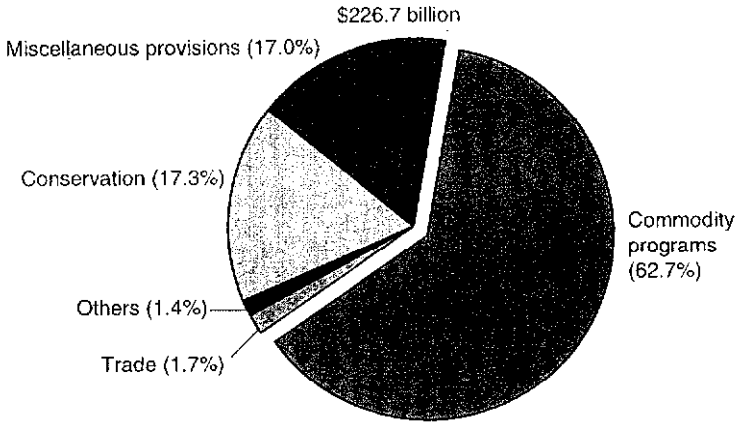


*The Commodity Credit Corportion (CCC) is a federally owned and operated corporation within the U.S. Department of Agriculture created to stabilize, support, and protect farm income and prices through loans, purchases, payments, and other operations. All money transactions for agricultural price and income support and related programs are handled through the CCC.

Source: www.ers.usda.gov/briefing/farmpolicy/gov-pay.htm

Figure 11

2002 Farm Act projected spending for non-nutritional programs, 2002-11



Note: Others include energy (0.18%), forestry (0.04%), research (0.69%) and rural development (0.45%).

Source: www.ers.usda.gov/briefing/farmpolicy/questions/cust2002act.htm

elimination of current restrictions on planting fruits and vegetables (Womach, 2005) on base acres.

Government program payments, such as direct and countercyclical payments, are partially capitalized into land values and rental rates (Barnard et al., 2001). Effects include impacts on the wealth of farmland owners

through increased land values, increased rental income of farmland owners, and producers' production costs (increased rental payments or costs to buy land). Nearly two-thirds of program acreage is leased. Consequently, future changes to government payments would affect land values and rental rates, which would affect future income statements and/or balance sheets of the farm sector.

Trade Policies

Trade policy concerns associated with international trade agreements, such as those of the WTO, have become a crucial part of the review of U.S. farm policy. In 2001, the WTO launched another round (the "Doha Round") of negotiations on agricultural trade that are still ongoing. Current negotiations are focusing on limiting the use of trade-distorting policies, such as tariff and nontariff barriers, export subsidies, and the types and levels of domestic agricultural support in member countries. Under the 1994 Uruguay Round Agreement on Agriculture, the United States and other countries capped the amount of trade-distorting domestic support provided to the agricultural sector. Soybean producers benefit from marketing loans, counter-cyclical payments, and crop insurance subsidies that are, or may be, subject to aggregate spending limits under the existing WTO agreement.[17] Spending limits could be further reduced or modified if an agreement can be reached under the Doha Round.

Current negotiations and proposals are focusing on developing a framework that would substantially increase market access (i.e., lower tariffs), eliminate export subsidies, and reduce domestic farm program payments, particularly those not decoupled from current production or price. Specific U.S. negotiating proposals include a 60-percent reduction in its own aggregate spending on trade-distorting support and a 55- to 90-percent reduction in developed-country import tariffs.[18] It would call for the EU-25, which has even higher levels of trade-distorting subsidies, to reduce spending by as much as 83 percent. Also proposed are reductions for each country's allowance of "non-commodity specific" trade-distorting support, from the current 5 percent of agricultural production value to 2.5 percent.

Even without a new trade agreement, the legality of some domestic farm policies is being challenged under current WTO rules and may affect policy options. Brazil's successful challenge to some segments of the U.S. cotton program, while not directly related to soybeans (except for the export credit programs), may have ramifications for U.S. commodity programs in general. The influence would extend to the marketing loan and countercyclical payment programs. The United States has already made some adjustments to its export credit guarantee programs to comply with one aspect of the WTO ruling on export subsidies. Specifically, the United States has adopted new risk-based fees on borrowers and eliminated the GSM-103 credit program to ensure that, over the long term, borrower fees entirely cover program costs. In fiscal 2005, credit programs financed U.S. exports of oilseeds ($414 million), protein meals ($170 million), and vegetable oils ($78 million).

[17] To date, the United States has not notified to the WTO how commodity support program payments under the 2002 Farm Act would be classified.

[18] In October 2005, the United States proposed major reform for the Doha Round of WTO negotiations (Office of the United States Trade Representative, 2005.) For details on this and any subsequent proposals, see www.ustr.gov.

Although trade in unprocessed soybeans is relatively unhindered by global tariffs, lower tariffs on imports of soybean oil and soybean meal could benefit domestic processors. Applied tariffs on soybean oil, for example, average about 20 percent for the world's top importers of the commodity, compared with rates generally at or below 10 percent for soybeans.[19] Modest achievements have been made in liberalizing access to these import markets through recent bilateral trade agreements, but a broader multinational agreement within the Doha Round could extend access for U.S. soybeans and products to other markets.

A world trade agreement could also be accompanied by further disciplines on the allowable forms of food aid, export credits, and activities of state trading enterprises. New disciplines on food aid would prevent commodity donations from displacing commercial sales. U.S. food aid programs operate with commodity donations from CCC-owned stocks or CCC tenders, which are sold in foreign markets for the financing of local development projects. U.S. food aid exports of vegetable oil in FY 2004 totaled $232 million, accounting for 19 percent of the total export value. The Bush Administration has proposed providing 25 percent of U.S. food aid under Title II in the form of cash, which could be quickly used to purchase commodities closer to a sudden food emergency.

[19] Agricultural tariff schedules for World Trade Organization (WTO) member countries report the current maximum permissible duties. In addition to tariffs, both exporters and importers have used other trade-distorting policies, such as differential export taxes in Argentina and in Brazil (prior to 1996) and phytosanitary barriers in India. These policies create incentives to boost domestic oilseed production or encourage exports of processed products, which tend to displace U.S. oilseed exports and shift the composition of U.S. exports toward whole oilseeds and away from value-added oilseed meals and vegetable oils.

Conclusions

Prior to 1996, U.S. policies to protect farm income were primarily based on controlling supply and prices through programs to restrict acreage, manage stocks, and limit imports. Such programs caused unintended consequences and adversely affected the competitiveness of U.S. agriculture. Today, the policy initiatives are focused on increasing demand through trade liberalization, expanding new uses, enhancing crop yields and quality, expediting cost efficiencies of production and transportation, conserving farm resources, and providing better ways to manage risk.

Since 2002, government payments to the soybean sector have been relatively small, consisting primarily of fixed direct payments, but potential outlays could increase if prices decline. Domestic market conditions, Federal budget deficit concerns, and multilateral trade negotiations will be important considerations throughout the review of new farm legislation.

Other policy considerations include the level of funding for farm conservation, infrastructure, rural development, and research programs. Under the WTO, many of these non-commodity-specific payments are not considered trade distorting and are not subject to discipline. A reallocation of Federal funding to these types of programs could aid U.S. efforts to stay within its current ($19.1 billion) limit on trade-distorting domestic support, and a possibly lower limit if and when a new trade agreement is reached. Farm incomes of soybean producers could be supported by a net expansion of exports from trade liberalization, which could offset any decline of domestic supports. Throughout the U.S. soybean sector, there are opportunities to discover new product uses and improvements in crop quality, develop more versatile risk management instruments, and lower costs of crop production and transportation.

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Useful Links

Oil Crops Yearbook tables (www.ers.usda.gov/publications/so/view.asp?f=field/ocs-bb/) include historical data covering domestic soybean production, trade, use, and prices.

Production, Supply and Distribution (PSD) database (www.fas.usda.gov/psd/) contains official USDA data on production, supply, and distribution of agricultural commodities for the United States and major importing and exporting countries. The database provides projections for the coming year and historical data for more than 200 countries and major crop, livestock, fishery, and forest products.

WTO Agricultural Trade Policy Commitments Database (www.ers.usda.gov/db/wto/) contains data on implementation of trade policy commitments by WTO member countries. Data on domestic support, export subsidies, and tariffs are organized for comparison across countries. This queriable database offers various options for viewing and downloading data.

Quick Stats: Agricultural Statistics Database (www.nass.usda.gov/QuickStats/) offers U.S., State, and county-level agricultural statistics for many commodities and data series. Quick Stats offers the ability to query by commodity, State, and year. The dataset can be downloaded for easy use in a database or spreadsheet.

Agricultural Atlas of the United States (www.nass.usda.gov/research/atlas02/) provides maps showing county-level data from the 2002 Census and some maps showing increases and decreases from 1997 Census data.

Farm policy background, program provisions, and history (www.ers.usda.gov/Briefing/FarmPolicy/historyOfFarm.htm) provides access to previous Farm Acts and policy backgrounders prepared by ERS for those Acts.

Farm Program Acres (www.ers.usda.gov/data/baseacres/) allows downloading and mapping of county-level farm program and planted acreage data for nine major program crops (corn, grain sorghum, barley, oats, wheat, rice, cotton, peanuts, and oilseeds).

Farm Programs, Price Supports, Participation, and Payment Rates (www.ers.usda.gov/Briefing/FarmPolicy/data/Provisions.xls) contains program parameters for individual commodities.

CCC Net Outlays by Commodity and Function (www.fsa.usda.gov/dam/bud/CCC%20Estimates%20Book/2006PresBud/Pres%20Bud%20Table%2035.pdf) provides total Commodity Credit Corporation expenditures by commodity.

U.S. and State farm income data include calendar year data on direct government payments.

- **Direct government payments, history** (www.ers.usda.gov/data/FarmIncome/finfidmu.htm#payments)

• **Latest forecast**
(www.ers.usda.gov/Briefing/FarmIncome/Data/GP_T7.htm)

Price Support Loan and LDP Activity Report (www.fsa.usda.gov/dafp/psd/Reports.htm) includes data on year-to-date and the previous 4 years of marketing loan and loan deficiency payment expenditures.

National and County Commodity Loan Rates (www.fsa.usda.gov/dafp/psd/LoanRate.htm) provides county and national marketing loan rates.

U.S. WTO Domestic Support and Support Reduction Commitments (www.ers.usda.gov/briefing/FarmPolicy/usnotify.htm) summarizes the U.S. domestic support notifications to the WTO.

Appendix 1—Comparison of Operating and Financial Characteristics Between More Specialized and Less Specialized Soybean Farms

According to the 2004 Agricultural Resource Management Survey (ARMS)[1], farms that grew soybeans averaged 550 acres of cropland in 2004, of which 545 acres were harvested crop acres (appendix table 1). Soybeans accounted for 266 (nearly half) of the harvested crop acres and for 42 percent of the farm value of production. Production specialty (determined by the largest proportion of gross commodity receipts from the farm operation) across farms growing soybeans was nearly equally divided between corn and soybeans. Soybeans were the production specialty on 31 percent of farms and corn the production specialty on 33 percent of farms. Soybeans are typically grown in a 2- to 3-year rotation on farms that also grow corn and wheat. Farms that grew soybeans were concentrated in the Heartland (68 percent) and the Northern Crescent (13 percent).[2]

[1] For more information on ARMS and to access data, see www.ers.usda.gov/Briefing/ARMS/

[2] For more information on ERS Farm Resource Regions, see www.ers.usda.gov/Briefing/ARMS/resourceregions/resourceregions.htm

Farms vary widely in size and characteristics, ranging from very small retirement and residential farms to establishments with sales in the millions. ERS combines occupations of operators and sales classes of farms to assign farms into one of three categories:

- Commercial farms (any farms with annual sales of $250,000 or more);
- Intermediate farms (farms with sales less than $250,000 and whose operators report farming as their primary occupation); and
- Rural-residence farms (farms with annual sales less than $250,000 and whose operators report their primary occupation as either retirement or off-farm).

Farms that grew soybeans were mostly rural residence and intermediate farms (appendix table 2). Commercial farms accounted for 20 percent of the total number of soybean farms, versus 45 percent rural residence and 35 percent an intermediate type.

Operational Characteristics of More and Less Specialized Soybean Farms

Farms growing soybeans where soybeans accounted for more than half of the total value of production (more specialized soybean farms) were distinct from farms where soybeans accounted for less than half of the total value of production (less specialized soybean farms). Farms specializing in soybeans were generally smaller in size and level of sales than less specialized soybean farms. More specialized soybean farms had, on average, much lower gross and net farm incomes and substantially fewer financial assets than less specialized soybean farms. Both groups were primarily located in the Heartland and Northern Crescent with over 50 percent of each group located in the Heartland (appendix tables 3 and 4).

FOR IMMEDIATE RELEASE

For additional information contact: Tyler Kelley or Chris Toebben at Osborn & Barr Communications, 888-235-4332.

Soybean Checkoff Shares a Taste of Healthier Soy Oil to Come

AMANA, Iowa. (Aug. 29, 2006) - A recent soybean checkoff-funded study shows that four out of five consumers consider soybean products to be healthy, and more than half agree that consuming soy products can play a role in reducing obesity. To maintain that consumer confidence, however, the trans-fat issue must be resolved.

That's why the soybean checkoff has been working with industry partners to develop and promote low-linolenic (low-lin) soybeans. Low-linolenic soybean oil doesn't require hydrogenation - the process that creates trans fats - so the use of these soybean varieties reduces or eliminates trans fats in food products.

Earlier this year, the U.S. Food and Drug Administration required food companies to begin labeling trans fats in their products. Since that time, food companies have made it a priority to avoid trans fats. Kellogg's has already stated it would use low-lin soybeans to help reduce or remove trans fats from its foods. The soybean checkoff is committed to helping make sure other food companies have that option as well.

"This past year, seed was available to produce up to 450 million pounds of low-lin oil," says Chuck Myers, United Soybean Board (USB) director and a soybean farmer from Lyons, Neb. "That accounts for nearly 950,000 acres of soybeans. The availability continues to increase, but it is up to farmers to ensure that this preferred product has enough supply to meet consumer demand."

Late this year, approximately 400 million pounds of low-linolenic oil could be available to the food industry. By 2007, more than 2.5 million acres of soybeans could be planted to low-lin soybeans. This growth will be driven by increased demand from the food industry as more food manufacturers seek out trans-fat solutions.

"In some cases, farmers could receive an additional $0.40 per bushel or higher," says Jim Legvold, USB director and soybean farmer from Vincent, Iowa. "The checkoff and plant breeders must continue to balance the demand by consumers with profitability of the soybean farmer. It is one thing to develop a product with specialty traits, but it is another to develop a product that can be grown profitably by soybean farmers."

The importance of low-lin soybeans to the future of food was the focus of an event at the Farm Progress show that also included other issues dealing with soyfoods. Representatives from USB, the Iowa Soybean Association and the Soyfoods Council discussed the latest in human consumption of soy. Following presentations, attendees were treated to a soyfoods sampling that included tofu dessert bars, tortillas with soy protein, and soy sour cream. These are just a few examples of healthy and delicious foods made from soy.

"The soybean checkoff has invested in low-linolenic and related traits since 2000," says Myers. "Now it is up to the entire soybean industry to do everything we can to maintain the positive image of soy."

USB is made up of 64 farmer-directors who oversee the investments of the soybean checkoff on behalf of all U.S. soybean farmers. Checkoff funds are invested in the areas of animal utilization, human utilization, industrial utilization, industry relations, market access and supply. As stipulated in the Soybean Promotion, Research and Consumer Information Act, USDA's Agricultural Marketing Service has oversight responsibilities for USB and the soybean checkoff.

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December 9, 2005

Kellogg plans to use Monsanto soybean oil

Mary Jo Feldstein
St. Louis Post-Dispatch

Dec. 9-- Kellogg Co. said Thursday it will use Monsanto Co.'s Vistive low-lin soybean oil to reduce or eliminate trans fatty acids in several of its products.

Kellogg did not say which of its brands will switch, but some products will hit the shelves early next year. Government regulations require food labels to include information on trans fats beginning Jan. 1.

"Our goal is to make use of the most innovative ingredients possible and to encourage the accelerated production and adoption of low-lin oils, so the public will benefit from this breakthrough technology," said David McKay, president and chief operating officer of Kellogg.

Contract farmers harvested the first commercial crop of Vistive soybeans this fall. The hybrid soybeans are not genetically modified. They are bred to contain a lower level of linolenic acid. That makes the soybean oil more stable so that it doesn't need to be partially hydrogenated for longer shelf life. Partial hydrogenation creates unhealthy trans fats.

For Monsanto, of Creve Coeur, the Vistive crop was the first from a pipeline of seeds aimed at being healthier, tastier, easier to ship and store, or better for processing. It adds to Monsanto's business of improving crops for farmers by boosting yield and reducing the need to apply pesticides and herbicides.

Still, there is a "significant shortage of low-lin soybean oil," McKay said.

To meet future demand, soybean farms will need to transform production methods, and food makers must voice their intentions to use low-lin soybean varieties, McKay said.

In the meantime, Kellogg will work with the Bunge/DuPont Biotech Alliance, another producer of low-linolenic soybeans, to increase production of its low-lin soybean oil for use in 2007. Kellogg said it also needs increased acreage of Monsanto's Vistive soybeans.

Farmers planted about 200,000 acres of low-linolenic soybean varieties in 2005, according to the United Soybean Board. Nearly a million acres of the varieties are expected to be planted in 2006.

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Kellogg believes significantly more acres will be needed as food makers switch from partially hydrogenated soybean oil to healthier low-linolenic varieties.

More than 5 billion pounds of partially hydrogenated soybean oil is used each year in the United States. Soybean oil accounts for 80 percent, or 17.5 billion pounds, of the oil consumed nationwide. It's the most widely used oil in food production.

---- INDEX REFERENCES ----

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INDUSTRY: (Soybeans & Oilseeds Farming (1SO80); Ingredients (1IN93); Food Technology (1FO81); Food & Beverage Production (1FO79); Agriculture (1AG63); Shortening & Oils (1VE38); Agriculture Machinery & Technology (1AG37); Agriculture, Food & Beverage (1AG53))

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February 13, 2005

Section: 1

AMERICA'S OIL CHANGE: Losing Trans Fats; Fat Substitute, Once Praised, Is Pushed Out of the Kitchen

KIM SEVERSON and MELANIE WARNER

Scientists contend that trans fat, component of partially hydrogenated oil favored by food industry, is more dangerous than fat it replaced; trans fat has same heart-clogging properties as saturated fat, but also reduces good cholesterol, and small but growing body of research has linked it to metabolic problems; Food and Drug Administration has ordered food companies to disclose trans fat amounts on food labels starting next year; food industry finds search for substitute more daunting and expensive than first imagined; photos, chart
Scientists contend that trans fat, component of partially hydrogenated oil favored by food industry, is more dangerous than fat it replaced; trans fat has same heart-clogging properties as saturated fat, but also reduces good cholesterol, and small but growing body of research has linked it to metabolic problems; Food and Drug Administration has ordered food companies to disclose trans fat amounts on food labels starting next year; food industry finds search for substitute more daunting and expensive than first imagined; photos, chart

Bob Pitts knows doughnuts. He fried his first one in 1961 at the original Dunkin' Donuts shop in Quincy, Mass. Just by looking at the lumps and cracks on a misshapen doughnut, he can tell if the frying oil is too cool or the batter too warm. But Mr. Pitts, the company's doughnut specialist, cannot find a way to make one that tastes good without using partially hydrogenated oil, now considered the worst fat in the American diet.

An artificial fat once embraced as a cheap and seemingly healthy alternative to saturated fats like butter or tropical oils, partially hydrogenated oil has been the food industry's favorite cooking medium for decades. It makes French fries crisp and sweets creamy, and keeps packaged pastries fresh for months.

But scientists contend that trans fat, a component of the oil, is more dangerous than the fat it replaced. Studies show trans fat has the same heart-clogging properties as saturated fat, but unlike saturated fat, it reduces the good cholesterol that can clear arteries. A small but growing body of research has connected it to metabolic problems.

The Food and Drug Administration has declared that there is no healthy level in the diet and has ordered food companies to disclose trans fat amounts on food labels by January 2006.

That has sent Mr. Pitts and his counterparts at dozens of companies on an expensive and frustrating race to change America's oil. In the last year, Mr. Pitts has tried 19 alternatives in the company's test kitchen near Boston, but the doughnuts were either too heavy or so slick the icing slid off. Most simply didn't taste good.

So far, only the most health conscious consumers are shopping to avoid trans fat. But food companies are betting that will change when the labeling law takes effect, and they have already spent tens of millions of dollars trying to get rid of trans fat without changing the taste of America's favorite processed and fast foods.

"Whoever's on that list of products with trans fats is going to be sweating bullets," said Harry Balzer, vice president for the NPD Group, a consumer research company based in Port Washington, N.Y.

At least 30,000 and as many as 100,000 cardiac deaths a year in the United States could be prevented if people replaced trans fat with healthier nonhydrogenated polyunsaturated or monounsaturated oils, according to a 1999 joint report by researchers at the Harvard School of Public Health and the Brigham and Women's Hospital in Boston.

This and other studies led the government's top medical advisers for the Institute of Medicine at the National Academy of Sciences to declare in 2002 that they could not determine a healthful limit of trans fat, as they had for other dietary fats. The following year the government approved the labeling law.

The $500 billion food processing industry has long defended trans fat, starting in the 1970's when scientists first raised concerns. But with the new labeling requirement looming and lawmakers searching for ways to hold food companies responsible for their customers' health, getting rid of it has become an obsession.

"It's the perfect storm for these companies: concern over litigation and legislation, as well as a market opportunity of baby boomers getting older and being more concerned with their health," said Dean Ornish, the director for the Preventive Medicine Research Institute in Sausalito, Calif., and a consultant to PepsiCo, McDonald's and ConAgra Foods.

PepsiCo has already scrubbed trans fats from its Frito-Lay brand chips. Health-oriented grocery stores like Whole Foods and Wild Oats refuse to sell any processed food that contains it. Last month, Gorton's removed trans fat from its fish sticks, and Tyson Foods introduced frozen fried chicken products without it. Executives at Kraft Foods, ConAgra, Kellogg and Campbell Soup want to get trans fat out of most or all of their products by the beginning of next year.

Unlike diet-driven trends that filled store shelves with low-fat products in the 1990's and, more recently, low-carb foods, the removal of trans fats does not have a strong consumer constituency. Although some market research shows that more than 80 percent of consumers have heard that trans fat is unhealthy, few shop to avoid it. Most seem to be like Joan Nicholson, 57, a New Yorker who retired to Boise, Idaho. "I read about cholesterol and trans fats and fatty acids and I try to keep it all straight," she said, "but I'm afraid I don't do a great job of it."

Unsatisfying Alternatives

Finding a substitute for partially hydrogenated oil is more daunting and considerably more expensive than food companies first imagined. That is because it is the perfect fat for modern food manufacturers. Produced by pumping liquid vegetable oil full of hydrogen with a metal catalyst at high heat, the fat stays solid at room temperature -- an essential trait for mass-produced baked goods like crackers or cakes. But that is the very process that creates the dangerous trans fat.

The shortening-like oil is an industry workhorse. Its smoothness and high melting point make it a great medium for the creamy filling in an Oreo. In the deep-fat fryer, partially hydrogenated oil can take repeated heatings without breaking down.

It also helps products stay fresh longer on supermarket shelves. Small amounts keep peanut butter from separating. It is even found in products promoted as healthful, like Nutri-Grain yogurt bars and Quaker granola bars.

According to one survey on trans fat issued by the Food and Drug Administration in 1999, partially hydrogenated oil was in 95 percent of the cookies, 100 percent of crackers and 80 percent of frozen breakfast foods on supermarket shelves.

Margarine, which was very high in trans fat, was one of the first foods to change. ConAgra Foods in Omaha spent about a year creating trans fat-free versions of soft tub margarines like Parkay and Fleichmann's. But the company is having a tougher time cracking the code on stick margarines, frozen dinners and microwave popcorn.

The company tested liquid soybean oil in its Marie Callender's frozen dinners, but the oil puddled under the roasted potatoes and the sauce slipped right off the meat, leaving it barren and dry.

"It wasn't very appealing," recalled Pat Verduin, senior vice president for product quality and development at ConAgra, which owns dozens of household brands, including La Choy, Hunt's and Peter Pan.

At the Pepperidge Farm division of Campbell Soup, in Norwalk, Conn., puff pastry sheets and pot pies are causing the most trouble. Concoctions tested over the last year have made the crusts unpalatably dense and breadlike.

"We can't get the flakiness and layering with these softer fats," said Scott Gantwerker, its quality assurance chief.

The company had more success with its Goldfish snack crackers, which after two years of tinkering are made with a sunflower oil blend and are free of trans fat. The oil, called NuSun, resists oxidation and spoilage. But it will not solve every company's problem. Only 2 million

acres of the sunflowers are planted each year, compared with 75 million acres of soybeans. As a result, the sunflower oil can cost 20 percent to 25 percent more, said Larry Kleingartner, executive director of the National Sunflower Association.

Feeding the Fast Food Giants

Finding a way to have businesses change the oil they use is even more problematic for the fast-food industry, which uses partially hydrogenated oil in deep-fat fryers and on griddles. Some chains, like Legal Seafood and Ruby Tuesday, replaced their oil with healthier versions, but they are the exceptions. Restaurants face no government labeling requirement.

"We're not into knee-jerk reactions," said Yum Brands' chief executive, David C. Novak, whose company owns KFC, Taco Bell and Pizza Hut. "We've seen things come and go." Yum Brands, Mr. Novak said, "is at the early stages" of trans fat replacement.

McDonald's replaced beef tallow with partially hydrogenated soybean oil in 1990. In September 2002, the company vowed it would use healthier oil in its 13,000 stores in the United States by February 2003. Two years later, it is still serving up six grams of trans fat in a large order of fries and has given no indication of when that will change. Last week, the company agreed to a $8.5 million settlement of a lawsuit accusing it of misleading the public about its efforts to remove trans fat.

During a conference call in December, McDonald's chief executive, James A. Skinner, offered few specifics on the company's progress in eliminating trans fat. He would say only that levels had been reduced in fried chicken products by 15 percent. "We remain committed to reduce trans fats," he said.

McDonald's problem, like that of many other giant food companies, is one of supply and demand. There simply is not enough reasonably priced replacement oil that is capable of retaining the signature flavor of a McDonald's fry, said John Jansen, senior vice president for sales and marketing at Bunge, the world's largest processor of oilseeds like soybean and canola.

Among the options McDonald's considered is a new breed of oil called high-oleic canola, which can withstand repeated heating in a deep-fat fryer without compromising taste. But it is in short supply and expensive. The annual production of the oil this year will be about a billion pounds and McDonald's would require about a third of that, Mr. Jansen said. At roughly 20 cents more a pound, the switch would cost the company an additional $70 million a year, according to figures offered by Mr. Jansen.

And until large users like McDonald's commit themselves to it, oil-seed growers will not produce more. The scale of the problem becomes clear at the J.R. Simplot French fry and hash brown plant in Caldwell, Idaho, where Burbank russet potatoes become McDonald's fries.

Before being frozen and shipped to restaurants and supermarkets, all frozen fries are given an initial light frying, usually in cheap partially hydrogenated soybean oil. Simplot food scientists

recently developed the Infinity fry, cooked in a high-oleic canola blend. The fry takes well to baking in the school cafeteria, where it has found a market. It can also be fried in trans-fat-free oil.

The Infinity can cost up to 50 percent more than the average fast-food fry. As a result, it is expected to make up only 1 percent to 2 percent of food sales this year for Simplot, a privately held company with $3 billion in annual sales that was the first to sell frozen fries to McDonald's.

Simplot's real profit center is the huge fry factory just across a muddy parking lot from the test kitchen where the Infinity fry was born. There, 720,000 pounds of frozen fries made with partially hydrogenated vegetable oil tumble off the line every day and are shipped to restaurants like McDonald's.

"Logistically, trying to turn the restaurant industry on its head is essentially impossible on a 'let's do it by May' sort of basis," said Kevin Storms, president of Simplot's food group. And then there is the matter of cost.

"Most restaurant customers," Mr. Storms said, "want a specific taste at a specific price."

Medical Advice Changes

Balancing health with taste has long been a challenge for food manufacturers. In the 1980's, on scientists' advice, the industry replaced saturated fats like coconut oil and butter with oil containing trans fat. Now nutritionists have changed their edict.

"There was a lot of resistance from the scientific community because a lot of people had made their careers telling people to eat margarine instead of butter," said Walter Willett, chairman of the Department of Nutrition at the Harvard School of Public Health and one of a handful of medical researchers who have led the fight against trans fat. "When I was a physician in the 1980's, that's what I was telling people to do and unfortunately we were often sending them to their graves prematurely."

He and other researchers say that cells rely on natural fatty acids to function. Trans fat is artificial, and acts in the body like grains of sand do in the workings of a clock.

The strongest argument against trans fat is its role in heart disease. Like lard, beef fat or butter, trans fat increases low-density lipoprotein, or LDL, the so-called bad cholesterol. But it also decreases HDL, the good cholesterol that helps clean arteries, several studies have shown.

Food companies have, for the most part, accepted the word of scientists and are working to remove trans fat, even though they know finding a new oil is going to cost them. Not only does equipment need to be retooled, budgets must be re-examined.

Taste and Technology

Food companies argue that completely eliminating trans fat might be impossible given the cost and the fact that consumers do not want the taste of favorite foods to change. That is why a coalition of edible oil producers and food manufacturers persuaded both the Agriculture and Health and Human Services Departments to soften the federal government's stance on trans fat consumption in the latest version of the dietary guidelines released in January.

The scientific advisory committee that created the guidelines originally warned that trans fat consumption should be "limited to less than 1 percent of total calories," or about the amount in half a doughnut. But the numeric value was replaced with the phrase "keep trans fatty acid consumption as low as possible."

Food companies are also fighting a campaign by the Center for Science in the Public Interest, which frequently criticizes the industry, and a group of cardiologists and researchers to ban trans fat altogether, a proposal similar to one snaking through Canada's legislative system.

Faced with the lack of trans fat free vegetable oil alternatives, some companies are gingerly turning back to palm oil, a saturated fat that was taken out of many products in the late 1980's after an effective campaign waged in part by the American Soybean Association and the Center for Science in the Public Interest helped turn Americans away from all forms of "tropical grease."

Kraft is using a combination of palm fruit oil and high-oleic canola for the filling in its three trans-fat-free Oreo varieties -- a reduced-fat version and two with yellow, rather than chocolate, wafers. Without the firmness of palm oil, getting the consistency that Oreo lovers expect would have been nearly impossible, said Jean Spence, Kraft's executive vice president for technical quality.

The trade-off was an extra half-gram of saturated fat per serving. The company still has not figured out how to make the traditional Oreo taste the same without trans fat or significantly higher saturated fat levels. So far the new versions make up 9 percent of Oreo sales, according to data from Information Resources, an industry research firm.

Some companies are experimenting with new blends of liquid oil and fully hydrogenated oil, which does not contain trans fat. Others are using an enzyme method called intersterification to blend the oils.

Critics say that these offerings are still artificial, highly processed ingredients that may not be much safer than oils produced by partial hydrogenation. And nutritionists wonder whether consumers know enough to distinguish good fat from bad, and natural oils from artificial.

"I don't know that they will look at a label that has low trans fat and high saturated fat and be able to figure out if it is healthy or not," Joanne Ikeda, a nutrition professor at the Center of Health and Weight at the University of California, Berkeley.

And consumers might not even care.

"I know there are healthy fats and there are unhealthy fats and that trans fats are the unhealthy ones, but I don't know what they are supposed to do to you," said Thai Bu, 32, who was buying whole-grain bread and eggs recently at a West Seattle grocery store. "If I want a cookie and it has it in it, I'll still eat one or two."

Photos: Bob Pitts, a Dunkin' Donuts food specialist, has tried 19 alternatives to oil with trans fat, but the doughnuts were too heavy or the icing slid off. (Photo by Gregg Matthews for The New York Times); Dunkin' Donuts now offers muffins, pastries and cookies without trans fat, but it has not found a way to rid the ingredient from its doughnuts. (Photo by Jodi Hilton for The New York Times); (Photograph by Tony Cenicola)(pg. 30); At J.R. Simplot, supplier to McDonald's, oil like this with trans fat is a staple. The company sells fries without it, but they cost more. (Photo by Chad Case for The New York Times)(pg. 1)

Chart: "Judging a Box by Its Cover"
Until the government requires food companies to list trans fat on labels next year, here are some ways to figure out how much is in a product.

Finding trans fat
1. If partially hydrogenated oil is in the ingredient list, the product contains trans fat.

Calculating the number of grams
2. Note the amount of total fat. Add up the grams listed next to each individual fat. The missing grams are mostly trans fat.

When only saturated fat amounts are listed and partially hydrogenated oil is the main fat, the trans fat amount is often equal to or more than the saturated fat amount.

Watching for hidden amounts
3. The Food and Drug Administration allows a product with less than a half gram per serving to claim the product has no trans fat. But often, people eat more than one serving size in a sitting. A double serving of a product with a half gram of trans fat or less can add up to unhealthy amounts quickly.

How much trans fat some popular foods contain
The U.S.D.A. dietary guidelines advise eating as little trans fat as possible, but avoiding it altogether might be impossible.

FAST FOOD GRAMS OF TRANS FAT
KFC original recipe chicken dinner: 7.0
Burger King large fries: 7.0
McDonald's large fries: 6.0
Dunkin' Donuts glazed doughnut: 4.0

PACKAGED FOOD
1 Pillsbury Grands buttermilk biscuit: 3.0

3 Oreos: 2.5
3 Milano cookies: 1.7
5 Ritz crackers: 1.5
1/3 cup of Bisquick mix: 1.5
2 Fig Newtons: 1.0
2 teaspoons powdered non-dairy creamer: 1.0

FROZEN FOOD
Marie Callender's chicken pot pie 10oz.: 8.0
2 Eggo waffles: 2.0
6 Mrs. Paul's crunchy fish strips: 2.0

SURPRISES
1 Kellogg Nutri-grain cereal bar: 2.5
1 Mission soft flour tortilla: 1.0
1 Pepperidge Farms hamburger roll: 1.0
1 cup of Orville Redenbacher's original microwave popcorn: 0.5

(Sources by The companies; Consumer Reports magazine; Centers for Science in the Public Interest; Food and Drug Administration)(pg. 30)

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December 9, 2005

Kellogg makes switch to healthier soyabean oil

Jeremy Grant in New York

20051209 110053 Kellogg will on Friday become the first multinational food company to use a new type of soyabean oil that eliminates some of the most unhealthy fats from foods.

The development is a sign that pressure to tackle rising obesity rates is leading farmers to switch to new kinds of crops in response to demands from the food and agribusiness industry to help deliver healthier foods.

The new soyabean oil comes from a soyabean seed called Vistive, developed by Monsanto, the biotechnology group.

Vistive eliminates the need for soyabean oil to be hydrogenated, a process that makes the oil stable but also produces harmful trans fatty acids or trans fats.

A similar product has also been developed by agribusiness Bunge and DuPont, the chemicals group, but has yet to be adopted on a large scale.

The development is significant because soyabean oil accounts for almost 80 per cent of the edible oil consumed in the US, including salad dressings and cooking oil.

Kellogg, which makes cookies and snacks as well as cereal, will make a "major investment" in new technologies that will make it possible to reduce or eliminate trans fats as well as saturated fats that have been shown to contribute to high cholesterol rates.

David Mackay, chief operating officer, said the company hoped to accelerate adoption of the new type of soyabean.

While the company was on track to eliminate trans fats from its "wholesome snacks" and crackers by next month, there was not enough production of so-called low-linolenic soyabeans to allow Kellogg to cut trans fats from its Keebler cookies.

The US government has said that all food products must show the level of trans fats on labelling by next month.

Kellogg said it would also work with Bunge and DuPont to increase production of its Nutrium low-linolenic soyabean seed.

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Mr Mackay said: "This is an opportunity for us to fix something that's an issue: how do we get more processors and manufacturers to embrace it [low-linolenic soyabeans] so it gets broader acceptance."

Kellogg called on other food companies "to create the market demand necessary for ramping up larger volumes of low linolenic soybean varieties".

According to the United Soybean Board, which represents 660,000 soyabean farmers, there are about 1m acres of low-linolenic soyabeans planted in the US. Total soyabean acreage is 75m.

Steve Poole, the USB's director of soy food programmes, said another 4m acres was needed "to meet marketplace demand".

But he said farmers were "totally behind" the trend towards low-linolenic soyabeans because of rising consumer demand for healthier foods.

He said of Kellogg's investment: "From the farmers' perspective this is very positive because it says the major food companies are now aware of 'low-lin' beans and are committed to it."

Vistive is the first product to emerge from a new business unit formed at Monsanto two years ago to address food companies' needs as they develop healthier foods.

---- INDEX REFERENCES ----

COMPANY: EI DU PONT DE NEMOURS AND CO; KELLOGG CO

NEWS SUBJECT: (Corporate Globalization (1XO29); Business Management (1BU42); Health & Family (1HE30); Nutrition (1NU67))

INDUSTRY: (Soybeans & Oilseeds Farming (1SO80); Oil (1OI41); Upstream Oil (1UP67); Ingredients (1IN93); Oil & Gas (1OI76); Food & Beverage Production (1FO79); Agriculture (1AG63); Shortening & Oils (1VE38); Agriculture, Food & Beverage (1AG53))

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Outlook

Electronic Outlook Report from the Economic Research Service

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Oil Crops Outlook

Mark Ash and Erik Dohlman

Farmers Expected to Harvest a Record U.S. Output of Soybeans

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The next release is Nov. 13, 2006

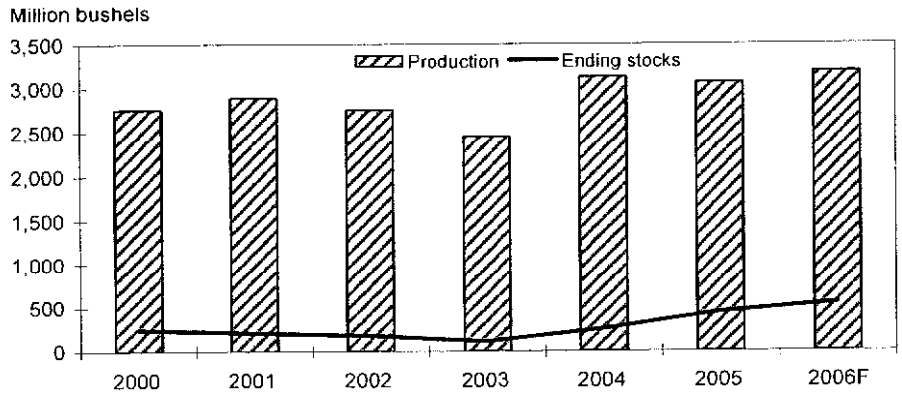
Approved by the World Agricultural Outlook Board.

Based on higher acreage and yield, the U.S. Department of Agriculture's (USDA) October Crop Production report indicated that U.S. soybean output in 2006 would climb to a record high 3,189 million bushels. An expected record supply raised 2006/07 forecasts of soybean exports and domestic crush to respective record highs of 1,145 million and 1,775 million bushels. However, with larger changes for the supply than for soybean demand this month, 2006/07 ending stocks likewise are expected to reach a record high of 555 million bushels. Despite the outlook for an abundant supply, the forecast for the season-average price is unchanged at $4.90-$5.90 per bushel, as a rally in corn and wheat prices is contributing support to the soybean market.

Global rapeseed output for 2006/07 was forecast at 46.4 million metric tons, up 0.7 million from last month. Improved yields in Canada increased expected production from 8.0 million to 8.5 million tons, yet still well shy of the record 2005 production at 9.7 million. However, severe drought will slash production in Australia to 0.8 million tons, down from the previous forecast of 1.25 million and last year's output of 1.44 million.

Figure 1

Successive U.S. bumper harvests of soybeans raising the stock carryout



Sources: *Oil Crops Yearbook*, Economic Research Service, and *World Agricultural Supply and Demand Estimates*, World Agricultural Outlook Board, USDA.

Domestic Outlook

Favorable Late Summer Weather Improves Outlook for U.S. Soybean Yield

USDA's October Crop Production report indicated that U.S. soybean output in 2006 would climb to a record high 3,189 million bushels. The revised crop forecast is up 96 million bushels from last month and would exceed the 2005 harvest by 126 million bushels. An updated survey of 2006 acreage indicated a soybean harvested area of 74.5 million acres (exceeding the previous estimate by 570,000 acres). Although 190,000 fewer acres were sown in the Mississippi Delta region, those declines were offset by even higher plantings recorded for Ohio, Nebraska, South Dakota, and North Dakota.

The main reason for this month's higher production, however, was a yield increase to 42.8 bushels per acre. The gain is 1 bushel above the September forecast and just below the 2005 record. Improved yields for Illinois, Minnesota, and Iowa contributed most of this month's increase for the national crop.

Reported beginning stocks of soybeans turned out moderately lower than expected at 448.9 million bushels. Based on the September 1 stocks and the cumulative use data, the 2005 crop was revised down by 23 million bushels to 3,063 million. Harvested area for 2005 was 110,000 acres lower than previously indicated and lower yields in a number of States trimmed the national average yield to 43.0 bushels per acre (formerly at 43.3 bushels). When the stock carryover is added to current production, the total 2006/07 supply is up to 3,641 million bushels, 318 million more than last year's former record.

Despite a slight advance of crop maturity this fall for soybeans, harvest activity in September was stalled in many locations by wet weather. As of October 8, harvesting of the U.S. soybean crop had progressed to 47 percent, matching the 5-year average but behind the 56 percent harvested a year ago. Last month's harvest delays precipitated a brief price rally, which stabilized as conditions improved by early October.

Ample Supply May Support a Record Strong Export Potential

Slow farm sales in September temporarily squeezed the supplies available to domestic processors. However, foreign buyers were more willing to pay a higher cost for soybeans than domestic users, so 2006/07 exports have set off on a strong early pace. U.S. export inspections for September totaled 64 million bushels, the fastest start for the month since 1999. In Brazil, soybean exports peaked in July, and tightening stocks are making subsequent soybean exports comparatively costly. Argentine supplies for export are also declining as domestic processors are consuming rising quantities. New-crop soybean harvests in both countries are at least 4-5 months away. No growth is forecast for 2006/07 soybean exports from Brazil, while Argentine exports are expected down 3 percent. As a consequence, foreign buyers will be more reliant upon U.S. purchases for some time. Sales of U.S. soybeans to China have been particularly brisk. U.S. export sales commitments to date are 143 million bushels higher than a year ago, with sales to China accounting for 91 million of the increase. In contrast, 2006/07 soybean imports by the European Union countries (EU-25) are forecast to rise 1 percent

This month, USDA raised the 2006/07 forecast of U.S. soybean exports from 1,125 million to 1,145 million bushels.

An anticipated major impediment to an even larger volume of soybean exports is a steady demand by domestic processors (and their likely substantial export business for soybean meal). In 2006/07, U.S. crushers are forecast to use a record 1,775 million bushels of soybeans, up 10 million from last month's forecast, compared with the 1,739 million consumed in 2005/06. With larger change for the supply than for soybean demand this month, the expected surplus of 2006/07 ending stocks should rise to a record high 555 million bushels from 530 million forecast earlier. Expectations for a comparatively high stocks-to-use ratio of 18 percent should keep soybean farm prices under pressure. In September, soybean prices in central Illinois averaged $5.15 per bushel, below last year's $5.49. Despite the outlook for an abundant supply, the forecast for the season-average price is unchanged at $4.90-$5.90 per bushel, as a rally in corn and wheat prices is contributing support to the soybean market.

For at least another year, U.S. soybean meal exports are likely to be quite competitive, particularly throughout major markets in Latin America. To illustrate, 2006/07 soybean meal imports for Mexico are anticipated to expand by 12 percent, although largely at the expense of soybean imports, which could edge 1 percent higher. Comparatively low values for soybean meal (forecast at $147.50-$177.50 per short ton) will support a robust level of exports. The 2006/07 forecast of U.S. soybean meal exports was increased 250,000 tons this month to 8.35 million short tons. It is also likely that 2005/06 soybean meal trade finished above previous forecasts at 7.85 million tons.

While likely to grow at a slower percentage than exports, domestic use could still lead the overall increase in soybean meal tonnage. Domestic disappearance is forecast to rise 750,000 tons (2.2 percent) in 2006/07 to 34.1 million tons.

The burden of record-high inventories of soybean oil is weighing down current prices. End of August soybean oil stocks had accumulated to 3,042 million pounds, just slightly below the previous month's all-time high. Since July 2006, soybean oil prices have fallen from a monthly average of 25.9 cents per pound to a September average of 23.5 cents. Subsequent strength in prices will also be tempered by better prospects for canola production in Canada. An all-time high for U.S. canola oil imports is expected this year at 1.65 billion pounds and in 2006/07 should approach that level again. Likewise, domestic output of canola oil (supplied through a strong influx of canola seed imports) could stay near a record volume. Steady growth in U.S. palm oil imports should continue in the marketing year ahead, as well. Yet, soybean oil values could resume their strength in 2007 once consumption overtakes the output gains. The forecast of the 2006/07 average price for soybean oil remains unchanged at 23.0-27.0 cents per pound.

Harvests of Sunflowerseed, Canola, and Cottonseed Hurt by Dry Weather

Producers planted nearly 2 million acres of sunflowers in 2006, up slightly from the estimate from the June Acreage report and reflecting greater sowing of oil-type varieties in North Dakota and South Dakota. Even so, the decline in sunflower acreage from last year still totals 725,000 acres. That factor alone would be enough

to substantially cut sunflowerseed production. Confection-type sunflowerseed took a disproportionate amount of the acreage reduction in 2006.

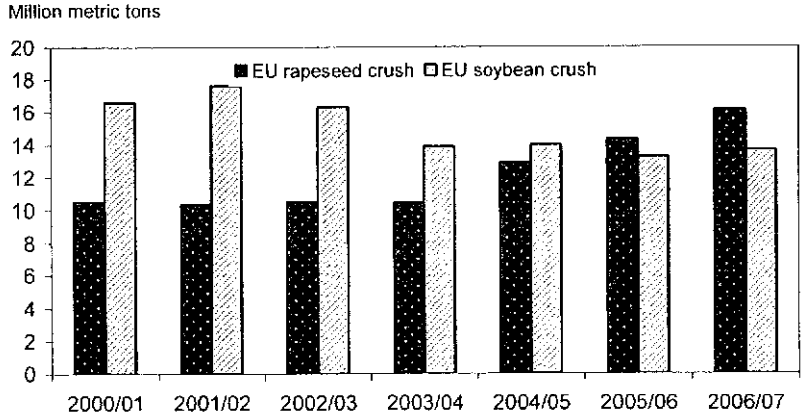
In addition, sunflowerseed yields are forecast down sharply this year. A dry summer in the Great Plains slashed sunflowerseed yields in all States except Minnesota. For North Dakota, the June-July cumulative precipitation was only half of normal. Following a record high national average yield last year of 1,540 pounds per acre, the 2006 yield could be reduced by a quarter toward 1,134 pounds per acre. Combined with the loss of acreage, the yield reduction lowers expected sunflowerseed production in 2006 by 47 percent to 2,114 million pounds. The two largest producing States, North Dakota and South Dakota, should account for 60 percent of the total output decline.

Cushioning the crop losses is a record-large carryover of sunflowerseed stocks remaining from last year's bumper harvest. September 1 sunflowerseed stocks totaled 781 million pounds, up from just 199 million the previous year. Total 2006/07 supplies will then be down by 1.25 billion pounds, compared with a crop reduction of 1.9 billion pounds. Strong demand for sunflowerseed oil is expected to boost crushing to around 1.3 billion pounds. Ending stocks should be drawn down substantially toward a minimal pipeline level, but it is unlikely that a major reduction in non-oil uses and exports can be avoided. The average sunflowerseed price may not differ markedly from the 2005/06 average of $12.00 per hundredweight.

For canola, adverse weather also compounded an acreage decline this year. Sowing of canola fell 10 percent in 2006 to 1.05 million acres. Canola yields were also affected in the same region where sunflower crops were damaged. With a 15-percent drop in the average yield to 1,212 pounds per acre, U.S. canola seed production is forecast down 23 percent to 1.2 billion pounds. Unlike sunflowerseed, though, an ample supply can still be maintained with imports from Canada. Crushing of canola seed can be supported around 2.2 billion pounds by supplementing the domestic harvest with up to 1.3 billion pounds of imports. More stocks will likely be needed in preparation of the opening of a new biodiesel plant in North Dakota next year.

U.S. cottonseed production for 2006 improved this month by 107,000 short tons to 7.3 million. However, production would still be 11 percent lower than last year, principally because of lower harvested acreage and yields in Texas. Despite a smaller output this year, a negligible volume of 2006/07 imports is expected due to a poor Australian cotton crop. Thus, a lower domestic supply likely means reductions for U.S. cottonseed demand. Domestic crushing is seen declining 9 percent to 2.75 million short tons, curtailing the consumption of cottonseed oil by a similar percentage. Feed use of cottonseed could also drop 9 percent to 4.2 million tons. There could be an even larger proportional decline in 2006/07 cottonseed exports (to 405,000 tons from 523,000 tons in 2005/06)

Figure 2
Opposite trends emerge for the EU-25 crush of soybeans and rapeseed



Source: PS&D database, Foreign Agricultural Service, USDA.

Record European Rapeseed Harvest Offsets Smaller Crops in Australia and Canada

Global rapeseed output for 2006/07 was forecast at 46.4 million metric tons, up 0.7 million from last month. World rapeseed area is up 0.5 percent in 2006, but lower yields are expected to pare output by 4.5 percent from last year's record high of 48.5 million. It will be possible to sustain a steady rate of world rapeseed exports (near 7.2 million tons) only through a sharp reduction in ending stocks.

In Canada, producers have turned in better canola yields than previously anticipated. The excellent yields of a year ago in Saskatchewan and Alberta have not been matched, although Manitoba yields were much improved. For Canada as a whole, expected production increased from 8.0 million to 8.5 million tons, yet still well shy of the record 2005 production of 9.7 million. A better supply and weaker competition from Australia boosts the 2006/07 export forecast to 5.65 million tons versus 5.4 million in 2005/06. Canola ending stocks next year are expected to drop to barely over 1 million tons from 2.1 million tons this year given the smaller crop and robust demand.

Throughout Australia, this year's severe drought has devastated crop potential. When canola was sown last May, the soils were already becoming abnormally dry. Following the country's driest August on record, and exacerbated by warmer than average temperatures, moisture levels continued to deteriorate through September. The stunted canola fields are now expected to produce just 0.8 million tons, down from the previous forecast of 1.25 million and last year's output of 1.44 million. The production decline led to a reduction in the 2006/07 forecast of Australian canola seed exports to a 10-year low of 450,000 tons.

The crop losses in Australia contributed to an already tight global balance between supply and demand. Farmers in the EU-25 are expected to produce a record-large 15.5 million tons of rapeseed this year. The harvest estimate is up 0.7 million tons from last month and slightly above last year's previous record of 15.4 million tons. Conditions since sowing last fall were far from optimal, but rapeseed crops proved to be surprisingly resilient, particularly in Germany and Poland. Early spring soil moisture was apparently sufficient to support crop yields through a comparatively dry and hot summer.

Despite a bumper harvest, rapeseed processors in the EU-25 are being hard pressed to keep up with an ever growing demand for rapeseed oil. Rapeseed crushing in 2006/07 is forecast at 16.1 million tons, 13 percent above the 2005/06 record. The lack of exportable Australian supplies complicates the task, with a majority of EU-25 imports now expected to come from Ukraine, Russia, and Romania. The potential demand is higher, but the foreign supply constraints could limit EU-25 rapeseed imports to around 0.4 million tons. Although there are available stocks of seed to export from Canada, the EU-25 currently restricts imports of all Canadian biotech varieties. By next year, however, that barrier could fall. The European Commission is now tasked with deciding whether to approve canola imports (exclusively for processing an oil for biodiesel) for the second of Canada's two major biotech varieties. For now, a growing volume of rapeseed oil imports from Canada, the United States, and even China should continue to supplement domestic output.

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Related Websites

WASDE,
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Table 1--Soybeans: U.S. supply and disappearance

Year beg. Sept. 1	Area Planted	Area Harvested	Yield	Supply Beginning stocks	Supply Productior	Supply Imports	Supply Total	Disappearance Crush	Disappearance Exports	Disappearance Seed, feed, & residual	Disappearance Total	Ending stocks
	Million acres		*Bu/acre*				*Million bushels*					
2004/05	75.2	74.0	42.2	112	3,124	6	3,242	1,696	1,097	193	2,986	256
2005/06	72.0	71.3	43.0	256	3,063	3	3,322	1,739	947	188	2,874	449
2006/07[2]	75.6	74.5	42.8	449	3,189	4	3,641	1,775	1,145	166	3,086	555
2004/05												
September						0.4		121.0	47.2			
October						0.2		155.3	177.7			
November						0.3		151.1	181.0			
Sep-Nov				112.4	3,123.7	1.0	3,237.1	427.4	405.8	99.3	932.4	2,304.6
December						0.7		150.0	155.0			
January						0.5		148.6	123.5			
February						0.3		137.6	132.2			
Dec-Feb				2,304.6	---	1.4	2,306.0	436.2	410.7	77.8	924.7	1,381.4
March						0.4		148.5	98.7			
April						0.3		139.4	55.5			
May						0.3		142.8	43.7			
Mar-May				1,381.4	---	1.0	1,382.3	430.7	197.9	54.4	683.1	699.3
June						0.7		132.0	34.6			
July						1.2		139.5	20.0			
August						0.3		130.3	28.2			
Jun-Aug				699.3	---	2.3	701.5	401.8	82.8	(38.8)	445.8	255.7
Total					3,123.7	5.6	3,241.7	1,696.1	1,097.2	192.7	2,985.9	
2005/06												
September						0.2		133.2	34.1			
October						0.2		157.7	137.2			
November						0.2		151.5	141.4			
Sep-Nov				255.7	3,063.2	0.6	3,319.6	442.4	312.6	62.5	817.5	2,502.1
December						0.3		148.4	88.3			
January						0.2		152.4	111.8			
February						0.4		136.3	111.3			
Dec-Feb				2,502.1	---	0.8	2,502.9	437.2	311.4	85.1	833.7	1,669.2
March						0.4		149.5	95.6			
April						0.3		135.5	43.4			
May						0.3		146.2	46.5			
Mar-May				1,669.2	---	1.0	1,670.2	431.3	185.5	62.7	679.5	990.7
June						0.6		137.4	39.0			
July						0.2		148.5	47.6			
August						0.2		142.1	51.0			
Jun-Aug				990.7	---	1.0	991.7	428.0	137.7	(22.7)	543.0	448.8
Total to date						3.4	3,322.3	1,738.7	947.2	210.3	2,330.6	

[1] Forecast.

Sources: *Crop Production* and *Grain Stocks* National Agricultural Statistics Service, U.S. Department of Agriculture; and *Oilseed Crushings,* Census Bureau, U.S. Department of Commerce.

Last update: 10/16/2006

Table 2--Soybean meal: U.S. supply and disappearance

Year begin. Oct. 1	Supply				Disappearance			
	Beginning stocks	Production	Imports	Total	Domestic	Exports	Total	Ending stocks
				1,000 short tons				
2004/05	211	40,715	147	41,073	33,559	7,343	40,902	172
2005/06[1]	172	41,163	165	41,500	33,350	7,850	41,200	300
2006/07[2]	300	42,285	165	42,750	34,100	8,350	42,450	300
2004/05								
October	210.7	3,685.2	6.5	3,902.4	3,077.2	469.5	3,546.7	355.7
November	355.7	3,584.2	7.3	3,947.1	2,866.6	793.7	3,660.3	286.8
December	286.8	3,567.9	6.9	3,861.7	2,697.0	893.4	3,590.4	271.3
January	271.3	3,552.5	6.8	3,830.6	2,875.3	614.5	3,489.8	340.8
February	340.8	3,293.3	7.0	3,641.2	2,649.2	681.5	3,330.7	310.4
March	310.4	3,547.6	8.9	3,867.0	2,900.5	718.5	3,619.0	248.0
April	248.0	3,326.6	7.6	3,582.1	2,583.6	691.0	3,274.6	307.5
May	307.5	3,397.9	9.4	3,714.7	2,819.8	546.0	3,365.7	349.0
June	349.0	3,160.6	7.4	3,517.1	2,704.4	567.9	3,272.3	244.8
July	244.8	3,320.4	5.8	3,570.9	2,726.1	482.5	3,208.6	362.3
August	362.3	3,122.1	64.9	3,549.3	2,903.2	407.9	3,311.1	238.3
September	238.3	3,157.0	8.8	3,404.1	2,756.1	476.2	3,232.3	171.8
Total		40,715.4	147.2	41,073.3	33,558.9	7,342.6	40,901.5	
2005/06								
October	171.8	3,700.9	9.3	3,882.0	2,906.6	659.2	3,565.8	316.1
November	316.1	3,562.2	10.0	3,888.4	2,908.9	674.6	3,583.5	304.9
December	304.9	3,518.0	10.8	3,833.7	2,879.4	616.2	3,495.7	338.0
January	338.0	3,589.5	10.7	3,938.1	2,869.0	742.5	3,611.5	326.6
February	326.6	3,215.3	11.0	3,552.9	2,514.4	736.8	3,251.2	301.6
March	301.6	3,504.0	12.5	3,818.1	2,866.4	665.2	3,531.6	286.5
April	286.5	3,212.6	11.4	3,510.5	2,584.0	511.1	3,095.1	415.4
May	415.4	3,474.6	13.3	3,903.4	2,921.6	678.2	3,599.8	303.5
June	303.5	3,250.9	16.4	3,570.8	2,689.8	614.9	3,304.6	266.2
July	266.2	3,507.8	11.3	3,785.2	2,642.7	770.0	3,412.6	372.6
August[1]	372.6	3,351.7	12.7	3,737.0	2,780.8	730.3	3,511.1	225.8
Total to date		37,887.4	129.4	38,188.6	30,563.7	7,399.0	37,962.7	

[1] Estimated. [2] Forecast.

Source: *Oilseed Crushings*, Census Bureau, U.S. Department of Commerce.

Last update: 10/16/2006

Table 3--Soybean oil: U.S. supply and disappearance

Year begin. Oct. 1	Supply				Disappearance			
	Beginning stocks	Production	Imports	Total	Domestic	Exports	Total	Ending stocks
	Million pounds							
2004/05[1]	1,076	19,360	26	20,462	17,439	1,324	18,763	1,699
2005/06[2]	1,699	20,345	35	22,079	17,900	1,150	19,050	3,029
2006/07[2]	3,029	20,060	55	23,144	19,200	1,250	20,450	2,694
2004/05								
October	1,075.6	1,759.6	1.4	2,836.6	1,507.3	59.9	1,567.2	1,269.4
November	1,269.4	1,688.0	4.7	2,962.1	1,586.5	184.5	1,771.0	1,191.2
December	1,191.2	1,682.3	1.1	2,874.5	1,323.9	239.5	1,563.5	1,311.1
January	1,311.1	1,680.2	1.7	2,992.9	1,355.8	77.0	1,432.8	1,560.1
February	1,560.1	1,564.1	2.0	3,126.2	1,262.2	217.2	1,479.4	1,646.8
March	1,646.8	1,686.4	1.8	3,335.0	1,447.6	74.6	1,522.2	1,812.7
April	1,812.7	1,579.6	2.1	3,394.5	1,522.6	74.8	1,597.4	1,797.1
May	1,797.1	1,620.1	1.8	3,419.0	1,458.3	71.9	1,530.2	1,888.7
June	1,888.7	1,497.3	0.8	3,386.9	1,480.3	68.5	1,548.9	1,838.0
July	1,838.0	1,586.7	0.2	3,425.0	1,383.7	52.4	1,436.1	1,988.8
August	1,988.8	1,484.4	2.8	3,476.0	1,611.7	137.3	1,749.0	1,727.0
September	1,727.0	1,531.1	5.8	3,264.0	1,499.1	65.9	1,564.9	1,699.0
Total		19,359.7	26.3	20,461.6	17,439.0	1,323.7	18,762.6	
2005/06								
October	1,699.0	1,828.6	3.1	3,530.8	1,570.9	76.3	1,647.3	1,883.5
November	1,883.5	1,756.7	2.9	3,643.2	1,637.3	154.1	1,791.4	1,851.8
December	1,851.8	1,717.3	1.9	3,571.0	1,272.8	107.8	1,380.6	2,190.5
January	2,190.5	1,765.2	3.0	3,958.8	1,388.8	71.3	1,460.1	2,498.7
February	2,498.7	1,594.8	4.0	4,097.5	1,356.9	67.2	1,424.1	2,673.4
March	2,673.4	1,746.5	4.2	4,424.0	1,527.8	178.1	1,705.9	2,718.1
April	2,718.1	1,586.3	2.3	4,306.7	1,454.7	96.6	1,551.3	2,755.4
May	2,755.4	1,709.3	2.2	4,466.9	1,528.6	53.4	1,582.0	2,885.0
June	2,885.0	1,608.7	2.3	4,496.0	1,494.6	82.3	1,576.8	2,919.2
July	2,919.2	1,737.6	3.3	4,660.1	1,464.7	89.3	1,554.0	3,106.1
August[1]	3,106.1	1,657.7	3.7	4,767.5	1,660.2	65.3	1,725.5	3,042.0
Total to date		18,708.8	33.0	20,440.8	16,357.1	1,041.7	17,398.8	

[1] Estimated. [2] Forecast.

Sources: *Oilseed Crushings* and *Production, Consumption, and Stocks*, Census Bureau, U.S. Department of Commerce.

Last update: 10/16/2006

Table 4--Cottonseed: U.S. supply and disappearance

Year beg. Aug. 1	Supply				Disappearance				
	Beginning stocks	Production	Imports	Total	Crush	Exports	Other	Total	Ending stocks
	1,000 short tons								
2004/05	421	8,242	1	8,664	2,923	379	4,770	8,072	592
2005/06[1]	592	8,172	0	8,764	3,011	523	4,629	8,163	602
2006/07[2]	602	7,256	25	7,883	2,750	405	4,227	7,382	501

[1] Estimated. [2] Forecast.

Sources: *Crop Production*, National Agricultural Statistics Service, U.S. Department of Agriculture; and *Oilseed Crushings*, Census Bureau, U.S. Department of Commerce.

Last Updated: 10/13/2006

Table 5--Cottonseed meal: U.S. supply and disappearance

Year beg. Oct. 1	Supply				Disappearance			
	Beginning stocks	Imports	Production	Total	Domestic	Exports	Total	Ending stocks
	1,000 short tons							
2004/05	77	0	1,362	1,439	1,280	107	1,387	52
2005/06[1]	52	0	1,370	1,422	1,222	150	1,372	50
2006/07[2]	50	0	1,240	1,290	1,170	70	1,240	50

[1] Estimated. [2] Forecast.

Source: *Oilseed Crushings*, Census Bureau, U.S. Department of Commerce.

Last Updated: 10/13/2006

Table 6--Cottonseed oil: U.S. supply and disappearance

Year beg. Oct. 1	Supply				Disappearance			
	Beginning stocks	Imports	Production	Total	Domestic	Exports	Total	Ending stocks
	Million pounds							
2004/05	109	2	957	1,068	935	57	991	76
2005/06[1]	76	1	950	1,027	892	65	957	70
2006/07[2]	70	0	865	935	815	55	870	65

[1] Estimated. [2] Forecast.

Sources: *Oilseed Crushings* and *Production, Consumption, and Stocks*, Census Bureau, U.S. Dept. of Commerce.

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Table 7--Peanuts: U.S. supply and disappearance

Year beg. Aug. 1	Supply				Disappearance					
	Beginning stocks	Imports	Production	Total	Domestic food	Crush	Seed & residual	Exports	Total	Ending stocks
	Million pounds									
2004/05	1,121	37	4,288	5,447	2,600	393	548	491	4,032	1,415
2005/06[1]	1,415	32	4,870	6,317	2,618	542	499	491	4,150	2,167
2006/07[2]	2,167	35	3,267	5,469	2,658	597	437	485	4,177	1,292

[1] Estimated. [2] Forecast.

Sources: *Crop Production* and *Peanut Stocks and Processors*, National Agricultural Statistics Service, U.S. Dept. of Agriculture and Census Bureau, U.S. Department of Commerce.

Last update: 10/16/2006

Table 8--Oilseed prices received by U.S. farmers

Marketing year	Soybeans	Cottonseed	Sunflower	Peanuts	Flaxseed
	$/bu.	*$/ton*	*$/cwt.*	*Cents/lb.*	*$/bu.*
1996/97	7.35	126.00	11.70	28.10	6.37
1997/98	6.47	121.00	11.60	28.30	5.81
1998/99	4.93	129.00	10.60	28.40	5.05
1999/00	4.63	89.00	7.53	25.40	3.79
2000/01	4.54	105.00	6.89	27.40	3.30
2001/02	4.38	90.50	9.62	23.40	4.29
2002/03	5.53	101.00	12.10	18.20	5.77
2003/04	7.34	117.00	12.10	19.30	5.88
2004/05	5.74	107.00	13.70	18.90	8.07
2005/06	5.66	95.50	12.00	17.30	5.95
2006/07[1]	4.90-5.90	88-118	10.95-12.55	17.8-19.4	5.65-6.65
2005/06					
September	5.77	96.00	13.20	17.00	6.10
October	5.67	89.40	12.80	17.40	6.05
November	5.62	92.60	12.30	17.50	5.93
December	5.78	95.10	11.60	17.40	5.82
January	5.87	102.00	11.20	17.30	5.64
February	5.67	98.20	11.40	18.60	5.50
March	5.57	NA	11.40	16.90	5.35
April	5.52	NA	11.90	17.40	5.56
May	5.68	NA	11.80	17.30	5.58
June	5.62	NA	11.70	17.00	5.40
July	5.61	NA	11.90	17.00	5.47
August	5.23	93.00	12.50	17.00	5.50
2006/07					
September[1]	5.12	99.10	12.00	17.10	5.45

[1] Preliminary. NA = Not available.

Source: *Agricultural Prices,* National Agricultural Statistics Service, U. S. Department of Agriculture.

Last update: 10/16/2006

Table 9--U.S. vegetable oil and fats prices

Marketing year	Soybean oil [2]	Cottonseed oil [3]	Sunflower oil [4]	Peanut oil [5]	Corn oil [6]	Lard [6]	Edible tallow [6]
				Cents/lb.			
1996/97	22.50	25.58	22.64	43.65	24.05	23.02	23.01
1997/98	25.80	28.85	27.00	49.21	28.94	19.46	20.69
1998/99	19.90	27.32	20.10	40.72	25.30	14.66	15.14
1999/00	15.60	21.52	16.68	35.96	17.81	13.64	13.21
2000/01	14.15	15.98	15.89	34.97	13.54	14.61	13.43
2001/02	16.46	17.98	23.25	32.23	19.14	13.55	13.87
2002/03	22.04	37.75	33.11	46.70	28.17	18.13	17.80
2003/04	29.97	31.21	33.41	60.84	28.43	26.13	22.37
2004/05	23.01	28.01	43.71	53.63	27.86	21.80	18.48
2005/06	23.41	29.47	38.50	44.96	25.18	21.74	18.16
2006/07[1]	23.0-27.0	28.0-32.0	32.5-36.5	43.0-47.0	25.5-29.5	19.0-23.0	19.0-23.0
2004/05							
October	23.23	22.74	34.81	55.00	23.10	27.95	16.13
November	22.95	23.88	34.70	55.00	24.24	27.26	16.34
December	21.79	23.81	35.40	55.67	26.67	26.50	17.43
January	20.46	23.70	44.29	56.00	27.41	22.10	17.51
February	20.70	24.38	49.29	55.00	27.58	18.30	18.50
March	23.60	28.19	47.11	50.00	28.08	17.71	19.95
April	23.09	29.80	45.98	50.00	29.29	20.72	22.19
May	23.38	30.63	46.50	53.25	30.65	22.95	20.84
June	24.70	33.13	46.50	52.50	30.73	21.30	19.25
July	25.46	34.15	45.13	52.38	30.01	18.08	17.36
August	23.59	30.44	46.44	52.25	28.83	17.75	17.38
September	23.19	31.25	48.33	50.06	27.75	20.97	18.83
2005/06							
October	24.26	34.44	37.75	45.50	27.50	27.38	18.95
November	22.52	34.38	39.07	45.50	27.08	27.76	19.98
December	21.00	30.50	37.61	45.00	26.08	18.60	18.94
January	21.63	29.63	36.24	42.50	25.22	17.16	18.60
February	22.21	29.50	37.02	42.50	23.65	16.44	18.07
March	23.21	29.75	36.24	42.50	22.61	16.82	17.54
April	22.98	27.05	37.50	42.50	23.19	18.00	15.86
May	24.76	28.06	40.31	42.50	25.25	17.13	16.19
June	24.20	27.25	NA	43.75	25.70	17.63	17.33
July	25.86	29.20	NA	45.00	25.75	22.21	18.17
August	24.80	26.69	NA	47.30	25.42	29.91	18.93
September[1]	23.54	27.13	NA	49.25	24.71	31.86	19.33

[1] Preliminary. [2] Decatur, IL. [3] PBSY Greenwood, MS. [4] Minneapolis. [5] Southeast mills. [6] Chicago.
Sources: *Monthly Feedstuff Prices* and *Peanut Report,* Agricultural Marketing Service, U.S. Dept. of Agriculture.
Last update: 10/16/2006

Table 10--U.S. oilseed meal prices

Marketing year	Soybean meal [2]	Cottonseed meal [3]	Sunflower meal [4]	Peanut meal [5]	Canola meal [6]	Linseed meal [4]
			$/Short ton			
1996/97	262.00	192.00	110.60	207.79	192.02	158.75
1997/98	185.30	144.00	84.20	210.25	131.15	117.54
1998/99	138.50	109.55	64.20	122.02	112.28	84.49
1999/00	167.62	127.43	75.00	108.15	117.07	103.42
2000/01	173.62	142.93	90.50	119.75	139.20	121.92
2001/02	167.72	136.16	87.27	112.32	143.33	121.29
2002/03	181.58	146.12	105.00	128.35	144.06	122.91
2003/04	256.05	183.47	111.14	177.56	188.45	159.25
2004/05	182.90	124.04	85.50	118.34	139.75	115.55
2005/06	174.17	144.27	77.46	110.86	140.52	120.00
2006/07[1]	147.5-177.5	115-145	55-85	85-115	110-140	75-105
2004/05						
October	155.37	126.75	75.67	100.38	133.39	99.50
November	153.90	119.00	98.00	99.25	138.81	114.60
December	161.60	117.00	97.63	93.50	135.13	109.13
January	167.34	112.50	94.00	93.25	129.21	111.63
February	167.95	111.25	76.00	99.25	139.55	109.88
March	187.96	110.80	68.20	112.00	146.08	109.80
April	193.19	108.00	75.00	122.75	140.85	104.00
May	198.68	110.40	80.00	137.25	139.25	96.00
June	219.28	138.75	NA	145.25	153.98	116.00
July	215.75	151.00	NA	140.83	150.48	159.38
August	198.43	143.00	NA	132.50	138.12	157.75
September	175.40	140.00	105.00	109.00	132.10	98.98
2005/06						
October	166.22	133.13	73.25	105.50	130.13	100.38
November	170.32	132.50	64.80	102.50	139.55	113.60
December	193.17	175.00	70.00	100.88	158.06	118.00
January	183.64	172.50	NA	NA	150.05	127.25
February	176.73	152.50	NA	114.50	143.94	130.17
March	175.07	148.75	98.00	113.50	134.74	129.00
April	174.64	144.38	90.33	113.17	136.04	126.63
May	175.77	131.50	72.60	113.33	136.59	119.10
June	176.83	135.00	66.50	107.13	139.63	116.88
July	168.97	132.50	76.50	107.50	137.83	111.50
August	159.76	134.50	79.33	100.00	143.28	101.10
September[1]	168.87	139.00	83.33	98.75	136.38	92.75

[1] Preliminary. [2] Hi-pro Decatur, IL. [3] 41% Memphis. [4] 28% Minneapolis.
[5] 50% Southeast mills. [6] 36% Pacific Northwest.
Source: *Monthly Feedstuff Prices,* Agricultural Marketing Service, U.S. Dept. of Agriculture.
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Section: c

Kansas has big stake in battle over trans fat

BY PHYLLIS JACOBS GRIEKSPOOR, The Wichita Eagle

Out with trans fat.

In with low-linolenic, high-oleic, non-hydrogenated... something.

The lingo isn't easy, but the message is clear: Trans fat is bad.

When medical researchers made that discovery several years ago, companies who make food and food ingredients -- including Kansas companies Cargill and Bunge, which crush soybeans, and bakeries such as Sara Lee and Interstate -- began a scramble to find ways to get trans fat out of food.

The task is daunting. Vegetable oil, the source ingredient of most trans fat, is in almost everything, from snack foods to mayonnaise.

And the stakes are high: Americans consume more than 22 billion pounds of edible oils annually, according to the national Institute for Shortening and Edible Oils. And growing the grains from which those oils are made is big business for Kansas farmers.

Nutrition labels on all foods must carry information on trans fat content, a move intended to help consumers cut their consumption.

Numerous foods without trans fat are already available, and researchers continue to develop new oils and new ways to process existing oils.

It's the chemistry

At the heart of the problem is the chemical makeup of vegetable oil as well as the process used to keep it from breaking down or spoiling.

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Scientific research centers on two ingredients: linolenic acid and oleic acid. In simplest terms, linolenic acid is chemically unstable, while oleic acid is stable.

Some oils -- including palm oil, sunflower oil, cottonseed oil and corn oil -- are naturally high in oleic acid. They require no chemical change to prolong shelf life but they tend to be more expensive and cannot be produced in anywhere near the quantities needed by food manufacturers.

Other oils -- including soybean oil, which has 78 percent of the total oils market -- are high in linolenic acid. They are chemically treated to prevent the linolenic acid from oxidizing, which causes spoilage.

The process, partial hydrogenation, also is used to turn liquid oil into a soft spread such as tub margarine. But a byproduct of the process is trans fatty acids, or trans fat.

The problem can be solved by creating an oilseed lower in linolenic acid or higher in oleic acid -- or both. Another option is to refine the process of hydrogenation.

That means chemists, seed companies and grain geneticists are all involved in the effort to develop healthier vegetable oils.

For the farmers in Kansas -- who grow $1.6 billion worth of sunflowers, corn, soybeans and canola -- it means higher premiums for desirable varieties.

Growing new or specialized crops also requires finding an elevator that will handle the crop, which can prove difficult.

"We have a few people getting into growing canola," said Steve Goering at the Right Co-op branch in Mullinville. "But there aren't a lot of places that handle it."

New plants, new oils

There has been significant progress in developing new kinds of oil and new ways to process existing oils.

Among the most promising is a new variety of sunflowers, NuSun, which produce a high-quality, naturally stable oil. NuSun was developed by traditional plant breeding.

Farmers have shifted hundreds of thousands of acres to the new sunflowers. Kansas farmers planted 255,000 acres of sunflowers in 2005, up from 100,000 acres in 2004. Almost all of them were NuSun.

Archer Daniels Midland, which operates a crushing plant at Goodland, has announced a contract program offering a premium to farmers in Kansas and several other states for growing NuSun.

Still, the amount of oil produced is nowhere near enough to meet the demands of major food manufacturers.

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Snack food giant Frito-Lay alone buys more than a billion pounds of oil every year. It is one of NuSun's biggest customers. All Frito-Lay products made in Canada use NuSun. But in the enormous U.S. market, there's only enough oil for the company's "Natural" line of chips.

John Sandbakken of the National Sunflower Association said he's happy with NuSun's growth. "We've carved out a good niche for our product," he said.

Changing chemistry

Biotech giants DuPont and Monsanto have taken on the search for a healthier soybean. Both have introduced varieties of soybeans lower in linolenic acid.

Small numbers of farmers in Iowa and Ohio were paid to grow about 30,000 acres of low-linolenic beans last year. Rival Monsanto is shooting for 500,000 acres of seed beans this year -- five times the amount grown last year.

Companies are also paying a premium to farmers who grow those beans.

Researchers, including Cargill and Dow Agroscience, are also working to develop oilseeds that have a higher, stable oleic content.

High-oleic soybeans, canola, sunflowers and safflower are being developed.

So far, most of the research has involved traditional plant breeding methods, rather than biotechnology.

Cargill has also developed a newer hydrogenation process which it claims produces far less trans fat.

---- INDEX REFERENCES ----

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Chapter 1

Trans Fats—Chemistry, Occurrence, Functional Need in Foods and Potential Solutions

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Introduction

Natural oils and fats are liquids or semisolids consisting primarily of triacylglycerols (TAG). In literature, TAG are often referred to as triglycerides, even though this latter term is less accurate in representing the molecular structure of this class of compounds. The distinction between fats and oils is seen by their physical state at ambient temperature; the fats are solid and the oils are liquid. The two major sources of oils and fats are from animals and plants. Greater than 90% of commercial oils and fats used for human consumption are plant-derived vegetable oils. Unrefined natural oils and fats, after extraction from the source, comprise mostly TAG containing less than 5% of minor components such as sterols, phospholipids, tocopherols, fatty acids and partial glycerol esters. The minor components and their concentration in the crude oil depend upon the origin and method of oil extraction. The crude oils are subjected to various processing steps like degumming and alkali refining (to remove phospholipids and fatty acids), bleaching (to remove colored and polar matter) and steam stripping or deodorization (to remove volatile components) to make them suitable for human consumption. Oils subjected to these steps are usually referred to as RBD (refined, bleached and deodorized) oils and contain about 99% TAG.

The major vegetable oils of commerce are soybean, cottonseed, canola, sunflower, corn, peanut, palm, palm kernel and coconut oils. Other vegetable oils like olive, rice bran, safflower, sesame and other specialty oils are not used extensively due to availability and cost. A typical chemical structure of TAG is shown in Figure 1.1. The TAG contains a glycerol backbone with three hydroxyls esterified to three long linear carboxylic acids called fatty acids. The glycerol portion of TAG is constant in all oils and fats. The type of fatty acid structure and the position of esterification on glycerol differ from one TAG to another. Glycerol is a prochiral molecule capable of forming two different TAG stereoisomers when esterified with different fatty acid chains at the 1- and 3-positions. These stereoisomers when differentiated from one another are identified as stereospecifically numbered, -*sn*-glycerol derivatives (Kodali *et al.*, 1984, 1989a). Even though biological systems can recognize the isomeric -*sn*-glycerol derivatives, the physical and chemical properties of these isomers are very similar. For all functional and practical purposes they are treated as one and the same.

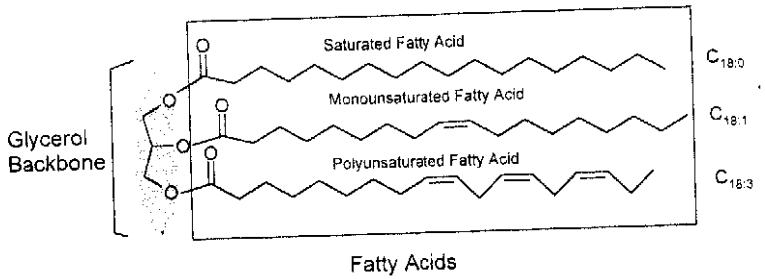

Fig. 1.1. A typical molecular structure of a triacylglycerol showing the glycerol backbone region esterified with three different fatty acids: stearic, oleic, and linolenic acids.

Vegetable oils contain a mixture of specific TAG molecules of given concentrations. Fatty acid structures differ from each other in carbon chain length and the number of double bonds. Most of the naturally occurring fatty acids are even numbered, 4 to 24 carbon atoms long. They are synthesized by the biological systems from two-carbon unit acetyl coenzyme A. More prevalent saturated fatty acids with no double bonds that occur in oils and fats are lauric (C_{12}), myristic (C_{14}), palmitic (C_{16}) and stearic (C_{18}) acids. The number in the parenthesis shows the number of carbon atoms corresponding to the fatty acid chain length. Sometimes a zero after the number indicates that there are no double bonds. The predominant unsaturated fatty acids are oleic ($C_{18:1}$), linoleic ($C_{18:2}$) and linolenic ($C_{18:3}$) acids. The numbers in the parenthesis show the carbon chain length followed by the number of double bonds. The position of double bonds in the chain and the double bond configuration are also very important. In oleic acid it is at carbon-9, in linoleic at 9 and 12 and in linolenic at 9, 12 and 15. Most of the unsaturated fatty acids that occur in natural fats and oils –with few exceptions, have the double bonds in *cis* configuration. The fatty acids that contain a single double bond are referred to as "monounsaturated" and others with more than one double bond are "polyunsaturated" fatty acids. Even though there are hundreds of different fatty acids that occur in oils and fats, the fatty acids referred above are most common and abundant in natural oils and fats.

The predominant vegetable oils in commerce can be divided into three types based on carbon chain length—lauric, palmitic and oleic oils. The lauric oils, mostly coconut and palm kernel oils, contain high levels of 12-carbon lauric acid. The common palmitic oil, palm oil, contains 16-carbon palmitic acid in high concentration. The lauric and palmitic oils are high in saturated fatty acids and are semisolids at ambient temperature. Because coconut, palm and palm kernel oils are grown in the temperate regions, they are referred to as tropical oils. Oleic oils predominantly contain 18- carbon fatty acids, stearic, oleic, linoleic and linolenic acids. The soybean, cottonseed, canola, corn and peanut oils belong in this category. The major types of edible oils that are consumed in North America are soybean, corn and canola. Palm oil is not extensively used in the United States but is more common in Asia and

Europe. Soybean and palm are the two most abundantly available vegetable oils in the world, each accounting for close to 25% of the total worldwide oils and fats production of about 120 million tons/year.

Defining vegetable oil composition by individual TAG structure and concentration is more accurate but very cumbersome. This requires sophisticated methodology in separating and identifying the various TAG species. Because of this reason, vegetable oils are identified by gross fatty acid composition (by weight). The fatty acid composition of most edible oils in commerce is shown in Table 1.1. The fatty acid composition of various vegetable oils is determined by plant variety and genetics. In a given variety the fatty acid composition changes a little, due to geography and environmental factors. Because of this variation the fatty acid composition is often expressed as a range rather than a single number. The fatty acid compositions given in Table 1.1 are given in average weight percent.

Recent developments in biotechnology and plant breeding make it possible to develop new genetic varieties, which yield oils with different fatty acid composition than traditional oils. For example, the oil from regular canola is composed of 62% oleic acid whereas the high oleic and very high oleic canola varieties are composed of about 75 and 84% oleic acid, respectively.

There are numerous review articles that deal with composition, processing, physical and chemical properties and commercial aspects of oils and fats (Technical committee of the ISEO, 1994; Hasenhuettl 1994, Thomas 2003). More comprehensive and detailed information is provided in Bailey's (Bailey's 1996). Another source of chemical and physical property information on various specific fatty acids, TAG, partial glycerol esters is provided in The Lipid Handbook (Gunstone *et al.*, 1994).

TABLE 1.1
The Fatty Acid Composition (wt.%) of Conventional and High Oleic Oils

Oil Type	S.C.[a] C6–10	Lauric C12	Myristic C14	Palmitic C16	Stearic C18	L.C.[b] C20–24	Oleic C18:1	Linoleic C18:2	Linolenic C18:3
Soybean	—	—	—	11	4	—	23	55	7
Cottonseed	—	—	1	22	3	—	19	54	1
Sunflower	—	—	—	7	5	—	19	68	1
Canola	—	—	—	4	2	—	62	22	10
H. Oleic Canola	—	—	—	4	2	2	75	12	5
VHO[c] Canola	—	—	—	4	2	1	84	5	4
Peanut	—	—	—	11	2	7	48	32	—
Corn	—	—	—	11	2	—	28	58	1
Coconut	15	47	18	9	3	—	6	2	—
Palm kernel	8	48	16	8	2	—	15	3	—
Palm	—	—	1	45	4	—	40	10	—

[a]Short Chain C-6 hexanoic (caproic), C-8 octanoic (caprylic), C-10 decanoic (Capric) fatty acids.
[b]Long Chain C-20 Eicosanoic (arachidic), C-22 docosanoic (behenic), C-24 tetracosanoic (lignoceric) fatty acids.
[c]Very High Oleic.

Cis, Trans Isomerism

The double bond present in the fatty acid inhibits the rotation of carbons on either side and thereby fixes the configuration of atoms present on double bond carbons. Because of this fixed geometry the hydrogen atoms present on double bond carbons can be on the same side (*cis*, in Latin) or on the opposite side (*trans*, in Latin). The "*cis*" and "*trans*" are written in *italics* to identify their Latin origin and to represent the chemical configuration as shown in Figure 1.2. *Cis* and *trans* isomers are geometric isomers as they differ from one another only in the way that the atoms are oriented in space. The double bond is rigid and creates a kink in the chain. The rest of the chain is free to rotate about the other C-C single bonds. In general *trans* compounds have higher melting points than the corresponding *cis* isomers, reflecting the greater ease of crystal packing of the somewhat more symmetrical molecules. The interconversion of *cis* and *trans* takes place by the breaking and reformation of the double bond, which requires about 65kcal/mole of energy. Because of this high energy barrier the *cis* and *trans* isomerization does not occur easily, unless assisted by a catalyst or high temperatures.

The *cis* isomer is more asymmetric than the corresponding *trans* isomer and cannot pack well into a crystal lattice. Because of this reason the *trans* isomers have a higher density, lower solubility and a higher melting point. *Trans* isomers are less sterically hindered and more thermodynamically stable than *cis*. Therefore, the *cis* isomer can be transformed into a *trans* isomer by subjecting it to a high temperature. Very high temperatures provide enough energy to cause rotation about the double bond to convert *cis* configuration into a more stable *trans* isomer, an irreversible process. During vegetable oil refining, the oil is subjected to steam deodorization to remove the volatile compounds. The high temperature conditions of deodorization cause *trans* isomerization. Because of this reason most of the refined oils—even though not subjected to hydrogenation—contain as much as 1-2% of *trans* fats.

Functional Need for Solid Fat in Food Products

The oils/fats, besides proteins and carbohydrates are one of the three major classes of building blocks required for living organisms. They are the most concentrated form of energy (9 cal/gram) and because of this most living organisms use them as an

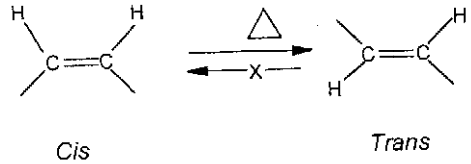

Fig. 1.2. *Cis, trans* isomerism of a double bond under thermal conditions.

energy storage medium. In various food applications oils and fats provide a number of functional benefits. They provide lubricity, decrease the interfacial tension of food particles thereby making the food more palatable and easier to swallow. They supply essential fatty acids and oil-soluble vitamins that are essential for various biological functions.

The chemical composition of a mixture of TAG molecules present in a given vegetable oil is responsible for its physical state at ambient temperature. The oils containing saturated fatty acids in high concentration, like coconut and palm, can provide unique functionality and are more oxidatively stable. In general, the physical state of liquid (oil) or solid (fat) can possess some general and specific characteristics as is shown in Table 1.2.

There are two primary reasons to use fats instead of oils—oxidative stability and solid fat functionality. These properties are very important depending upon the food application. In some frying applications, like snacks, the oxidative stability is very important but the solid fat content (SFC) is not. In baking applications, both of these properties are important. Lack of sufficient oxidative stability affects the shelf life of the food product. Oxidation is the cause of off-flavors and rancidity.

Solid fats can be preferred in food applications because they are resistant to oxidation. In oxidation, vegetable oils react with molecular oxygen to form hydroperoxides, which in turn break down to create radicals that promote further oxidation. The break-down products formed during oxidation lead to off-flavors. The ease of oxidation depends upon the fatty acid structure. The saturated fatty acids are much more stable than unsaturated fatty acids. The rate of oxidation of monounsaturated oleic acid is about 10 times greater than saturated stearic acid. The polyunsaturated linoleic acid undergoes oxidation 10 times faster than oleic and half as fast as linolenic acid (Kodali 2003a). The oxidation rates indicate that saturated fats are more stable than unsaturated fats and will have a longer shelf life. The oil containing polyunsaturated fatty acids are much more susceptible to oxidation than oils containing monounsaturated fatty acids. For this reason the low linolenic and high oleic oils have better functionality for frying applications. The oxidative stability of oils and fats affects the shelf life, process life, and the flavor of a food product.

The hardness of a fat imparts certain desirable properties such as crispiness, snap, and texture to a food product. The fats that are used in food applications contain a mixture of TAG. The composition and individual TAG chemical structure of a fat determines how much will be liquid and solid at room temperature. In fats,

TABLE 1.2
General Properties of Oils and Fats

Functional property	Oils (liquids)	Fats (solids)
Oxidative stability	Low	High
Hardness	None	Texture, spreadability, snap
Mouth feel	Good	Better

liquid oil is entrapped in a solid matrix, giving a solid or semisolid appearance. The percentage of solid fat in a fat matrix is quantified by the solid fat index (SFI) or the solid fat content (SFC). SFI measures the change in volume with temperature. The liquids have higher volume than solids; the volume decreases with the increase in degree of crystallinity within solids. SFC is measured by nuclear magnetic resonance that takes advantage of molecular mobility as indicated by signal broadening. The molecular mobility of liquids decreases as the crystallinity (SFC) increases, which broadens the signal. The results of SFI and SFC do not correlate well but both measure the percentage of solid fat with the change in temperature. This information is very useful in assessing the functionality of a fat in a given application.

In some formulations a certain amount of solid fat is necessary to entrap the liquid oil to prevent oiling-off. In retail popcorn packaging, for example, oiling-off discolors the packaging, giving the consumer a perception of damaged goods. The hardness of fat also provides brittleness or a snap in products like chocolates. If a sufficient amount of solid fat of the formulation melts much above the body temperature of 37°C, it leaves an undesirable waxy coating in the mouth. Because of this reason, solid fats that melt above 40°C are not used in higher concentration in food product formulations. On the other hand, if a solid fat has a very high amount of solids at room temperature and melts very quickly at or below body temperature, it creates a smooth cooling sensation in the mouth as it absorbs the energy from the mouth cavity. The cooling sensation is proportional to the enthalpy of melting. Therefore the fats with higher enthalpy will have the greater effect. The melting of the fat also releases other ingredients responsible for taste and flavor, giving a burst of euphoric sensation.

Cocoa butter is an excellent example to demonstrate the desirable properties of solid fat. Cocoa butter is more homogeneous in composition than most natural fats, with only three fatty acids—palmitic, stearic and oleic—constituting more than 95% of the composition. The three fatty acids, found in high concentration, lead to the formation of few TAG structures. This relative structural homogeneity and high amount of saturates provide cocoa butter fat with both high melting temperature and stability. The ratio of saturated to unsaturated fatty acids is 2:1; when combined with nature's propensity to attach unsaturated fatty acids at the 2-position of glycerol, symmetrical TAG structures like POP and SOS are favored. In general, symmetrical TAG have higher melting temperatures than their unsymmetrical counterparts. The high melting temperature and steep melting curve of cocoa butter can be observed by measuring the SFC of cocoa butter with temperature as shown in Figure 1.3.

Cocoa butter has a very high SFC at or below room temperature (Figure 1.3). Because of this, products containing high concentrations of cocoa butter have good dimensional stability and a snap to the bite. Once in the mouth cavity the fat melts rapidly by absorbing the surrounding energy. The sharp melting between 20 to 35°C and high enthalpy gives cocoa butter unique and valuable properties that demonstrate the importance of solid fat in food.

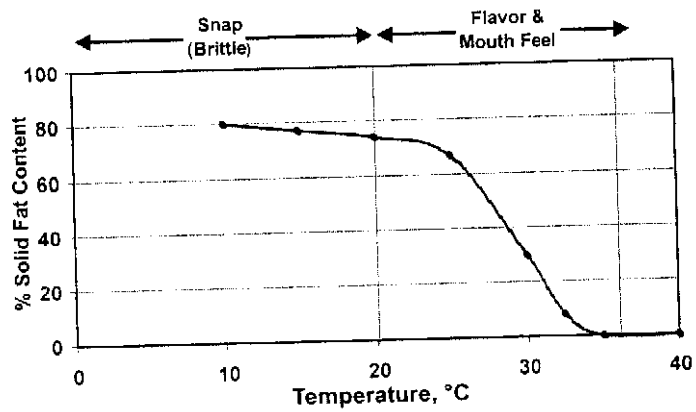

Fig. 1.3. Cocoa butter melting behavior, change in solid fat content with temperature.

Properties and Source of *Trans*

The unsaturated fatty acids present in the natural oils and fats are in *cis* configuration. The *cis* isomers are relatively asymmetric and pack poorly in the crystal lattice due to a kink in the middle of the hydrocarbon chain. This kink in the middle of the chain reduces the inter-chain interactions in the solid state, thereby lowering the melting temperature and enthalpy. Compared to *cis* double bonds, *trans* double bonds are relatively symmetric and pack better in the crystal lattice, so their melting temperature falls between the melting temperatures of saturated and *cis* unsaturated fatty acids. A comparison of the molecular structures and melting temperatures of three fatty acids of 18-carbon chain length, oleic acid (*cis*-9 double bond), elaidic acid (*trans*-9 double bond), and stearic acid illustrate this point. The molecular structures with space filling models and melting temperatures are shown in Figure 1.4.

Nature utilized the *cis* configuration to make the high molecular weight TAG molecules as large as 900 Daltons and still keep them in the liquid state at ambient temperature. Biological processes occur more efficiently and molecules are more accessible in a liquid state. Because of this the fatty acid composition of various vegetable oils reflect the climatic and geographic conditions. Tropical oils contain saturated fatty acids in higher concentration whereas the oleic oils that are grown in a colder climate contain polyunsaturated fatty acids in greater concentration.

Soybean oil is the most abundant vegetable oil worldwide, accounting for 25% of the total world production. It is also the most-consumed vegetable oil in the United States. Soybean oil is composed of more than 60% polyunsaturated fatty acids, which react readily with oxygen to form hydroperoxides. To improve the oxidative stability by reducing the content of polyunsaturated fatty acids of soybean

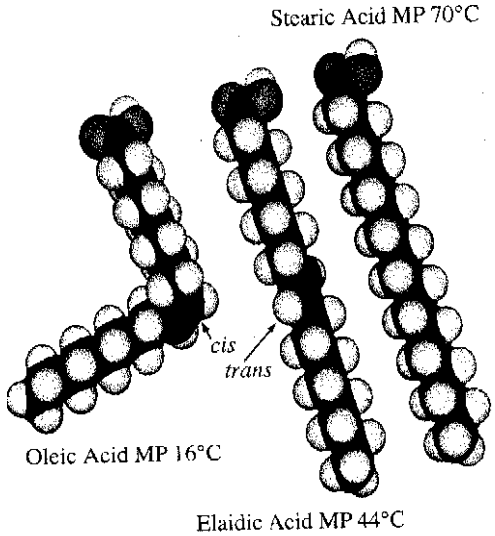

Fig. 1.4. The molecular structures of oleic acid (*cis*-9, m.p. 16°C), elaidic acid (*trans*-9, m.p. 44°C) and stearic acid (m.p. 70°C).

oil, hydrogenation was invented in the early 20th century. Partial hydrogenation of vegetable oils is the major source of *trans* fats in food products. The *trans* fat content of hydrogenated fats varies from 10% to as much as 40% based upon the extent of hydrogenation and hydrogenation conditions. This will be further discussed in the hydrogenation process described below. Minor amounts of *trans* fats also form under the deodorization conditions of vegetable oil processing. Another source of *trans* fats is of animal origin from dairy and meat products. The concentration of *trans* fats in dairy and meat fats is usually low, from 3-8%, and these *trans* fats are different from those formed by hydrogenation of vegetable oils. The bacteria present in the ruminants' gut hydrolyses the dietary fat and subjects the resulting fatty acids to biohydrogenation. The initial step in this process involves the conversion of *cis*-12 double bond in polyunsaturated fatty acids to a *trans*-11 configuration, followed by the hydrogenation of a *cis*-9 double bond. Thus in biohydrogenation process linoleic acid gives rise to vaccinic acid, a *trans*-11 fatty acid. Because of this reason the *trans* fats of animal origin contain *trans*-11 vaccinic acid in greater concentration whereas the partially hydrogenated vegetable oils contain a higher concentration of *trans*-9 elaidic acid (Mossoba *et al.* 2003). The concentration of various *trans* isomers and their relative ratios can help to determine the origin of *trans* fats in the diet. For instance the examination of adipose fat can reveal the source of dietary *trans* fats, from either partially hydrogenated vegetable oil or ruminant fats (Combe 2003).

Trans Fats Reduction/Elimination Technologies

In July 2003, FDA issued a final rule requiring a mandatory declaration in the nutritional label of the amount of *trans* fat present in foods including dietary supplements. The declaration of *trans* fat is to be expressed as grams per serving to the nearest 0.5 gram increment below 5 grams and to the nearest gram increment above 5 grams (Moss and Wilkening 2005). The *trans* fat regulations that will be effective from January 1, 2006 are influencing food product manufacturers either to eliminate or reduce the *trans* fat from their products.

Many fat and oil applications do not require SFC. Most of these applications include deep-frying where thermal and oxidative stabilities are more important. There are some exceptions to this, such as donut frying where the SFC is necessary to provide glaze and crispiness. For frying applications, good oxidative stability can be obtained by using monounsaturated oils, low linolenic oils or formulating with antioxidants. In other applications, like baked goods, a certain amount of SFC is crucial. The solid fats provide the pliability to dough and also give layer, spread or discrete distribution of fat depending upon the product requirement. Some of the unique properties provided by solid fats in baked goods are flakiness, hardness, volume increase, layer separation, air entrapment while baking, dimensional structure and freshness.

There are five core strategic technologies that have the ability to reduce or eliminate the *trans* fat content in foods. These are formulation, modification of fatty acid composition through genetics, hydrogenation, fractionation and interesterification. These are enabling technologies that can be used alone or in combination with each other to create *trans* fat solutions. These technologies and their limitations are discussed below.

Formulation

There are a number of *trans* fat solutions that can be created through formulation (Walter 2004). These strategies include:

(i) Entrapment of liquid oils. The liquid oils can be entrapped in solid fat matrix. A small percentage of completely hydrogenated soybean oil can entrap a large amount of liquid oil. Care must be taken not to use large amounts of very high melting fats as they can leave a coating in the mouth cavity and create waxiness. Based on the food product formulation, the entrapment can also be achieved by other components present in the formulation, such as emulsifiers.

(ii) Blending partially hydrogenated fat with stable high oleic oils can provide structure and oxidative stability with reduced *trans* fat content.

(iii) Addition of antioxidants to fats and oils can provide oxidative stability and improve the shelf life of the products. The antioxidants can be natural (such as tocopherols), synthetic, or a combination of both.

(iv) Use of palm fractions can provide the desired SFC without the use of *trans* or hydrogenated fat on the label. However the trade-off comes from the presence of

palm on the label, indicating the use of saturated tropical oil. Formulation with animal fats and their fractions create a similar conundrum of incorporating higher saturates and cholesterol content on the label.

(v) Special hydrogenation conditions can provide low *trans* base stocks that can still permit the "*trans* fat 0g" label depending upon the fat content and serving size as described in the hydrogenation section below.

Genetics

Plant genetics can be modified through conventional plant breeding or genetic engineering. In the past two decades both these techniques have been used to change oilseed bearing plants to modify their fatty acid composition. This process will drastically increase in the next decade to produce various varieties of specialty oils that provide specific functionality for food and industrial applications (Kodali *et al.*, 2003). In a single crop variety there are a number of genotypes which give a specific trait responsible for a specific fatty acid composition. In soybeans, genotypes with special traits have been developed that include low-linolenic, high-oleic, low-palmitic, low-saturate, high-palmitic and high-stearic (Liu 1999). Other varieties target enhancement of levels of minor components such as specific tocopherols. A number of high oleic oils, including canola, sunflower, and safflower, are currently available on the market (Loh 2000). Genetic modification is also targeted towards the creation of high saturated fatty acid varieties that can replace hydrogenated oils with naturally produced solid fats. These fats could be further fractionated to give value-added cocoa butter substitutes (Kodali 2004). Most of these crops are in the developmental stage, and some have to overcome penalties like yield lag to become economically successful.

Hydrogenation

The two primary reasons for hydrogenation are to improve the oxidative stability and to increase the SFC. The improved oxidative stability also improves the flavor and shelf life of the products. The increased SFC increases the melting temperature and provides improved food texture and functionality.

In the hydrogenation process, hydrogen atoms are added to the unsaturated (double) bonds thereby converting them into saturated C-C (single) bonds. The level of unsaturation of oil is measured by the absorption of iodine and expressed as iodine value (IV). During partial hydrogenation, the iodine value of soybean oil is reduced from the initial 126 to a desired IV of 110 to 70 depending upon the required functional properties of the hydrogenated base stock. The hydrogenation is done in the presence of a metal catalyst and pressurized hydrogen gas at high temperature. Even though the addition of hydrogen to the double bonds is the primary reaction during the hydrogenation, other side reactions occur, such as isomerization of double bonds from *cis* to more stable *trans* configuration and migration of the double bonds along the chain (shifting the position of the double bonds in the chain). With the current hydrogenation technology the *trans* formation can be reduced but not eliminated.

Trans formation increases with hydrogenation temperature but decreases with an increase in pressure, catalyst concentration and agitation. Hydrogen starvation during hydrogenation and using a reused or poisoned catalyst can also increase the *trans* formation (Mounts 1987).

Evans *et al.* studied *trans* formation under selective and nonselective conditions of hydrogenation (Evans *et al.*, 1964). The catalyst concentration (0.2%) and the agitation (1380 rpm) were kept the same for both reaction conditions. The hydrogenation conditions employed were selective (170°C), hydrogen pressure (5 psi); nonselective (120°C), hydrogen pressure (100 psi). Under these conditions the measured *trans* formation was about 0.7% per IV unit reduction under selective conditions and 0.4% per IV unit for nonselective conditions. This demonstrates that *trans* formation can be influenced by hydrogenation conditions. However, the saturated content increased more under nonselective conditions than under selective conditions. The type and nature of catalyst also influences the *trans* formation considerably. A typical representation of *trans* and saturates formation during the hydrogenation process is shown in Figure 1.5.

Even though the hydrogenation increases the *trans* and saturates, by manipulating the hydrogenation conditions their formation can be minimized. The temperature and type of catalyst play a big role in *trans* and saturated fat formation (Ariaansz and Okonek 1998). Recently Beers and Mangus reported on low *trans* hydrogenation processes. (Beers and Mangus 2004). *Trans* fat regulations allow "*trans* fat 0g" on the food product label if the product contains below 0.5 g of *trans* fat per serving.

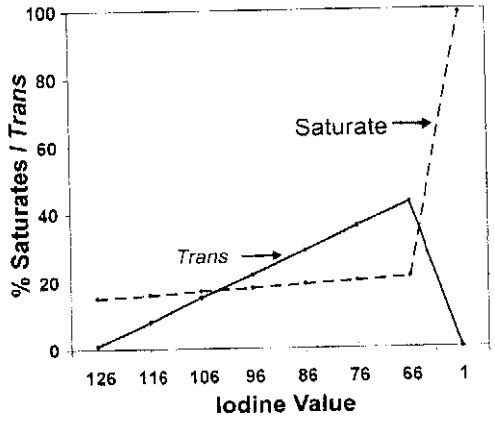

Fig. 1.5. A schematic representation of formation of saturates and *trans* fats of soybean oil during hydrogenation from iodine value of 126 to completely hydrogenated soybean oil of iodine value 2. Most of the hydrogenated base stocks (IV, 110-70) used in food products are shown in the box.

Therefore the *trans* fat content in the fat ingredient, the serving size and the amount of fat used in the food product formulation can determine the ability to use the "*trans* fat 0g" label. The amount of fat allowed per serving in order to use the "*trans* fat 0g" label, based on *trans* fat content is shown in Table 1.3. Many food products contain 3–5 grams of fat/serving. Modification of various hydrogenation conditions and their optimization can lead to low *trans* hydrogenated fats with reasonable functionality (List and King, 2005).

Fractionation

The process of crystallization and separation of low melting liquid and high melting solid portions of a fat mixture is called fractionation. Fractionation can be done with the help of a solvent or without a solvent (dry fractionation). Solvent fractionation done with acetone or hexane is more efficient and gives a cleaner separation of the fractions. Due to greater capital and processing cost involved however, it is seldom practiced. The dry fractionation process is extensively practiced in the palm oil industry (Pantzaris, 2000). The solids and liquids thus separated are called *stearins* and *oleins*, respectively. To make this a viable process certain amounts of solids are necessary at ambient temperatures. Because of this reason, the high saturated or hydrogenated *trans* fatty acid containing oils are good starting feed materials for fractionation. Palm oil is also well suited for fractionation due to its high-saturated fatty acid content. The palm fractions are natural and do not contain *trans* fats. Usually the crystallization is effected by cooling the palm oil very slowly to facilitate the nucleation and growth of a desired crystal structure, morphology and size. The slurry of liquids and solids thus formed are separated by centrifugation or by filtration through a mechanical press by applying pressure. The fractionation process has become very handy in creating different varieties of palm products from very low melting super *oleins* to very high melting hard *stearins* from a single source. A typical palm fractionation process with different fractions and their melting ranges are given in Figure 1.6.

TABLE 1.3
The *trans* Fat Content in the Ingredient and the Corresponding Amount of Fat/Serving to Allow the Use of "*trans* fat 0 g" on a Food Product Label

Trans Fat Content (wt%) in the Ingredient	Amount of fat/serving in the formulation (g)
1	49
2	24
3.5	12
7.5	6
15	3
32	1.5
40	1

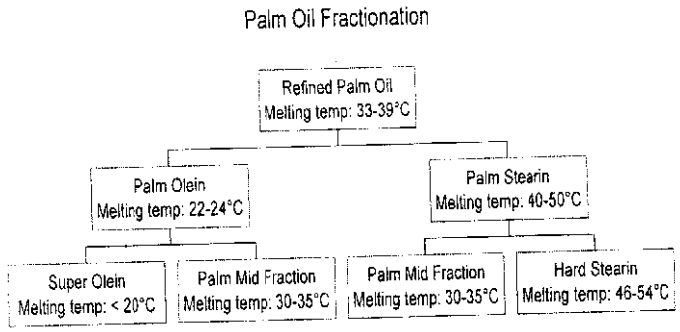

Fig. 1.6. Dry fractionation of palm oil into stearines and oleins.

A typical fatty acid composition of palm oil and palm fractions is shown in Table 1.4. By varying the crystallization temperature, cooling rate and amount of pressure applied during the filtration, a number of palm fractions of different composition and properties can be produced. More than 20 different palm oil fractions are available commercially.

Similar fractional crystallization and filtration is also used on oils that contain small amounts of high melting TAG or waxes. This fractionation is usually called winterization. Winterization is mostly done to remove the turbidity caused by the high melting crystals and to improve the oil clarity at room temperature.

Interesterification

In vegetable oils and fats the distribution of fatty acids on the glycerol backbone is not random. The saturated fatty acids are preferentially esterified to the glycerol primary hydroxyls, 1 and 3, and the unsaturated fatty acids are esterified to the 2-position. The interesterification process is used to modify the distribution of fatty acids, thus modifying the properties of natural or hydrogenated or fractionated oils or fats. Interesterification is a transesterification of two or more oils or fats where the fatty acid arrangement on the glycerol back bone of each of the original TAG is

TABLE 1.4
Typical Fatty Acid Composition of Palm Oil and Palm Fractions

Fatty Acid	Palm Oil	Palm Olein	Superolein	Hard Stearin
Myristic (C14:0)	1	1	1	1.5
Palmitic (C16:0)	47	40	35	60
Stearic (C18:0)	4	4	4	4.5
Oleic (C18:1)	41	43	46	28
Linoleic (C18:2)	11	12	14	6
Melting temp.	33–39°C	20–24°C	15°C	46–54°C

rearranged. Interesterification is done under chemical or enzymatic conditions. In chemical interesterification the distribution of fatty acids on the glycerol backbone of the product is rearranged as per the statistical probability at equilibrium. However, in the enzymatic processes the enzymes are more specific, favoring rearrangement of the fatty acids present at the 1 and 3 positions of glycerol, leaving the 2-position intact. The enzymatic process is commercially applied to produce more exotic fats like cocoa butter substitutes. At present the chemical interesterification process is simpler and more cost effective than the enzymatic process. It is quite possible however, that the enzymatic process could be more cost effective and beneficial in producing the structured TAG of higher value.

The chemical interesterification of two different base stocks with different melting temperatures that produce an intermediate melting product is shown in Figure 1.7. This process can be affected by heating the transesterified components in the presence of a small amount of base catalyst like sodium methoxide. As shown in Figure 1.7, two different fats and oils of different TAG composition and properties can be transesterified to yield an end product of an entirely different composition. The desired physical properties of the end product can be achieved by choosing the composition and the ratio of saturated and unsaturated components. Sometimes the random distribution of fatty acids can be altered by crystallization and separation of higher melting saturated product from the reaction by conducting the transesterification process at temperatures below the crystallization temperature of the high-melting components that form during the reaction. This type of interesterification is called directed transesterification.

Specifically, random chemical transesterification process can be accomplished by drying the base stock to be interesterified at about 100°C under a vacuum, and then adding a base catalyst of about 0.1 wt% to the heated oil. After the catalyst addition, the oil is kept under a vacuum and agitation for 30 minutes to complete the interesterification process. The catalyst can be deactivated by adding bleaching earth and filtration, or by a water wash. The oil thus obtained is dried, bleached and deodorized to produce the final product. Even though the process is simple, care should be taken to prepare the starting oils, as the quality of the feedstock greatly

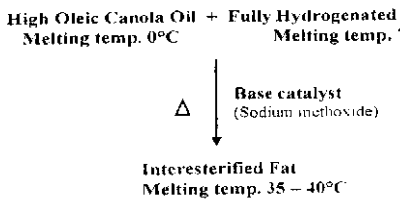

Fig. 1.7. Chemical transesterification of high oleic oil with fully hydrogenated soybean oil gives an interesterified product of intermediate melting temperature.

affects the oil losses. The presence of moisture, fatty acids or peroxides in the feedstock can kill the catalyst and reduce product yield. Starting feedstock of good quality will require lower amount of catalyst and result in lower oil losses.

Functional Fat with Nutrition/Health Characteristics

It would be useful to find a solid fat that has ideal functional and nutritional characteristics. The new FDA regulations to label the *trans* fats and the resulting consumer perception encourage the elimination or reduction of *trans* fats from food products. The functional void created by the elimination of *trans* can be filled by saturated fats. However, this is not a clean option, as the saturated fats are not considered healthy. Various health organizations recommend that the amount of total dietary fat intake is 30% of the total daily calories. The recommended saturated fat intake should be less than 10% of the daily energy. This translates to one saturated fatty acid per TAG molecule in the fat. At the same time, the fat should provide the right functional properties like hardness at room temperature and high and sharp melting characteristics between 20 and 35°C with high enthalpy of melting. Designing such a functional fat requires an in-depth understanding of the structure-properties-functionality relationship. The discussion of various groups of structurally related pure TAG compounds in the following section will facilitate the concept of such a designer fat.

Designer Fats

Molecular Packing and Polymorphism

The physical properties of a fat depend upon the TAG composition and chemical structure. Therefore, to relate the physical properties of a fat to the functionality, it is crucial to understand the connection between the TAG structure and its influence on the molecular packing. A specific TAG structure and the resulting physical properties have implications in some physiological processes, such as accessibility in aggregated particles like chylomicrons, enzymatic hydrolysis and the subsequent metabolism (Redgrave *et al.*, 1988; Small 1984). Once a fat structure that meets all the functional requirements is identified, it could be produced using the enabling technologies discussed above.

Fats additionally have the propensity to pack in several different crystal structures of comparable lattice energy with different melting temperatures and molecular packing. These different solid-state structures of the same chemical composition are called polymorphs and the phenomenon is called polymorphism. Polymorphism of fats and oils has been well studied and characterized by various techniques like x-ray diffraction and vibrational spectroscopy by different researchers for over 50 years (Chapman 1962; Larson 1964, Kodali *et al.*, 1989a, Sato 1996). Three distinct polymorphic forms, α, β', and β have been characterized based on their hydrocarbon chain packing. In general, α is the least stable and lowest melting polymorphic form

with no specific chain-chain interaction, followed by intermediate melting β′ with specific chain-chain interaction. The most stable and high melting polymorph is β with very specific molecular packing. These polymorphs are distinguished from each other based on the x-ray diffraction short spacings that characterize the molecular packing on the short axis, called the hydrocarbon sub-cell packing. In reality most of the fats may have more than three polymorphic forms. For example a single TAG structure, 1,2-dipalmitoyl-3-decanoyl-*sn*-glycerol, has been shown to form 5 distinct polymorphs that differ from each other in the molecular packing in the short as well as long axis, resulting in distinct physical properties (Kodali *et al.*, 1989b).

The main factors that contribute to different modes of packing in each polymorphic form are the geometry of the glycerol backbone and the packing of the long hydrocarbon chains along their long and short axis. The packing along the acyl chain length can be identified from the X-ray long spacings, which is also called layered packing. Fatty acid chain length, the presence of one or more double bonds and the position of substitution on the glycerol backbone all influence the layered packing (Kodali *et al.*, 1987, 1989a, 1990).

The molecular structure influences the solid-state behavior of fats with temperature as well as the rates of crystallization and crystal morphology. The understanding of crystal structure, stability and rates of transformation from one polymorphic form to another can relate to some of the gross functional properties. For instance, the discoloration or blooming in chocolates is due to transformation of desirable β-crystal form into another higher melting β-form. In margarines and shortenings, crystallization of β-polymorphic form instead of the desirable β′-polymorph results in large crystal size and morphology responsible for graininess or a sandy feeling in the mouth.

The β′ crystals, due to their relatively small crystal size, feel smooth and melt quickly in mouth. It is known in the industry that oils containing higher concentrations of palmitic acid like cottonseed oil stabilize the β′-polymorphic form. For this reason cottonseed oil is added to soybean oil base stocks that are used to make shortenings and margarines. The mismatch of C16 and C18 chain lengths create a methyl end chain packing that stabilizes the β′-polymorphic form. The most stable crystal form in one of the pure TAG with dissimilar chain lengths, 1,2-dipalmitoyl-3-myristoyl glycerol (PPM), is the β′-polymorphic form and there is no β-form. This provided an opportunity to determine the first single crystal structure of TAG β′-polymorph (Sato *et al.*, 2001a). As described earlier in the case of cocoa butter, the functionality of mouth feel and cooling sensation can be interlinked to the physical properties of melting temperature, melting range and enthalpy of melting. These properties emanate from the molecular packing of the high melting β-polymorphic form. In turn the molecular packing and properties can be related to the relative homogeneity in chemical composition and symmetrical TAG structures present as in cocoa butter. The molecular origins of functionality can therefore be understood by relating the chemical structure to the molecular packing and physical properties. The interrelationship of molecular origins of functionality to the properties and chemical structure is shown in Figure 1.8.

Molecular Origins of Functionality

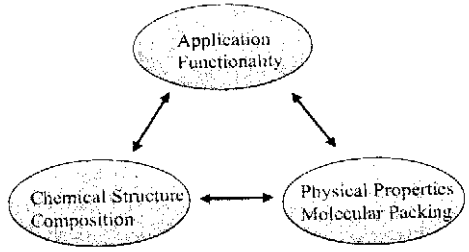

Fig. 1.8. Fundamental knowledge of the influence of chemical structure and composition of a fat on the molecular packing and ensuing physical properties will help to understand the connection between fat functionality and chemical structure.

Studying the molecular structure and packing of groups of compounds where the chemical structure is varied systematically will enhance understanding and could lead to the creation of the ideal fat with desired functionality. There are a number of systematic studies directed to understand the chemical structure to the molecular packing (Fahey *et al.*, 1985; Hagemann *et al.*, 1972; Kodali *et al.*, 1987,1989a, 1990, Sato *et al.*, 2001b; Yano *et al.*, 1999). A few groups of structurally related TAG are presented below.

Molecular Packing and Properties of Monoacid TAG

The physical properties and molecular packing of single acid TAG are listed in Table 1.5. As one would expect, the melting temperatures and enthalpies of these TAG decrease from saturated to monounsaturated to polyunsaturated. Among the monounsaturated the trielaidoyl (*trans*-9) and trivaccinoyl (*trans*-11) gylcerols show considerably higher melting temperatures and enthalpies, making them more suitable for solid fat applications.

The comparison of *cis*, *trans* and saturated monoacid TAG as space-filling models is shown in Figure 1.9. The space-filling models clearly show the packing of saturated TAG, SSS and *trans*-9 TAG, EEE can be facilitated readily compared to the *cis*-9 TAG, OOO with kinked double bonds. All the single acid TAG pack in bilayered structure in the stable β-polymorphic form. However one notable difference between the *trans* unsaturated EEE and saturated, SSS and *cis* unsaturated OOO is that EEE does not form β′-polymorphic form (Kodali *et al.*, 1987). It is possible the *trans* unsaturation may destabilize the orthorhombic subcell packing of β′-polymorphic form. The acyl chain orientation and molecular packing in the layered structure in the stable β-polymorphic form of these TAG will be similar to the published single crystal structure of monoacid TAG, trilauroyl glycerol (Larsson 1964). Typical

TABLE 1.5
The Melting Temperatures and Enthalpies of 18-carbon Single Acid TAG

TAG	Abbreviation[a]	Melting Temp. °C[b]	ΔH of melt[c] Kcal/mole	Packing chain length[d]
Tristearoylglycerol	SSS	73	46	2
Trielaidoylglycerol	EEE	42	36	2
Trivaccinoylglycerol	VVV	42	36	2
Trioleoylglycerol	OOO	5	23	2
Trilinoleoylglycerol	LLL	−13	20	2
Trilinolenoylglycerol	LnLnLn	−24	—	—

[a]S=stearic (C_{18}); E=elaidic ($C_{18:1}$) with *trans* double bond at C9; V=vaccinoyl($C_{18:1}$) with *trans* double bond at carbon 11; O=oleic($C_{18:1}$); L=linoleic ($C_{18:2}$); Ln=Linolenic ($C_{18:3}$).
[b]The melting temperature is of high melting polymorphic form.
[c]The enthalpy of melting is from high melting polymorphic form to melt.
[d]The packing chain length is from powder x-ray diffraction long spacings corresponding to bilayer, two chain length structures (about 45 Å).

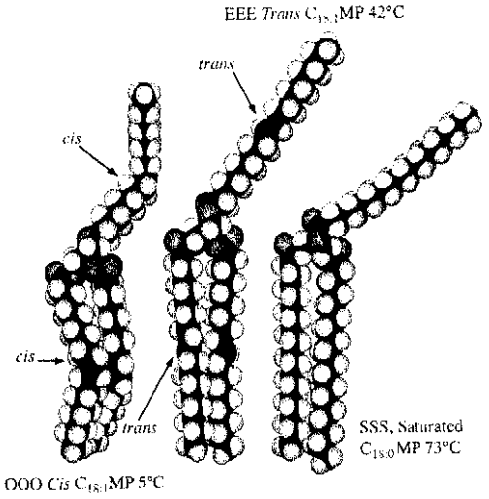

Fig. 1.9. The space-filling models of mono-acid triacylglycerols – tristearoylglycerol (SSS, m.p. 73°C), trielaedoylglycerol (EEE, m.p. 42°C) and trioleoylglycerol (OOO, m.p. 5°C).

representation of layered packing and melting behavior of this class of compounds as represented by SSS and EEE is shown in Figure 1.10.

Molecular Packing and Properties of Symmetric Di-acid TAG

A group of symmetrical di-acid TAG were compared with monoacid TAG, tristearoyl glycerol, SSS and trioleoyl glycerol, OOO. In this group all the fatty acid

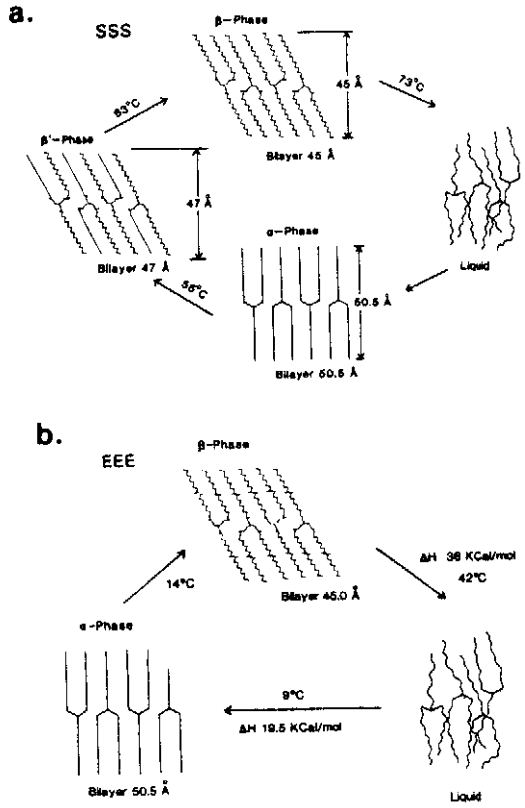

Fig. 1.10. Schematic representation of phase behavior of a. tristearoylglycerol, SSS and b. trielaidoylglycerol, EEE (Kodali *et al.*, 1987).

chains have the same carbon chain length C_{18} but the unsaturation and position of esterification on glycerol differ from each other (Kodali *et al.*, 1987). The nature of the acyl chain at glycerol 2-position influences the melting temperature and enthalpy. The saturated stearoyl chain has a higher melting temparature and enthalpy than the unsaturated chains. Among the unsaturated, the *trans* acid containing TAG have higher enthalpies but the melting temperatures are comparable to *cis* oleic acid containing TAG. The *trans* double bond in the middle of the chain at 9-position in elaidic acid, when moved to 11-position in vaccinic acid, decreases both the enthalpy and melting temperature. This demonstrates that the hydrocarbon chain packing in the methyl end of the chain is more important than the carboxylic acid side. This

TABLE 1.6
The Melting Temperatures and Enthalpies of Di-acid Symmetrical TAG in Comparison to Single Acid TAG, SSS and OOO

TAG	Abbreviation[a]	Melting Temp. °C[b]	ΔH of melt[c] Kcal/mole	Packing chain length[d]
Tristearoylglycerol	SSS	73	46	2
1,3-dioleoyl-2-stearoylglycerol	OSO	25	32	3
1,3-dioleoyl-2-elaidoylglycerol	OEO	9	29	3
1,3-dioleoyl-2-vaccinoylglycerol	OVO	4	23	3
Trioleoylglycerol	OOO	5	23	2

[a]S=stearic (C_{18}); E=elaidic ($C_{18:1}$) with *trans* double bond at C9; V=vaccinoyl ($C_{18:1}$) with *trans* double bond at carbon 11; O=oleic ($C_{18:1}$) with *cis* double bond at C9.
[b]Melting temperature is of high melting polymorphic form.
[c]The enthalpy of melting is from most stable β-polymorphic form to melt.
[d]The packing chain length is from powder x-ray diffraction long spacings corresponding to bilayer, two chain length structures (about 45 A) or trilayer, three chain length structures (about 65 A).

group also demonstrates that a single *trans* fatty acid chain in a molecule may not be sufficient to increase the enthalpy and melting temperature compared to a *cis* fatty acid chain. The molecular packing of these symmetrical TAG reveal that they pack in trilayered structures. The odd chains at the glycerol 2 position segregate to form a separate layer from the 1 and 3 positions. This acyl chain orientation is similar to monoacid triacyl glycerols even though the latter packs in a bilayered structure. A typical molecular packing of trilayered structure is illustrated by 1,3-diolcoyl-2-stearoylglycerol (OSO) and is shown in Figure 1.11.

Phase Behavior of 1,3-Dioleoyl-2-Stearoylglycerol

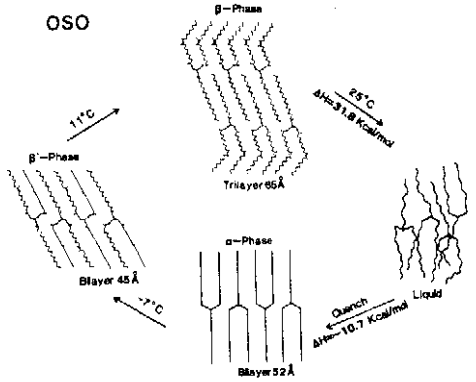

Fig. 1.11. A schematic representation of phase behavior of a di-acid triacylglycerol, OSO (Kodali *et al.*, 1987).

Molecular Packing and Properties of Asymmetric Di-acid TAG

In another systematic study a set of asymmetric di-acid TAG with asymmetric chain substituted at sn-glycerol-3 position were studied (Fahey *et al.*, 1985). The chain length of this 3-acyl chain is increased 2 carbons at a time from C-14, myristic acid, to C-24, lignoceric acid. The physical properties and molecular packing of this series of compounds are compared with trioleoyl glycerol and given in Table 1.7. The melting temperatures and enthalpies of these compounds increase with an increasing chain length. The 3-acyl chain length of C-18 and above show melting temperatures above 20°C but below body temperature. The enthalpies of these compounds are similar to or better than trioleoyl glycerol. The molecular packing of all these compounds reveal trilayered structures with the odd 3-acyl chain segregating from the other two chains to form a middle layer. This trilayer structure packs 1 and 2-acyl chains in the same layer, while the 3-acyl chains of two different molecules form the middle layer. This type of acyl chain packing forces the glycerol conformation perpendicular to the layer plane, which is different from the glycerol conformation of single acid TAG stable crystal structure but similar to diacylglycerols and phospholipids (Goto *et al.*, 1992).

Role of Glycerol Conformation in Molecular Packing and Properties

Understanding the stable glycerol conformation in structurally similar TAG will enable the contribution of glycerol conformation to the stable molecular packing to be understood. The physical properties and packing of OSO and OOS are compared

TABLE 1.7
The Melting Temperatures and Enthalpies of Asymmetric Di-acid TAG in comparison to Single Acid TAG, OOO

TAG	Abbreviation[a]	Melting Temp. °C[b]	ΔH of melt[c] Kcal/mole	Packing chain length[d]
1,2-dioleoyl-3-myristoylglycerol	OOM	12	18	3
1,2-dioleoyl-3-palmitoylglycerol	OOP	18	21	3
1,2-dioleoyl-3-stearoylglycerol	OOS	23	23	3
1,2-dioleoyl-3-arachidoylglycerol	OOA	29	26	3
1,2-dioleoyl-3-behenoylglycerol	OOB	33	28	3
1,2-dioleoyl-3-lignoceroylglycerol	OOLg	36	26	3
Trioleoylglycerol	OOO	5	23	2

[a]M=myristic (C_{14}); P=palmitic (C_{16}); S=stearic (C_{18}); A=arachidic (C_{20}); B=behenic (C_{22}); Lg=lignoceric (C_{24}).
[b]The melting temperature is of high melting polymorphic form.
[c]The enthalpy of melting is from most stable β-polymorphic form to melt.
[d]The packing chain length is from powder x-ray diffraction long spacings corresponding to bilayer, two chain length structures (about 45 A) or trilayer, three chain length structures (about 65 A).

TABLE 1.8
The Melting Temperatures and Enthalpies of Di-acid Symmetric and Asymmetric TAG, OSO and OOS

TAG	Abbreviation[a]	Melting Temp. °C[b]	ΔH of melt[c] Kcal/mole	Packing chain length[d]
1,3-dioleoyl-2-Stearoylglycerol	OSO	25	32	3
1,2-dioleoyl-3-stearoylglycerol	OOS	23	23	3

[a]S=stearic (C_{18}); O=oleic ($C_{18:1}$) with cis double bond at C9.
[b]The melting temperature is of high melting polymorphic form.
[c]The enthalpy of melting is from most stable β-polymorphic form to melt.
[d]The packing chain length is from powder x-ray diffraction long spacings corresponding to trilayer, three chain length structures (about 65 A).

in Table 1.8. The comparison of the molecular packing of symmetric TAG, OSO with asymmetric TAG, OOS shows that both of them pack in trilayered structures. However, to accomplish this, the oleoyl chains segregate from the stearoyl chains to form different layers sandwiching the stearoyl chains, shown in Figure 1.11. This molecular packing forces the glycerol conformation parallel to the layer plane in OSO or perpendicular to the plane in OOS. Except for this difference, the rest of the packing is comparable to each other. The glycerol conformation in these two molecules in relation to the end methyl plane is shown in Figure 1.12. This change in

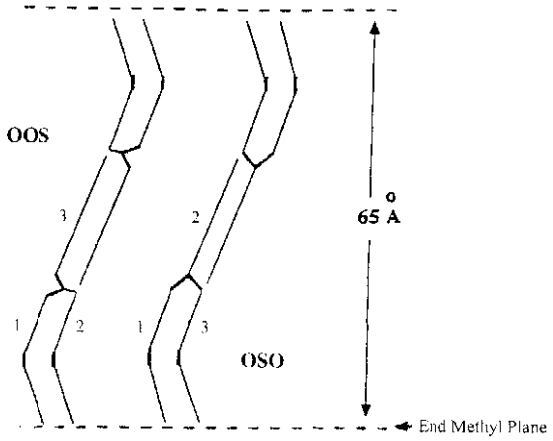

Fig. 1.12. The layered packing of symmetric and asymmetric di-acid TAG OSO and OOS. The 1,2- or 1,3- oleoyl chains of a molecule pack in a layer on either side of stearoyl chains segregated to form a middle layer. This acyl chain arrangement forces the glycerol conformation to be either parallel (OSO) or perpendicular (OOS) to the methyl layer plane.

glycerol conformation influences the enthalpies and melting temperatures of these two compounds. The symmetrical TAG OSO has 2°C higher melting temperature and 9 Kcal/mole higher enthalpy than the asymmetric counterpart.

The glycerol conformation present in OSO is more stable than OOS (Kodali *et al.*, 1987). This is corroborated with the fact that the single crystal structure of monoacid TAG, trilauroylglycerol, shows similar glycerol conformation (Larson 1964). This indicates that when all the three chains are equal, the glycerol conformation parallel to layer plane orientation is preferred. This also confirms the symmetric TAG will have higher melting temperatures and enthalpies than the asymmetric TAG.

Summary

Fats and oils containing TAG are a major class of compounds that are essential not only for various biological functions but also for food functionality. The use of certain oils in the diet is also dictated by the cost and availability. The natural oils and fats contain *cis* double bonds, which isomerise into thermodynamically more stable *trans* form during hydrogenation and deoderization. *Trans* fats, just like saturated fats, offer desirable food functionality. The new FDA regulations stipulate that the *trans* fat content of food products should be included on the label. This created a negative consumer perception of *trans* fats and encourages the food manufacturers to reduce or eliminate the *trans* fats.

There are a number of enabling technologies such as formulation, genetic modification, hydrogenation, fractionation and interesterification that are available to reduce the *trans* fats in food products. However, to create an ideal fat with good food functionality, nutrition, and health, requires an in-depth understanding of structure-properties-functionality relationships. With the existing knowledge in literature fats with one saturated fatty acid / TAG molecule with good functional properties can be produced. To produce ideal fats cost effectively requires leveraging of enabling technologies.

Acknowledgments

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Decreasing *Trans* and Saturated Fatty Acid Content in Food Oils

The edible oil industry has various processing and reformulation strategies available to decrease the *trans* and saturated fatty acid contents of food oils to increase their health value.

G.R. List

Photo courtesy of United Soybean Board

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On July 11, 2003, the Food and Drug Administration published final rules mandating *trans* acid content to be included on food labels by January 1, 2006, in accordance with the Nutrition Labeling Act of 2003. This ruling will have a profound effect on the food and edible oil industries. This article provides some background and describes some strategies that will permit the food industry to comply with the new regulations.

Trans Fats

Fats and oils are triglycerides containing both saturated and unsaturated fatty acids. Typically, common vegetable oils, including soybean, corn, cottonseed, sunflower, peanut, and olive, are relatively low in saturated acids, and the double bonds within unsaturated acids are in the *cis* configuration. To improve their oxidative stability and to increase their melting points, vegetable oils sometimes require hydrogenation. This is particularly true for margarines, spreads, shortenings, and frying fats. During catalytic hydrogenation, some of the double bonds are isomerized from the naturally occurring *cis* form to the *trans* form. *Trans* acids may also be formed in the rumen of animals. Butter, milk, beef tallow, and lard contain small amounts (2–5%) of *trans* acids.

The roles of saturated and *trans* acids in human health and nutrition are highly controversial issues. Nevertheless, in 1990, Congress passed the Nutrition Labeling and Education Act, and by 1994, labeling guidelines had been published. Of particular interest are statements regarding fat. Listing of "Total fat" must be in grams and in bold print. Listing of "Saturated fat" must be in grams, but is not required if the food contains less than 0.5% of total fat per serving and if no claims are made about fat and cholesterol content. If not required and not declared, the statement, "Not a significant source of saturated fat" must be included at the bottom of the nutrition label. Listing of "Polyunsaturated" in grams is voluntary, unless "Monounsaturated fat" or "Monounsaturated" is declared or a cholesterol or saturated fat claim is made and the total fat declared is greater than zero. Listing of "Cholesterol" must be in milligrams and in bold print, but is not required if the product contains less than 2 mg of cholesterol per serving and makes no claim about fat,

saturated fat, or cholesterol; and, if not declared, the statement, "Not a significant source of cholesterol" must be included at the bottom of the nutrition label.

Several groups petitioned the Food and Drug Administration to include *trans* acids as part of the nutrition label, and proposed rules issued in 1999 mandated both *trans* labeling and statements to the effect that *trans* acid consumption should be kept to a minimum. After opening the rules for public comment several times, final regulations were issued on July 11, 2003 (FDA, 2003). By January 1, 2006, *trans* content will be required as a separate line on labels, but the aforementioned statement regarding consumption was eliminated.

Soybean and Palm Oils

An edible oil quality triangle has been described as having oxidative stability, functionality, and nutrition as the three legs (Lui, 1999). The ideal fat or oil should have excellent oxidative stability at high and ambient temperatures, contain enough solid fat for use as margarines, shortenings, and frying fats, and be both low in saturated fatty acid, and high in polyunsaturated acids, thus satisfying the requirements of the triangle. However, no single fat or oil fully satisfies these requirements.

Worldwide consumption of edible fats and oils in 2001–02 amounted to just over 92 million metric tons, of which 59% can be accounted for by soybean oil (29 million metric tons) and palm oil (25.4 million metric tons). While soybean oil is relatively low in saturated acids (15%), it represents a major source of *trans* fatty acids in our food supply because it must be hydrogenated to achieve functional properties and oxidative stability for use in salads/cooking, shortenings, and margarines/spreads. On the other hand, palm oil, while containing no *trans* acids, contains about 50% saturated acids, making it attractive for use in the these products, particularly when modified by interesterification and/or fractionation.

Thus, just two fats and oils dominate and dictate oil processing worldwide, and any discussion of strategies to reduce *trans* and saturated acids in the food supply must focus on soybean and palm oils.

To improve the quality triangle for functionality and oxidative stability, various fat-modification techniques—hydrogenation, interesterification, fractionation, and combinations—are employed by the industry. A decade ago, it was estimated that about one-third of the edible oils produced worldwide were hydrogenated, while 10% were processed by interesterification/fractionation (Haumann, 1994). While more recent data are lacking, it is anticipated that the latter techniques will see increased usage in the future.

Over the past several decades, a number of oilseeds have been introduced with modified fatty acid composition. These include canola and soybean oils with low linolenic acid content; corn, soybean, and sunflower oils with high oleic acid content; and soybean oils with high saturated acids and low saturates (Lui, 1999; Gunstone, 2001; Gupta, 1998, 2001).

Many of these oils show promise in reducing *trans* and/or saturated acids in food oils because the high-oleic oils are much more oxidatively stable and do not require hydrogenation, while the high-saturated oils are *trans* free.

Improvements in oil processing technology also provide options for *trans* and saturated acid reduction. Traditional random interesterification, in which fatty acids are redistributed across the glycerol backbone, is usually accomplished with a chemical catalyst and is thus nonspecific. Numerous advances have been made by use of enzymes which are stereo-specific, allowing production of tailor-made fats (MaCrae, 1983). Indeed, shortening and confectionery fats are now produced commercially by this technology. The time-honored hydrogenation process offers potential for reducing *trans* acids in food oils (Hasman, 1995; King et al., 2001; Warner et al., 2000).

> Just two fats and oils dominate and dictate oil processing worldwide, and any discussion of strategies to reduce *trans* and saturated acids in the food supply must focus on soybean and palm oils.

Trans and Saturated Acid Contents

Nearly 18 billion lb of soybean oil are consumed domestically per year, as follows: shortening 8.57 billion lb; margarine/spreads 1.24 billion lb; salad/cooking oil 7.9 billion lb; and other edible products 125 million lb (Soyatech, 2003). The shortening and margarine categories contain hydrogenated components. Based on the assumption that soft and stick margarines/spreads contain an average of 15% *trans* acids and shortenings contain an average of 20% *trans* acids, about 1.9 billion lb of *trans* acids are produced each year by hydrogenation.

During 2000–01, corn oil consumption amounted to 1.41 billion lb, canola oil 1.75 billion lb, and cottonseed oil 767 million lb. No data are available on the amounts of these oils going into shortenings, marga-

Table 1—*Trans* and saturated acid consumption in the United States, 2001–02

Oil/fat	Consumption (billion lb)		
	Total	*Trans* acids	Saturated acids
Soybean spreads	1.24	0.186	0.38
Soybean shortening	8.57	1.714	1.97
Soybean salad/cooking oil[a]	7.9	0.79	1.185
Corn oil	1.345	—	0.18
Cottonseed oil	0.767	—	0.203
Canola oil	1.793	—	0.129
Coconut oil	1.1	—	1
Palm oil	0.455	—	0.205
Palm kernel oil	0.471	—	0.409
Lard	0.989[b]	0.01	0.392
Tallow	1.47[c]	0.07	0.401

[a]May contain trans acids, about 10%
[b]1–2% trans
[c]4–5% trans

rines, and salad cooking oils.

Significant amounts of edible food and oils high in saturated acids are consumed per year in the U.S., including coconut oil 1.1 billion lb, lard 989 million lb, palm and palm kernel oils 826 million lb, and edible tallow 1.47 billion lb—a total consumption of 2.48 billion lb of saturated acids.

Thus, the U.S. consumption of *trans* and saturated acids is about equal—1.9 vs 2.48 billion lb, respectively. The value for *trans* consumption is low because of lack of data for the amounts of corn, cottonseed, and canola oil processed by hydrogenation (Table 1).

A survey of the *trans* content of soft tub margarine/spreads in the U.S. was reported by List et al. (2000). The samples were premium products that were taken from grocery store shelves and, according to their label, were formulated from hydrogenated and liquid soybean oil. From 1992 to 1999, the overall *trans* reduction ranged from about 25% to 82%, with an average reduction of nearly 56%. The 1992 data indicate an average of nearly 20% *trans* in soft tub products, whereas the 1999 data show less than 9% *trans*. Stick/spreadable products have shown decreased *trans* acid contents over the past decade—*trans* acids averaged 26.8% in 1989, but by 1999 the average had dropped to 16.9%, a 37% overall reduction (Postmus et al., 1989; List et al., 2000).

Thus, the domestic edible oil industry has made concerted efforts to reduce *trans* acids in edible products. This has been accomplished through reformulation methods in which a multiple basestock system employing three hydrogenated oils has been replaced with a single hydrogenated component. Typically, soybean oil, hydrogenated to an iodine value (IV)—a measure of degree of unsaturation—of about 65 (40% *trans*), is blended with 25–50% liquid soybean oil to yield components suitable for a wide variety of spreads, including soft tub, spreadable stick, and stick products.

The *trans* acid content of margarines and spreads taken from the literature over a seven-year period (1995–2002) show some interesting trends in oil processing (Alonzo et al., 2000; Oveson et al., 1998; Ratnayke et al., 1998; Tsanev et al., 1998; Tekin et al., 2002; Bayard and Wolff, 1995). Low-*trans* products are arbitrarily defined as those having 5% or less *trans* acids, while zero-*trans* products may have smaller amounts (1–2%). Of the 228 samples reported, 87 (38.2%) may be considered zero- or low-*trans*. The largest number of samples reported include those from Canada and the U.S., where 10 of the 126 were zero- or low-*trans*.

These results indicate that margarines/spreads formulated in North America are formulated primarily from hydrogenated components rather than by interesterification. The products produced in Denmark are formulated from interesterified oil components and represent the only country surveyed where hydrogenation has been replaced entirely. However, if the 59 samples from Denmark are excluded, 28 of 169 (16.6%) were low- or zero-*trans*. Thus, it would appear that hydrogenation remains the technology of choice to formulate margarine/spread products throughout most of the world.

Matsuzaki et al. (2002) analyzed margarines marketed in 11 countries, including Europe, Scandinavia, and the U.S., for their *trans* fatty acid and other compositional data. Their data confirm that any decrease in *trans* fatty acids is achieved at the expense of increased saturated acids content. Margarines produced in the U.S. had the lowest *trans*/saturated acid content (41.4%) and the highest ratio of polyunsaturated fat-

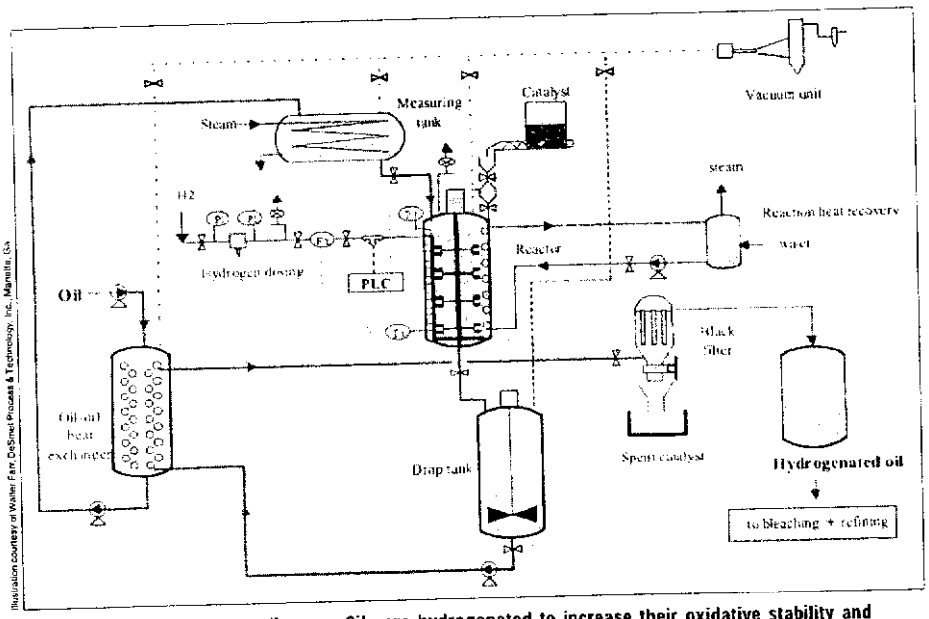

Illustration courtesy of Walter Farr, DeSmet Process & Technology, Inc., Manalla, GA

Fig. 1—Hydrogenation flow diagram. Oils are hydrogenated to increase their oxidative stability and improve their melting properties by increasing their degree of saturation. Hydrogenation is also a primary cause of formation of *trans* fatty acids.

ty acids/*trans* fatty acids plus saturated acids compared to the rest of the world. The same trend was observed for soft tub margarines.

Hydrogenation of Soy-Based Oils

Fig. 1 is a flow diagram of the hydrogenation process. Temperature, pressure, agitation, and catalyst concentration are the most important factors governing the course and speed of hydrogenation. However, with other factors being equal, temperature has the largest effect on *trans* acid formation. Industrially, hydrogenation is carried out under selective conditions favoring reduction of polyunsaturated groups over that of monoenic acids.

Typically, selective conditions involve high temperature (160–220°C) and low hydrogen pressure (10–40 psi) in the presence of 0.02–0.04% nickel metal catalyst supplied as 25% nickel on a support. Although selective conditions promote *trans* fatty acid formation, it is imperative that the amount of stearic acid formed at lower IVs be kept at a minimum, since any tristearin formed in the reaction will unduly raise the melting point of the finished oil such that the sharply melting "*trans*" functionality is compromised.

Partially hydrogenated winterized soybean salad/cooking oil (PHWSBO) has been produced commercially in the U.S. since the early 1960s. It is typically produced by hydrogenation under selective conditions (160–170°C, low hydrogen pressure, and 0.02% nickel) where the IV is reduced from approximately 130–132 to 110–115. The feedstock is then chilled slowly, allowing the higher-melting triglycerides to crystallize. The liquid oil is then recovered by filtration. The higher-melting fraction, stearine, may be incorporated into margarine/spread or shortening products.

The composition and properties of PHWSBO are given in Table 2, along with hydrogenation conditions used in its manufacture. The product with an IV of 110–112 will remain clear at refrigerator temperatures and is superior to unhydrogenated oil for light frying in the home.

Further discussion of the hydrogenation process can be found in reviews by Hastert (1996), Patterson (1994), and Erickson and Erickson (1995).

Margarine Basestock and Formulation of Spreads

Margarine oil basestocks—hydrogenated components that, when blended with liquid oil, produce desired functional properties—require "selective conditions" in which stearic acid formation needs to be controlled very carefully. Typically, low pressure and high temperature are used. The preparation of multi-purpose margarine basestocks involves reducing the IV of soybean oil from about 130 to 65–70 in the presence of a nickel catalyst at about 220°C and low hydrogen pressure.

Margarine oils typically show the following solid fat content (SFC): tub products 8–14 at 10°C, 4–8 at 21.1°C, and 1–

Table 2—Properties of partially hydrogenated soybean oils

Oil	Fatty acid composition C16	C18	C18:1	C18:2	C18:3	Iodine value	% *trans*	Melting point (°C)	Solid fat content 10°C	21.1°C	26.7°C	33.3°C	40°C
Original soybean oil	11.2	3.7	22.1	55.0	6.8	132.0	0.0	–14.3	0.0	0.0	0.0	0.0	0.0
Hydrogenated soybean oil[a]	11.4	4.7	40.3	40.5	3.0	112.6	8.7	16.7	0.0	0.3	0.0	0.2	0.2
Stearine	12.8	6.5	48.4	30.3	1.9	97.2	13.3	27.6	14.2	5.5	1.7	0.0	0.0
HW SBO	10.5	4.4	42.0	40.0	2.9	109.5	9.1	–7.5	0.9	0.0	0.1	0.0	0.0
Margarine oil[b]	11.3	13.6	75.2	0.0	0.0	64.7	39.7	41.3	73.7	54.1	44.7	22.3	3.3
Shortening oil[c]	11.3	5.1	72.6	11.0	0.0	81.5	31.8	29.3	36.3	13.7	4.6	0.0	0.0

[a]160°C, 40 psi H_2 pressure, 0.02% nickel; [b]216°C, 20 psi H_2 pressure, 0.03% nickel; [c]221°C, 20 psi H_2 pressure, 0.03% nickel

2 at 33.3°C; stick products 20–25 at 10°C, 10–12 at 21.1°C, and 2–4 at 33.3°C. The hydrogenated soybean oil, when blended with 25–50% liquid oil, results in SFCs suitable for tub and stick products, respectively. The melting point of the blended oils will usually be 32–35°C. The *trans* isomer content of the basestock is about 40%, which, after blending, yields final *trans* values for tub and stick products of 10 and 20%, respectively. *Trans*-containing triglycerides are very sharply melting materials at low temperatures. They provide functionality for spreadability and resistance to oil-off at room temperatures, yet they melt very quickly at body temperature to yield a pleasant, cooling sensation in the mouth.

Shortening Basestock and Formulation of Shortening

Shortening basestocks are typically prepared by hydrogenation of soybean oil to an IV of about 80. Lower temperatures and higher pressures are used than for margarine basestocks.

To formulate shortenings, liquid oil is blended to decrease the SFC, and addition of completely hydrogenated hardstock (10–12%) raises the 33.3°C and 40°C SFC values.

The baking industry employs a number of shortenings. Their *trans* acid content varies from about 12% to nearly 25%. Reduction in the *trans* acid content of shortenings is possible by alternative processing techniques such as interesterification. However, no- and low-*trans* shortenings, while equivalent in performance to hydrogenated products, may be more expensive and will have elevated saturated acid contents.

High-Stability Oils

High-stability oils (HSOs) were developed more than 30 years ago (Gooding, 1972). Compared to commodity oils (soybean, corn, cottonseed, canola, peanut), they are expensive, but they are extremely stable and fill definite needs for the food industry. They are liquids at ambient temperature and perform well as spray oils and in products with large surface areas or where long shelf life is required.

HSOs are at least four times more resistant to oxidation and hydrolysis than commodity salad oils; this translates into slower development of off-flavors and marked improvement in color stability. Typical applications include use as carriers of flavors, moisture barriers, viscosity modifiers, gloss enhancers, lubricating/releasing agents, and anti-dusting agents, as well as use in roasting of nuts and frying operations.

Use in 2000 was estimated to be 45,000–57,000 metric tons—70% low-end HSO, 10% mid-range, and 20% high-end. These designations refer to their relative stability under active oxygen method conditions (100°C) or hours to reach a peroxide value of 100. Low, mid-range, and high-end oils have peroxide values of 50–100, 100–300, and >300, respectively (Lampert, 2000).

HSOs can be processed from both commodity oils and oils that have been modified genetically or by plant breeding. High-oleic corn, soybean, and sunflower oils meet requirements for low-end HSO without processing beyond refining, bleaching, and deodorizing, whereas soybean oil requires partial hydrogenation and dry fractionation as well. Both medium- and high-end HSOs can be prepared from both commodity oils and oils modified by either genetic engineer-

ing or plant breeding. However, light, partial or heavy hydrogenation and dry fractionation must be employed along with the usual refining, bleaching, and deodorization steps.

Low-end HSOs prepared from hydrogenated, dry-fractionated soybean oil contain 15% saturates and 32% *trans*, whereas high-oleic sunflower oil contains 9.5% saturates and 1% *trans*. HSOs based on canola and high-oleic canola oils offer opportunity for *trans* reduction in mid-range applications. Canola HSO shows 18–29% *trans*, compared to 51% for soy-based oil. Similarly, high-oleic-based, high-end oils have 33% *trans* compared to 48% for cottonseed- or soybean-based oils (Lampert, 2000).

HSOs are liquids at ambient temperature and are highly functional and convenient to use. They are used at low levels, often 0.2 and 1%, and are most commonly sprayed onto the surface of the food or ingredient. Although more expensive than commodity oils, processing costs are reduced, making final pricing comparable.

It is expected that increased use of HSOs will occur in the future to reduce the fat content in foods, improve shelf life, and improve health and nutrition.

Canola Oil

Hydrogenation of canola oil has been studied extensively in the laboratory (see review by Koseoglu and Lusas, 1990). Although canola oil is widely used in margarines/spreads and shortenings, the *trans* isomer content of these products tends to be somewhat higher than soybean-based products (Postmus et al., 1989).

Compared to soybean oil, hydrogenation of canola oil results in more *trans* acids at a given IV level. For example, canola oil (IV 113), when hydrogenated to IV 80 for shortening stock, contains about 45% trans acids, compared to 31–32% for soybean oil at the same IV. Canola margarine stock (IV 75) contains 50% *trans*, compared to 40% for soybean oil at IV 65. Lightly hydrogenated canola (IV 90) used as a frying fat contains 20% *trans*, whereas soybean oil at IV 110–116 contains about 10–12% *trans* (Eskin et al., 1996).

These phenomena can be accounted for by the differences in fatty acid composition of the two oils. Canola oil contains 60% oleic acid and about 32% polyunsaturated acids (22% linoleic acid and 10% linolenic acid), whereas soybean oil contains about 22% oleic acid and 63% polyunsaturated acids. Thus, the high content of oleic acid renders canola oil more amenable to isomerization/*trans* fatty acid formation during hydrogenation; also sulfur-containing glucosinulates found in canola oil tend to poison the catalyst, thus promoting formation of *trans* acids. Canola oil tends to crystallize in the undesirable beta (highest-melting) form because of the low levels of palmitic acid found in the oil. To improve the crystal habit, the addition of palm oil prior to hydrogenation reportedly stabilizes the oil in the desirable beta-prime form desired for margarines and shortenings (Eskin et al., 1996).

Cottonseed Oil

Cottonseed oil has an IV of about 110 and contains about 25% saturated acids. A basestock system for formulation of shortenings, margarines, and spreads consists of five hydrogenated oils along with a hardstock or completely hydrogenated component (IV >5). Oils hydrogenated to an IV of 75–80 under non-selective conditions (350°F, 30–45 psi, 0.02% nickel catalyst) possess flat solid fat index (SFI) curves suitable for shortenings, whereas the IV 58, 65, and 70 oils hydrogenated under selective conditions (440°F, 11–15 psi, 0.04–0.08% nickel catalyst) possess steep SFI curves needed for margarine/spreads. The IV 58 oils have SFIs and melting properties very similar to those of IV 65 soybean oil and are similar in *trans* acid content. In 1997, only 8 million lb of cottonseed oil was used in margarines/spreads in the U.S.

O'Brien and Wan (2001) provide an excellent review of food uses and processing of cottonseed oil.

Corn Oil

During 1955–85, corn oil usage in margarines/spreads increased from less than 500,000 lb to 210 million lb, but dropped to about 61 million lb by 1997. Corn oil contains about 13% saturated acids and has an IV of approximately 127. Soft and stick margarines

formulated from blends of hydrogenated soybean oil and liquid corn oil are available commercially.

Soybean oil basestocks are produced by hydrogenation of the oil to IVs of 65–67 under selective conditions and contain about 48% *trans* acids. The IV 65 oil blended with 25–30% liquid corn oil is suitable for soft products, while the IV 67 oil blended with 45–47% liquid corn oil is suitable for stick products. The *trans* acid content of soft and stick products is 12–14% and 20–24%, respectively.

Strategies to Reduce *trans* Acids

There are a number of strategies to reduce the *trans* fatty acid content of oils:

• **Interesterification.** The patent literature is replete with information on interesterification as a route to low-*trans* fats and oils. Gillies (1974) covered the patent literature from 1960 to 1974. A further search of the patent literature using margarine/shortening and interesterification as key words yields more than 46,000 references since 1976 alone. Thus, a comprehensive review would not be practical. Instead, several examples will be given from the author's laboratory.

Random interesterification of 80% liquid soybean oil with 20% completely hydrogenated soybean oil provides a route to soft margarine oil having suitable solid fat and crystal structures (List et al., 1977). Further work in which the interesterified oils were formulated into soft margarines in the pilot plant demonstrated that the 80:20 blend produced margarine that was harder and more difficult to spread than hydrogenated controls. Adding 20% liquid oil resulted in a product with suitable spreadability, sensory properties, and resistance to oil/water loss (List et al., 1995a).

Random interesterification of other liquid oils, including corn, peanut, cottonseed, canola, and palm, with completely hydrogenated soybean or cottonseed flakes yields basestocks suitable for formulation of zero-*trans* margarines and shortenings (List et al., 1995b).

Shortening oils require higher, flatter SFI curves and higher melting points than margarine oils. To obtain these properties, it is necessary to incorporate more stearine into the interesterified blend. The desired SFIs and melting points are achieved by blending the interesterified basestock with additional liquid oil.

Typically, all-purpose shortening prepared from hydrogenated components show SFI values of 18–23, 14–19, 13–14, and 7–11 at 50, 70, 92, and 104°F, respectively. A 50:50 blend of interesterified and liquid soybean oil closely matches these values. Fluid shortenings can be prepared by blending 35% of the basestock with 65% soybean, corn, peanut, cottonseed, or canola oil.

• **Fractionation.** Rapid growth of the palm industry, beginning in the mid-1970s, prompted development of improved fractionation technology. Historically, solvent and detergent processes had been used, but today physical or dry fractionation is the standard industry method.

Palm oil (IV 51–53) is fractionated

into olein (IV 56–59) and stearine (IV 32–36) fractions. The olein fraction is further fractionated into mid-fractions, super oleins, and top oleins. The palm mid-fractions (IV 42–48) are further processed into harder fractions (IV 32–36). Fractionation of the stearine (IV 32–36) yields soft and super stearines (IV 40–42 and 17–21, respectively) (Tirtiaux, 1996). These fractions can be incorporated into margarines/shortenings and confectionery fats. However, replacing *trans* fat with highly saturated palm fractions will increase saturated acid content.

Further discussion of the fractionation process can be found in reviews by Krishnamurthy and Kellens (1996), Timms (1997), and Deffense (1985).

Palm Oil

Zero-*trans* margarine fats can be prepared via random interesterification of soybean oil with palm stearine or fully hydrogenated soybean oil in ratios of 80:20. Petrauskaite et al. (1998) concluded that increasing the amount of fully hydrogenated soybean oil to 30 parts produced zero-*trans* oils suitable for shortening; 40 parts palm stearine randomized with 60 parts soybean oil also produced shortening oil very similar to commercial products.

Ozay et al. (1998) described the formulation of *trans*-free margarines from sunflower and cottonseed oils interesterified with palm oil, palm kernel oil, palm stearine, and palm kernel olein and compared them to products made by simply blending the components in various ratios. Palm oil crystallizes slowly compared to other fats and oils, leading to a phenomenon known as post hardening in which products become harder during storage. The authors observed minimal post hardening in their study and reported that the use of skim milk in preparing the emulsions prior to crystallization was effective in retarding post hardening in blends high in palm oil and palm kernel oil.

Yusoff et al. (1998) reported formulation of *trans*-free tub, pastry, and bakery margarines from palm oil, palm olein, palm stearine, and palm kernel olein interesterified with soybean and rapeseed oil. The normal level of palm oil in commercial soft tub products was reported to be 25%, but palm olein can be used up to a level of 40%.

Berger (1998) reported studies on palm oil usage in a variety of food products, including margarine, baking shortenings, frying fats, and dairy products such as whipped toppings, ice cream, cheese, and *vanaspati*, a butter-like product with a melting point of 37–38°C used extensively in India and Pakistan. Vanaspati is manufactured with a granular structure and a minimum of free oil at room temperatures. In the early 1980s, the product (1 million tons/year), produced in Pakistan from hydrogenated components, contained about 30% *trans* acids. After it was reformulated with 80% palm oil and 20% liquid vegetable oil, *trans* acids were reduced to less than 4%. However, the saturated acid content would be on the order of 40%.

Oils With Modified Composition

Over the past several decades, a number of oilseeds with modified fatty acid compositions have been developed and commercialized. Most have resulted from traditional plant breeding techniques (Lui, 1999; Gunstone, 2001; Loh, 2000; Wilson, 1999). These include high- and mid-level-oleic sunflower oil; high-oleic corn, soybean, and safflower oils; low-linolenic canola and soybeans oils; and high-oleic/low-linolenic canola oil.

A number of laboratory frying studies have demonstrated superiority of modified oils over commodity oils (Warner and Gupta, 2003; Warner and Knowlton, 1997; Warner et al., 1997; Mounts et al., 1994; Warner and Mounts, 1993, 1994; Su et al., 2003).

Although low-linolenic canola and soybeans oils have reached commercialization, costs and production problems have impeded their success in the marketplace. However, the new labeling regulations may provide new markets and demands for modified-composition oils.

Fluid Shortenings

Fluid shortenings are stable suspensions of 2–20% hard fat in liquid vegetable oil which may or not be hydrogenated (Herzing, 1996; Andre and Going, 1957; Holman and Quimby, 1950; Mitchell, 1950). Fluid shortenings have been used for many years in baked goods where high solids contents are not required, such as fillings, cakes, and breads. They serve the same function as solid shortenings by imparting tenderness and lubricity, as well as serving as carriers for emulsifiers needed for aerating cake batter or giving crumb strength to bread. Other advantages include the fact that, since they are liquid and pumpable, they can be easily metered into batch and continuous processes. Some reduction of *trans* acids might be achieved by substituting liquid or un-

hydrogenated oil in formulations where hydrogenated oils have been traditionally used.

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GROCERY MANUFACTURERS OF AMERICA
MAKERS OF THE WORLD'S FAVORITE BRANDS OF FOOD, BEVERAGES, AND CONSUMER PRODUCTS

June 18, 2004

Division of Dockets Management (HFA-305)
Food and Drug Administration
5630 Fishers Lane
Room 1061
Rockville, MD 20852

ANPR COMMENTS

Re: Docket No. 2003N-0076; Food Labeling: *Trans* Fatty Acids in Nutrition Labeling; Consumer Research to Consider Nutrient Content and Health Claims and Possible Footnote or Disclosure Statements; Reopening of the Comment Period; 69 Fed. Reg. 9559 (Mar. 1, 2004)

The Grocery Manufacturers of America (GMA)1 appreciates this opportunity to offer comments concerning the Food and Drug Administration (FDA) Advance Notice Proposed Rulemaking (ANPR) on *trans* fatty acids in nutrition labeling. This ANPR seeks comments on potential approaches to establishing a daily value (DV) for *trans* fat and a revised DV for saturated fat, qualifying criteria for nutrient content and health claims, and the use of possible footnote or disclosure statements about *trans* fat.

Summary

GMA urges FDA to address *trans* fat labeling as part of a deliberate, reasoned, and comprehensive strategy that will best achieve the public health goals associated with such labeling. The National Academy of Sciences/Institute of Medicine (IOM/NAS) has recommended that FDA establish a joint daily value (specifically, a daily reference value) for *trans* fat and saturated fat by using "food composition data, menu modeling, and data from dietary surveys to estimate minimum intakes consistent with nutritionally adequate and health-

1 GMA is the world's largest association of food, beverage and consumer product companies. With U.S. sales of more than $500 billion, GMA members employ more than 2.5 million workers in all 50 states. The organization applies legal, scientific and political expertise from its member companies to vital food, nutrition and public policy issues affecting the industry. Led by a board of 42 Chief Executive Officers, GMA speaks for food and consumer product manufacturers and sales agencies at the state, federal and international levels on legislative and regulatory issues. The association also leads efforts to increase productivity, efficiency and growth in the food, beverage and consumer products industry.

promoting diets for diverse populations."2 Regardless of the framework that is pursued, however, evaluation of a possible DV for *trans* fat raises complex and novel issues that will require considerable agency resources and thought, as well as significant public participation. Significantly, neither the Nutrition Subcommittee of the FDA Food Advisory Committee ("Nutrition Subcommittee") nor the 2002 IOM/NAS Panel on Macronutrients was able to identify a quantitative recommended intake for *trans* fat consumption, illustrating the difficulty presented by *trans* fat. 3/

To achieve the public health goals that *trans* fat labeling is intended to attain, proper sequencing and timing are key. GMA urges FDA to focus on, in this order, the following initiatives: (1) proper implementation of the final rule on quantitative *trans* fat labeling, (2) regulatory initiatives that will help drive product reformulation to reduce *trans* fat, and (3) a thoughtful and comprehensive review of the Nutrition Facts panel.

Regarding nutrient content claims, GMA supports the establishment of "*trans* fat free" and "reduced *trans* fat" claims. GMA also urges FDA to re-evaluate disqualifying requirements for health claims. GMA intends to address disqualifying and minimum nutrient content requirements in greater detail in comments that will be submitted in response to the agency's May 4 notice concerning general principles for health claims.4

First Priority: Fully Implement Quantitative *Trans* Fat Labeling

To assist consumers now, and to follow through on what is already required, GMA urges FDA to first focus on informing consumers about quantitative *trans* fat labeling (together with saturated fat and cholesterol). Both agency and industry efforts to educate the public about *trans* fat are in progress and must receive adequate resources and attention.

An immediate focus on quantitative *trans* fat labeling is needed because mandatory labeling of a daily value for *trans* fat (in any form) is—even under the best of circumstances—likely to be several years away. The July 2003 final rule requiring the declaration of quantitative *trans* fat values in the Nutrition Facts box will take effect on January 1, 2006, and industry efforts to comply with this major change are substantially underway.5 Thus, even if FDA were to issue a

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2 IOM/NAS, *Dietary Reference Intakes: Guiding Principles for Nutrition Labeling and Fortification*, at 5-13 (Dec. 2003).

3/ *See* Transcript of Food Advisory Committee, Nutrition Subcommittee Meeting, Total Fat and Trans fat (Apr. 27-28, 2004); IOM/NAS, *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids* (the "Macronutrient Report") (Nat'l Academy Press 2002).

4 69 Fed. Reg. 24541 (May 4, 2004).

5 If FDA were to issue a proposal and final rule this year, so as to finalize a daily value rule in time for the January 1, 2006 uniform compliance date, a significant economic burden would be presented because so many labels are already too far in the development pipeline to be pulled back and further revised efficiently.

proposal this year and a final rule just a year later, the effective date would not be until January 1, 2008. Moreover, the complexity and novelty of this issue suggest that several years, at a minimum, would be required to see any rulemaking through to completion. For these reasons, GMA believes that any additional labeling requirements for *trans* fat realistically could take effect, at the earliest, in 2008.

An immediate focus on quantitative labeling is therefore prudent and offers FDA's best opportunity to ensure that consumers are educated about *trans* fat. This includes providing consumers with information about what *trans* fat is, what products may contain it, and how to make health-conscious food selections within the context of a food's total nutritional profile. Part of this effort should include a cautionary note that it is overly simplistic to rely upon the word "hydrogenated" in the ingredients list as an indication of whether *trans* fat is present in the food at dietarily significant levels. Many products that contain partially hydrogenated oils contain these ingredients at extremely low levels that do not rise to nutritional significance; other products contain fully hydrogenated oils (e.g., high stearate soybean oils) that not only do not contain *trans* fat, but also contain saturated fat in the form of stearic acid, which a substantial body of evidence suggests is cholesterol neutral. GMA also recommends that information on stearic acid be included in agency educational materials.

Second Priority: Focus on Product Reformulation

Second, FDA should focus on labeling initiatives that will best drive product reformulation to reduce *trans* fat content, and should allow adequate time for reformulation to occur, before considering a DV for *trans* fat in any form. FDA's own economic analysis accompanying the *trans* fat rulemaking identified product reformulation as a linchpin for public health goals to be derived from *trans* fat labeling. GMA believes strongly, however, that any new or reformulated products need to be healthier than the products they replace. The call for "zero" *trans* fat heard in some circles would very likely lead to unintended negative consequences, such as significantly increased saturated fat content in some products, if industry is not allowed sufficient time to reformulate.6/

Reformulation. The reformulation process does not come without significant product development challenges. *Trans* fats cannot simply be removed from products; they must be replaced with another ingredient that carries similar qualities (e.g., texture, structure, taste, shelf stability, etc.) in order to maintain product integrity. Even if a promising substitute for a *trans* fat-containing ingredient is found, it must be assessed as part of a complex evaluation process that requires substantial research and development work, sensory evaluation, in-plant modifications, adjustments, and scale-up efforts, stability studies, and packaging and labeling modifications, among other steps in the product development process.

GMA has prepared a preliminary summary of a "typical" product reformulation process (see Appendix B). If all goes well, a "typical" process can require several years, thousands of personnel hours, and millions of dollars. For example, Frito-Lay North America, Inc. reported

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6/ This concern is addressed more fully in our comments of May 26, 2004, which are incorporated herein and attached for your reference in Appendix A.

that reformulation of its snack food lines to remove *trans* fat required approximately three years, 7000 personnel hours, 240 analytical tests, 25 consumer tests, and tens of millions in capital expenditures. Of course, if challenges are encountered, such as consumer rejection of a proposed reformulation, additional time and expense would be required. Industry is committed to pursuing alternatives to *trans* fats, but must be allowed sufficient time to pursue these alternatives in a meaningful way.

Adequate time for reformulation is also important because any process for establishing a DV requires consideration of current and likely *trans* fat intake. The *trans* fat content of the food supply is in a period of rapid and significant change, and these changes should be encouraged and allowed to bear fruit.7 Companies should be encouraged to expend their limited resources on product reformulation that improves public health over the long term, rather than on label changes that likely will need to be changed again in the near future.

By allowing adequate time for reformulation, FDA can also ensure that adequate *trans* fat data will be available, should the agency decide to consider the approach recommended by the IOM/NAS for establishing a DV. As the final rule on quantitative *trans* fat labeling has not yet taken effect, food composition data on *trans* fat are increasing, but remain limited. If the recommended IOM/NAS approach is to be meaningfully pursued, consideration of minimum intakes must take into account a diversity of circumstances, including dietary differences due to cultural, regional, socioeconomic, and other demographic considerations. The intake assessment necessary to carry out the recommended IOM/NAS approach, therefore, cannot be adequately pursued without data on *trans* fat levels for a wide variety of foods. GMA believes that such data are not currently available, and that a focus on reformulation now and in the near future would also allow time for the necessary data to be developed.

Labeling. GMA urges FDA to pursue labeling initiatives that will aid reformulation efforts and provide incentives for the use of healthful fats and oils. Two labeling issues warrant special consideration: (1) a separate and voluntary declaration of stearic acid, a cholesterol-neutral saturated fat, in the Nutrition Facts panel and elsewhere on the label, and (2) development of appropriate and flexible claim criteria for claims such as "*trans* fat free."

Since FDA last evaluated the state of the science, stearic acid has been widely recognized as a "neutral" fatty acid that does not raise low density lipoprotein (LDL) cholesterol. Of particular importance to this rulemaking, stearic acid was recognized as cholesterol-neutral during the deliberations of the April 27 to 28 meeting of the Nutrition Subcommittee. 8/ In 2002, stearic acid was similarly identified as cholesterol-neutral in the IOM/NAS "Macronutrient Report," which described stearic acid as more similar to oleic acid than to palmitic, lauric, or myristic

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7 Examples of some of the many improvements in our member company products can be found in the May 26, 2004 comments provided in Appendix A. These examples almost certainly represent a fraction of the forthcoming formulation changes, as GMA understands that many companies plan to reformulate but have not yet made these plans public. GMA members would be pleased to meet with the agency to discuss these examples and associated resources if that would be useful.

8/ *See, e.g.,* Transcript of Food Advisory Committee, Nutrition Subcommittee Meeting, Total Fat and Trans fat (Apr. 27-28, 2004) (statements of A. Lichtenstein).

acids. 9/ Moreover, since 1993, the regulations of the Food Safety and Inspection Service (FSIS) have permitted the voluntary declaration of stearic acid in nutrition labeling for meat and poultry products. 10/ These developments provide a reasonable basis for FDA to reconsider its position on this important fatty acid.

Despite the well-recognized status of stearic acid as neutral with respect to LDL cholesterol, the current nutrition labeling regulations do not facilitate its identification and use. Indeed, under the present regulations, stearic acid is silently included within the quantitative declaration and daily value for saturated fat—a result that arguably fails to allow consumers to "readily observe and comprehend such information and to understand its relative significance in the context of the total daily diet." 11/ To facilitate healthful reformulation and replacement of *trans* fat with alternatives like stearate-rich fats and oils, GMA asks that FDA allow the voluntary identification of stearic acid within nutrition labeling. GMA believes that the public health would benefit from inclusion on a voluntary basis of a separate line for stearic acid in the Nutrition Facts panel, as a subset of saturated fat. This declaration should be accompanied by the quantitative amount of stearic acid per serving, without a separate DV.

GMA also believes that public health would benefit from development of appropriately flexible and obtainable claim criteria for nutrient content claims, such as "*trans* fat free." Although many reformulation efforts are currently underway, flexible claim criteria are critical to encourage further reformulation work that will affect a broad cross-section of the food industry. Flexibility is needed because many ingredients that provide the functionality of *trans* fat may also contain higher levels of saturated fat.

Our member companies are investing human and monetary resources with the fats and oils industry in an effort to find alternative ingredients that reduce or eliminate *trans* fat without increasing saturated fat or with only a minimal increase in saturated fat. At this time, however, it is simply unrealistic to expect that increases in saturated fat can be entirely avoided. So long as these smaller increases in saturated fat do not offset the health benefits of reduced *trans* fat levels, and reformulated products are healthier overall, they should not preclude the use of claims like "*trans* fat free" that can provide incentives for widespread reformulation. GMA's specific proposals for "*trans* fat free" and similar claims that GMA believes will promote reformulation are discussed more fully under a separate Nutrient Content Claims heading below.

Third Priority: Cohesive Review of Nutrition Facts Panel

Third, FDA should dedicate resources to a thoughtful, efficient, and cohesive review of the Nutrition Facts panel. For the first time since enactment of the Nutrition Labeling and Education Act of 1990 (NLEA), FDA is embarking upon a major review of nutrition labeling requirements. This review is prompted not only by the need to update labeling to reflect the latest dietary

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9/ IOM/NAS Macronutrient Report, *supra* note 3, Ch. 8, 11.

10/ 9 C.F.R. §§ 317.309(c), 381.409(c).

11/ *See* Nutrition Labeling and Education Act of 1990, § 2(b)(1)(A).

recommendations, as set forth in the IOM/NAS dietary reference intakes (DRIs), but also by current initiatives regarding obesity. The DV concept is a critical component of this review, and efficiency dictates that DV issues be considered and addressed as part of a single, comprehensive, and cohesive effort. FDA should not—and from an economic perspective, must not—undertake this effort in a piecemeal fashion. Too frequent changes to the familiar Nutrition Facts panel could also conceivably erode consumer confidence in the food label.

As part of this review, FDA should develop a strategy for educating consumers about the DV concept. Educating consumers about the DV concept is important because it would lay the necessary groundwork for, and should be a condition precedent to, adoption of any new or revised DV declaration. A growing body of evidence suggests that consumers are either confused by the DV concept or do not use it, so it is simply premature to pursue a new DV of any type at this time. 12

For the foregoing reasons, it is simply inefficient and premature to adopt a DV for *trans* fat at the present time, either in the form of a joint DV with saturated fat or standing alone. Ensuring public health gains in an efficient manner dictates that a DV for *trans* fat should be considered only as part of the review of other DVs and after the marketplace has had time to make product reformulation. Moreover, at the present time scientific support for a DV is lacking, as neither the Nutrition Subcommittee nor the 2002 IOM/NAS Panel on Macronutrients was able to identify a quantitative recommended intake for *trans* fat consumption.

Trans Fat Footnote

As described in previous comments, GMA also believes strongly that the use of a footnote advising consumers to limit their intake of *trans* fat, saturated fat and/or cholesterol is similarly premature, regardless of the wording selected. As it has for other nutrients that lack a DRV or RDI, FDA should require declaration of the amount of *trans* fat, but leave the Percent Daily Value declaration blank. This approach is sound from both a legal and a policy standpoint because FDA historically has not required a Percent Daily Value declaration where there exist insufficient data to establish a DRV (e.g., monounsaturated fat, sugars) or other reasons make such a declaration unnecessary in certain circumstances (i.e., protein).

GMA continues to believe that a footnote is not needed to provide guidance to consumers when using the quantitative information to help maintain healthy dietary practices. Consumers are learning about *trans* fat through information on manufacturers' web sites as well as the media. FDA has launched their consumer education campaign on *trans* fat, and has developed consumer messages on how consumers can keep their intake of saturated fat, *trans* fat, and cholesterol low. As described previously, GMA believes that FDA should continue to focus on these efforts at the present time, and should plan as next steps changes that will truly help to drive product reformulation, followed by the nutrition labeling review contemplated by the obesity initiative and the recent IOM/NAS report addressing the use of DRIs in food labeling. Adoption of a

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12 *See, e.g.*, Division of Market Studies, Office of Scientific Analysis and Support, FDA CFSAN, Helping Consumers Lead Healthier Lives through Better Nutrition: A Social Sciences Approach to Consumer Information, Food Choices, and Weight Management (Jan. 2004) (Executive Summary).

footnote at the present time would divert limited resources from these important activities and would be of dubious value to consumers.

The Relationship of *Trans* Fat to Nutrient Content Claims

GMA supports the establishment of "*trans* fat free" and "reduced *trans* fat" claims, the inclusion of *trans* fat criteria in claims pertaining to saturated fat, and the continued validity of factual amount claims for *trans* fat, as follows.

"*Trans* fat free." GMA believes that this claim should require, per reference amount and per labeled serving, (1) less than 0.5 g of *trans* fat, consistent with FDA's approach to other "free" claims, and (2) no more than 25% of the total fat as saturated fat, or, if this percentage is exceeded, no more than 2.0 g of total saturated fat.

A limitation of no more than 25% of total fat as saturated fat is necessary to facilitate and encourage the use of healthy oils in product formulations. FDA's initial "*trans* fat free" proposal would have required that products bearing the claim contain less than 0.5 g of saturated fat, the equivalent of "saturated fat free."13 This approach, however, has the undesirable effect of preventing even the healthiest of oils (e.g., olive oil, canola oil), as well as many products formulated with such oils, from bearing "*trans* fat free" claims. This result is unrealistic and unjustified, as all oils contain some amount of saturated, polyunsaturated, and monounsaturated fatty acids. Moreover, a growing body of evidence indicates that appropriate consumption of healthful oils may help to reduce the risk of coronary heart disease, as evidenced by the recent qualified health claim petition on monounsaturated fatty acids from olive oil.14

The proposed 25% criterion is also consistent with the IOM/NAS Acceptable Macronutrient Distribution Range (AMDR) for fat of 20% to 35% of energy. At the midpoint of the AMDR (i.e., 28% of energy), 25% of total fat corresponds to 7% of total energy from saturated fat. In other words, based on a 2000 calorie diet, 28% of energy from fat corresponds to approximately 62 g of total fat; 25% of 62 g is 15.5 g of saturated fat, which corresponds to 7% of total energy from saturated fat. A diet containing 7% of calories from saturated fat is widely considered to be low in saturated fat. GMA believes that the proposed 25% criterion will serve to keep saturated fat in check in a manner consistent with prevailing dietary recommendations while encouraging reformulation of products with healthier oils.

GMA further believes that a 2 g limitation on saturated fat is prudent so as not to penalize products with very little fat (e.g., products with 3 g of total fat, 2 g of which is saturated). A 2 g limitation is consistent with the existing definitions of "cholesterol free" and "low cholesterol" in 21 C.F.R. § 101.62(d), both of which provide that foods bearing these claims may contain no more than 2 g of saturated fat. In adopting these definitions, FDA found a 2 g limit for saturated

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13 64 Fed. Reg. 62746, 62796 (proposed 21 C.F.R. § 101.62(c)(6) (Nov. 17, 1999).

14 The North American Olive Oil Association, Qualified Health Claim Petition, Authorization of a Health Claim for Monounsaturated Fatty Acids from Olive Oil and Coronary Heart Disease (Aug. 28, 2003) (Docket No. 2003Q-0559).

fat to be consistent with dietary recommendations for no more than 10% of calories from saturated fat, and further found that such flexibility would permit a reasonable number of foods, including soybean, corn, and olive oils, to bear "no cholesterol" claims.15 These findings similarly justify a 2 g limitation for saturated fat in the case of "*trans* fat free."

The beneficial impact of the flexible criteria GMA suggests is reflected in the attached chart (see Appendix C), which depicts the eligibility of several products under differing criteria for "*trans* fat free." This chart confirms that a more flexible saturated fat limitation of no more than 2 g or 25% of fat as saturated fat would enable appropriate products to bear "*trans* fat free" claims, providing incentive for manufacturers of these and similar products to reformulate.

Finally, if the term "*trans* fat free" is declared and the product contains a partially hydrogenated ingredient, GMA believes that the manufacturer should use an asterisk in the ingredient statement to inform consumers that the partially hydrogenated ingredient contributes a trivial or insignificant amount of *trans* fat. Informative statements of this type have long been required in the case of other "free" claims, including "fat free" and "sugar free." Based on recent FDA guidance, GMA understands that the agency will not object to the voluntary use of an asterisk in the ingredient statement explaining that a partially hydrogenated ingredient contributes a trivial or insignificant amount of *trans* fat, even if a manufacturer chooses not to make a *trans* fat free claim.

"Saturated fat free." GMA believes that this claim should be comparable to the "*trans* fat free" claim, as saturated fat (with the exception of stearic acid, as noted above) and *trans* fat are anticipated to have similar physiological effects. Accordingly, GMA does not object to maintaining the existing definition of "saturated fat free" in 21 C.F.R. § 101.62(c)(1). This definition requires foods marketed as "saturated fat free" to contain less than 0.5 g of saturated fat and less 0.5 g *trans* fat per reference amount and per labeled serving.

"Reduced *trans* fat" and "reduced saturated fat." GMA urges that the criteria for a "reduced *trans* fat" claim should require a reduction of at least 25% in *trans* fat as compared to an appropriate reference food, consistent with FDA precedent for "reduced saturated fat" in 21 C.F.R. § 101.62(c)(4). To help ensure that reductions in *trans* fat are not negated by attendant increases in saturated fat, and vice versa, GMA recommends that both descriptors include a criterion for the maximum increase in *trans* fat or saturated fat, as applicable, that would be permitted in foods bearing one of these claims. Finally, GMA suggests that both claims include limitations that ensure that any overall reductions will be nutritionally meaningful.

Specifically, for "reduced saturated fat" and similar claims (e.g., "less saturated fat"), GMA recommends that FDA retain the existing definition in 21 C.F.R. § 101.62(c)(4), with the following addition: when saturated fat is decreased, *trans* fat may increase by an amount that is no greater than half (i.e., 50%) of the quantitative decrease for saturated fat. Thus, if saturated fat is reduced from 6 g to 3 g (a 3 g, or 50% reduction), any attendant increase in *trans* fat could not exceed 1.5 g, for a net decrease of 1.5 g, or 25%. This approach ensures that the minimum net decrease in saturated fat and *trans* fat combined will be at least a 12.5% reduction.

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15 58 Fed. Reg. 2302, 2334 (Jan. 6, 1993).

For "reduced *trans* fat" and similar claims, GMA recommends that, based on longstanding agency precedent, a 25% reduction in *trans* fat be required. In addition, to prevent large reductions in *trans* fat content from being negated, GMA believes that no more than half (50%) of the quantitative amount of *trans* fat that is reduced should be offset by gains in saturated fat. Thus, if *trans* fat is reduced from 8 g to 4 g (a 4 g, or 50% reduction), any attendant increase in saturated fat could not exceed 2 g, for a net decrease of 2 g, or 25%. As was the case with saturated fat, this approach ensures that the minimum net decrease in *trans* fat and saturated fat combined will be at least a 12.5% reduction.

GMA further believes that the overall amount of reduction for each nutrient should be nutritionally meaningful. For saturated fat, this is ensured by FDA's restriction that "reduced" claims are not permitted where the reference food meets the definition for "low saturated fat." For *trans* fat, however, there is no definition of "low," so a different criterion needs to be developed.

For *trans* fat, 0.5 g is the smallest increment that may be identified in nutrition labeling, and therefore represents the minimum amount deemed by the agency to be of nutritional significance. Accordingly, GMA believes that, at a minimum, *trans* fat should be reduced by at least 0.5 g in foods bearing reduced *trans* fat claims.

GMA acknowledges that there ideally would be no increase in saturated fat in foods bearing reduced *trans* fat claims; similarly, there ideally should be no increase in *trans* fat in foods bearing reduced saturated fat claims. This ideal, however, is not consistently achievable with current products and technologies. Because small dietary changes can amount, over time, to large differences of public health significance, GMA urges FDA to adopt a flexible approach that will encourage product reformulation.

Disclosure levels. In the 1993 rulemakings to implement the NLEA, FDA required that foods bearing nutrient content claims include disclosure statements regarding fat, saturated fat, cholesterol and/or sodium when such nutrients are present at levels exceeding 20% of the DRV. Because there is no DV for *trans* fat, and because it is premature to establish a DV, for the reasons explained in these comments, GMA believes it is similarly premature to establish a disclosure level for *trans* fat for nutrient content claims. As explained previously, GMA believes that FDA's immediate focus should be on (1) implementing quantitative *trans* fat labeling requirements, (2) pursuing labeling initiatives that will best drive product reformulation, such as defining "*trans* fat free," and (3) undertaking a cohesive review of the Nutrition Facts panel, as part of the agency's plans to incorporate new DRIs in food labeling and address obesity concerns. By focusing on these important initiatives and allowing adequate time for reformulation, FDA will be able to accomplish the greatest good for public health.

Factual statements of Amount. GMA urges FDA to affirm that purely factual statements of amount (e.g., 0 g *trans* fat) are permitted if truthful and not misleading. Such claims are not required to meet any definition of "*trans* fat free" that may be adopted, nor are they prohibited in the absence of a "trans fat free" definition.

Factual statements regarding the amount of a nutrient in a food are "amount or percentage" claims that are not subject to definition pursuant to section 403(r)(1)(A) of the Federal Food, Drug, and Cosmetic Act (FFDCA). Instead, consistent with First Amendment considerations and Congress' direction to allow such claims so long as they are truthful, not misleading, and consistent with defined terms, 16/ FDA has prescribed by regulation the circumstances for using these claims. Under the applicable regulation, set forth at 21 C.F.R. § 101.13(i), amount claims that characterize the level of a nutrient in food (e.g., "less than 3 g of fat") must either be consistent with the definition for a corresponding claim or must include a disclaimer indicating that the food does not meet such a claim (e.g., "only 200 mg of sodium per serving, not a low sodium food.") If, however, an amount claim includes no characterizing terms, the claim is expressly permitted without a disclaimer pursuant to 21 C.F.R. § 101.13(i)(3). Accordingly, purely factual statements regarding the amount of *trans* fat in a food, including "0 g *trans* fat per serving," are authorized pursuant to 21 C.F.R. § 101.13(i)(3) unless they are false or misleading. GMA does recommend that, if a product contains greater than 2 g saturated fat per serving (the level currently allowed in foods permitted to bear "cholesterol free" claims), and does not qualify for a "trans fat free" claim, a referral statement be used in proximity to the amount statement to alert the consumer to the saturated fat content of the product.

The Relationship of *Trans* Fat to Health Claims

Disqualifying levels for health claims generally. FDA should carefully consider use of disclosure levels in place of disqualifying levels currently provided in 21 C.F.R. § 101.14(a). As GMA has commented previously, the principles established in the *Pearson v. Shalala* and *Whitaker v. Thompson* decisions make clear that FDA regulations relating to disqualifying criteria of this type violate First Amendment commercial speech protection. GMA intends to address disqualifying and minimum nutrient content requirements in greater detail in comments that will be submitted in response to the agency's May 4 notice concerning general principles for health claims.17

Disqualifying levels for CHD claims. The saturated fat and *trans* fat content of food are important considerations that should be addressed in the evaluation of health claims pertaining to coronary heart disease (CHD). It is, however, premature to establish a disqualifying level for *trans* fat for CHD health claims because there is no DV for *trans* fat, and it is premature to establish a DV, for the reasons explained in these comments. As for total fat, disqualifying criteria for CHD health claims are unnecessary because, as was recognized by the Nutrition Subcommittee, there is no relationship between total fat intake, per se, and CHD.

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16/ NLEA § 3(b)(1)(A).

17 69 Fed. Reg. 24541 (May 4, 2004).

GMA appreciates FDA's consideration of these comments, and would be pleased to discuss the information and points provided herein upon request.

Sincerely,

Alison Kretser

Alison Kretser, M.S., R.D.

APPENDIX A

GROCERY MANUFACTURERS OF AMERICA
MAKERS OF THE WORLD'S FAVORITE BRANDS OF FOOD, BEVERAGES, AND CONSUMER PRODUCTS

May 26, 2004

Lester Crawford, DVM, Ph.D. (HF-1)
Acting Commissioner
Food and Drug Administration
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Robert E. Brackett, Ph.D. (HFS-1)
Director
Center for Food Safety and Applied Nutrition
Food and Drug Administration
5100 Paint Branch Parkway
College Park, MD 20740

Dear Dr. Crawford and Dr. Brackett,

I am writing to bring your attention to the key element in the public discussion about trans fatty acids (trans fat), namely the reduction or elimination of trans fat in processed foods. Our members in the food industry take the public concerns about trans fat seriously, and are working diligently to address these concerns.

The food industry has made great strides in its efforts to reformulate products to lower trans fatty acids levels by reducing or eliminating the partially hydrogenated vegetable oil content in the food supply. However, we believe strongly that any new or reformulated products need to be healthier than the products they replace, and that the call for mandatory "zero" trans fat heard in some quarters could lead to unintended consequences.

Saturated fat consumption remains a public health concern. A removal of trans fat "at any cost" could lead to a return to oils with high saturated fat content and products that have a less healthy fat profile than the products they are intended to replace. Therefore, we call upon FDA to adopt policies that foster the development of healthier products for American consumers and not focus on only one element of the overall nutritional profile. Let me elaborate briefly with three simple points:

Point 1: The processed food industry is addressing trans fat in a serious way.

The processed food industry has always responded to newer scientific evidence and the resultant regulatory policies. Since last summer, our member companies have been revising their nutrition labels to add quantitative labeling of trans fat in accordance with new FDA regulations. We also strongly support the FDA's educational efforts to inform consumers about the role of trans fat, saturated fat and cholesterol in proper dietary management.

GMA members, working in tandem with the fats and oil industry, have also made considerable R&D investments in finding alternative ingredients that reduce or eliminate trans fat without increasing saturated fat in any significant way. These R&D efforts seek to merge the health benefits of alternative ingredients with necessary functional elements such as taste, texture, structure, and shelf stability. Equally important is evaluation of product performance differences in the reformulated products as is or as ingredients for recipe use applications in the home.

It should be noted that removing trans fat does not come without challenges. Some of these, such as reformulation to achieve the same taste, appearance, stability and performance, are widely known. Less understood are challenges in sourcing replacement ingredients, availability in commercial quantities, adjustments to equipment to receive, store and use alternative ingredients, and adjustments to cooking, handling and packaging, with resulting impacts on efficiency and productivity.

Point 2: The food industry's guiding principle for reformulation is that any new, reformulated product needs to be healthier than the product it replaces.

It is a cardinal principle that we always want to be taking a step forward, not a step back. Accordingly, whenever possible, we believe that any new or reformulated products need to have improved fatty acid profiles than the products they replace. This means we must look at the total amount of fatty acids in the product and not focus exclusively on trans fat content. The goal should be that any decreased levels of trans fat should be replaced with no increase or with as small an increase in saturated fat as possible, and at most by an equivalent increase in saturated fat, in as many product categories as technologically feasible.

It is also essential that food companies take the time needed to "get it right" so that product evolution is responsible and responsive to today's health concerns. Our members have been vigorously pursuing this goal, and have already made significant progress in a short period of time. Examples of some of these improvements can be found in Appendix A1. Given this commitment, with time and a devoted R&D effort, we will see an increase in the introduction of products with more favorable fatty acid profiles. Examples of proposed product re-formulations that are currently undergoing product performance and stability testing can be found in Appendix A2.

Point 3: Care is needed to avoid unintended consequences.

As we move forward, it is absolutely essential that we take great care to avoid unintended consequences. Finding appropriate substitute ingredients to replace those that contain trans fat presents significant technological challenges that need to be overcome. That takes time, dedication, and patience. If companies are compelled to eliminate trans fat before a better substitute is developed—so that significantly higher levels of saturated fat (such as from tropical oils) are used instead—it would be a major step back for public health and an enormous disservice to American consumers. A relevant case study on reduction of trans fat in pot pie crust formulations can be found in Appendix A3. This case study illustrates the difficulties in product reformulation for the entire category of baked goods.

There is the distinct possibility of being confronted with the unintended consequence of companies removing trace amounts of partially hydrogenated oils (<0.5 g) and substituting an alternative ingredients that have higher levels of saturated fats than the original formulation simply to avoid the term "partially hydrogenated oils" from appearing in the ingredient listing. This is just one of the possible unintended consequences of rash actions against trans fat.

In conclusion, we need to keep our eye on the goal—to reduce trans fat in the diet while creating healthier products for consumers—even if it takes a little longer to get it right. The food industry will continue to address this issue seriously and in a responsible way. We urge the FDA to develop and support policies that achieve this goal and not to pursue directions that single-mindedly target trans fat.

We would be happy to meet with you further to discuss this if you would find that useful.

Sincerely yours,

Alison Kretser

Alison Kretser, MS, RD

Appendix A1
Examples of GMA Member Company Efforts to Reduce or Eliminate Trans Fat

Campbell Soup
Campbell Soup's Pepperidge Farm division announced in November 2003 that Goldfish® crackers will be transitioning its entire cracker product line to become free of trans fatty acids. More than 90 percent of the Goldfish® cracker line will be transitioned to zero trans fat by May 2004, with the remainder of the line converting by late summer. Goldfish® will provide consumers with the first line of zero trans fat crackers from a major brand. To lead off the transition to zero trans fat, Goldfish® is adding a brand new offering to the line – Goldfish Crisps®, which will be available nationally in March in three varieties: Cheddar Jack, Four Cheese and Cheesy Sour Cream & Onion. Then, over the next few months, all existing varieties of Goldfish® snack crackers will be converted to zero trans fat recipes.

ConAgra Foods
ConAgra Foods is actively applying the latest lipid technology to their portfolio of products including spreads, snacks, frozen meals, dairy, potato products and meal kits. They are testing product formulations for a wide array of functional properties to meet consumer needs for stability and overall acceptance.

The J.M. Smucker Company
The J.M. Smucker Company has introduced a new specially-formulated Crisco® All-Vegetable Shortening with zero grams trans fat per serving and no increase in the level of saturated fat. The specially-formulated Crisco® All-Vegetable Shortening tastes and performs well in a variety of classic Crisco® recipes.

Kraft
Kraft is reformulating a number of its product lines. They will introduce Triscuit® crackers with zero grams trans fat, the first in a series of biscuit products that will be reformulated to have zero grams or reduced levels of trans fat. Additionally, Nabisco will launch a four-item line featuring 100-calorie packs of the Wheat Thins®, Chips Ahoy!®, Cheese Nips® and Oreo® brands. These portion-control, single-serve snacks are formulated to have three grams or less of total fat, zero grams of trans fat and no cholesterol.

Monsanto
Monsanto unveiled a three-phase soybean breeding project last fall.

Phase 1: Using conventional breeding to produce a soybean with lower levels of linolenic acid. A low-linolenic soy oil would require less or no hydrogenation and could reduce or eliminate trans fat in many foods. The beans will be available to plant in two years.

Phase 2: Applying further conventional breeding to make this new bean higher in heart-healthy monounsaturated fats, producing a soy oil similar to olive oil but with a milder taste. Seed will be available in four to five years.

Phase 3: The soybean is further altered to bring its saturated fat down to one percent. It would be stable without hydrogenation, high in heart-healthy monounsaturated fats and almost free of saturated fats. Seed will be available in eight years.

PepsiCo
PepsiCo was the first major food company to eliminate trans fats from an entire product, namely Frito-Lay™ snacks, eliminating 50 million pounds of trans fats from the American diet, well in advance of the FDA labeling mandate. It has announced its commitment that 50 percent of new products will comprise essentially healthy ingredients or offer improved health benefits.

Unilever Bestfoods
Unilever Bestfoods North America announced the entire line of "I Can't Believe It's Not Butter!"® soft spreads will be free of trans fat, targeted for completion in the first half of 2004. Other products in Unilever Bestfoods portfolio of products that are already trans fat-free include all varieties of Promise®, Take Control®, Brummel & Brown® and Shedd's Country Crock Light®, to name just a few. Less than one half of one percent of American adults' total calories comes from the trans fat present in margarine products.

Appendix A2: Proposed Product Reformulations

Product	Serving Size	Current				Proposed			
		Total Fat	Saturated	Trans	S+T	Total Fat	Saturated	Trans	S+T
Cheese snack crackers A	30g	8	1	2	3	8	2.5	0	2.5
Cheese snack crackers B	30g	8	2	3	5	8	2	0.5	2.5
Chocolate chip cookies	30g	9	2.5	2.5	5	9	4.5	0	4.5
Crème filled chocolate cake*	47g	8	2	2	4	10	3	0	3
						10	4.5	0	4.5
Frosted strawberry toaster pastry	52g	5	1.5	2	3.5	5	2.5	0	2.5
Fruit and grain bar	39g	3	1	1	2	3	2	0	2
Graham crackers	29g	3.5	0.5	1.5	2	3.5	1.5	0	1.5
Oatmeal crème pie	38g	7	1.5	2	3.5	7	2	0.5	2.5
Rolled chocolate cake w/crème filling*	61g	12	3	4	7	12	4.2	0	4.2
						12	3.1	0.5	3.6
Sandwich cookie	34g	7	1.5	2.5	4	7	2	0	2
Strawberry filled cereal bar	37g	3	0.5	1	1.5	3	2	0	2
Vanilla coated chocolate cake w/crème filling*	74g	16	1.5	4	5.5	16	7	0	7
						16	5.1	0.7	5.8
Wheat wafer	31g	5	1	2	3	4.5	0.5	0	0.5

* Each of these products has two reformulation options.

Appendix A3
Case Study: Reduction of Trans Fat in Pot Pie Crust Formulations

Background:
Premium pot pie crusts are formulated with 25 percent to 33 percent hydrogenated soybean oil to provide the flaky texture and flavor of a high quality pastry crust. Lard is not used because of the traditional health concerns around high saturated fat content and cholesterol. The utilization of partially hydrogenated oils results in a product containing a trans fat level, which raises health concerns based on recent scientific findings.

Objective:
Reduction or elimination of trans fat levels within a premium pastry crust with minimal to no increase in saturated fats.

Technical Hurdles:
Delivery of a flaky pastry texture

Both the fat content and the form of the fat are critical to provide the barrier within the starch/protein matrix that delivers the desired flaky texture of a premium pastry crust.

Options Under Exploration:

A) Reduce Formulated Fat Content

Efforts to reduce the overall fat content of the pot pie crust have been unsuccessful. Three difficulties arise using this reformulation option:

1) Reduction in fat content reduces the fat available to form layers within the product and the result is a less flaky pie crust that is unacceptable to consumers.
2) In order to develop the protein structure within the pot pie crust with less fat, additional water must be added to the dough. Unfortunately, as the pastry cooks and moisture is lost, the resulting texture of the pot pie crust is short, dry and, in some cases, hard.
3) The incorporation of fat mimetics to bind the additional water that is necessary to use in a fat reduced product has the potential to improve the texture of this product. However, further testing is required to carefully evaluate the texture of the finished product, the freeze stability of the reformulated product and consumer testing of the acceptance of fat mimetic as a food ingredient listed in the ingredient list on the food label.

B) Replace All or Portion of Partially Hydrogenated Oils with Unsaturated, Liquid Oils

Liquid oils can replace some of the partially hydrogenated oils but not all of it. Three difficulties arise using this formulation option:

1) If liquid oils are used in too high a proportion, the liquid oil ends up coating much smaller starch/protein particles rather than layering the fat between the starch/protein clusters. This layering is required to deliver the optimal "flakiness" of a crust that consumers have come to expect in a premium pastry crust.
2) The soft texture of the resulting liquid oil based dough is sticky and very hard to handle efficiently in the current production environment.
3) The fat stability of liquid oils is a function of the fatty acids composition of the oil. Canola oil, which is a cost effective base oil and readily available, is prone to rancidity due to its high level of polyunsaturated fatty acids. Anti-oxidants may be added to prevent rancidity of canola oil, but this would require added label declarations and would add cost to the finished product.

C) Utilize Tropical Oils

Tropical oils, which have high amounts of saturated fats and naturally occurring anti-oxidants, are stable under appropriate storage conditions. During the manufacturing process of the pot pie, tropical oils remain solid at the required pastry processing temperatures and hence do not need to be hydrogenated but the resulting pot pie crust will have a greatly increased saturated fat level in comparison to the amount of trans fat removed from the original formulation.

The utilization of tropical oils was greatly decreased 20-30 years ago due to public health concerns about their high natural saturation levels. In the 1970's and 1980's, partially hydrogenated oils were thought to be much healthier than other types of oils and fats (i.e., tropical oils, lard and beef tallow) that were high in saturated fat. Lard and beef tallow had the additional health concern of containing cholesterol which is not found in vegetable oils. Partially hydrogenated vegetable oils delivered similar functionality and became a suitable replacement with lower saturation levels. The trade off question now becomes "Which is more detrimental to human health, the higher saturated tropical oils or the low saturated partially hydrogenated vegetable oils that contain trans fat?"

D) Interesterification--Alternative Processing of Fat

Other methods for modifying liquid oil systems, which do not result in trans fat formation, do exist (e.g. intersterification). However, these methods are not widely commercially available today.

1) The cost of oils processed by interesterification is significantly more expensive than current oil processing methods (e.g. hydrogenation), ultimately resulting in a much higher final product cost. Suppliers indicate that in the early stages of commercialization, a processing cost increase of 60 percent to 100 percent over current oil processing methods can be expected. Translating this to a manufacturer using 10 million pounds of solid fat a year results in a $300,000 to $500,000 product cost increase annually.
2) If the industry decided as a whole to use this approach tomorrow, ingredient suppliers would not be able to support the commercial demand at present. There is a required

capital investment by ingredient suppliers as well as significant lead time prior to this process being available for commercial use.

E) Combination of the Above

Due to the functional requirement of fat in delivering the desired product characteristics (e.g. baking functionality, product taste and texture, and shelf life), some combination of the above options holds the best promise.

Work to date on reformulation shows an ability to reduce trans fat levels by 46 percent to 100 percent with a resulting saturated fat increase of 30 percent to 40 percent. The relatively good news is that 90 percent of the saturated fat in the reformulated product is stearic acid, a neutral fatty acid with regard to effect on LDL cholesterol. However, there has been no success in delivering an acceptable product texture and a lower trans fat content with no impact on saturated fat levels. Solid fats required to produce a premium pastry are only found in more highly saturated fat systems.

The current work focus is on maximizing the reduction in trans fat while assuring no increase in the combined trans fat and saturated fat levels. The greatest opportunity appears to be in utilizing a combination of alternatively processed solid fats with a reduction in overall fat content.

APPENDIX B

Select Steps in the Development of Food Products with No or Reduced *Trans* Fat

I. <u>Concept/Strategy Phase (3-6 months if suitable alternative available, 2-3 years if not)</u>

- Identify suitable alternatives to fats and oils with *trans* fatty acids.
    - Suitable alternatives to *trans* fat may be limited in some product categories. For example, for confectionery, the only currently available options that are suitable from a technological perspective are tropical oils. Development of new technologies requires a longer timeframe, especially if coupled with use of a modified oilseed fatty acid composition.
- Confirm availability of supply at appropriate volumes.
    - Time needed for reformulation will vary depending upon the availability of suitable alternatives at necessary volumes. For example, modified soybeans that produce oil that does not require hydrogenation are in development, and could be of interest for many products, but significant production volume could be 2-3 years away, at best.
    - Availability of modified agricultural oilseeds and their products requires use of identity preservation programs at all stages of development (i.e., seed company, farmer, grain elevator, seed processor, ingredient manufacturer, and finished food company).
- Ingredient suppliers may themselves undergo substantial production and other modifications in order to supply new or modified ingredients, which adds time and expense to the process.
- Develop product reformulation design and plan.
- Assess pertinent regulatory requirements, including global ramifications.

II. <u>Research and Development/Preliminary Sensory Evaluation (6-12 months)</u>

- Use bench-top testing to identify key product variables for current products (i.e., a gold standard or control).
- Schedule promising substitute products for preliminary sensory evaluation using professional testing panels (i.e.,in-house and/or external).
- Conduct preliminary consumer testing.

- Conduct analytical testing of proposed formulations as necessary to examine nutritional, organoleptic, and other properties.

- If differences between the control and proposed substitute are found, additional research may be conducted to identify process and other changes to reduce differences.

    - Desired changes may extend to modifications of ingredients by suppliers, which initiates another R&D cycle to modify and produce ingredients with desired properties.

III. <u>Pilot Plant Production and Scale-Up to Commercial Operations (6-18 months)</u>

- Assess necessary adjustments to equipment that receives, stores, and uses alternative ingredients.

- Evaluate necessary adjustments to cooking, handling, and packaging processes in light of efficiency and productivity targets.

- Develop revised raw material specifications and acceptance criteria.

- Evaluate consumer preferences.

    - If product is unacceptable, product development process must begin anew, which may extend back to the level of the ingredient manufacturer.

- Plan for scale-up of production (i.e., production at commercial quantities).

- Conduct shelf-life studies (can be particularly important and challenging when modifications to fat content are involved).

- Make final contractual and other arrangements for supply of new ingredients and materials, as needed.

IV. <u>Packaging and Labeling (3-6 months)</u>

- Assess need for changes in packaging materials.

- Conduct analytical work for revised nutrition labeling.

- Develop revised Nutrition Facts Panels and ingredient lines.

- Evaluate revised labels for regulatory compliance.

- Conduct consumer testing of revised labels.

- Make plans for label transitions and use of old labels.

V. Product Development Summary (Total time 18 months-6 years)

- Industry segments affected by change in vegetable fats and oils: All segments, from seed companies, to elevators, to seed processors, to ingredient manufacturers, to finished product manufacturers. For new ingredients created from current commodity oilseeds, ingredient manufacturers and finished product manufacturers bear the greatest burden. However, if a new ingredient is derived from a minor oilseed or a new oilseed with a modified fatty acid profile, then from an agronomic production standpoint, all segments could be impacted.

- Number of plants per manufacturer affected: Varies, but changes to a single product or group of products can affect numerous plants simultaneously, adding substantially to complexity and cost.

- Analytical testing: Can be extensive, requiring analysis of modified nutrition profiles, organoleptic properties, and other factors. One company reported more than 240 analytical tests associated with a reformulation effort.

- Consumer testing: A typical change may require dozens of consumer testing panels.

- Capitol expenditures: Can approach tens of millions of dollars per company.

- Personnel hours: One company reported 7000+ personnel hours.

- Total time for new product development that may be required: Varies, but can easily approach one-and-one-half to six years.

APPENDIX C

					Saturated Fat Level to make a Trans Fat Free Claim	
Reformulated Product	**Total Fat**	**Sat Fat**	**Trans Fat**	**%Sat Fat**	**≤ 0.5g**	**≤25%or≤2.0g**
Cheese Flavored Snacks	10g	1.5g	0g	15%	No	Yes
Cheese Snack Cracker	8g	2.5g	0g	31%	No	No
Chocolate Chip Cookies	9g	4.5g	0g	50%	No	No
Crème Filled Chocolate Cake	10g	3g	0g	30%	No	No
Frosted Strawberry Toaster Pastry	5g	2.5g	0g	50%	No	No
Fruit and Grain Bar	3g	2g	0g	66%	No	Yes
Graham Crackers	3.5g	1.5g	0g	43%	No	Yes
Oil, Canola	14g	1g	0g	7%	No	Yes
Oil, Corn	14g	2g	0g	14%	No	Yes
Oil, Olive	14g	2g	0g	14%	No	Yes
Sandwich Cookie	7g	2g	0g	29%	No	Yes
Shortening	12g	3g	0g	25%	No	Yes
Strawberry Filled Cereal Bar	3g	2g	0g	66%	No	Yes
Tortilla Chips	7g	1g	0g	14%	No	Yes
Wheat Wafer	4.5g	0.5g	0g	11%	Yes	Yes

NATIONAL RESTAURANT ASSOCIATION®

REPRESENTING THE RESTAURANT INDUSTRY
The Cornerstone of the Economy, Career Opportunities and Community Involvement

October 30, 2006

Rena Bryant
Secretary to the
Board of Health
125 Worth Street CN-31
New York, NY 10013

Re: Comment; Notice of Intention to Add 81.50 to Article 81 of The New York City Health Code; Mandatory Calorie Statements

Dear Ms. Bryant:

The National Restaurant Association (the Association) is pleased to share its views on the above-referenced proposal (the Proposal) which would mandate that prominent calorie statements accompany food items and prices on restaurant menus. 1/ Because the Proposal fails in its essential purpose to advance the public health of New York City residents this initiative should be permanently withdrawn. Alternately, the Association urges the members of the Board of Health (the Board or BOH) to reject any final rule based on this proposal. The Association pledges its willingness to work with the Board and other community and civic leaders to address the important issues that prompted the Proposal. However, we do not believe that the inflexible, narrow focus of the Proposal provides a sound basis for a productive dialogue.

Many Association members operate within the City, and the concerns reflected in this comment apply to all restaurant operators. The diversity of our membership and the substantial impact of the Proposal prompts every segment of our broad industry to urge that the Proposal be permanently withdrawn. 2/

1/ Founded in 1919, the National Restaurant Association is the leading business association for the restaurant industry. Together with the National Restaurant Association Educational Foundation, the Association's mission is to represent, educate, and promote an industry that is comprised of over 925,000 restaurant and foodservice outlets employing more than 12.5 million people, making us the largest private sector employer in the United States. As such, diversity, customer service, and high quality foods are top priorities for the ever-growing restaurant industry.

2/ The Association at the outset notes its concern over the apparent rush of the Department to impose new, novel rules without a thoughtful deliberative process. Approval of this measure by the Board in December would be a disservice to the many New York City establishments affected, reflecting poorly on how the Board conducts its affairs and advancing a flawed policy that will succeed only in imposing costs (on businesses and consumers) while producing no off-setting benefits.

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I. FLEXIBLE REGULATORY POLICIES MAXIMIZE CONSUMER ACCESS TO DIET, NUTRITION, AND HEALTH INFORMATION IN DIVERSE RESTAURANT SECTOR

Rising obesity rates and the risk factors associated with an imbalance between calorie intake and physical activity present a serious public health concern. The relationship between Americans' eating habits, lifestyle choices, and a myriad of other factors render a complex problem difficult to solve. This complexity cannot be an excuse for inaction or an impediment to meaningful change. National Restaurant Association members have embraced the need for action by deed, not word. The sheer range of our industry's efforts reflect the remarkable difference in the formats, menus, and consumer expectations for each one of us, depending on the day and eating occasion.

Action for action's sake rarely advances concrete public health objectives, no matter how bold or well-intended. The threshold question of whether the Proposal represents sound, rational public policy or an unfounded, arbitrary government intrusion is determined by examining the context in which the Proposal will play out. The Proposal fails in all of its stated objectives for the simple reason that the Department has cobbled together a series of assumptions, untested theories, concerns, and well-intended objectives to produce a regulatory framework that is flawed and doomed to fail. The ironic result of this "action" will be to move an important segment of the food industry in a direction that will inevitably undermine, not advance, the health of New Yorkers.

Calories "count" and the Department's findings concerning the risks associated with excessive caloric intake is true of a broad segment of the American population. The Association has long-supported consumer access to useful nutrition information. Many of our members have acted accordingly, their efforts reflecting numerous and varied approaches to furnishing consumers with calorie and other nutrition information that they want and will actually use. Such efforts are possible because of a flexible federal regulatory framework that fosters and allows for creative, tailored approaches by restaurants. The Proposal unduly impinges on such efforts, yielding unintended costs and resulting in regulatory conduct that would be struck down by a reviewing court on any number of grounds, including violations of the principles of the Supremacy Clause and the Commerce Clause of the U.S. Constitution.

This is particularly true for our numerous small and medium size members who have not yet had time to fully grasp or assess the Proposal's impact.

A. Diversity in Industry Precludes a "One-Size-Fits-All" Regulatory Mandate

The restaurant industry is an incredibly complex and diverse one. There is diversity in the types of operations which comprise the industry, the demographics of the consumers they serve, the types of foods provided, and the business units which make it all possible. Whereas some restaurants know most of their customers by name, others serve thousands of people daily. Some restaurants provide only a few menu items, others provide a multitude of options, which can be customized in a myriad of ways. Some restaurants use vast and complex supply chains, and still others might rely on local farmers' markets to determine the day's menu items. In sum, this is an industry where attempts at categorization will always find many exceptions such that there is no suitable rule.

Restaurants comprise an industry of at least 39 different segments. 3/ These segments include fullservice restaurants, quickservice operations, neighborhood taverns, catering businesses, food and beverage operations at factories, hospitals, schools, and sports complexes. The restaurant industry extends to food service at military bases and officers' clubs and food service operations within retail or convenience stores. It also includes hotels and mobile caterers. Of course, even within these various segments there is incredible diversity. For example, the fullservice restaurant segment includes family dining operations, casual dining, and fine dining. In addition, the lines between these segments are increasingly becoming blurred as restaurants seek new business opportunities constantly evolving to meet consumer needs. Virtually all of these restaurant formats would be covered by the Proposal given the breadth of the proposed notion of "standardized menu item," as explained below.

Restaurants serve a demographic mix of customers – a mix that can vary from restaurant to restaurant by age, ethnicity, income, lifestyle, and dietary preference. Some restaurants need to consider all segments of the population as their customers, yet others are able to cater to very specific segments. Even those that do cater to a specific demographic mix do not always cater to the same mix. That is to say, one fullservice restaurant's typical customer can be very different from the next fullservice restaurant's typical customer. Those restaurants serving all segments of the population also need to be sure to offer food choices that appeal to all customers.

Consequently, diversity among food choices, both within a given restaurant and across the industry, is also apparent and prevalent. The industry is responding to constant demand from consumers for choice – indeed, consumer

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3/ National Restaurant Association 2006 Forecast at 9. See Attachment 1.

choice is "a critical driver of restaurant patronage." 4/ This means that many restaurants are trying to increase the number of food options provided and increase the opportunity for consumers to change or add to a "base" item or "food platform." 5/ Moreover, there has been an increase in the number of specials or limited-time menu items, particularly among quickservice operations, where four out of five operations promote special or limited time menu items. 6/ Some formulations are unchanged over decades while many other menu items are regularly updated or modified.

In addition, restaurants are ever adapting to trends in consumer preferences. For example, at the height of the low-carb craze, restaurants met an increased demand for low-carb options and saw a decrease in the number of pasta orders. Yet, a year later, orders of pasta and Italian style fare had increased. While some trends in consumer preference affect all segments of the restaurant industry, other trends are specific to individual segments. For example, the increase in popularity of chicken sandwiches has been seen by a much greater number of quickservice operators than by fine dining establishments. 7/ In all, restaurant menus are constantly changing in a highly competitive environment. This is a constant within our industry.

The changes in menus are not just over time in response to trends. Changes are rapid and constant with each order placed. Our members estimate that approximately one-half to two-thirds of chain restaurant orders are customized by the consumer for a given "standard" menu item. This is not by accident. Chain restaurants' market their ability to customize. In the most uniform of chain restaurants a fixed menu item is merely a starting point for consumer customization. Indeed, some chain restaurants have made substantial investments in redesigned kitchens customization. For casual dining and many other dining formats the expectation is for complete customization. Throughout the restaurant industry a standardized menu item is a thing of the past. Assumptions to the contrary are simply incorrect and policies promised on such assumptions will inevitably lack a rational basis.

Restaurants not only sell food; they also buy it. These supply operations are as vast and varied as the industry itself. Some restaurants may only prepare fresh ingredients, whereas others may buy most of their items partially prepared or cooked by another operation. Some restaurants are part of a vast network or chain, providing economies of scale, yet other restaurants are one-of-a-kind, single proprietorships. Some restaurants rely on local and in-season goods,

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4/ *Id.* at 21.

5/ *Id.* at 17.

6/ *Id.* at 16.

7/ *Id.* at 24.

while others may source supplies from around the country and around the world to meet consumer preferences. Accordingly, the business operation supporting each restaurant can be incredibly complex or relatively straightforward.

In all, the restaurant industry is one of complex variation. The common thread is that each restaurant, large or small, strives to meet the needs and expectations of each customer it serves. Restaurants want to provide consumers with a rewarding dining experience, one that will be repeated. This requires constant innovation and a desire to provide consumers with what they want, when they want it, and where they want it. Thus, as the preferences of the American consumer are diverse, so too is the restaurant industry. This heritage and dynamic reality is evident from nearly every corner and thorough-fare of New York City. The sheer size, diversity and world-renown reputation of the New York dining experience is valued by residents and visitors alike.

B. Restaurants' Efforts to Provide Information to Assist Consumers in Making Informed Purchasing Decisions Are Substantial and Evolving

Nutrition information at point of sale is not a new concept, with many such efforts dating back to at least the 1980's. As the vehicles of communication between restaurants and patrons have evolved, so too have the tools utilized to reach consumers with calorie and other nutrition and healthy living information, including websites, brochures, and public education campaigns. The utilization of these different vehicles reflects how consumers seek information concerning nutrition and dining options. Industry approaches are as diverse and "customized" as our consumers expectations, eating habits, and preferences.

The restaurant industry's efforts are substantial and are continuing to evolve. A survey of such efforts compiled by the Association in 2005 highlights these efforts. 8/ The range of approaches is not by accident. Operators carefully develop, test, and ultimately offer varied ways to communicate diet and health information. A cursory review of the Association survey reflects the differing approaches by operators as to consumer expectations, preferences, and level of knowledge and interest. One cannot envision a local regulatory requirement that would account for, or produce, the varied and pervasive approach to nutrition outreach to consumers that currently exists across a broad spectrum of dining formats found throughout the City.

The Association is rightfully proud of its own efforts in developing a model nutrition program that can be consulted and adapted by its members. One of the most innovative programs the Association is pleased to support is the rapidly

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8/ *See* Attachment 2.

expanding HealthyDiningFinder.com. Originally pioneered in Southern California it received a grant from the Centers for Disease Control and Prevention. The web-based program enables consumers to input their dieting objectives. In return, restaurants and selected menu items consistent with their goals are provided. The Association also serves as an important resource for medium size and smaller restaurants who are interested in developing nutrition programs but lack the experience or internal expertise. Many other organizations and companies play a similar role. Building on the success of our efforts such as this is far more likely to yield meaningful public health gains than the simplistic "uniform" approach envisioned by the Proposal.

Industry efforts are not static. Innovation and change abound due to what restaurants do best – listen to the customer and deliver. The dynamic nature of industry efforts is reflected in a visit to any number of our member's restaurants. The sophisticated yet accessible channels of communication utilized by our members mark a level of achievement and success for which our industry is deservedly proud.

These voluntary efforts provide achievable, suitable, and effective means by which consumers understand the role restaurant foods play as part of their individualized diets. The necessity, value, and attendant costs are judged against the backdrop of current, ongoing, and always-evolving industry efforts. We would be pleased to meet with City officials to share more details on the many in the many current and planned industry efforts and in working together our common goal of aiding consumers in making informed food choices.

C. Regulatory Importance of Fostering Flexible, Innovative Approaches to Furnishing Nutrition, Diet, and Health Information to Consumers

The Board is not the first regulatory body to determine that the nature of foods served in restaurants has important public health consequences. In implementing the Nutrition Labeling and Education Act of 1990 (NLEA), the U.S. Food and Drug Administration (FDA) found it was proper to exercise its authority over nutrition claims in restaurants, observing "that, from an overall public health perspective, this important segment of the diet cannot be ignored." 9/ FDA, however, reversed its proposed rule that would have applied the same compliance standards for packaged foods to restaurant foods. The constitutional significance of this determination is discussed further below.

9/ 58 Fed. Reg 2387 (Jan. 6, 1993) (final rule). FDA is, of course, the federal agency charged by Congress to bring its expertise and insight to establish a rational method of recognition in the very area that the Department now treads.

Most telling are the factual findings by FDA in arriving at a flexible compliance standard by which restaurants must demonstrate a "reasonable basis" for why a menu item complies with a defined nutrient content claim. 10/ First, the agency observes that prepackaged foods have some variability but that the agency "has been able to develop workable criteria that take into account these variations." 11/ Then, FDA identified and addressed the difficulty in regulating restaurant foods. The preamble to the NLEA final rules states:

> However, the agency acknowledges that there are variations unique to restaurant foods (e.g., methods of preparation). Moreover, FDA recognizes that there are difficult questions, as demonstrated by the comments, as to how exactly to analyze restaurant foods in a reasonable and cost effective manner... FDA concludes that the difficulties are not so great as to preclude restaurants from making claims or to prevent the agency from being able to assure consumers that the nutrient content claims that appear on restaurant foods reasonably reflect the nutrient content of the food. 12/

On this basis, FDA established a flexible compliance standard for restaurant foods that takes into account the need for flexibility to encourage (not discourage) efforts to provide patrons nutrition information. 13/ The Board has misunderstood this important difference between prepackaged and restaurant foods. In light of the unique nature of restaurant foods, it would be irrational and arbitrary to move forward with the Proposal. Against the same administrative record before the Department, FDA recognized the unique properties of restaurant foods in devising a rational approach that fosters consumer access to nutrition information for restaurant foods.

II. FUNDAMENTAL FLAWS AND INCORRECT ASSUMTIONS OF PROPOSAL WILL YIELD SUBSTANTIAL COSTS AND UNINTENDED CONSEQUENCES

A. The Myth of Standardization

The effectiveness of the proposal is dependant upon the Board's working assumption that for certain restaurant operators (presumably including

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10/ FDA separately determined that when nutrient content claims are conveyed that the restaurant must meet the regulatory definition established by the agency, discussed below.

11/ *Id.* at 2387.

12/ *Id.*

13/ *See* 21 C.F.R. § 101.10. The constitutional significance of FDA's approach is addressed separately below.

chain restaurants) menu items are sufficiently standardized so that a statement of caloric content accurately reflects the menu item as order-and-consumed. Notwithstanding the central importance of this assumption, the Proposal makes no findings or assessment as to the degree of uniformity necessary to render a menu item "standardized" nor is there consideration as to whether the necessary degree of standardization in fact exists. It does not.

Standardization – uniformity between one "identical" item to those prepared before and after it – is a concept that exists for prepackaged foods displayed on supermarket shelves. Food processors operate using sophisticated equipment, weight control programs, and other measures that, indeed, do achieve a remarkable level of consistency and uniformity among packages often produced at a rate of several hundred per minute. 14/ Multiple-unit restaurants go to great lengths to ensure a consistent dining experience, yet inevitable variation and customization dictates the calorie content of what is served. The variation among employees, sourced ingredients and method of preparation are just a few of the many variables that yield differing nutritional values for seemingly identical menu items. 15/ For smaller restaurants, consistency relative to portion control of the kind envisioned by the Department is even more challenging and (as for all restaurants) in counter to the consumer's expectation to customize.

A restaurant meal is very different from a packaged food. If you purchase a can of beans, you get a can of beans (standard size, standard ingredients, and uniform weight). A restaurant meal can vary from chef to chef and from day to day. A restaurant cannot assure perfect consistency in recipes and portion sizes or the many other factors that influence calorie content for the millions of menu items our industry serves each day.

In larger and presumably more sophisticated operations, typical of many chain restaurants, a great deal of training and oversight is in place to ensure standard serving amounts and consistency of quality, no matter the locality where the item is ordered and served. However, a person, not a machine, is spreading the mayonnaise. A restaurant simply cannot match the level of precision associated with a food manufacturing facility, which produces standardized packaged foods to exact specifications.

14/ This uniformity allows for the exacting compliance rules enforced by FDA. *See* 21 C.F.R. § 101.9. Commercial food processors who adhere to good manufacturing practices readily obtain the accuracy of nutrition labeling mandated by FDA for packaged foods.

15/ Chain restaurants often have entire teams of people dedicated to the development of procedures and employee training to ensure consistency. Even under the best of circumstances there is typically an unavoidable level of variability that creates nutritional variability for the same menu item. This variability exists even when there is no customization, which of course is frequent.

Restaurant meals are prepared by people on the spot. For many items, a "standard" does not exist. For example, what is the standard size of a "schmear" of cream cheese on a bagel? No two schmears are equal, especially in calorie count. In larger chain restaurants there is substantial focus on uniformity to both meet consumer expectations and to ensure that the restaurant delivers the value reflected by the menu price. Product "builds" (recipes), scoops, ladles and other utensils are uniform across a chain restaurant's system to support consistency. At the same time, hand-scales are not found in food preparation areas of chain restaurants and other restaurants and regardless operators cannot replicate the precision of industrial food processing equipment. Experience and expertise within the industry and common experience amongst all of us demonstrates that the assumptions on standardization by the Department are false.

The sources of variability within a restaurant setting are substantial and differ from one dining format to another. In addition to the factors listed above, consider these additional sources of inherent variability that affects calorie content: cooking time and method selected; natural variance in the weight of foods (e.g., pieces from a chicken, cuts of meat, size of fruit/vegetable); changes in base ingredients purchased from a vendor; differences among vendors even when all meat a single specification set by the restaurant; the amount of the menu item (main dish, side or other component); and the discretion of the chef or food preparer who may place more or less of a component or side dish to achieve a certain presentation for a given order.

The simplest of menus does not present the uniformity and purported standardization assumed by the Department. One national chain restaurant prides itself on quality and simplicity. The menu board reflects a choice from four meats, three formats (burrito, soft taco, etc.) and four toppings/sauces. There are no "standard menu items." Rather, one finds a fixed but not insignificant number of combinations that could not possibly be captured on the largest of menu boards. All of this variability is in addition to the side dishes offered. Hence, even in the most uniform of QSRs posting calorie information in the manner proposed will not reasonably capture what is ordered and served, as explained further below.

In addition to the "human factor" contributed by food preparers, there is a human factor resulting from consumer customization. Many QSRs are designed around the concept of customers' self-selection of ingredients. According to National Restaurant Association research, for example, the make-up of a sandwich consisting of just five items or toppings (such as bread, meat, cheese, lettuce, tomato), can be ordered in a myriad of ways. A sandwich comprised of 10 items or toppings could theoretically yield millions of possible combinations. Further, an individual presented with 15 items for a sub or sandwich has a seemingly endless number of possible combinations.

It would be futile for restaurants to accurately provide nutrition labeling for the significant number of different ways it might serve a particular menu item on a particular day. Everyone recognizes that ordering a meal in a restaurant is personalized. It is far different than buying a prepackaged food where the consumer only has the option to buy the product presented to them (i.e., there is no opportunity for customization). This complexity must be appreciated and addressed by any scheme designed to mandate calorie or other nutritional information for restaurant foods.

Is it impossible or impractical to arrive at a single calorie value for a given menu item? No, of course not. Chain and other restaurants utilize pamphlets, brochures, websites and other communication tools to convey nutrient information for a given menu item. Indeed, several chain restaurants have developed remarkable web-based information tools that allow consumers to calculate the total nutrition values of any number of combinations of menu items. Such information is typically presented in a manner and context whereby consumers appreciate the utility and limitations of the information. 16/

A statement of a fixed number of calories on a menu board could reasonably lead a consumer to expect that, like a packaged food, the menu item served contains that precise amount of calories. This is, of course, precisely what is intended by the Department. The Notice states: "Providing simple, point-of-purchase calorie information would allow consumers to make informed food choices in restaurants just as they currently can in supermarkets." 17/

Menu labeling in this fashion reasonably creates expectations of accuracy that simply are not achievable in restaurants. Neither consumers nor operators would be well-served by this result. Restaurants in New York City would also face an impossible situation: violation of the Health Code (if caloric information is not posted) or risk legal liability or undeserved negative publicity when someone confirms that the calorie values lack the accuracy consumers might reasonably expect. 18/ Indeed one single-unit New York City restaurant shared that it has expended more than $10,000 on analytical testing on menu items but will only provide information if asked. Why? The testing showed such a large variance that they determined posting average values would mislead their guests. This proposal would force them to do so.

16/ For example some restaurants accomplish this important "qualification" with a short explanation of variability from the posted nutrient value(s) versus what is purchased.

17/ Notice at 4.

18/ Many restaurants have reasonably managed this potential for confusion through a supplemental statement explaining the possibility and source of variability between the nutrition information provided as compared to the menu item purchased. Of course, no level of quality assurance oversight and training could ever produce the consistent envisioned (and required) by the Proposal.

The Department makes no particularized findings that the calorie information that would be mandated will be sufficiently uniform so as to be meaningful. The reality for restaurant foods, as demonstrated by this administrative record and the common experience of restaurant patrons, is incompatible with the premise of the Proposal. The context in which restaurant foods are ordered, prepared and consumed readily illustrates the flaw of the Proposal and why the lofty goals espoused by the Department will not be met. The Department, accordingly, lacks a rational basis for mandating calorie content statements in the manner proposed.

B. Scope of Proposal Ill-Defined and Over-Reaching

The scope of the proposal is ill-defined and reaches a far broader scope of operations than contemplated by the Notice. Proposed Section 81.50(a) ("scope and applicability") identifies "menu items that are served in portions and the size and content of which are standardized...." No definition is offered beyond "size and content." The Notice sheds a bit more light, advising that the requirement applies to "food items that are standardized with regard to portion size, formulation, and ingredients." As a preliminary matter, we note that neither a legal nor public policy assessment of the Proposal is possible without a clear understanding of its scope. 19/ We offer comments based on the plain meaning of the terms the Department uses to identify the scope of the Proposal.

The consequence of the Board's mis-estimation as to scope is of great policy and legal significance. There are legal ramifications of a proposal that is intended to apply to largely out-of-City chain restaurants (who operate, employ and pay local taxes), not locally-situated restaurants, discussed separately below. Indeed, the Proposal is largely premised on the assumption that "standardized menu item" has an established and clear meaning. Indeed, the Department confidently states (with no explanation or basis) that the Proposal will apply to only 10% of restaurants in the City.

"Standardized menu item" is not a term that lends itself to fair and consistent application. Defining "standardized" in terms of portion size, formulation, and ingredients fails to provide a level of specificity that clearly

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19/ Indeed, as it stands, the scope of the Proposal is so ill-defined that it would likely be deemed void for vagueness because "a statute which either forbids or requires the doing of an act in terms so vague that men of common intelligence must necessarily guess at its meaning and differ as to its applications violates the first essential of due process of law." *Connally v. General Construction Company*, 269 U.S. 385, 391 (1926).

conveys who is covered under the Proposal, as noted. Standardization, as the Proposal contemplates, simply does not exist. 20/

"Standardized menu items" would presumably cover many of the items that are offered at chain restaurants. At the same time, the Board intended to exempt all but the largest chain restaurants, not smaller restaurants where the supposed standardization does not exist. Consider, however, a three-egg cheddar cheese omelet offered on the menu of any number of high-end or other small restaurants where the Proposal supposedly does not reach. The omelet indeed is "standardized." The portion size is fixed at three eggs, and the formulation presumably is fixed (i.e., one scoop of cheddar cheese, using the scoop that is placed at the bulk container in the kitchen, and a relatively small amount of margarine to prevent the omelet from sticking to the hot pan).

The omelet is "standardized" and so are many other restaurant menu items found at numerous restaurants big and small. The deli on nearly every block in many areas of the City all offer a "standardized" turkey sandwich. Portion control is important to operators of any size as a simple matter of industry economics. There is no basis to distinguish "standardized menu items" in chain restaurants from foods in other restaurants that are offered for sale with a standard portion size, formulation, and ingredients. A slice of "vegetable lasagna," always sliced in proportionate shares before being plated with use of a spatula is standardized, and so is the "2-pound lobster," 12-ounce filet, and perhaps even the 4 lamb-chop special with a mint sauce served on the side. Each of these items, like traditional chain restaurant offerings, can be and often are "customized." The Proposal does not distinguish among these different menu offerings, and all could reasonably be subject to mandatory calorie labeling on the basis of consistent size, formulation and ingredients.

FDA has no definition of a standardized food in its regulations. Interestingly, in explaining the scope of an exemption for mandatory nutrition labeling of foods sold from the deli counter of a supermarket, the agency explained that a food that is standardized is one that "arrives at a store in a form to be sold directly to the consumer (i.e., it is 'standardized')." 21/ A food that is not standardized, according to FDA, undergoes processing or preparation, including portioning, before being sold to the consumer. 22/ Viewing FDA's formulation of

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20/ An unfortunate outcome from the Proposal is that industry attempts to offer and encourage healthful modifications to existing menu items, serves to further undermine the very notion of standardization.

21/ 58 Fed Reg at 2148.

22/ FDA cites as examples (for supermarket delis) filled, customized, shared or assembled bakery items that are prepared on-premise, and foods portioned per customer request. FDA observes: "In these examples, the food is not a 'standardized' in the form that it is sold to consumers when it arrives at the store." 58 Fed. Reg. at 2148.

"standardized" as reasonable on it face, the Proposal would cover virtually no restaurant foods, which by their very nature are prepared in some fashion.

Of course, the answer is not to extend an ill-conceived labeling requirement to 90 or 100 percent of restaurants, rather than just the estimated 10 percent targeted by the Department. Nor is there an appropriate definition of "standardized" that the BOH can adopt. Rather, the myth of standardization, and the impossibility of arriving at a clear, fair, and easy-to-apply definition underscores why the Proposal should be withdrawn from further consideration. The scope of the Proposal as intended by the Department bears no relationship to the reach of the language of Proposed Section 81.50. Moreover, the far-reach of a proposal based on the concept of "standardized menu item" imposes many costs on a broad segment of New York City restaurants.

C. Costly Compliance Standard Contradicts Board's Assumption on Need for Analytical Testing and Accuracy

Section 81.50 (b)(ii) would require that the mandated calorie value "be calculated in accordance with 21 C.F.R. section 101.9(c)(1)(i)..." 23/ The Department explains in its Notice that this mandatory provision "does not require any FSE to engage in analysis of the nutrition content of its menu item." This statement is erroneous and in conflict with proposed Section 81.50.

The referenced FDA requirement for calculating calories does require analytical measurement of other nutrients from which a food's caloric content can be calculated. While literally true – analytical measure is not required under FDA's Section 101.9 (c)(1)(i) - analytical testing of other nutrients is typically required to arrive at a numerical value for calorie content. The cost of analytical testing will arise each time a menu item is added or modified. The cost could well translate into a barrier to providing nutrition information for those operators that do not otherwise offer nutrition information. Even for larger chain restaurants, the proposal imposes real costs to the extent that reliable calculations from a valid database must be replaced with extensive laboratory testing of each menu item. Chain restaurants estimate current analytical testing costing $100,000 annually. The Department erred in its assumption that no costs associated with analytical testing would be imposed on restaurants.

There is some recognition in the Notice as to the sheer complexity of the Proposal with regards to multiple varieties of a similar menu item. Proposed Section 81.50 (b)(iii) states: "[f]or menu items that come in different flavors and varieties but that are listed as a single menu item (such as beverages, ice cream,

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23/ Notice at 5. Further, the mandatory requirement would only apply to foods for which calorie information is already publicly available.

pizza or doughnuts), the median calorie content for all flavors or varieties of that item shall be listed on menu boards for each size offered for sale. The median calorie content for all flavors or varieties of that item shall be listed on menus. Calculations of median calorie content for beverages shall exclude flavors or varieties that contain less than 15 kcals per 8 ounce serving." This approach to calculating values is complex, confusing and unlikely to be applied (or enforced) in a uniform fashion.

This proposed "solution" will not accomplish the desired goals of the Department. It will be a disservice to restaurant guests. Take, for example, a coffee chain. Popular cafes typically offer a very broad variety of options for a coffee drink. A customer can order a cafe latte with skim, 2%, whole, or soy milk. The calorie content of this 16-ounce beverage can vary from 160 to 260 calories. That 100 calorie difference means a great deal to someone who is watching his or her caloric intake. Small, specific changes in food and physical activity behaviors can have a positive effect on health. Research shows that affecting energy balance by 100 calories per day could prevent weight gain in most of the population. 24/ The deviation between actual calorie content and the value required to be declared by the Board could be significant.

In addition, the contemplated calculations are unclear, subject to differing interpretations, and complicated by ever-changing flavors and varieties offered at a given restaurant on a given day. The complexity of the proposed methodology would add additional costs exacerbated by the frequency of changes to menus of many restaurants. These costs could be significant given the breadth of what foods would be considered "standardized" as discussed above. The assumption that calorie information can be derived simply and without costly analytical testing pursuant to FDA's packaged food standard (21 C.F.R. §101.9) reflects a critical miscalculation by the Department as to the true impact of the Proposal.25/

24/ *See* Krukowski, R., Harvey-Berino, PhD, RD, J., Kolodinsky, PhD, J., Narsana, MS, R.T., and DeSisto, T.P., "Consumers May Not Use or Understand Calorie Labeling in Restaurants," *Journal of the American Dietetic Association* (June 2006) at 917. *See* Attachment 3.

25/ The Department has also not seemingly considered the impact its trans fat ban would have on providing accurate, consistent nutrition/calorie information. Consider the intent by the Department to require reformulation of restaurant foods without trans fat. If calorie and other nutritional information is to reflect the "national" values across a national or regional chain, those values will not necessarily be accurate for any products specifically formulated for New York City. Hence, there may be yet other costs (e.g., separate nutritional analysis for City restaurant menu items).

D. Department Failed to Consider, Define, or Reasonably Measure Other Costs

The Department provides no estimation of costs associated with the Proposal. This omission is not incidental or irrelevant. It is difficult, if not impossible, for the Department to make any reasoned conclusion as to the merits of a final rule without weighing costs. City restaurants, particularly mid-size and smaller operators, may lack the ability to fully appreciate the costs to their business and express such concerns via the public comment process. There are true costs associated with the Proposal. Those costs are also of significant legal consequence, as explained below.

The cost of compliance will, of course, vary by the operator. The cost of redesigning and maintaining menu boards is expensive and reprinting of printed menus is expensive as well. These costs are not borne by some unknown out-of-City corporation. Whether national or local, it is the New York City restaurant that ultimately bears the costs of ill-conceived regulation. New Yorkers pay for the Board's mis-calculation in higher menu prices and the impact on jobs. The prosperity of restaurant operators is necessarily local as well.

Changes in menus, a mainstay of most restaurants, will exacerbate these costs. One national chain and others were properly viewed as innovators when posting nutrition information on menus some time ago. Experimentation yielded to realism given the practical operational costs. Under the Proposal, the Board would view innovative operators as outlaws if they deemed other communication channels more effective and/or economically obtainable. Faced with the business impracticability of menu calorie labeling, operators will be forced to withdraw all public sources of calorie information – a strange, counter-productive consequence of the Proposal.

There is also a complete lack of consideration for the impact of the Proposal on small businesses. As explained above, the potential scope of the term "standardized menu item" could force numerous items to bear calorie information. Regardless of the size of the restaurant, these costs are real. Separately, the Board should also consider the cost of a decision by City restaurants who may discontinue providing caloric and other nutrition if forced to furnish caloric values on menus. It is rare in this age of government accountability and transparency that the Board would approve a new measure without instructing the Department to make a full accounting of costs and burdens weighed against the actual benefits.

E. Proposal Creates Peculiar Disincentive to Providing Voluntary Nutrition Information

Section 81.50(a) specifies that mandatory calorie labeling is only required when the information is already provided to the public. (This is a

singularly peculiar provision: Why would the Board need to mandate information that is already being provided to consumers? Why would the City erect barriers to consumers access to nutrition information given its value to consumers?). As discussed in other sections of this comment, the cost of the Proposal would be significant for any affected restaurants (even those that already have determined the calorie content of existing menu items). The costs to franchises (and other owners and operators) is not an abstract concept – the restaurants that operate within New York City will be harmed. The conditioning of the requirement on whether calorie information is already provided for the menu item suffers from other problems and concerns as well.

First, there are costs of ongoing compliance explained above. Depending on the nature of the operation and the cost of compliance, it is possible that some firms will simply elect not to provide any information to the public if compliance is unduly burdensome. It is counter-intuitive to mandate information only when it is already provided. It is irrational and an exceedingly bad idea to prevent consumers from any access to calorie information because the cost of compliance with the City requirement is too high or burdensome.

Even for operators that currently provide calorie information, the Proposal creates a disincentive for operators to continue to provide calorie information on new or reformulated items. Reprinting a brochure occasionally (and advising consumers as to the possibility of changes since the date of publication) or periodically updating a website with new nutrition information is a relatively cost-effective way to provide consumers with valuable nutrition information. Indeed, those who are interested in the nutrient content of restaurant foods have a vast amount of information available to them. The Proposal would effectively legislate out of the marketplace any of many less burdensome options. Brochures, tray liners and the like offer a degree of flexibility and cost-effectiveness relative to signage that is more expensive, inflexible and has longer lead times for making changes.

The flexibility and efficiency that characterizes the current voluntary flow of nutrition information to consumers is lost under the Proposal. 26/ Instead, the cost of providing the information becomes much greater. Given the scope of the term "standardized," it is incorrect for the Board to simply assume that only large, national chains will be effected (and perhaps it is assumed that such added costs are imposed in some mythical fashion that has no impact on the restaurants and their employees located within the City). The costs create a discernable barrier to entry of smaller restaurants who may not have the ability to provide calorie information in the highly prescriptive, costly manner preferred by the Department.

26/ The Association is also concerned as to where the intervention of the BOH would end. Will the costs and failures of the Proposal be continually revisited as the Department puts forth one failed hypothesis after another? New York City restaurants can ill-afford to serve as a testing ground for public policy experimentation with substantial costs and uncertain or non-existent benefits.

As FDA recognized in 1993, regulatory standard that fails to take account of the need for flexibility in the restaurant sector will provide less not more information to consumers.

It is apparent from the framing of the Notice that the Board does not intend (nor presumably has it considered) the practical impact of the Proposal with respect to menus beyond those restaurants that would in some (unexplained) fashion be exempt (due to the assorted lack of "standardization"). The disparate impact of the Proposal, no matter how the Department would attempt to define a "standardized menu item" creates clear barriers to consumer access to calories. As explained above, for drive-thru and other menu displays it would prove near impossible to comply with the Proposal. Again, these operators would be subject to repetitive Health Department sanction or would have to abandon any City residents effort to communicate information to and throughout the country. 27/

Against this backdrop, the Department is hard pressed to argue that the public health of New Yorkers is threatened unless calorie content is disclosed in the precise manner proposed. The public health is decidedly ill-served by a regulatory scheme that erects new barriers to consumer access to the very information that the City acknowledges is so vital. Because of the disincentive to provide nutrition information, the Proposal will impede greater access to information. The Proposal thus yields none of the premised benefits. The Proposal ignores many less burdensome options that in many restaurants would prove more effective.

F. Proposal Fails to Consider Consumer Expectations, Behavior and Limitations of Mandatory Calorie Labeling

The Department premises the Proposal on an enticing proposition: by placing calorie information next to the menu price, consumers will finally have the necessary information from which to make informed choices. This would, in-turn, change consumer behavior because at present the Department views City residents as completely unaware of the diet and health consequences of their purchasing decisions. We give New Yorker's more credit than that but believe that we have a long way to go in supporting consumers in making healthful diet and lifestyle choices.

27/ For those who consult routine Board of Health's citations relative to electing where they dine, many New Yorkers might be surprised to learn they may have to avoid a given establishment not because of sanitation, holding temperatures or the absence of a certified food safety personnel presence, but simply because the operator could not comply with the menu calorie mandate (though such information may be in a brochure at point-of-sale). In this the level and focus of public health New Yorkers expect from their elected officials?

Theories and hypotheses are useful analytical tools, indispensable to scientists and useful to spur public debate. Sound public policy and principles of law preclude the reliance on a hypothesis to impose new regulation. In the present case, the Department's preferred view of the world is dubious. There are many factors that would impede or undermine the promised public health gains from mandating menu display of caloric values.

1. Practical Limitations of Posting Calories on Menus and Menu Boards

The ideal world of City menus cluttered with calorie and other information is not easily obtainable and not very useable. For menu boards there are practical space limitations. Mandated uniform font and type size would likely make all information unreadable and inaccessible. Consumers may mistakenly hand-over $2.98 to a cashier for a 99-calorie hamburger that actually contains 298 calories and sells for 99-cents. Will the mandatory menu labeling requirement work? The Board will be left to guess because the Department has not evaluated the impact of its proposal. In contrast, before FDA mandated the Nutrition Facts panel for packaged foods it conducted extensive consumer research and invited public comment. The research and ensuing public discourse led regulators to abandon many "good ideas" that proved confusing or inaccessible to consumers when tested.

The Department's approach appears to be "mandate now, hope for the best later." A few member companies have tried to redesign menu boards and even preliminary efforts have yielded poor results. The menu boards will be difficult to read and will frustrate, not inform, patrons. 28/

Consider next the menu boards placed at drive-thru locations. Space is extremely limited. Admittedly tongue-in-check, will QSRs be expected to erect bill boards at the drive-thru or face the risk of a Health Department citation? Will City ordinances relating to outdoor bill boards prompt visits from other agents of City government to descend upon restaurants struggling to comply with an impossible calorie labeling rule?

More likely, QSRs may be forced to greatly scale-back their drive-thru menu offerings to accommodate the space needed to comply with the Proposal. If a QSR reasonably determined that it must omit lower-volume sales items, it may be that salads and other healthier alternatives may not be included. Any number of

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28/ The consumer is the ultimate determinant of success. Research in this area reveal that the Department's preferred option is not shared by consumer. We find informative and significant the findings of the Hartman Group that has actually examined consumer behavior. Their findings (presented in comments to the Department) further evidence the wide gap between reality and this Proposal.

case studies over the years reveal the difficulty of sustaining the offering of healthful menu options due to consumer disinterest. 29/ Would mandatory calorie information in this context make it more likely that New Yorkers would eat healthier at the drive-thru? Any such determination by the Board would include sheer guess-work because the Department did not do its homework.

2. Assumptions on Utility of Caloric Values Speculative and Incorrect

The notion that inflexible, mandatory caloric labeling will influence consumer behavior is plausible but incorrect. 30/ It is important to recognize that the benefit of this initiative does not depend on the Department's ability to demonstrate the value of calorie information generally, but rather that there is some (as yet unmeasured) benefit to the prescriptive proposed requirement below. Moreover, the Board, for reasons discussed below relative to constitutional considerations, must determine that the purported benefit is unobtainable by any other (less restrictive) means.

The Department cites the NLEA and derides restaurant websites (and presumably all other innovative means of communication) as inadequate because the information is not accessible at point-of-purchase. Remarkably, and without any citation or explanation, the Department posits of the Nutrition Facts panel on packaged foods: "This information is widely used." The unabated rise in obesity rates since 1994 suggests that access to nutrition information does not yield any measurable public health benefit. Even more speculative is the notion that calorie content alone in a restaurant will be successful when complete nutrition labeling on packaged foods, has had little impact for the majority of Americans.

Proponents will point to the rise in obesity and the number of away-from-home meals to suggest that restaurants are the culprit. Presumably, since the Department won't ban out-of-home dining its easier to mandate calorie values on menus. Perhaps, but the scientific literature suggests that the approach will not work, raising numerous issues that the Department must address. 31/

29/ The Association urges the Board to carefully consider the comments of other stakeholders who empirically show that consumers do not apply dietary limitations when dining-out. The behavior is apart from, and would not be influenced by, a simple calorie statement.

30/ The Association does not view calorie information as itself irrelevant. Of course, nearly all chain restaurants provide an array of nutrition information precisely because they want to aid our consumers in making informed choices.

31/ Indeed, a great body of nutrition science literature is focused on dietary factors such as fat, fruits and vegetables. *See* Howard, PhD, B.V., Van Horn, PhD, L. et al, "Low-Fat Dietary Pattern and Risk of Cardiovascular Disease," *JAMA* (February 2006). *See* Attachment 4.

Industry research has found that consumers do not respond favorably to attempts to regulate their eating behavior. They perceive such actions as meddling and condescending and, in many cases, may respond by rejecting altogether the idea of trying to "eat wisely." The Department's conjecture and assumptions stand in marked contrast to empirical data and studies of consumer expectations. Menu and menu board labeling will not achieve the desired effect. We know through industry research that customers do not favor placing nutrition information on menus or menu boards and that it will not dramatically change their behavior. They do not add up menu item calories when they are looking forward to a meal nor is calorie values for individual items itself necessarily useful (even though per-item values is the only feasible way to present nutrition labeling). Restaurants, no matter how responsible or committed, cannot present calorie values for individual menu items and for various "combo's" that might be offered or selected by consumers, as explained above.

From extensive ethnographic research, we find that there is a powerful disconnect between "label reading" behavior and actual food consumption. Put most simply, we believe that while an interest in nutrition information *may* drive short term attitudes or purchase behaviors, this interest has no net effect on the overall amount of calories consumed or any number of other factors that influence diet and overall health.

There are many "disconnects" in how consumers see themselves and their views on diet and health that will render mandatory calorie labeling on menus irrelevant. The consumer research of the IFIC Foundation, "Away From Home Foods: Opportunities for Presenting Obesity" warrants careful consideration. 32/ We anticipate that the Board's review of this study alone will prompt an instruction to the Department to go back to the drawing board.

Several notable findings of the IFIC research include the following.

- Consumers don't readily understand that calories and other dietary changes impact their energy balance. Unaided, just 2 percent noted the value of eating fewer calories and just one-half identified consuming less of a specific type of food or beverage.
- Probing consumers on their understanding of calories reflects that many likely won't utilize mandatory calorie information. Sixty-seven percent look for calorie information, but 18 percent answered incorrectly or declined to guess how many calories they should eat each day; only 29 percent correctly understood that calories in general cause weight gain.
- The study found that it is very difficult for individuals to manage energy balance and/or calculate discretionary calories.

32/ *See* IFIC Report (May 2006). *See* Attachment 5.

- Consumers do not adhere to the Dietary Guidelines' recommendation of moderate to intense activity 30 minutes most days of the week. IFIC's Food and Health Survey noted that 36 percent of consumers are not physically active, and only 2 percent are active 1-2 days per week.
- Among the "learnings" highlighted by IFIC: lifestyle demands put health on the back burner, especially for parents; information doesn't translate into action and consumers struggle for motivation to change behavior.

The IFIC study also sheds light on a number of other pieces to the puzzle. There is certainly a great deal left to be done.

As noted below, there are a number of studies and scientific evidence the Department is either not aware of or inexplicably failed to consider and decided to ignore. 33/ To make clear, the Association has certainly not had the time, nor do we purport to set-out the body of relevant scientific literature. The 30-day comment period and lack of advance notice (via the Department's Regulatory Agenda) makes such a task impossible. The IFIC report and other studies do illustrate there is "more to the story" then is apparent in the Notice.

Ill-considered assumption that access to caloric values will influence behavior or public health is a study by Dr. Krukowski, et al. 34/ The large survey examined the ability of people to estimate their true calorie needs, whether consumers read labels and whether they seek calorie labeling for restaurant foods. The nearly 1000-person survey found that 44 to 57 percent of responses reported that "they would not likely use restaurant food calorie information." 35/ For whatever reason respondents who frequent QSRs "were significantly more likely to report that they rarely look at food labels . . . and would not use restaurant food labels to look for low-calorie foods. 36/ Experts have also cautioned against moving forward with new public policies absent a careful scientific basis for doing so. 37/

33/ If there was any greater evaluation of the issues by the Department it is not evident from the scant information presented in the Notice. Denying access to any such broader consideration to interested parties would itself warrant withdrawal of the Notice. Regardless, we further note with great concern that the Department did not consult or utilize the expertise and perspective that resides within the restaurant industry that would be subject to the proposed new requirements.

34/ *See* Attachment 3.

35/ *Id.* at 918.

36/ *Id.*

37/ The University of Chicago's Tomas Philipson observed with regard to sound federal policy: "Without solid scientific conclusions bearing on the issues of food labeling and the obesity epidemic, the proposals would not be in the interest of public health or in the tradition of a science-based agency such as the FDA." *See* Philpson, T., "Government perspective: food labeling," *The American Journal of Clinical Nutrition*, (2005) at 263S. *See* Attachment 6.

Krukowski's research identified another confounding observation – the consumers with less healthy eating habits did not correlate to weight.

> The influence of weight status on the use of food labels was examined and no significant patterns in reported food label use or desire for more information in restaurants were found. This finding is somewhat inconsistent with previous research that has suggested that those who have less healthful dietary habits are more likely to ignore food label information (13-15); however, weight status and the quality of ones dietary habits are not always related.

The study's findings and the inconsistency with some prior research suggest the obvious value of further scientific investigation. Further, the cited study reflects the premature speculation by the Department that mandating calorie values on menus will have any effect on body weight and obesity. Indeed, the authors conclude from the pilot data that "recent legislation advocating for greater labeling of restaurant food may not be particularly effective in combating the obesity epidemic if people are not looking at existing food labels and are not able to use this information for nutrition planning." 38/ Other studies have examined the need for education in advance of simple nutrient values. 39/

Against this backdrop the assumption that calorie values on menus will yield any public health benefit is suspect. The Department must come to terms with the realities and challenges of the regulatory content they seek to influence. There is no rational, science-based justification for the Proposal nor is there any notion that the initiative would influence obesity or advance the public health. The theoretical appeal of the Proposal will not produce measurable benefits that could outweigh the associated costs.

3. Hyper-focus on Calories Misinforms and Will Encourage Unsound Dietary Practices

An over-emphasis on calorie content also undermines effective consumer education. The ability to convey complex information in useable, understandable ways creates a challenge. The Department's solution – simplify the message to a single nutrient value – is short-sighted and out-of-sync with public health experts outside of City and a few small circles.

38/ *Id.* at 919. The study states: "While it is always better for consumers to have access to more, rather than less, information, these preliminary results indicate that public health efforts to control obesity perhaps should first focus on an education campaign designed to teach appropriate calorie intake values and food label reading skills to the general public. Id. at 919-920.

39/ *See, e.g.*, Rothman, MD, MPP, R.L., Housam, BS, R. et al, "Patient Understanding of Food Labels," *American Journal of Preventative Medicine* (2006). *See* Attachment 7.

The Dietary Guidelines illustrate the gap between the Proposal and the consensus within the public health community. The 2005 Dietary Guidelines for Americans contrasts markedly from the Department's single nutrient focus underpinning its proposed public health initiative. 40/ The nine areas of focus represent the scope of core areas that relate to diet and health – adequate nutrients within calorie needs, weight management, physical activity, food groups to encourage, fats, carbohydrates, sodium and potassium, alcoholic beverages and food safety. The focus and recommendations conveyed in the Dietary Guidelines have, of course, been readily accepted and espoused by federal policy-makers. 41/

The downside to a distorted message focused on calories is apparent from an understanding of how consumers purchase and consume restaurant foods – the "hidden calorie" problem. Recall the level of customization at all restaurants. Assume that a posting of calories would encourage the purchase of a salad over a higher calorie alternative. Proponents of the Proposal will argue that the purchase of the salad validates the wisdom of mandatory calorie labeling – information is power. The consumer then selects a salad dressing, or requests a small portion of mayonnaise. There is now an undetected (i.e., unlabeled) bump in calories above that identified on the menu. Does the consumer recognize that the higher calorie choice negated any net savings from selection of the salad? Consider further that the consumer enjoys a dessert based on the mistaken belief that the salad afforded a sufficient calorie "savings" to justify the purchase of the dessert. The same would be true for any number of dipping sauces, side dishes or other customization with any array of supposedly "standardized" menu offerings. In numerous instances the consumer will be misinformed. The simplicity of calorie labeling is marred by the reality of how the information will be used (and, as pointed out above, not used). 42/

The Proposal's hyper-focus on calories will result in consumers not recognizing the importance of other food choices they make. Under the Proposal, more calories are consumed than listed on the menu board and the interest and awareness of other nutrients goes unnoticed. There is value in conveying caloric values in context of a food's other nutrients. Many chain restaurants accomplish this very objective through innovative, diverse efforts. The Board will be unable to produce a similar result.

40/ Dietary Guidelines for Americans 2005. *See* Attachment 8. *See also* 2005 Dietary Guidelines Advisory Committee (2005). *See* Attachment 9.

41/ *See, e.g.*, Schneeman, PhD, B. 2005 Dietary Guidelines for Americans presentation. *See* Attachment 10.

42/ This scenario raises another issue that the Department ignores – education. Indeed, it is not missing "E" in the NLEA that some suspect explains the rise in obesity not-withstanding nutrition facts appearing on food labels. The Proposal isn't concerned about education. Indeed it perpetuates the "hidden calorie" problem frustrating public education efforts.

4. Structural Causes of Obesity Dooms Proposal

Studies also show the structural technology driven changes that have contributed prominently to rising obesity in this country. Lakdawalla and Philipson conducted extensive theoretical and empirical research in estimating that "40 percent of the recent growth in weight seems to be due to agricultural innovation that has lowered food prices, while 60 percent may be due to demand factors such as declining physical activity from technological changes in home and market production." 43/

Other dietary and consumer behaviors are contrary to the Department's assumptions. We find calorie consumption is connected to either: (1) a set of tacit, ingrained behaviors (e.g. constant grazing) which go largely unnoticed – by consumers as well as researchers; or (2) culturally located eating behaviors. Specifically, those who eat together tend to eat less, while those who eat alone tend to over consume. In part, this observation stems from the fact that changes in eating behavior are less likely to arise from "information processing" than simple social or peer pressure. The administrative record before the Department will validate these considerations which must be addressed.

The Association's view is not that effective public health initiatives are not meritorious simply because there are multiple causes to complex problems. Rather, the Department must carefully consider these dominant structural and other factors and examine in what manner its Proposal will address these considerations and how the purported benefits will succeed in light of these realities. 44/ Particularly with regard to the attitudinal barriers, the calorie menu labeling will fail no matter how appealing one finds its simplicity.

5. Department Reliance on Isolated References Misplaced

The Notice cites just a few references in support of its sweeping assertion that menu calorie labeling will meaningful influence consumer behavior and health. Before addressing these references we note the scant number relative to the growing and substantial body of literature that bears on the issues at hand. 45/ Respectfully, the Federal Trade Commission (FTC) requires more to

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43/ D. Lakdawalla and T. Philipson, "The Growth of Obesity and Technological Change: a Theoretical and Empirical Examination" NBER (May 2002). *See* Attachment 11. *See also* T.Philipson and R. Posner, "The Long-Run Growth of Obesity as a Function of Technological Change," NBER (November 1999). *See* Attachment 12.

44/ Valuable consumer research and analysis performed by IFIC illustrates the complexity and obstacles in addressing obesity and weight control relative to consumer perceptions and behavior. *See* "Addressing the Obesity Debate: a Consumer Point of View," (June 2003). *See* Attachment 13.

45/ One would expect that the Health Department would embark upon a new initiative only after fully considering and taking account of the underlying body of scientific literature. From the

support a simple diet and health claim. Certainly, informed public policy should rest on more. The few cited references do not alone provide compelling support for the Department's insistence that if only consumers had calories on menus they would achieve behavioral changes and improve on obesity and other risk-factors.

The Department's broad assertion of purported benefits relies on several specific assumptions: consumers underestimate calorie content of foods and have less purchase intent when they are provided calorie information, allegedly because they are more aware of disease risk. The authority for these fundamental premises is not a governmental or third-body authoritative body nor a wealth of studies, rather it is the work of two principle authors who conducted mail surveys in a single "southern state."

The references relied upon by the Department are riddled with flaws and limitations that render the three published articles by the same two principle authors woefully insufficient to justify a sweeping, highly intrusive and costly burden on restaurants and their patrons.

- Significant flaws in methodology. The reliance on a mail panel survey has serious limitations – respondents are skewed in terms of income (not identified in the articles), there is no indication of follow-up with non-respondents, the sample sizes are small and thus not representative of U.S. population. The survey is surely not representative of New York City residents.
- At least one of the studies appears to have not even addressed calories, nor obesity (Burton, Creyer 2004).
- The 2004 survey relies on, and draws key assumptions from "analysis performed by CSPI," yet the data and analysis is not included nor is there a citation, which suggests that the work relied upon was not subjected to objective peer review.
- The surveys purport to measure "purchase intent." References in the comment and other portions of the administrative record base research on actual consumer purchasing behavior.
- Notwithstanding the apparent bias/interest in forcing menu labeling of calories, even though authors acknowledge: "We also recognize that further research may identify additional nutrition formats that may be equally or more effective at conveying nutrition information, and that

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limited citations, and the overly-broad and unsupportable conclusions reflected in the Notice, it appears that the Department sought out those who agree with their assumptions and hypotheses. The grant of authority to the Board to protect and advance the health of New York City residents surely requires a greater effort to examine all of the relevant literature. We suspect that a reviewing court would agree.

combining possible social marketing initiatives with future nutrition disclosure research seems warranted." 46/

- The studies do not address a central issue – the value of calorie information on menus and menu boards. The limited findings may be worthy of some consideration but do not address the essential issue: Is there a compelling benefit to mandating that calorie information be on menus and *menu boards.*

Finally, the authors cite to the value of "further research addressing the implications of inclusion of nutrition information on menu is warranted." 47/ The conclusion is the context of the administrative record before the Board does not mirror the assumptions nor conviction reflected in the Notice that mandatory calorie menu labeling is justified.

If the Department's hypothesis is correct we can assume that people are less likely to purchase higher calorie items at chain restaurants once the calorie value appears on menus and menu boards. 48/ Will City residents simply walk past a conveniently located restaurant and head home to prepare a balanced, nutritious, healthy meal?

They will only have to cross the street to one of the estimated 90% of restaurants that the Department has determined will not be required to post calorie information. 49/ Does the meal at the local deli across the street from targeted chain restaurants contain fewer calories than the posted values of affected restaurants? Worse, the disparate impact of the Proposal will erroneously lead consumers to believe that the food in the 90% of exempt restaurants is healthier. The Department's assumption that consumer choices will change is incorrect. Consumers will merely frequent the 90% of restaurants that the Department predicts won't provide calorie information.

These barriers and challenges do not excuse inaction or the unwillingness to try bold, innovative approaches. This very energy drives many

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46/ Burton, PhD, S., Creyer, PhD, E. et al, "Attacking the Obesity Epidemic: The Potential Health Benefits of Providing Nutrition Information in Restaurants," *American Journal of Public Health* (September 2006) at 1675. *See* Attachment 14. It may be reasonable that the authors have not evaluated least burdensome or more effective means to address nutrition information in restaurants. For public policy and constitutional reasons, the Department is obliged to go further and address these issues head-on.

47/ Id. At 143.

48/ We supposed that this economic impact would be applauded by the Proponents of the Proposal as proof that the Board's bold action was effective. We suspect, at a minimum, that City restaurants and the residents they employ would not share this enthusiasm.

49/ Recall the Department hypothesizes that merely revealing calorie values on menus will discourage purchases of higher calorie food.

current and developing industry efforts. At the same time, the important public health issues at hand cannot be resolved by a majority vote of the Board. The residents of City will not benefit. There will be no public health benefits against which the costs and failures of the Proposal are balanced.

A regulatory approach should have a reasonable expectation of solving the problem; the restaurant industry has collectively known for a long time that menu labeling is not a promising solution or even an effective piece of it for many diverse operators in our industry. The Board must consider the Proposal in the context of the realities of restaurants, consumer behavior and the consensus views on nutrition education. The Department has made too many unfounded assumptions. "Good ideas" alone don't pass for effective policies that will produce meaningful change.

III. CONSTITUTIONAL PROHIBITIONS ON THE CALORIE LABELING PROPOSAL

A. City is Expressly Preempted From Requiring a Statement of Caloric Content

Enactment of the NLEA brought sweeping changes to the manner in which nutrition labeling information is conveyed to consumers via food labels and labeling for prepackaged and restaurant foods. Congress acted to bring order to a marketplace where consumers were deemed ill-served by the lack of clear and consistent regulatory definitions for claims and access to accurate nutrition information. Congressman Waxman stated in remarks preceding the "Statement of House Floor Managers" confirmed: "[T]he bill will once and for all settle the confusion surrounding health claims. For example, the term 'light' has different meanings on different labels." 50/

Congress also addressed head-on the extent to which the new national legislation would be uniform across the marketplace regardless of where a consumer resides or the locality in which the food was processed or offered for sale. In an explicit and thoughtful fashion Congress amended the Federal Food, Drug, and Cosmetic Act by adding Section 403A which provides for express preemption of many food labeling requirement enacted pursuant to the NLEA. Specifically, so-called nutrient content claims are given preemptive effect.

Section 403A(a)(5) states that "no State or political subdivision of a State may directly or indirectly establish under any authority or continue in effect as to any food in interstate commerce...(5) any requirement respecting any claim of

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50/ Congressional Record (October 26, 1990) at H12951.

the type described in section 403(r) made in the label or labeling of food that is not identical to the requirement of section 403(r), except a requirement respecting a claim made in the label or labeling of food which is exempt under section 403(r)(5)(b)." 51/ Section 403(r) authorizes FDA to regulate nutrient content and health claims for all foods. The exclusionary language of Section 403A(a)(5) - - the exception to the broad grant of preemptive authority to FDA - - arises in connection with specific statements that must accompany claims made on food packages for which Congress expressly determined are inapplicable to restaurant foods.

FDA has exclusive authority to define qualifying criteria for nutrient content claims and the NLEA bars any such claims not authorized by regulation. This legislative judgment reflects the obvious wisdom that restoring and maintaining order in the marketplace requires that a single definition govern the use of a given claim. Moreover, while reasonable people may differ, it is Congress that determined that unless a nutrient content claim is pre-approved by the federal government that claim is outright barred.

A statement as to the number of calories of a food item is a nutrient content claim. Section 403(r) states that a nutrient content claim is that which "characterizes the level of any nutrient which is of the type required" to appear in the Nutrition Facts panel, which includes Calories. 52/ The implementing regulation parallels the NLEA: "Any expressed nutrient content claim is any direct statement about the level (or range) of a nutrient in the food, e.g., 'low sodium' or 'contains 100 calories.'" 53/ The statement as to the amount of a nutrient (i.e., calories) "is a nutrient content claim and is subject to the requirements for nutrient content claims." 54/ A regulatory guidance document published by FDA confirms that a statement as to the amount of a nutrient is a nutrient content claim and is regulated accordingly. 55/

In the preamble accompanying the final regulation, FDA states that "almost half of the American food dollar is spent on food consumed away from home...FDA firmly believes that consumers expect, and deserve, that the claims made at point of purchase are truthful and not misleading." 56/ Recognizing the significant differences in how restaurant and prepackaged foods are prepared and

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51/ 21 USC Section 403A(a)(5).

52/ 21 USC Section 403(r).

53/ 21 C.F.R. Section 101.13(b)(1).

54/ Id. At 101.13(d).

55/ *See* "Questions and Answers, Volume II: A Guide for Restaurants and Other Retail Establishments" (August 1995). Question R93 (advising that statements as to the percentage or amount of a nutrient must comply with the claims regulations and be appropriately qualified when necessary).

56/ 58 Fed Reg at 2387.

sold, FDA did establish a distinct "reasonable basis" compliance standard for restaurants that would be applied to determine if a nutrient content claim complied with Section 403(r), as discussed separately in this comment. Hence a statement of calories is a nutrient content claim subject to the requirements of Section 403(r), including the compliance standard determined by FDA as most suitable for restaurant foods.

The preemptive effect of FDA's regulation of a statement of calories and all other nutrient content claims is binding on State and local jurisdictions, including New York City's Department of Health. FDA affirmed the legislative judgment that its regulation in this area is a binding, uniform standard.

> This reasonable basis for belief standard for restaurant nutrient content claims will provide regulatory officials, especially State and local authorities, with an effective standard for verifying that such claims are truthful and not misleading and in accordance with FDA regulations. FDA does not have the resources to adequately enforce its regulations in restaurants. State and local authorities have traditionally carried out this responsibility. In addition, section 4 of the 1990 amendments provides that State local authorities may enforce section 403(r) of the act in Federal court. 57/

The empowerment to enforce as granted to states by Congress, is different (and far more limited) than the power to regulate unfettered and without regard to by a binding uniform standard that is preemptive of state of local requirements that are not identical.

The courts have consistently addressed the respective rights and responsibilities of a state or local jurisdiction when it shares jurisdiction with the federal government. Concurrent jurisdiction does not contemplate nor excuse a local jurisdiction overstepping its local power in a manner that conflicts with federal law given preemptive effect by Congress. When determining whether Congress intended to occupy the field, or whether a local law conflicts with a federal law, courts consider the relationship between local and federal laws as they are interpreted and applied, not merely as they are written. 58/ For example, the net weight inspection practices of Rockland County, New York were deemed expressly preempted as in conflict with federal law. 59/

57/ *Id.* at 2388.

58/ *Jones v. Rath Packing Co.*, 430 U.S. 519, 526 (1977).

59/ *Kraft Foods North America, Inc. v. Rockland County Dept. of Weights and Measures*, 2003 WL 554796 (S.D.N.Y. Feb. 26, 2003). The U.S. Supreme Court has made similar findings against

FDA determined that not only must restaurants comply with its nutrient content claim rules, but they must also provide nutrition labeling. This is akin to the agency's general approach whereby exemptions from nutrition labeling are "lost" when the food bears a claim. 60/ Accordingly, Section 101.10, applicable only to restaurant foods, states: "Nutrition labeling in accordance with § 101.9 shall be provided upon request for any Restaurant food or meal for which a nutrient content claim ... is made, except that information on the nutrient amounts that are the basis of for claim ... may serve as the functional of complete nutrition labeling as described in § 101.9." 61/ Section 101.10 specifies the flexible compliance standard to be applied to determine the accuracy of a nutrient content claim, that includes a statement as to the number of calories.

Indeed, interested parties submitted comments to FDA in response to its 1991 proposal questioning FDA's legal authority to mandate nutrition labeling of any kind when a claim is made. FDA responded: "The agency continues to believe that it has the authority to issue regulations requiring restaurants that make nutrient content claims, including nutrition labeling. 62/

The Department has determined that in New York City calorie information must be provided, the accuracy of which will be judged under FDA's Section 101.9. Proposed Section 81.50 is not identical to (and is in direct conflict with) the more flexible, applicable FDA standard of Section 101.10. The plain language of Section 403A of the FFDCA and its implementation by FDA make clear that such a conflict between City and FDA is resolved in favor of FDA pursuant to the national uniform standard.

A pervasive, clearly articulated federal scheme, in place since 1993, dictates the manner in which a statement of calories and other nutrient content claims are regulated. Congress provided for the preemptive effect of section 403(r), only carving-out a few labeling conventions not applicable to restaurants. The Department has articulated and proposes to mandate a very different approach. For the policy reasons articulated above, the Association views the Proposal as ill-advised. As a matter of law, the Board is preempted from requiring calorie menu labeling. The Board is authorized to enforce the FDA requirements and is expressly authorized to petition FDA for an exemption from the preemptive effect afforded FDA's regulations by Congress. A petition is the only vehicle by which the Board may pursue its preference for a different regulatory standard.

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state inspection practices based on implied preemption as well. *See Jones v. Rath Packing Co.*, 430 U.S. 519 (1977).

60/ *See* 21 C.F.R. §101.9(j).

61/ 21 C.F.R. § 101.10.

62/ 58 Fed. Reg. at 2389.

B. Commerce Clause

In addition to violating the Supremacy Clause of the United States Constitution, the Proposal would violate the Commerce Clause, which expressly authorizes Congress "[t]o regulate Commerce . . . among the several states." 63/ While the Commerce Clause is cast as an affirmative grant of lawmaking power to Congress, it "has long been understood, as well, to provide 'protection from state legislation inimical to the national commerce [even] where Congress has not acted.'" 64/ This "negative" aspect of the Commerce Clause—the "dormant" Commerce Clause—operates to deny "the States the power unjustifiably to discriminate against or burden the interstate flow of articles of commerce." 65/

The Supreme Court has developed two distinct tests for determining the validity of local and state laws that may run afoul of the dormant Commerce Clause. Under the first test, "[i]f a restriction on commerce is discriminatory, it is virtually *per se* invalid." 66/ Thus, if a state law "is found to discriminate against out-of-state commerce, it is typically struck down without further inquiry." 67/ State laws that burden, but do not discriminate against interstate commerce, however, also may violate the dormant Commerce Clause under a second test: "[N]ondiscriminatory regulations that have only incidental effects on interstate commerce are valid unless 'the burden imposed on such commerce is clearly excessive in relation to the putative benefits.'" 68/ This is known as the *Pike* test. The Proposal violates the dormant Commerce Clause under both of these tests.

1. The Proposal Discriminates Against Interstate Commerce.

While the language of the Proposal may seem neutral, it is clear that the Proposal is intended to have a discriminatory impact on out-of-state (or out-of-city) commercial interests. In fact, the BOH acknowledges that the Proposal was intended to have this type of discriminatory effect. Constitutional doctrine, however, dictates that any law that is designed to benefit local economic interests at

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63/ U.S. Const. art. I, § 8, cl. 3.

64/ *Barclays Bank PLC v. Franchise Tax Bd. of Cal.*, 512 U.S. 298, 310 (1994) (citing & quoting *S. Pac. Co. v. Ariz. ex rel. Sullivan, 325 U.S. 761, 769 (1945)*) (alterations in *Barclays Bank PLC*).

65/ *Or. Waste Sys., Inc. v. Dep't of Envt'l Quality of Or.*, 511 U.S. 93, 98 (1994) (citations omitted).

66/ *Or. Waste Sys., Inc. v. Dep't of Envt'l Quality of Or.*, 511 U.S. 93, 99 (1994).

67/ *Chemical Waste Mgmt., Inc. v. Hunt, 504 U.S. 334, 342 (1992).*

68/ *Or. Waste Sys., Inc. v. Dep't of Envt'l Quality of Or.*, 511 U.S. 93, 99 (1994)(quoting *Pike v. Bruce Church, Inc.*, 397 U.S. 137, 142 (1970)).

the expense of out-of-state interests engaged in interstate commerce is *per se* invalid.

Pursuant to the Proposal, the calorie labeling requirement would apply only to "menu items that are served in portions the size and content of which are standardized and for which calorie content information is publicly available." In its Statement of Basis and Purpose, the Department speculates that "it is expected that the proposal would apply only to the approximately 10% of New York City food service establishments" that serve these types of menu items. In a press release accompanying the publication of the Proposal, the Department further acknowledges, with regard to this 10% of establishments, "[g]enerally, these are the high volume establishments." 69/

It is chain restaurants that are deemed most likely to use standardized recipes, formulations, and ingredients. And, these are precisely the businesses that have already made great strides to provide consumers with nutritional information via the Internet and in-store placards, brochures and by other means. Although the precise definition of "standardized" is ambiguous in the Proposal, judging from the Department's statements, the Proposal is not intended to affect independent, local businesses. 70/ There is no reason to view calories in non-affected restaurants of any less of a public health concern than the calories found in chain restaurants. The discriminatory impact is apparent.

This discriminatory effect of the Proposal would not be tolerated by the courts. Pursuant to a long line of Supreme Court cases, "economic protectionism—that is, regulatory measures designed to benefit in-state economic interests by burdening out-of-state competitors" is never a legitimate regulatory purpose. 71/ Moreover, courts have invalidated local laws on the grounds of protectionism without finding a protectionist motive, based solely on the effect of a law that favors in-state over out-of-state economic interests. Because "the evil of protectionism can reside in legislative means as well as legislative ends," 72/ it is of no consequence that the Department may not have intended to discriminate against out-of-state

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69/ As explained earlier, the definition of the term "standardized" is ambiguous and may reach more types of establishments than intended by the BOH. Therefore, the assumptions which led the BOH to these conclusions are speculative and may be incorrect. For the purposes of the constitutional analysis, however, we assume that the Proposal will have disparate impact intended by the Board.

70/ As discussed above, the BOH's assumption is suspect given the reach of a "standardized menu item." That is, the Board intends to impose a discriminatory impact on interstate commerce although is unclear whether they will be "effective."

71/ *Ass'n Indus. Of Mo. v. Lohman*, 511 U.S. 641,647 (1994); *see also Philadelphia v. New Jersey*, 437 U.S. 617, 624 (1978).

72/ *Philadelphia v. New Jersey*, 437 U.S. 617, 624 (1978).

interests. Instead, the mere fact that the Proposal would do so is sufficient to make the Proposal unlawful.

Pursuant to the Department's reasoning in the Notice, presumably, very few, if any, local food service establishments would run afoul of the Proposal's requirements. The term "standardized" on its face seems neutral, yet the BOH's conclusions that only about 10% of restaurants and primarily those that are "high volume" will be affected, shows that the Department intended the term "standardized" to mean that menu items are standardized among several establishments. This would necessarily impact the larger national or regional chain restaurants and fail to impact the majority of restaurants in the City—those that are locally owned, assuming that the assumptions of the Board prove correct.

Although the food at all of the City's food service establishments contains calories, and there is no allegation that more calories come from one type of establishment than another, the food served by the larger national and regional chain restaurants is singled out by the Proposal. The true effect of the Proposal as intended by the Department is economic protection, not consumer protection. The Proposal discriminates against non-local businesses and, therefore, violates the dormant Commerce Clause.

2. The Putative Benefits Fail to Outweigh the Burden on Interstate Commerce

In addition to its discriminatory purpose and effect, the Proposal places an excessive—and therefore unconstitutional—burden on interstate commerce. While a state, or locality, of course, has "a residuum of power ... to make laws governing matters of local concern," the sheer "incantation of a purpose to promote the public health or safety does not insulate a state law from Commerce Clause attack." 73/ That is, a law designed to serve a "salutary purpose nevertheless may further the purposes so marginally, and interfere with commerce so substantially, as to be invalid under the Commerce Clause." 74/ Here, the Proposal would impose significant costs on the affected food service establishments, yet there is little benefit produced by the Proposal for the many reasons set forth above. The seemingly non-existent benefits are outweighed by the associated costs.

To assist in determining when a burden on interstate commerce is unconstitutionally excessive in relation to a purported benefit, the Supreme Court considers four key inquiries: (1) the "nature of the [law's] putative local benefits;" (2) the burden the law places on interstate commerce; (3) whether that burden is "clearly excessive in relation to" the putative local benefits; and (4) "whether the local interests can be promoted as well with a lesser impact on interstate

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73/ *Kassel v. Consol. Freightways Corp. of Del.*, 450 U.S. 662, 669-70 (1981).

74/ *Id.* at 670.

commerce." 75/ In the case at hand, these four factors show that the Proposal would not pass constitutional muster.

First, as explained earlier, the actual benefits of the Proposal are questionable. In fact, relying only on the statistics provided by the Department in the Notice, the Proposal would have a minimal impact. The Department notes that "the average American consumes about one-third of calories from foods from restaurants;" the Department states that only about 10% of restaurants will be required to provide calorie statements; and, when calorie information is provided, the Department estimates that consumers choose high-calorie items "24% to 37% less often." So, if New Yorkers eat out for about one-third of their meals, eat at covered restaurants about 10% of the time (10% of 1/3 is about 3%), and actually use the calorie information only about two-thirds of the time that it is presented (2/3 of 3% is 2%), the required calorie statements arguably are used to make lower calorie choices only during rare eating occasions, perhaps during as few as 2% of eating occasions.

Further, when consumers rely on calorie information, they get only part of the nutritional picture of a food. For example, judging only by calorie statements, a consumer may choose a 200-calorie hamburger over a 350-calorie salad. The salad, however, may be the "healthier" choice (depending on the nutritional needs of the consumer, there overall diet and other individualized factors). If, instead of relying only on the calorie statement, the consumer had used a nutritional brochure, which highlights the range of important nutrients available in the salad, the consumer could make a more informed and, perhaps, appropriate choice.

Second, the burden to be imposed on the affected businesses is not insignificant. To comply with the calorie-labeling requirements of the Proposal, each restaurant will have to redesign, reorder, and reprint both menus and menu boards. There are real practical costs arising relative to menus and menu boards (inside and placed at the drive-thru). As discussed above in greater detail, the Proposal would impose the following:

- Significant initial compliance costs as restaurants rework, reorder, and reprint menus and menu boards,
- Additional costs each time a menu item is changed or reformulated, affecting the caloric value and, therefore, necessitating a new redesign, reorder, and reprint of the menus and menu boards, and

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75/ *Blue Circle Cement, Inc. v. Bd. of County Comm'rs of Rogers*, 27 F.3d 1499, 1512 (10th Cir. 1994) (quoting & citing *Pike*, 397 U.S. at 142).

- Analytical testing costs as restaurants strive to meet the exacting standards set forth by FDA in its regulations for packaged foods that the Department adopts.

These processes will necessarily increase the costs of doing business in the City, and the Supreme Court has recognized this type of increase to be a burden on interstate commerce. For example, in 1977, the Court reviewed a North Carolina statute prohibiting the display of Washington State apple grades on closed apple containers. Although the cost of redesigning apple containers may have been minor, the Court found that "it burdened the Washington apple industry by increasing its costs of doing business in the North Carolina market." 76/ Here, too, the Proposal would increase the costs of doing business within the City.

The only way to avoid these redesign and testing costs would be for the chain restaurants to stop making nutritional information publicly available, thus coming out from under the reach of the Proposal. However, this option, too, imposes costs on the chain restaurants. For years, these businesses have been making great efforts to provide more nutritional information to consumers. The chain restaurants have realized that providing this information not only can assist consumers in making appropriate food choices, but it meets a consumer demand for such information, therefore conferring a competitive advantage. Accordingly, either by forcing overhauls of menus and menu boards or by forcing restaurants to cease providing nutritional information, the Proposal imposes significant costs. 77/ The breadth of the Proposed also extends those costs to a wide range of small and medium size businesses. As explained above, some operators may not be able to easily absorb the added costs, forcing them to abandon nutrition labeling or pass on the costs to their patrons in the form of menu prices. The burden on interstate commerce is clear.

Because of the difficulty of associating local health benefits with the Proposal, the significant burden it would place on interstate commerce would be excessive. Yet, even if the burden were not considered excessive compared to the public health purpose, the Proposal would still face constitutional scrutiny due to the availability of less restrictive ways to effect that purpose.

The goal of providing consumers with calorie information can be achieved by far less burdensome, and often more effective, means. Already, many,

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76/ *Hunt v. Washington State Apple Advertising Comm'n*, 432 U.S. 333, 348-349 (1977).

77/ An additional burden will be borne by the affected restaurants if the Proposal, in addition to the intended effect of deterring customers from choosing higher calorie options, deters consumers from buying food at all from the restaurants. The Proposal may drive business from the affected restaurants to restaurants not required to provide calorie information. More troubling, consumers may irrationally order the same type of menu item (containing the same number of calories), just from a different establishment.

if not most, national and regional chain restaurants provide nutritional information for consumers on their websites and through in-store methods, such as placards and brochures. These methods provide not only calorie information, but also a range of nutritional information. As discussed above, the flexibility afforded restaurants ensures that each operator can choose the optimal, most efficient manner in which to convey nutrition information. Armed with more complete information, consumers can make better decisions, than when armed with one piece of information alone. Therefore, these types of consumer education methods are less burdensome, and also more effective.

The *Pike* factors yield a single conclusion: the Proposal runs afoul of the Dormant Commerce Clause. The Proposal would not withstand judicial scrutiny and should, therefore, be abandoned.

IV. STANDARD OF REVIEW

New York City may not regulate in a manner that is irrational, arbitrary or capricious. As set forth in the Association's companion comment on the trans fat proposal, the Board must establish a minimum showing that the rulemaking is premised on more than theories, unproven assumptions and conjecture. For all of the reasons set forth above, the Department cannot (and should not) move forward with its calorie labeling initiative. At a minimum, the Notice has raised numerous practical and policy concerns. A rush to consider a final rule at the Board's December meeting in advance of a full consideration of the administrative record and constitutional issues would be imprudent.

V. CONCLUSION

Calorie and other nutrition information is of unquestionable value to consumers. Moderating calorie intake relative to one's level of physical activity is important as well. Creative and effective solutions are critical to addressing this serious and growing public health challenge. The Association views the Proposed as largely ineffectual because it fails to appreciate the diversity of the industry, consumer behaviors and expectations. The Proposal also removes a large measure of regulatory flexibility and hence will stymie not foster innovation and access to information.

Irrespective of differing viewpoints among stakeholders, the legal framework that governs the Board's actions requires a minimum showing that the Proposal is rational and not arbitrary. For the reasons and information presented the Proposal falls well short. The National Restaurant Association opposes the Proposal for the simple reason that it will not work.

The Board cannot exercise its judgment, no matter how well-intended or sound, when it acts contrary to the principles and protections recognized in the

U.S. Constitution. The Commerce and Supremacy Clauses give due weight, foster and preserve the exercise of local power to govern, particularly with respect to the health and welfare of its citizenry. Ultimately, no public health rationale, no matter how urgent or compelling, empowers the Board to abridge the constitutional limitations that apply to all that govern.

The National Restaurant Association recognizes the well-intentioned concerns that prompted the Department to seek comment on its novel public health approach to address obesity rates and foster consumer access to information. The restaurant industry recognizes the important contributions it can make. The nature and focus of these efforts are as varied and diverse as our industry. Our success – "what works" – can only be measured in the context of our industry. The Department has failed to appreciate and account for these realities.

The shortcomings and ultimate failure of the Proposal stem from misunderstandings and misconceptions about foods served in chain restaurants and other establishments. The Association welcomes the opportunity to establish an ongoing dialogue with the Board pledged toward our shared goal of maximizing the ability of restaurant to support their patrons in making positive dietary and lifestyle choices.

Sincerely,

Donna M. Garren, Ph.D.
Vice President, Health and Safety
Regulatory Affairs

John Gay
Senior Vice President, Government Affairs
and Public Policy

NATIONAL RESTAURANT ASSOCIATION®

REPRESENTING THE RESTAURANT INDUSTRY

The Cornerstone of the Economy, Career Opportunities and Community Involvement

Comment; Notice of Intention to Add 81.50 to Article 81 of The New York City Health Code; Mandatory Calorie Statements

Attachments

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National Restaurant Association

2006 Restaurant Industry

FORECAST

$511,000,000,000

Restaurant sales cross the [illegible] TRILLION dollar threshold.

THE U.S. RESTAURANT INDUSTRY HAS TRULY EVOLVED

into a mega-industry, an economic juggernaut that spans nearly 40 distinct segments, from tableservice and quickservice restaurants to foodservice operations in schools, businesses, hospitals and military installations.

In this 37th annual National Restaurant Association *Restaurant Industry Forecast*, the Association profiles the restaurant industry as it heads for its 15th consecutive year of real growth, with sales expected to top $511 billion at a record 925,000 locations in 2006.

The *Forecast* offers a snapshot of the restaurant industry's unique challenges and opportunities as restaurant operators strive in 2006 to meet the growing customer demand for food away from home. For more information, contact the National Restaurant Association, which works to represent, educate and promote the rapidly growing industry.

The 2006 Restaurant Industry Forecast was prepared by the National Restaurant Association Research Department:

Robert Ebbin.....*Senior Director, Research Projects*

Bruce Grindy.....*Senior Director, Economic Analysis*

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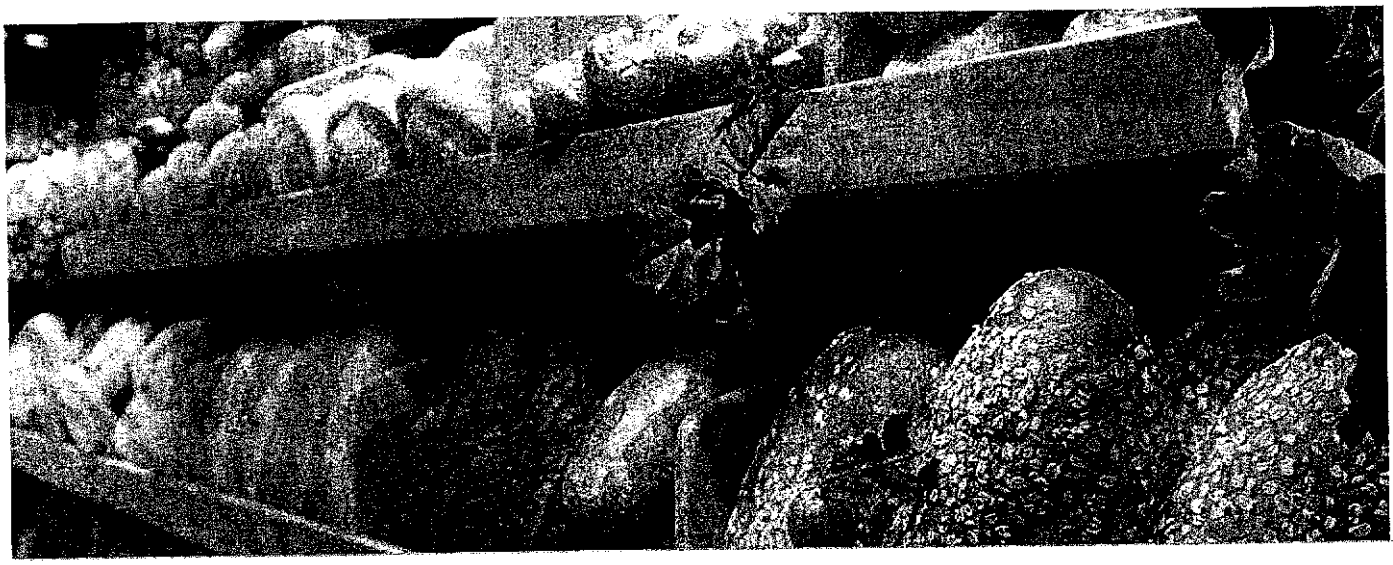
NATIONAL RESTAURANT ASSOCIATION



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RESTAURANT INDUSTRY AT A GLANCE: 2006

Restaurant-Industry[1] Sales	$511.1 billion
Locations	925,000
Employees	12.5 million
Restaurant-Industry Share of the Food Dollar	47.5 percent

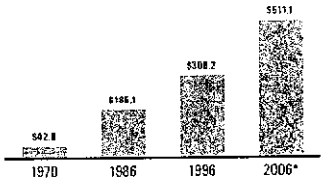
Sales Overview

- Restaurant-industry sales are forecast to reach a record $511.1 billion in 2006—an increase of 5.1 percent over 2005, or 2.5 percent in real (inflation-adjusted) terms. That compares with a 1.9 percent real gain in 2005.
- 2006 will mark the 15th consecutive year of real sales growth for the restaurant industry.
- On a typical day in 2006, the restaurant industry will post average sales of more than $1.4 billion.

Industry Segments

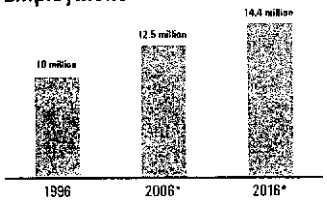
- Sales at fullservice restaurants are projected to reach $173.4 billion in 2006, an increase of 5.2 percent over 2005, for a real growth rate of 2.5 percent.
- Sales at quickservice restaurants are projected to reach $142.4 billion in 2006, an increase of 5 percent over 2005, for a real growth rate of 2.3 percent.

Restaurant Sales
(in billions of current dollars)



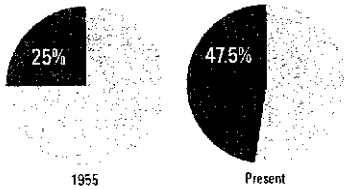
* projected
Source: National Restaurant Association

Total Restaurant-Industry Employment



* projected
Source: National Restaurant Association

Restaurant Industry's Share of the Food Dollar



Source: National Restaurant Association

4%

The restaurant industry's sales equal 4 percent of the U.S. gross domestic product.

[1] The National Restaurant Association defines the restaurant industry as that which encompasses all meals and snacks prepared away from home, including all takeout meals and beverages.

2006 OVERVIEW

SECTION HIGHLIGHTS

- As restaurants break the half-trillion-dollar mark for annual sales, consumer demand for restaurants continues unabated.
- Diversity is ever-increasing—in restaurant menu offerings, in customer demographics and in the industry's workforce.
- Restaurants will integrate technology; work to reduce energy costs; sharpen recruitment-and-retention efforts; and reach out to travelers and visitors.
- Many consumers will prize convenience and value and heighten their focus on health and nutrition.
- The restaurant industry is headed for a bright future.

Restaurants in the United States are headed for their 15th consecutive year of real sales growth, fueling continued growth opportunities for both restaurant operators and suppliers.

In its 37th annual *Restaurant Industry Forecast*, the National Restaurant Association forecasts that annual sales for the restaurant industry will total $511.1 billion in 2006. This projected gain—a 5.1 percent nominal increase over 2005's projected restaurant-industry sales of $486 billion, or a 2.5 percent gain over 2005 sales in inflation-adjusted terms—marks the first time the industry's sales will cross the half-trillion-dollar mark.

With more than $1.4 billion a day in sales, on average, the restaurant industry's share of the consumer's food dollar is 47.5 percent, up from about 25 percent in 1955. On a typical day in 2006, 130 million people will patronize a record 925,000 restaurant-industry locations. These locations employ 12.5 million people, making the restaurant industry the nation's largest private-sector employer.

The industry's direct sales account for 4 percent of the U.S. gross domestic product. Every dollar spent by consumers in restaurants generates another $2.34 in sales for other industries allied with the restaurant industry, such as agriculture, transportation and manufacturing. This raises the restaurant industry's overall economic impact to more than $1.3 trillion in 2006.

There's no mistaking the continued success of restaurant-prepared foods. Restaurants in the United States are an essential component of American lifestyles, driven by consumers' relentless demand for convenience, pursuit of social interaction and entertainment and continued gains in real disposable income.

What's New for 2006: 10 Top Trends

1.

Greater diversity—on the menu, among restaurant customers and in the restaurant workforce. Food-and-beverage offerings in the restaurant industry are becoming more varied to satisfy an increasingly diverse society with an ever more sophisticated palate. With recent National Restaurant Association research showing more than one in four restaurant employees speaks a language other than English at home, workplace diversity continues to be a great strength for the U.S. restaurant industry, with particular implications for innovations in training and enhanced cultural awareness.

2.

More emphasis on technology. As one of the most labor-intensive in the nation, the restaurant industry

increasingly integrates technology into its operations, boosting efficiency and productivity as well as enhancing the customer experience. Look for restaurants to devote a growing share of their budgets to technology in 2006. Restaurants will offer more self-service options for customers; delve more fully into online training; enrich their Web sites and expand their e-mail marketing; and broaden and upgrade their frequent-diner and gift-card programs.

3.

An unabated demand for convenience. Whether they're looking for a speedy drive-through or a piping-hot meal delivered to their car to take home, consumers will escalate their need for convenience. Consumers of all ages readily embrace increasingly convenient options operators offer: curbside service, drive-through, delivery and takeout. As operators come up with even more convenience innovations in 2006, watch for fullservice restaurants to go more aggressively after the takeout and delivery markets.

4.

Heightened focus on health and nutrition, while taste remains paramount. Nearly three of four adults say they try to eat more healthfully in restaurants than they did two years ago—a logical development as the average age of Americans increases and the first baby boomers turn 60. Yet with most consumers saying they look to restaurants for tastes and flavors they can't duplicate in their home kitchens, watch as restaurateurs work in 2006 to wow their most nutrition-conscious customers with "big taste" along with options for Americans with every dietary preference.

5.

Recruitment and retention issues take center stage. How to recruit great employees, develop their talents and keep them moving up the career ladder is the No. 1 concern for many restaurateurs in 2006. It's likely to remain so as the industry expands to an expected 14.4 million by 2016 from 12.5 million employees in 2006. The restaurant industry continues to be a critical training ground for millions of Americans of every demographic background. Nearly half of all American adults have worked in the restaurant industry, and more than one in four (28 percent) report their first job was in a restaurant.

6.

A continued pivotal role for tourism in restaurant-industry sales. The critical link between a robust tourism industry and strong restaurant sales is clear. Travelers and visitors account for an estimated 40 percent of sales at fine-dining operations and 25 percent of sales at casual- and family-dining operations. Increasingly attuned to the importance of the tourism market, restaurateurs welcome the expected growth of domestic travel and international arrivals to the United States in 2006.

7.

Increased emphasis on value. With energy and other cost pressures mounting, consumers will watch their cash on hand more closely in 2006, seeking value. While strong majorities of customers say they are satisfied with the value they receive for the price paid at restaurants, roughly three of five fullservice operators and more than three of four quickservice operators anticipate their customers will be more value-conscious in 2006. Restaurant operators will respond accordingly. Look for more experimentation with limited-time menu offerings in the quickservice sector and expanded use of frequent-diner programs, among other innovations aimed at value-conscious diners.

8.

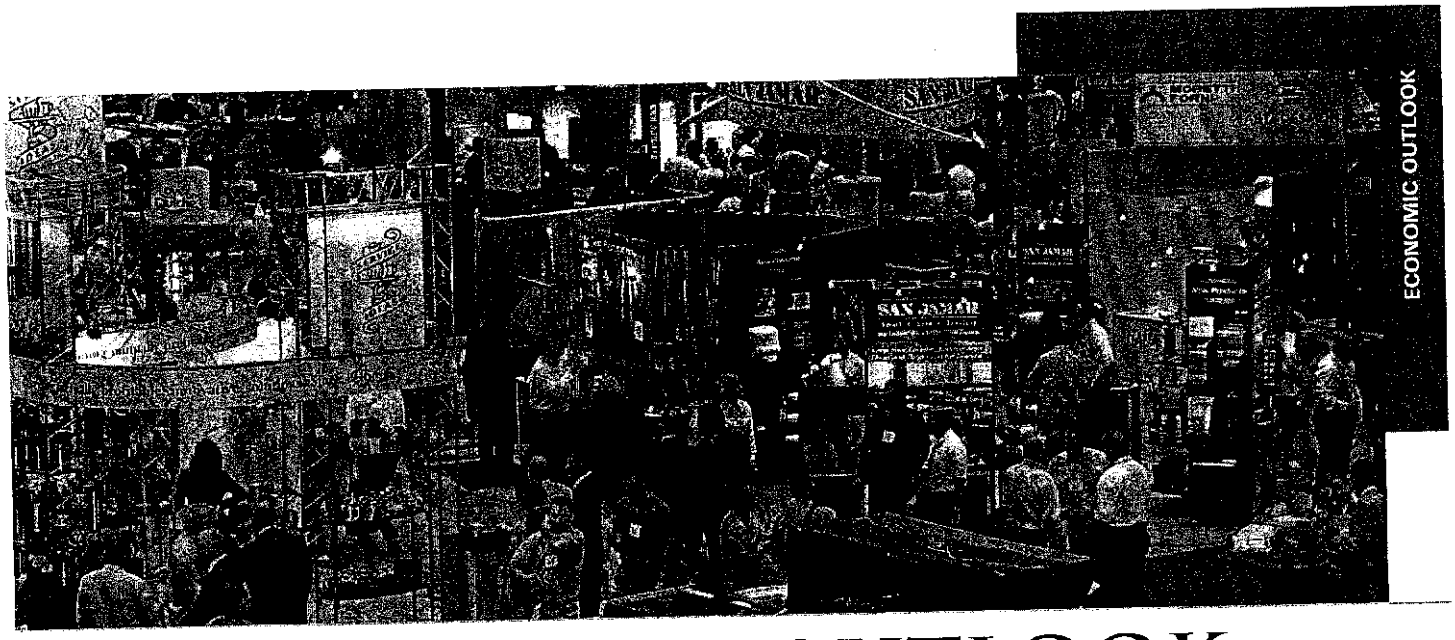
Increased attention to energy-efficiency. Higher energy prices will force belt-tightening among restaurant operators as well as consumers. Roughly four of five restaurateurs surveyed in October 2005 anticipate utility expenses will eat more of their bottom line next year. A majority of operators report they updated refrigeration, air conditioning and heating systems in the last two years. Look for stepped-up efforts in 2006 to conserve energy and reduce costs.

9.

Restaurants as homes away from home. With growing demand from plugged-in Americans accustomed to operating in a 24/7 society for amenities such as televisions and wireless Internet access, look for restaurants to bring more of these features to the table. Combined with rapid-pace remodeling and décor changes aimed at softening the ambiance of many quickservice operations, many restaurateurs are working hard to make customers feel as "at home" as possible.

10.

A bright future. The future of the restaurant industry is bright, not only for 2006, but beyond. Naturally, challenges will occur—ranging from recruitment to higher energy costs—but the spirit, innovation and flexibility that restaurant operators have demonstrated over the past decades will continue to triumph. Consider this basic fact: In 1970, restaurant-industry sales were $43 billion. Just over 35 years later, restaurant-industry sales are expected to surpass the half-trillion-dollar mark. The restaurant industry truly has become an economic juggernaut.



ECONOMIC OUTLOOK

SECTION HIGHLIGHTS

- Restaurants likely will perform against a positive economic backdrop in 2006, with continued GDP growth, steady income growth and solid job growth expected.
- Energy costs will remain a challenge in 2006, affecting both consumer spending and restaurant expenses.
- After three years of steady growth, wholesale food prices are expected to decline in 2006.
- Menu-price growth in 2006 is expected to remain below the inflation rate.
- The National Restaurant Association Restaurant Performance Index shows the industry entering 2006 on an improved note.

Despite many challenges in 2005, the national economy registered relatively solid growth. Looking ahead to 2006, although gas and energy prices will continue to pose a risk, the restaurant industry will benefit from another positive economic environment.

2005 in Review

The nation's economic landscape took some external shocks in 2005, including record-high gas and energy prices, major hurricanes and lingering uncertainties over war and terrorism. Yet in spite of the challenges, the resilient economy continued to grow at a healthy rate.

The U.S. gross domestic product grew at a solid 3.6 percent inflation-adjusted rate in 2005. The 2005 performance was down slightly from 2004's robust gain of 4.2 percent, which represented the strongest increase in national output in five years.

Economic growth was driven by solid gains in consumer spending, which represents about two-thirds of total economic activity in the United States. Business investment in equipment and software also continued to surge in 2005, increasing at a double-digit rate for the second consecutive year.

In addition to solid gains in consumer and business spending, the economy added jobs at a robust pace in 2005. The economy added jobs in 30 consecutive months between June 2003 and November 2005—an increase of nearly 4.5 million jobs.

Outlook for 2006

While the economic horizon is not without risks, the restaurant industry will likely perform against an improving economic backdrop in 2006.

Three key indicators of restaurant performance are expected to post accelerating growth in 2006, which bodes well for continued growth in restaurant-industry sales.

- **Gross domestic product:** The National Restaurant Association projects real GDP to increase at a solid 3.7 percent rate in 2006, just above the 3.6 percent gain registered in 2005.
- **Disposable personal income:** Disposable personal income—an important indicator of restaurant-industry growth—is expected to increase at a 3 percent inflation-adjusted rate in 2006, a solid improvement over the 1.6 percent gain posted in 2005. Stronger disposable-income growth is a positive sign for the restaurant industry, where a large proportion of growth is driven by cash on hand.
- **Jobs:** The U.S. economy is projected to add jobs at a 1.9 percent rate in 2006, stronger than the 1.6 percent gain registered in 2005 and the strongest job growth in six years.

At the state level

A number of states are expected to significantly exceed the national growth rates for jobs and disposable personal income.

For example, compared to the expected 1.9 percent job-growth rate for the nation, the strongest rates of job growth at the state level are expected in 2006 in Nevada (3.7 percent), Florida (3.5 percent), and Arizona (3.2 percent).

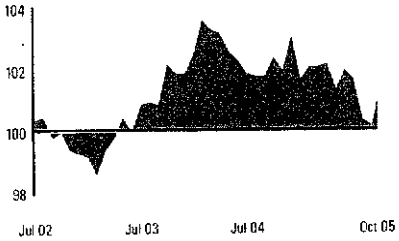
Similarly, where real personal disposable income is projected to grow at a rate of 3 percent nationally, states such as Arizona (4.6 percent), Tennessee (4.4 percent), Alaska (4.2 percent), Texas and Colorado (4.1 percent), and Florida (4 percent) will see even quicker gains.

The National Restaurant Association's projections for state-by-state growth in jobs, disposable personal income and population can be found on Page 34 as part of the *Forecast's* state and regional outlook.

Restaurant Performance Index

Industry Enters 2006 On an Improved Note

National Restaurant Association Restaurant Performance Index



Source: National Restaurant Association

According to the National Restaurant Association Restaurant Performance Index, restaurateurs are entering 2006 on an improved note.

With the lingering impact of high gas prices and hurricanes, the index trended downward in the third quarter of 2005, hitting a 27-month low of 100.2 in September.

However, the RPI rebounded strongly in October, jumping to 101.5. October marked the 30th consecutive month that the index stood above 100. Any level above 100 signals expansion in the composite index, which is based on eight key restaurant-industry indicators.

As a result, the outlook for the restaurant industry improved sharply going into 2006.

What is the Restaurant Performance Index?

The National Restaurant Association Restaurant Performance Index is a statistical barometer that tracks the health of and outlook for the U.S. restaurant industry. The RPI is based on responses to the Association's Restaurant Industry Tracking Survey, which is fielded monthly among restaurant operators nationwide. The composite index is based on eight leading restaurant-industry indicators. Four indicators provide a snapshot of recent activity; the other four measure operators' expectations for the future.

What does the Restaurant Performance Index's numerical value represent?

The National Restaurant Association Restaurant Performance Index is constructed so the health of the restaurant industry is measured in relation to a steady-state level of 100. Index values above 100 indicate that key restaurant-industry indicators are in a period of expansion. Index values under 100 represent a period of contraction for key restaurant-industry indicators.

Where can I get more information about the Restaurant Performance Index?

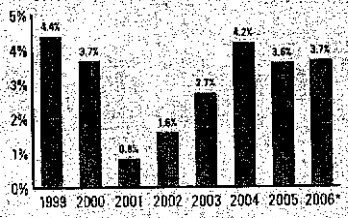
Visit the National Restaurant Association's Restaurant TrendMapper at www.restaurant.org/trendmapper.

U.S. ECONOMY LOOKS HEALTHY FOR 2006

Economic Growth

The national economy is expected to post moderate growth in 2006.

Real growth in GDP



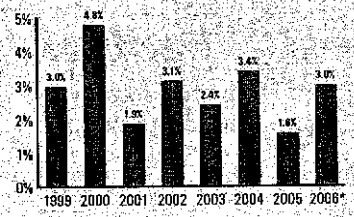
* projected

Source: Bureau of Economic Analysis, National Restaurant Association

Income Growth

Disposable personal-income growth is forecast to be stronger in 2006.

Real growth in disposable personal income



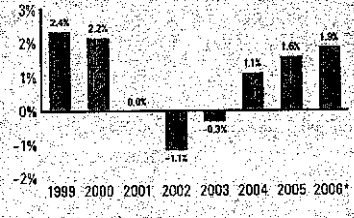
* projected

Source: Bureau of Economic Analysis, National Restaurant Association

Job Growth

The U.S. economy will add jobs in 2006.

U.S. job growth



* projected

Source: Bureau of Labor Statistics, National Restaurant Association

Energy Outlook

SOARING ENERGY PRICES TOOK THEIR TOLL on the nation's economy in 2005. Prices at the pump, home heating costs and utility bills left customers with less disposable income. Restaurateurs' expenses went up as operational costs rose and suppliers passed along increases.

Looking ahead, restaurant operators are bracing for elevated energy costs in 2006. According to a National Restaurant Association survey, more than eight in 10 fullservice-restaurant operators and 78 percent of quickservice operators expect to allocate a larger proportion of their budget to utility expenses in 2006.

WATCH THE CHILLY MONTHS: Consumers can expect a double whammy in early 2006. Americans will pay an average of $2.37 for a gallon of gas during the first quarter of 2006, forecasts the Energy Information Administration, 43 cents more per gallon than they paid in the first quarter of 2005. The higher prices come at the same time as the EIA forecasts record-high heating bills.

2005 action, plus the 2006 outlook

• **Gas prices:** Drivers had to contend with rising pump prices for most of 2005. The average price of a gallon of gas hit a record $3.07 in early September, $1.22 higher than the same period the year before. Prices later eased somewhat but remained well above previous-year levels.

Pump prices should be less volatile in 2006 but are not likely to fall below $2.30 for a gallon of regular gasoline, says the Energy Information Administration. Look for pump prices to average $2.43 in 2006, up from $2.29 in 2005 and $1.85 in 2004, the EIA says.

• **Home heating:** Home heating bills are expected to hit record levels this winter. The EIA forecasts that homes heated with natural gas will pay 41 percent more for the 2005–2006 winter season (October through March) compared to the previous winter. Homes fueled with heating oil could see a 27 percent hike; and homes heated with propane could pay 21 percent more. Homes heated with electricity will get a relative break, with bills expected to increase a comparatively modest 5 percent above the 2004–2005 winter.

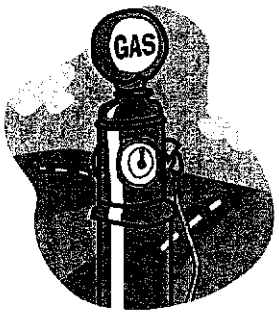
TAKING STEPS TO CONSERVE ENERGY AND REDUCE COSTS

A majority of restaurants updated refrigeration, air conditioners or heating systems in the last two years to conserve energy, according to an October 2005 National Restaurant Association survey

Proportion of restaurant operators who took the following actions for energy conservation in the past two years

	Family dining	Casual dining	Fine dining	Quickservice
Updated refrigeration, air conditioners or heating systems	66%	70%	57%	52%
Purchased energy-saving equipment	59%	57%	49%	43%
Modified lighting fixtures	47%	48%	40%	42%
Installed water-saving warewashers and/or toilet fixtures	39%	40%	38%	23%

Source: National Restaurant Association



Feeling the Pinch

Restaurateurs and consumers alike saw the impact of soaring gas prices on disposable income.

Restaurant report: Nine out of 10 quickservice-restaurant operators and two-thirds of fullservice-restaurant operators surveyed by the National Restaurant Association in October 2005 said the recent increase in gasoline prices had a negative impact on their business.

Consumer report: Forty-five percent of adults surveyed by the National Restaurant Association in October 2005 said they had cut back on purchases of food at restaurants or fast-food places as a result of rising gas and energy prices. Most adults cut back in some way, according to the survey: Three of four reduced spending in at least one of the following areas.

Proportion of adults who cut back on their spending in the following areas as a result of rising gas and energy prices

Spending on entertainment, such as movies or sporting events	47%
Purchases of gasoline	45%
Purchases of food at restaurants or fast-food places	45%
Shorten or postpone a weekend or day trip	43%
Purchases of clothing	41%
Purchases of household items, such as televisions or appliances	37%
Shorten or postpone a vacation	37%
Purchases of groceries	20%
Purchases of health-related items, such as prescription drugs	12%

Source: National Restaurant Association, October 2005

Food and Menu Prices

RISING FOOD PRICES continued to squeeze restaurant margins in 2005, although government data show that food prices rose at a somewhat lower rate than in previous years.

Wholesale food prices increased at a 1.8 percent rate in 2005, a relatively modest increase compared to the 5.5 percent and 5.6 percent gains registered in 2003 and 2004.

During the three-year period from 2002 to 2005, wholesale food prices jumped more than 13 percent, the strongest three-year gain in 15 years.

As a result of the recent gains in wholesale food prices, menu-price growth continued to creep up in 2005. After increasing at a 3 percent rate in 2004, menu prices rose 3.1 percent in 2005. That was the strongest growth since a 3.4 percent increase in 1991, but it was below the overall inflation rate, which came in at 3.4 percent in 2005.

Outlook for 2006

Wholesale food prices: After three years of steady growth in wholesale food prices, restaurant operators likely will get a modest reprieve in 2006. Wholesale food prices are projected to decline at a 0.5 percent rate in 2006, the first drop in four years. Two major meat commodities—beef and pork—are expected to register declines in 2006, while downward pressure also is expected on dairy prices.

Menu prices: Although restaurant operators are expected to benefit from a modest decline in wholesale food prices in 2006, energy prices will remain relatively strong. As a result, menu prices are projected to grow at a moderate 2.7 percent in 2006—again below the overall inflation rate, which is expected to be about 3.2 percent in 2006.

Commodity prices: Here is a closer look at trends in some of the major food commodities, based on information from the U.S. Department of Agriculture:

• **Beef:** After reaching record highs in 2004, market prices for beef held relatively steady in 2005. Although beef production rose about 1 percent in 2005, a relative shortage of Choice beef kept pressure on prices. Looking ahead to 2006, beef production is expected to increase 5 percent. Although demand will remain strong, market prices are projected to decline in the range of 3 percent to 11 percent.

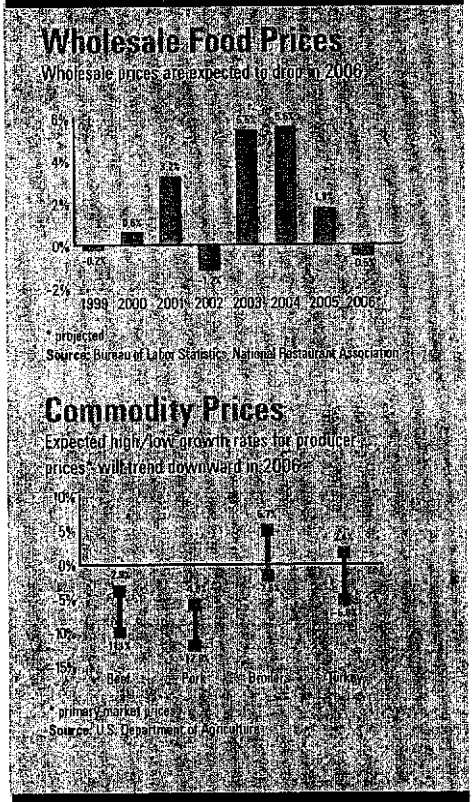
• **Pork:** After surging 33 percent in 2004, market prices for pork eased somewhat in 2005 amid stronger production and lower per-capita consumption levels. While pork production is projected to rise about 2 percent in 2006, exports also are expected to remain strong. As a result, market prices for pork are projected to decline in the 5 percent to 13 percent range but still remain well above their 2003 levels.

• **Poultry:** Broiler production posted steady gains in 2004 and 2005, and the trend is expected to continue in 2006. Along with production gains, broiler exports are expected to be sharply higher. With domestic demand for broilers remaining strong, market prices are expected to be flat to slightly higher in 2006. Market prices for turkey are projected to be flat to slightly lower in 2006 as stronger production and expected lower per-capita consumption combine with higher exports.

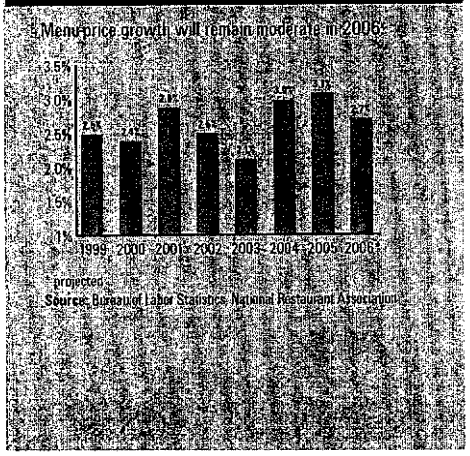
• **Dairy:** After registering a 3.5 percent increase in 2005, milk production is expected to grow 2.6 percent in 2006. Although strong domestic and foreign demand absorbed much of the excess supply in 2005, that should not be the case in 2006. As a result, wholesale prices for milk, cheese and butter are all expected to register notable declines in 2006.

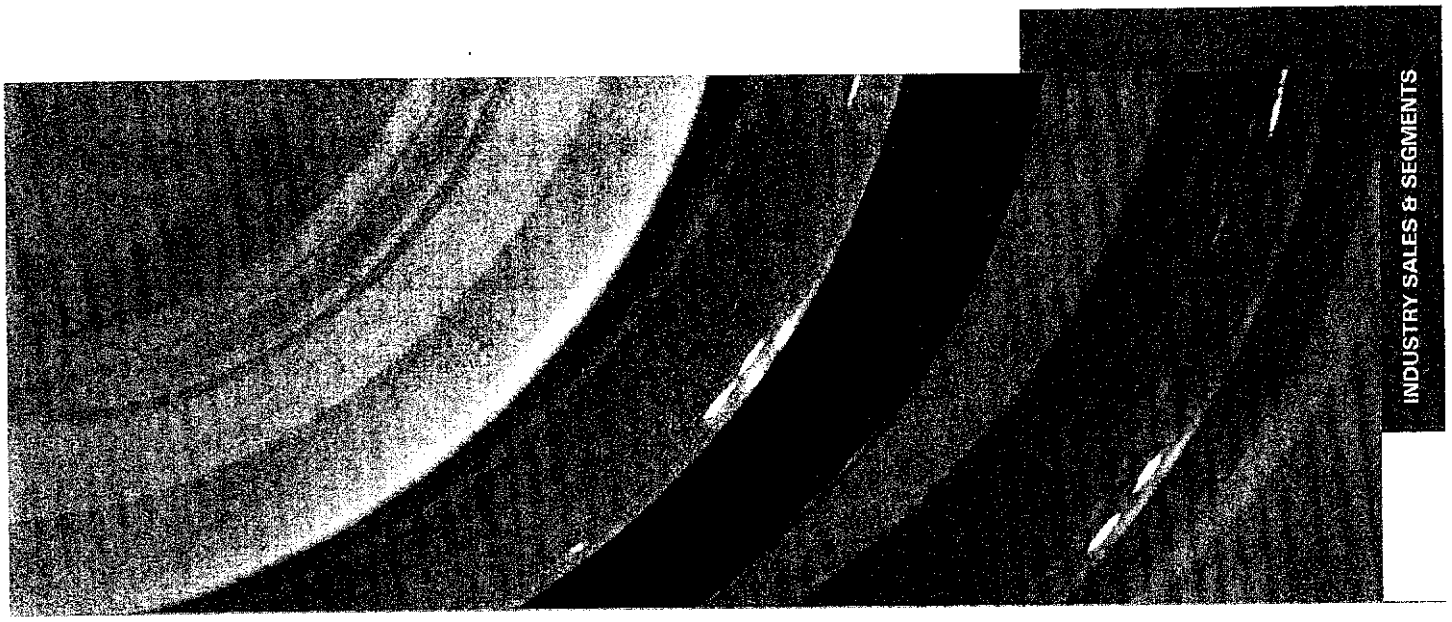
WHAT'S AHEAD

Food Prices



Menu Prices





INDUSTRY SALES & SEGMENTS

SECTION HIGHLIGHTS

- Restaurant-industry sales are forecast to reach a record $511.1 billion in 2006, an increase of 5.1 percent over 2005, or 2.5 percent in real (inflation-adjusted) terms.
- Sales at fullservice restaurants are projected to reach $173.4 billion in 2006, a solid 5.2 percent over 2005, for a real growth rate of 2.5 percent.
- Quickservice restaurants are projected to post sales of $142.4 billion in 2006, a 5 percent increase over 2005, for a real growth rate of 2.3 percent.
- Managed-services providers account for growing market share in many segments in which they operate.

Broadly defined, the "restaurant industry" is all meals and snacks prepared away from home, including all takeout meals and beverages.

A closer look shows the restaurant industry's complexity. The National Restaurant Association divides the restaurant industry into three broad groups: commercial restaurant services, noncommercial restaurant services and military restaurant services.

Within these groups, the Association tracks growth and trends in at least 39 distinct segments in its annual *Restaurant Industry Forecast.*

The 39 segments include fullservice restaurants, quickservice operations, neighborhood taverns and catering businesses. The restaurant industry encompasses food-and-beverage operations at factories, schools, hospitals and sports complexes.

It extends to foodservice at military bases and officers' clubs, and foodservice operations within retail or convenience stores.

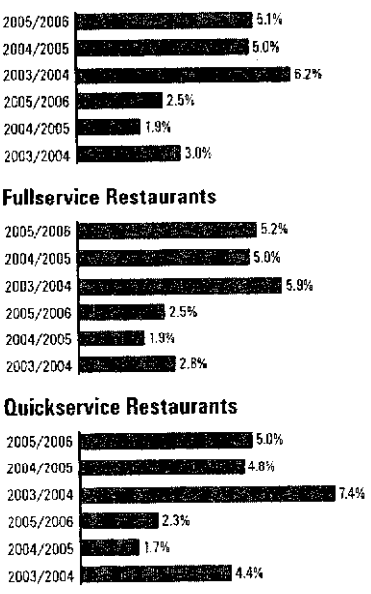
This section of the 2006 *Restaurant Industry Forecast* offers data on sales in key restaurant-industry segments, as well as analysis of some of the forces shaping these sales, particularly in the fullservice and quickservice segments.

Restaurant-Industry Percent Change In Dollar Sales

Industry real growth in 2006 is projected to be 2.5 percent

■ Percent change in current dollars

■ Percent change in real dollars



RESTAURANT INDUSTRY
FOOD-AND-DRINK SALES
PROJECTED THROUGH 2006

	2003 Estimated F&D Sales ($000)	2005 Projected F&D Sales ($000)	2006 Projected F&D Sales ($000)	'05–'06 Percent Change	'05–'06 Percent Real Growth Change	'03–'06 Compound Annual Growth Rate
GROUP I—COMMERCIAL RESTAURANT SERVICES[1]						
EATING PLACES						
Fullservice restaurants[2]	$148,257,957	$164,855,435	$173,427,918	5.2 %	2.5 %	5.4 %
Limited-service (quickservice) restaurants[3]	120,484,272	135,611,313	142,391,879	5.0	2.3	5.7
Cafeterias, grill-buffets and buffets[4]	5,059,218	5,103,638	5,215,918	2.2	-0.5	1.0
Social caterers	4,604,484	5,301,272	5,704,169	7.6	4.9	7.4
Snack and nonalcoholic beverage bars	14,363,015	16,996,193	18,418,622	8.4	5.7	8.6
TOTAL EATING PLACES	$292,768,946	$327,867,851	$345,158,506	5.3 %	2.6 %	5.6 %
Bars and taverns	13,950,234	15,132,042	15,737,324	4.0	1.1	4.1
TOTAL EATING-AND-DRINKING PLACES	$306,719,180	$342,999,893	$360,895,830[5]	5.2 %	2.5 %	5.6 %
MANAGED SERVICES[6]						
Manufacturing and industrial plants	$6,062,990	$6,570,196	$6,846,144	4.2 %	1.5 %	4.1 %
Commercial and office buildings	2,055,868	2,238,577	2,332,597	4.2	1.5	4.3
Hospitals and nursing homes	3,095,436	3,593,782	3,854,819	7.3	4.9	7.6
Colleges and universities	7,776,152	9,206,790	9,906,506	7.6	5.0	8.4
Primary and secondary schools	3,428,954	4,238,581	4,721,779	11.4	8.5	11.3
In-transit restaurant services (airlines)	1,746,113	1,903,144	1,973,560	3.7	1.0	4.2
Recreation and sports centers	3,798,091	4,191,205	4,372,802	4.3	1.6	4.8
TOTAL MANAGED SERVICES	$27,963,604	$31,942,275	$34,008,207	6.5 %	3.8 %	6.7 %
LODGING PLACES						
Hotel restaurants	$20,991,052	$23,341,378	$24,601,812	5.4 %	2.7 %	5.4 %
Other accommodation restaurants	353,118	381,932	396,445	3.8	1.1	3.9
TOTAL LODGING PLACES	$21,344,170	$23,723,310	$24,998,257	5.4 %	2.7 %	5.4 %
Retail-host restaurants[7]	20,297,087	23,526,795	25,284,813	7.5	4.8	7.6
Recreation and sports[8]	10,168,552	10,881,982	11,364,481	4.4	1.7	3.8
Mobile caterers	820,283	908,674	953,199	4.9	2.2	5.1
Vending and nonstore retailers[9]	9,120,206	9,750,777	10,101,805	3.6	1.5	3.5
TOTAL—GROUP I	**$396,433,082**	**$443,733,706**	**$467,606,592**	**5.4 %**	**2.7 %**	**5.7 %**
GROUP II—NONCOMMERCIAL RESTAURANT SERVICES[10]						
Employee restaurant services[11]	$665,095	$540,910	$516,289	-4.6 %	-6.2 %	-8.1 %
Public and parochial elementary, secondary schools	5,104,236	5,103,227	5,059,094	-0.9	-3.8	-0.3
Colleges and universities	5,379,500	5,444,491	5,384,702	-1.1	-3.6	0.0
Transportation	1,258,317	1,522,818	1,606,992	5.5	4.0	8.5
Hospitals[12]	11,212,636	12,041,268	12,402,506	3.0	0.6	3.4
Nursing homes, homes for the aged, blind, orphans and the mentally and physically disabled[13]	5,836,959	6,241,524	6,397,562	2.5	0.1	3.1
Clubs, sporting and recreational camps	7,204,774	8,074,505	8,526,890	5.6	2.8	5.8
Community centers	1,495,457	1,663,289	1,721,504	3.5	2.2	4.8
TOTAL—GROUP II	**$38,156,974**	**$40,632,032**	**$41,615,539**	**2.4 %**	**0.0 %**	**2.9 %**
TOTAL—GROUPS I AND II	**$434,590,056**	**$484,365,738**	**$509,222,131**	**5.1 %**	**2.5 %**	**5.4 %**
GROUP III—MILITARY RESTAURANT SERVICES[14]						
Officers' and NCO clubs (Open mess)	$1,065,099	$1,188,855	$1,255,431	5.6 %	2.9 %	5.6 %
Military exchanges	511,240	545,452	577,088	5.8	3.1	4.1
TOTAL—GROUP III	**$1,576,339**	**$1,734,307**	**$1,832,519**	**5.7 %**	**3.0 %**	**5.1 %**
GRAND TOTAL	**$436,166,395**	**$486,100,045**	**$511,054,650**	**5.1 %**	**2.5 %**	**5.4 %**

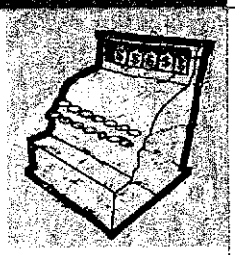
Source: National Restaurant Association

FOOTNOTES

1. Data are given only for establishments with payroll.
2. Waiter/waitress service is provided, and the order is taken while the patron is seated. Patrons pay after they eat.
3. Patrons generally order at a cash register or select items from a food bar and pay before they eat.
4. Formerly commercial cafeterias.
5. Food-and-drink sales for nonpayroll establishments should total $13,138,613,000 in 2006.
6. Also referred to as onsite foodservice and foodservice contractors.
7. Includes drug- and proprietary-store restaurants, general-merchandise-store restaurants, variety-store restaurants, food-store restaurants and grocery-store restaurants (including a portion of delis and all salad bars), gasoline-service-station restaurants and miscellaneous retailers.
8. Includes movies, bowling lanes, recreation and sport centers.
9. Includes sales of hot food, sandwiches, pastries, coffee and other hot beverages.
10. Business, educational, governmental or institutional organizations that operate their own restaurant services.
11. Includes industrial and commercial organizations, seagoing and inland-waterway vessels.
12. Includes voluntary and proprietary hospitals; long-term general, TB, nervous and mental hospitals; and sales or commercial equivalent to employees in state and local short-term hospitals and federal hospitals.
13. Sales (commercial equivalent) calculated for nursing homes and homes for the aged only. All others in this grouping make no charge for food served, either in cash or in kind.
14. Continental United States only.

Restaurant Industry Food-and-Drink Sales: Historical Trends

INDUSTRY SALES TRENDS, 2002–2006



For 37 years the National Restaurant Association has projected annual sales for up to 40 segments of the restaurant industry through the annual *Restaurant Industry Forecast*. Association economists also take a close look back, in an ongoing process of providing final estimates for sales in previous years. This chart shows the NRA's updated estimates on sales for key restaurant-industry segments from 2002 through 2004, along with the projected estimates for 2005 and 2006. For further historical data on restaurant industry sales, subscribe to the Association's online Restaurant TrendMapper at www.restaurant.org/trendmapper.

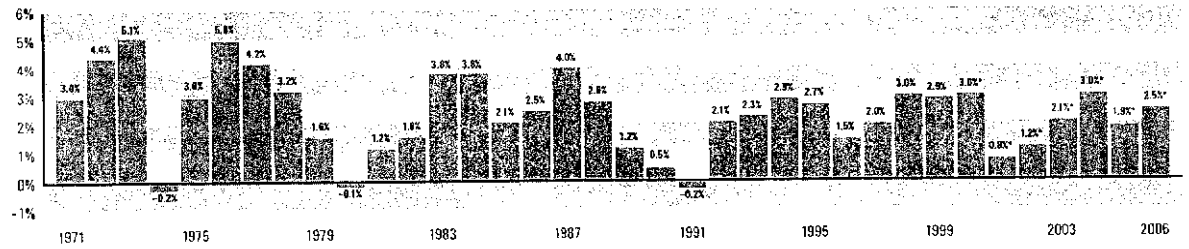
Restaurant Industry Food-and-Drink Sales, 2002–2006 ($000)

	2002*	2003*	2004*	2005**	2006**
COMMERCIAL RESTAURANT SERVICES	$379,329,492	$396,433,082	$421,883,206	$443,733,706	$467,606,592
Percent change from previous year		4.5%	6.4%	5.2%	5.4%
Eating places	279,753,559	292,768,946	312,060,435	327,867,851	345,158,506
Percent change from previous year		4.7%	6.6%	5.1%	5.3%
Fullservice restaurants	141,873,643	148,257,957	157,005,176	164,855,435	173,427,918
Percent change from previous year		4.5%	5.9%	5.0%	5.2%
Limited-service restaurants	115,075,713	120,484,272	129,400,108	135,611,313	142,391,879
Percent change from previous year		4.7%	7.4%	4.8%	5.0%
Cafeterias, grill-buffets and buffets	5,183,625	5,059,218	5,003,567	5,103,638	5,215,918
Percent change from previous year		-2.4%	-1.1%	2.0%	2.2%
Social caterers	4,327,523	4,604,484	4,936,007	5,301,272	5,704,169
Percent change from previous year		6.4%	7.2%	7.4%	7.6%
Snack and nonalcoholic beverage bars	13,293,055	14,363,015	15,715,577	16,996,193	18,418,622
Percent change from previous year		8.0%	9.4%	8.1%	8.4%
Bars and taverns	13,413,687	13,950,234	14,564,044	15,132,042	15,737,324
Percent change from previous year		4.0%	4.4%	3.9%	4.0%
TOTAL EATING-AND-DRINKING PLACES	293,167,246	306,719,180	326,624,479	342,999,893	360,895,830
Percent change from previous year		4.6%	6.5%	5.0%	5.2%
NONCOMMERCIAL RESTAURANT SERVICES	36,776,696	38,156,974	39,592,441	40,632,032	41,615,539
Percent change from previous year		3.8%	3.8%	2.6%	2.4%
MILITARY RESTAURANT SERVICES	1,512,665	1,576,339	1,647,275	1,734,307	1,832,519
Percent change from previous year		4.2%	4.5%	5.3%	5.7%
TOTAL INDUSTRY SALES	417,618,853	436,166,395	463,122,922	486,100,045	511,054,650
Percent change from previous year		4.4%	6.2%	5.0%	5.1%

*Estimate **Projection
Source: National Restaurant Association

Restaurant-Industry Real Sales Growth, 1971–2006

2006 is expected to mark the 15th consecutive year of real sales growth for the restaurant industry.



*Growth rates are estimated for 1998–2004 and projected for 2005–2006. Providing final estimates for restaurant-industry sales from previous years is an ongoing process. The National Restaurant Association's Restaurant TrendMapper offers updated sales estimates as they become available. Visit www.restaurant.org/trendmapper to learn more.

Source: National Restaurant Association

Fullservice Outlook

FULLSERVICE RESTAURANTS EXPECTED TO GENERATE $173.4 BILLION IN SALES IN 2006

The National Restaurant Association projects that sales at fullservice restaurants will reach $173.4 billion in 2006, a 5.2 percent increase over their 2005 sales level of $164.9 billion.

The projected sales increase will be an improvement over the 5 percent gain posted in 2005 but less than the robust 5.9 percent sales increase registered in 2004.

On an inflation-adjusted basis, the fullservice segment's projected growth rate of 2.5 percent for 2006 would be a solid improvement over 2005's 1.9 percent increase but slightly below 2004's 2.8 percent real gain.

Sales drivers: Economy, baby boomers, satisfied customers

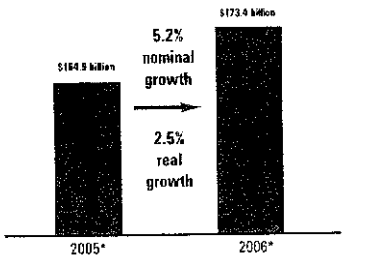
Sales in the fullservice-restaurant segment will be driven by a solid economy, a maturing baby-boom generation and fullservice-restaurant operators' ability to meet and exceed the evolving needs of customers across all age groups for freshly prepared food away from home.

With the oldest baby boomers set to turn 60 in 2006 and the youngest in their early 40s, members of this generation are in their peak earning years, which bodes well for restaurants.

Having literally grown up with the industry—going back to the birth of quickservice in the 1950s—the boomers are a restaurant-savvy slice of the populace who will continue to play a significant role in shaping fullservice-restaurant sales and trends, especially as more of the baby boomers turn their attention to health and wellness.

It's not just baby boomers who are dining-out sophisticates, though. Across all age groups, diners' appetites are growing for more options and increasingly sophisticated taste and flavor sensations. Responsive tableservice-restaurant operators have stepped up their ability to deliver. The basic fact: Two of three adults report their favorite restaurant foods provide flavor and taste sensations that can't easily be duplicated in their home kitchens.

Tableservice-Restaurant Sales



* projected
Source: National Restaurant Association

Couple this development with the greater accessibility of tableservice restaurants to the typical consumer, and it is a vibrant recipe for continued long-term success in the fullservice-restaurant segment. In fact, more than three of five adults agree there are more restaurants they enjoy going to now compared to two years ago.

BUSINESS IS LOOKING UP

Many fullservice-restaurant operators think business will be better in 2006.

Percent of fullservice operators, by type of operation, who expect business to be better in 2006 than 2005, or the same as 2005

	Business better than 2005	Business same as 2005
Family dining	48%	37%
Casual dining	59%	31%
Fine dining	69%	25%

Source: National Restaurant Association, 2005

Top Challenges for Fullservice Operators In 2006

What is the top challenge you expect to face in 2006?

Percent of fullservice-restaurant operators, by type of operation, who mention:

	Fullservice segment		
	Family dining	Casual dining	Fine dining
Recruiting and retaining employees	20%	15%	7%
Gas and energy costs	15%	16%	12%
Competition	9%	16%	13%
Building and maintaining sales volume	11%	13%	13%
The economy	11%	5%	12%
Operational costs	10%	8%	9%
Labor costs	5%	5%	11%
Profitability	4%	5%	5%
Food costs	5%	4%	3%

Source: National Restaurant Association, 2005

Fullservice restaurants get in the game: takeout and delivery

Time-strapped and convenience-seeking Americans are bringing a greater variety of tableservice-restaurant fare into the home, further blurring the line between dining at home and dining away from home.

• **Fullservice-restaurant takeout.** More than nine in 10 family- and casual-dining operators offer takeout, according to a recent National Restaurant Association survey. Nearly half of these expect takeout sales will represent a larger proportion of their sales in 2006 compared to 2005. Fine-dining operators also see opportunity: Two-thirds offer a takeout option, and roughly one-third of them expect takeout to represent a larger proportion of sales in 2006.

On the customer side, nearly two of five adults reported that they bought takeout foods from a fullservice restaurant in the past year. The use of takeout from fullservice restaurants is much more common among younger adults and adults with children in their household. Roughly half of adults between the ages of 18 and 34 used takeout at a fullservice restaurant in the past year, compared to just 25 percent of adults age 55 and older.

According to the Association survey, consumers are looking for even greater ease. More than half (56 percent) of adults surveyed said they would likely use curbside pickup if their favorite tableservice restaurant offered the option. Restaurant operators also might want to take another look at their takeout packaging: Asked to rate their satisfaction with the takeout packaging provided by fullservice restaurants, only 75 percent of customers—a relatively low percentage, compared to customers' ratings of other tableservice-restaurant attributes—said they were satisfied.

• **Fullservice-restaurant delivery.** Most fullservice restaurants don't offer delivery. But of the fullservice operators that do, four out of 10 see it accounting for a bigger share of sales in 2006. In recent National Restaurant Association research, 58 percent of all adults—and more than 70 percent of adults aged 18 to 34—reported they would be likely to use a delivery option if their favorite fullservice restaurant offered it.

Productivity pressure

In 2006, fullservice-restaurant operators will engage in a heightened effort to control costs and increase their operations' productivity.

• **Add self-serve options:** With a receptive population, more tableser-

Fullservice Restaurants: Home Away from Home

Fullservice restaurants not only serve as America's dining rooms; increasingly, they're becoming America's family rooms.

In a multi-tasking society, the National Restaurant Association foresees more fullservice restaurants taking steps to become an extension of the physical home environment.

Internet access is one important area. Twenty-seven percent of adults recently surveyed by the National Restaurant Association said they'd likely use wireless Internet access if their favorite tableservice restaurant offered it. The percentage rose to 52 percent for adults aged 18 to 24.

Table-top televisions spark interest as well. One in four adults surveyed by the Association said they would likely watch a small television at their table if their favorite fullservice restaurant offered it.

They Want Their TV

Percentage of adults who say they would be likely to use the following options if their favorite tableservice restaurant offered it

	All Adults	Age 18 to 24	Age 25 to 34	Age 35 to 44	Age 45 to 54	Age 55 to 64	Age 65 and older	Adults with no children in household	Adults with children in household
Likely to use curbside takeout	56%	73%	71%	59%	51%	43%	40%	50%	67%
Likely to use delivery option	58%	72%	74%	69%	58%	41%	32%	52%	70%
Likely to use wireless Internet access	27%	52%	42%	24%	22%	12%	12%	22%	34%
Likely to use a small TV at the table	25%	50%	37%	21%	19%	13%	11%	23%	28%
Likely to use a customer-activated ordering/ payment terminal	43%	62%	56%	49%	35%	33%	25%	38%	51%

Source: National Restaurant Association

vice operators are likely to add self-service options. According to recent National Restaurant Association research, 43 percent of customers would likely use customer-activated ordering and payment terminals at their tables if their favorite fullservice restaurants offered them. The level of interest is even higher among younger adults.

• **Make better use of existing assets to build new revenue streams.** For example, banquet and catering business not only help restaurateurs meet the needs of customers but also use existing equipment, staff and facilities to help build new sales. About two-thirds of fullservice operators—including more than eight in 10 fine-dining operators—offer banquet facilities. More than half of those who offer banquet facilities expect that banquets will represent a larger proportion of their total sales in 2006.

Catering services are offered by approximately half of family- and casual-dining operators, and about seven in 10 fine-dining operations. Of those fullservice operations that offer catering, roughly three of five operators expect catering to represent a larger proportion of their sales in 2006, compared to 2005. Only 5 percent of operators expect catering to represent a smaller proportion of sales in 2006.

Online marketing gains solid footing

The Internet is altering forever the way customers find and patronize restaurant establishments.

A recent National Restaurant Association survey shows that more than 36 percent of consumers have visited a restaurant's Web site.

Thirty-one percent of consumers have viewed a restaurant's menu online, up from 9 percent in 1999. Eleven percent have used the Internet to place an order, and 10 percent have used it to make a restaurant reservation.

With more customers going online for information about restaurants, are restaurants ready? About seven in 10 fullservice-restaurant operators have a Web site, up from approximately one-half of fullservice operators five years ago. Fine-dining operators are much more likely to have a Web site than their family- and casual-dining counterparts; 90 percent of fine-dining operators have a site, compared to 67 percent of casual-dining and 55 percent of family-dining operators.

Whether restaurateurs update their sites often enough is another question: Roughly one in four update their sites monthly, while another one in four make changes only a few times a year.

Restaurateurs are making the move into e-mail marketing. Seven in 10 fine-dining restaurant operators report that they plan to use e-mail marketing or e-mail newsletters to market their restaurants in 2006. The percentages were much lower for other tableservice restaurants. Only 28 percent of family-dining operators and 38 percent of casual-dining operators plan to do e-mail marketing.

Restaurant Customers Are Using the Internet

Proportion of adults who have used the Internet for the following restaurant-related activities

	2005	1999
Visit a restaurant's Web site	36%	n/a
Find out information about a restaurant they haven't patronized before	35%	13%
View a restaurant's menu	31%	9%
Place an order at a restaurant for dining-in, carryout, or delivery	11%	3%
Make reservations at a restaurant	10%	3%

Source: National Restaurant Association

DRIVING CUSTOMER TRAFFIC

LOADING UP ON GIFT CARDS

As illustrated by their No. 1 ranking by consumers (see page 23), restaurant gift cards are growing in popularity. About four of five fullservice operators offer gift cards. More than half of the casual- and fine-dining operators that offer gift cards expect them to represent a larger proportion of total sales in 2006. Among family-dining operators, 41 percent expect gift cards to represent a larger proportion of sales in 2006.

REWARDING LOYAL CUSTOMERS

Roughly one of four fullservice operators offers a customer-loyalty and reward program—e.g., a program that uses the enticement of a gift certificate or discount, for example, to reward customers who have spent a certain amount at the restaurant. Another one of 10 fullservice restaurants plan to offer frequent-diner programs in 2006.

The frequent-diner trend is expected to grow. Twenty-three percent of adults participate in frequent-diner programs at restaurants, fast-food places or coffee shops, according to recent Association research. A large portion of adults (46 percent) say they would be more likely to patronize a restaurant if it offered a customer loyalty and reward program.

Quickservice Outlook

QUICKSERVICE RESTAURANTS EXPECTED TO POST SALES OF $142.4 BILLION IN 2006

The quickservice-restaurant segment is expected to post sales of $142.4 billion in 2006, a 5 percent increase over its 2005 sales of $135.6 billion.

The projected growth in quickservice-restaurant sales will be stronger than the 4.8 percent gain registered in 2005, but well below the healthy 7.4 percent increase registered in 2004.

In real terms, quickservice-restaurant sales are projected to advance at a 2.3 percent rate in 2006, up from a 1.7 percent inflation-adjusted increase in 2005 but more than two percentage points below the strong 4.4 percent real gain registered in 2004.

The National Restaurant Association defines quickservice restaurants as operations where patrons generally order at a cash register or select items from a food bar and pay before they eat.

Solid gains come despite heated competition

Competition is heated throughout the restaurant industry but sizzling in the quickservice sector. Facing stronger challenges from other segments, such as convenience and food stores, as well as the impact of higher energy costs on consumers' cash on hand, sales at quickservice restaurants are not increasing quite as quickly as fullservice-restaurant sales.

The competitive trend is likely to get even hotter, according to the Association's 2005 quickservice operator survey. Asked to rate the intensity of competition on a scale of 0 to 100, quickservice operators responded with a steamy average of 85 for 2006—up from 76 in 2004 and 82 in 2005.

Despite the competitive environment, quickservice sales are headed for solid gains in 2006, in large part because of consumers' unrelenting demand for convenience.

Offering convenience alone, though, is not enough to ensure success in the quickservice arena in 2006. Value will remain equally important.

This section of the 2006 *Restaurant Industry Forecast* focuses on the key trends and developments in the quickservice-restaurant segment.

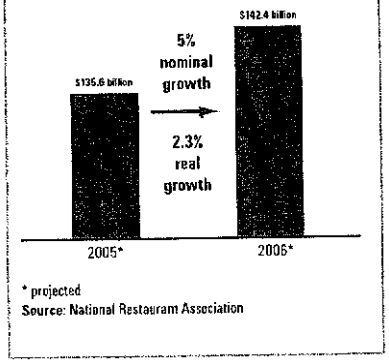
Off-premises sales critical to growth

Off-premises sales—including takeout, delivery and drive-through—have become and will continue to be critical to the growth of the quickservice segment.

- **Drive-through:** Three in four quickservice operators offer drive-through service. According to a recent Association survey, two-thirds of these expect drive-through sales to account for a larger proportion of sales in 2006.
- **Delivery:** Roughly 40 percent of quickservice operators offer delivery; about half of these expect their delivery sales to increase as a share of total sales in 2006.
- **Takeout:** More than four of 10 quickservice operators said takeout would represent a higher proportion of total sales in 2006.

Off-premises sales—including takeout, delivery and drive-through—will continue to be critical to the growth of the quickservice segment.

Quickservice-Restaurant Sales



* projected
Source: National Restaurant Association

Consumers will look for greater value

One of the competitive advantages of the quickservice-restaurant segment remains its ability to provide consumers with a meal at a reasonable price in a short period of time. And in general, most consumers agree that meals at quickservice restaurants are worth the price. According to the Association's 2005 consumer survey, 73 percent of adults are satisfied with the value they receive for the price they pay at quickservice restaurants.

Still, more than three of four quickservice-restaurant operators expect their customers to be more value-conscious in 2006 compared to 2005. One reason is higher energy

prices, which take a big bite out of disposable income—especially problematic for consumers with less disposable income.

For quickservice restaurateurs to offer greater value, their operations must become more cost-efficient and effective.

Managing costs

Quickservice operators expect utility spending and labor-related costs to go up as a share of their total budget in 2006. More than three-quarters of operators surveyed by the National Restaurant Association expect utility expenses to consumer a larger portion of their budget in 2006. Three out of five said wages would account for a larger share of their budget.

Not surprisingly, quickservice operators report taking steps to conserve energy, such as purchasing energy-saving equipment and modifying lighting fixtures (see page 7). Of the operators reporting that they have not taken steps for energy-conservation purposes during the past two years, the largest percentage of respondents—one of six—said they planned to purchase energy-saving equipment in 2006.

Building business

In their efforts to boost revenues as well as manage costs in the highly competitive quickservice market, more operators are seeking ways to differentiate themselves from their competitors.

Stepping up marketing and advertising efforts is one major way operators can keep their establishments top of mind among consumers.

Some examples revealed in National Restaurant Association research:

- **Community marketing:** Eighty-two percent of quickservice operators will sponsor community events in 2006 as a way of marketing their business.
- **Video/digital menu boards:** More than one in five quickservice-restaurant operators now use digital or video menu boards to add pizzazz to their in-store marketing.
- **Web-site marketing:** Roughly three of four quickservice operators will bolster Web-site marketing in 2006. Seven of 10 quickservice-restaurant operators report that they have a Web site. Those operators with Web sites update the content a median of 12 times a year.
- **Frequent-diner programs:** More than two of five quickservice-restaurant operators offer a frequent-diner program to build customer loyalty. These programs will continue to gain popularity in 2006; roughly 15 percent of operators who do not currently offer such programs plan to introduce a frequent-diner program in the next year.
- **Limited-time menu offerings:** A hefty four out of five quickservice-restaurant operators will promote limited-time menu offerings in 2006. These items, typically the result of extensive testing and research, have proven to be a good way for companies to drive additional customers to their brand. Even if available only for a short amount of time, the menu add-ons widen the choices available to customers and attract new patrons.

Gift Cards Come On Strong in Quickservice

Percentage of quickservice-restaurant operators who anticipate that the following categories will represent a larger proportion of their total sales in 2006

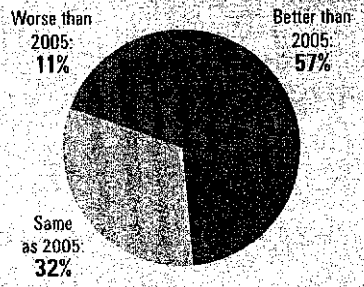
Gift cards	70%
Drive-through	65%
Catering	53%
Delivery	52%
Takeout	45%

Source: National Restaurant Association

Quickservice Operators: Report from the Field

2006 Business Outlook

Most quickservice operators expect business to be better in 2006 than 2005



Source: National Restaurant Association, 2005

Top Challenges for 2006

Percent of quickservice-restaurant operators who mention

Recruiting and retaining employees	31%
Gas and energy costs	21%
Labor costs/wages	15%
Operational costs	14%
Food costs	12%

Source: National Restaurant Association, 2005

2006 Spending Priorities

Percentage of quickservice-restaurant operators planning to allocate a larger proportion of their budget to selected items in 2006

Utility expenses	78%
Wages	60%
Training	44%
Remodeling	44%
Benefits	43%
Technology	41%

Source: National Restaurant Association, 2005

Advertising Media/ Marketing Techniques

Percentage of quickservice restaurant operators who plan to use selected advertising media or marketing techniques in 2006

Sponsorship of community event	82%
Limited-time menu offering	80%
Direct mail	79%
Radio	78%
Newspaper	74%
Web site	74%
Handouts or flyers	72%
Sponsorship of sports team or event	72%

Source: National Restaurant Association

• **Food platforms:** In 2006, more quickservice operators are likely to experiment with "food platforms," menu offerings aimed at giving customers even more choice. With these items, customers get a basic offering—a burger, for example—and can pick and choose from a variety of sauces and condiments to add to the basic platform. The use of a "food platform" has obvious productivity benefits from an operational standpoint while offering consumers new and varied choices.

• **Gift cards:** Gift cards are becoming an increasingly important source of sales for quickservice restaurants. More than four of five participants in the National Restaurant Association's quickservice-restaurant operator survey reported that they offer gift cards. Of those, seven in 10 anticipate that gift cards will represent a larger proportion of total sales in 2006.

Growing diversity

The growing diversity of the U.S. population is making its presence felt in the restaurant industry. Fifty-nine percent of quickservice-restaurant operators surveyed by the National Restaurant Association expect their food-and-beverage offerings to become more diverse in 2006; 63 percent expect the demographics of their customers to become more diverse; and 59 percent expect the demographics of their workforce to grow more diverse in 2006.

Breakfast business

Fifty-six percent of quickservice-restaurant operators surveyed by the National Restaurant Association serve breakfast. Among those, roughly half expect this daypart to represent a larger proportion of their total sales in 2006. This outpaces the three out of 10 who expect lunch to grow as a proportion of total sales and the one-quarter predicting that dinner would account for a larger portion of sales.

Location-scouting

One truism in the quickservice-restaurant business is that as long as an operator's food quality is roughly equivalent to the competition, the convenience of the location will win the customer's business. Hence, quickservice companies in 2006 will continue their ongoing pursuit of new locations, with many newer locations being physically smaller in scope and frequently located in non-traditional locations.

Credit-card acceptance

More than nine of 10 quickservice operators (93 percent) accept credit cards, according to an Association survey of operators. But credit-card payments remain a relatively small percentage of total sales, accounting for a median of only 15 percent of total sales at quickservice operations.

Customer satisfaction

Participants in a 2005 Association survey of consumers were asked how satisfied they are with key attributes of quickservice restaurants: service, order accuracy, food quality, design and décor, takeout packaging, cleanliness and value received for the price paid.

Each of the attributes rated highly with consumers. Design and décor rated the highest, with 83 percent of those who responded reporting that they are satisfied with this attribute of quickservice restaurants. Following closely behind were takeout packaging (82 percent satisfied) and service (81 percent). Seventy-nine percent said they are satisfied with order accuracy; 78 percent registered satisfaction with food quality and with value received for the price paid.

Cleanliness was the attribute with the lowest level of satisfaction, but still 77 percent of consumers responding said they were satisfied.

Business challenge

Quickservice-restaurant operators face a host of business challenges as they strive to meet consumer demand for choice, quality, convenience and value. In an October 2005 survey of quickservice-restaurant operators, three of 10 respondents said they expect recruiting and retaining employees to be the biggest challenge they face in 2006.

Half of the quickservice-restaurant operators who serve breakfast expect this daypart to represent a larger proportion of their total sales in 2006.

Outlook for Other Major Markets

Fullservice and quickservice restaurants will account for about $316 billion of the restaurant industry's projected $511 billion in sales for 2006, with the remaining $195 billion coming from the restaurant industry's other segments—the National Restaurant Association tracks nearly 40.

The Association's 2006 *Restaurant Industry Forecast* provides detailed 2006 sales projections for each segment on Page 10.

In addition, the chart on the following page highlights growth in some of the industry's key markets, such as schools and hospitals that in some cases hire outside contractors ("managed services" providers) to run their foodservice operations and in other cases run their own foodservice operations. The charts here are aimed at helping restaurant-industry analysts more easily understand the components of these important foodservice markets.

MAJOR MARKETS: NEWS OF NOTE

Among the fastest-growing segments in the Commercial Restaurant Services sector in 2006—registering faster growth than fullservice or quickservice restaurants—is expected to be **retail-host restaurants**. This segment of the restaurant industry, which includes food-and-drink sales at foodservice facilities within such retail operations as supermarkets, convenience stores, department stores and gas stations—is projected to increase its sales 7.5 percent (4.8 percent in inflation-adjusted terms) in 2006, to $25.3 billion.

The managed-services category of the restaurant industry is gaining market share rapidly. Already a $32 billion category, this segment covers food-and-drink sales in facilities such as schools, businesses and hospitals that bring in outside contractors—variously referred to as "managed restaurant services" providers, onsite contractors, or foodservice contractors—to provide foodservice.

Sales in the managed-services segment are growing at a relatively fast pace. For example, while colleges and universities that provide their own foodservice are expected to see a 1.1 percent drop in food-and-drink sales in 2006, managed-services sales in these post-secondary schools are projected to grow by 7.6 percent. Primary and secondary schools that run their own foodservice are projected to see food-and-drink sales fall 0.9 percent in 2006; by contrast, managed-services sales in these schools are projected to grow by 11.4 percent, the fastest rate of all industry categories. The same forces are at work in the health-care industry. Managed-services sales are forecast to grow by 7.3 percent in hospitals and nursing homes in 2006, compared with increases of 3 percent and 2.5 percent, respectively, at hospitals and nursing homes that operate their own foodservice establishments.

MAJOR MARKETS AT A GLANCE

Growth in food-and-drink sales at select major markets in the restaurant industry in 2006

EDUCATIONAL: Food-and-drink sales by foodservice companies that manage restaurant services in colleges, universities, primary and secondary schools, as well as food-and-drink sales by schools that operate their own restaurant services.

2006 Projected Food-and-Drink Sales	**$25.1 billion**
'05–'06 Percent Change in Sales	**4.5 %**
'05–'06 Percent Real Change in Sales	**1.8 %**

EMPLOYEE: Food-and-drink sales by for-profit companies that manage restaurant services for employees at manufacturing and industrial plants and in commercial office buildings, as well as food-and-drink sales by plants and companies that run their own noncommercial employee restaurant services.

2006 Projected Food-and-Drink Sales	**$9.7 billion**
'05–'06 Percent Change in Sales	**3.7 %**
'05–'06 Percent Real Change in Sales	**1.1 %**

HEALTH CARE: Food-and-drink sales by foodservice companies that manage restaurant services in hospitals and nursing homes, as well as food-and-drink sales by hospitals and nursing homes that operate their own restaurant services.

2006 Projected Food-and-Drink Sales	**$22.7 billion**
'05–'06 Percent Change in Sales	**3.6 %**
'05–'06 Percent Real Change in Sales	**1.2 %**

LODGING: Food-and-drink sales at hotel restaurants and other accommodation restaurants.

2006 Projected Food-and-Drink Sales	**$25.0 billion**
'05–'06 Percent Change in Sales	**5.4 %**
'05–'06 Percent Real Change in Sales	**2.7 %**

MILITARY: Food-and-drink sales at military clubs and exchanges.

2006 Projected Food-and-Drink Sales	**$1.8 billion**
'05–'06 Percent Change in Sales	**5.7 %**
'05–'06 Percent Real Change in Sales	**3.0 %**

RECREATIONAL: Food-and-drink sales at recreation and sports centers, such as movie theaters, sports arenas and bowling lanes.

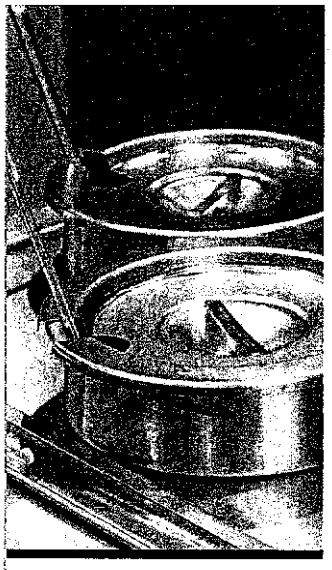
2006 Projected Food-and-Drink Sales	**$24.3 billion**
'05–'06 Percent Change in Sales	**4.8 %**
'05–'06 Percent Real Change in Sales	**2.1 %**

TRANSPORTATION: Food-and-drink sales on airlines, passenger/cargo liners and railroads.

2006 Projected Food-and-Drink Sales	**$3.6 billion**
'05–'06 Percent Change in Sales	**4.5 %**
'05–'06 Percent Real Change in Sales	**2.3 %**

MAJOR MARKETS: PROJECTED SALES, 2006

	2003 Estimated F&D Sales ($000)	2005 Projected F&D Sales ($000)	2006 Projected F&D Sales ($000)	'05–'06 Percent Change	'05–'06 Percent Real Growth Change	'03–'06 Compound Annual Growth Rate
EDUCATIONAL SALES: $25.1 BILLION						
TOTAL EDUCATIONAL	$21,688,842	$23,993,089	$25,072,081	4.5%	1.8%	5.0%
Colleges and universities						
Managed services	7,776,152	9,206,790	9,906,506	7.6	5.0	8.4
Noncommercial	5,379,500	5,444,491	5,384,702	–1.1	–3.6	0.0
Subtotal	$13,155,652	$14,651,281	$15,291,208	4.4%	1.8%	5.1%
Primary and secondary schools						
Managed services	3,428,954	4,238,581	4,721,779	11.4	8.5	11.3
Noncommercial	5,104,236	5,103,227	5,059,094	–0.9	–3.8	–0.3
Subtotal	$8,533,190	$9,341,808	$9,780,873	4.7%	1.8%	4.7%
EMPLOYEE SALES: $9.7 BILLION						
TOTAL EMPLOYEE[1]	$8,783,953	$9,349,683	$9,695,030	3.7%	1.1%	3.3%
Managed services						
Manufacturing and industrial plants	6,062,990	6,570,196	6,846,144	4.2	1.5	4.1
Commercial and office buildings	2,055,868	2,238,577	2,332,597	4.2	1.5	4.3
Noncommercial employee restaurant services	665,095	540,910	516,289	–4.6	–6.2	–8.1
HEALTH-CARE SALES: $22.7 BILLION						
TOTAL HEALTH CARE	$20,145,031	$21,876,574	$22,654,887	3.6%	1.2%	4.0%
Managed services in hospitals and nursing homes	3,095,436	3,593,782	3,854,819	7.3	4.9	7.6
Hospitals[2]	11,212,636	12,041,268	12,402,506	3.0	0.6	3.4
Nursing homes[3]	5,836,959	6,241,524	6,397,562	2.5	0.1	3.1
LODGING-PLACE SALES: $25.0 BILLION						
TOTAL LODGING PLACES	$21,344,170	$23,723,310	$24,998,257	5.4%	2.7%	5.4%
Hotel restaurants	20,991,052	23,341,378	24,601,812	5.4	2.7	5.4
Other accommodation restaurants	353,118	381,932	396,445	3.8	1.1	3.9
MILITARY SALES: $1.8 BILLION						
TOTAL MILITARY[4]	$1,576,339	$1,734,307	$1,832,519	5.7%	3.0%	5.1%
Officers' and NCO clubs (Open mess)	1,065,099	1,188,855	1,255,431	5.6	2.9	5.6
Military exchanges	511,240	545,452	577,088	5.8	3.1	4.1
RECREATIONAL SALES: $24.3 BILLION						
TOTAL RECREATIONAL	$21,171,417	$23,147,692	$24,264,173	4.8%	2.1%	4.6%
Recreation and sports centers						
Managed services	3,798,091	4,191,205	4,372,802	4.3	1.6	4.8
Noncontractors[5]	10,168,552	10,881,982	11,364,481	4.4	1.7	3.8
Subtotal	$13,966,643	$15,073,187	$15,737,283	4.4%	1.7%	4.1%
Clubs[6], sporting and recreational camps	7,204,774	8,074,505	8,526,890	5.6	2.8	5.8
TRANSPORTATION SALES: $3.6 BILLION						
TOTAL TRANSPORTATION	$3,004,430	$3,425,962	$3,580,552	4.5%	2.3%	6.0%
Managed services, in-transit commercial airlines	1,746,113	1,903,144	1,973,560	3.7	1.0	4.2
Noncommercial transportation[7]	1,258,317	1,522,818	1,606,992	5.5	4.0	8.5
OTHER SALES						
Retail hosts[8]	$20,297,087	$23,526,795	$25,284,813	7.5%	4.8%	7.6%
Mobile caterers	820,283	908,674	953,199	4.9	2.2	5.1
Vending and non-store retailers[9]	9,120,206	9,750,777	10,101,805	3.6	1.5	3.5
Community centers	1,495,457	1,663,289	1,721,504	3.5	2.2	4.8



FOOTNOTES

1. Includes sales for industrial plants and office buildings, seagoing ships, and inland-waterway vessels

2. Includes voluntary and proprietary hospitals; long-term general, TB, mental hospitals; and sales or commercial equivalent to employees in state and local short-term hospitals and federal hospitals.

3. Includes homes for the aged, blind, orphans, mentally and physically disabled; sales (commercial equivalent) calculated for nursing homes and homes for the aged only. All others in this group make no charge—either in cash or in kind—for food served.

4. Continental United States only

5. Includes sales at movies, bowling lanes, and recreation and sports centers.

6. A portion of food-and-beverage sales in clubs is business-related.

7. Includes sales on airlines, passenger/cargo liners and railroads.

8. Includes drug- and proprietary-store, general-store, variety-store, food-store and grocery-store restaurants; gasoline service station restaurants; and miscellaneous retailers.

9. Includes sales of hot food, sandwiches, pastries, coffee and other hot beverages.

Restaurant Purchasing Power

Restaurant Industry to Spend $183 Billion On Food and Beverages in 2006

It looks like 2006 is shaping up to be a good year for companies that are in the business of manufacturing, selling and distributing food and beverages to the $511 billion U.S. restaurant industry.

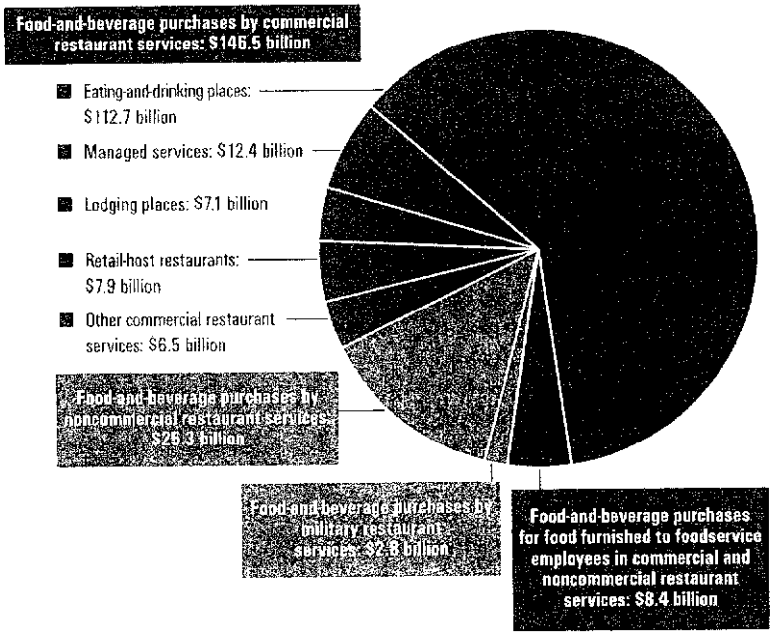
Restaurateurs and other foodservice operators are expected to buy $183 billion in food and drink from industry suppliers in 2006.

The National Restaurant Association projects that the biggest chunk of the purchases—about $146.5 billion, or 80 percent of the industry's projected food-and-beverage purchases for 2006—will be made by commercial restaurant services, the category that includes fullservice and limited-service restaurants, managed services, hotel restaurants and other commercial services.

Noncommercial restaurant services—food-and-beverage services operated by such entities as schools, hospitals and prisons—will spend a projected $25.3 billion in 2006 on food and beverages.

The military will purchase approximately $2.8 billion in food and beverages in 2006. Commercial and noncommercial restaurant services are projected to spend $8.4 billion furnishing food to their own employees in 2006.

Restaurant Food-and-Beverage Purchases to Approach $183 Billion in 2006

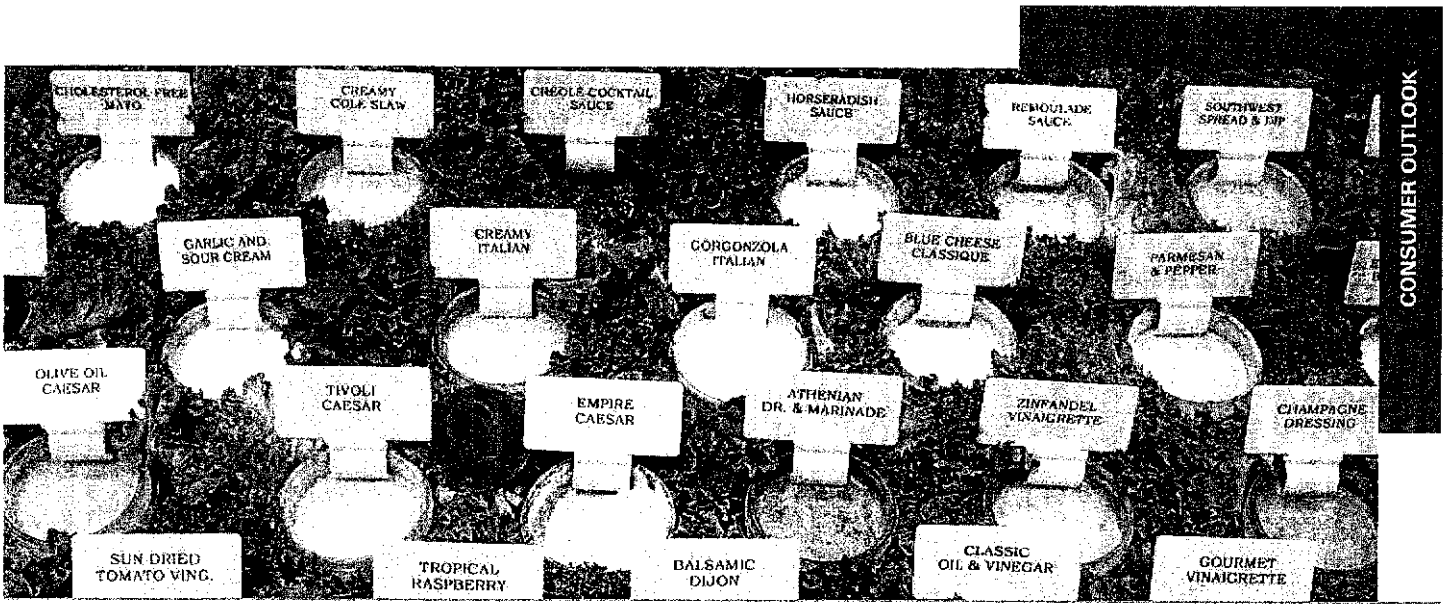


Source: National Restaurant Association

RESTAURANT INDUSTRY FOOD-AND-DRINK PURCHASES PROJECTED FOR 2006*

	2006 Projected F&D Purchases ($000)
GROUP I—COMMERCIAL RESTAURANT SERVICES**	
EATING PLACES	
Fullservice restaurants	$54,803,222
Limited-service restaurants	43,714,307
Cafeterias, grill-buffets, and buffets	1,945,537
Social caterers	1,471,676
Snack and nonalcoholic beverage bars	5,580,842
TOTAL Eating Places	$107,515,584
Bars and taverns***	5,161,842
TOTAL—Eating-and-Drinking Places	$112,677,426
MANAGED SERVICES	
Manufacturing and industrial plants	$2,758,996
Commercial and office buildings	963,362
Hospitals and nursing homes	1,418,573
Colleges and universities	3,288,960
Primary and secondary schools	1,723,449
In-transit restaurant services (airlines)***	947,308
Recreation and sports centers	1,294,349
TOTAL Managed Services	$12,394,997
LODGING PLACES	
Hotel restaurants	$6,962,313
Other accommodations restaurants	132,650
TOTAL Lodging Places	$7,094,963
Retail-host restaurants	7,863,577
Recreation and sports	3,266,756
Mobile caterers	281,194
Vending and non-store retailers	2,909,320
TOTAL—Group I	**$146,488,233**
GROUP II—NONCOMMERCIAL RESTAURANT SERVICES	
Employee restaurant services	$258,144
Public and parochial elementary, secondary schools	4,510,887
Colleges and universities	1,991,086
Transportation	893,532
Hospitals	5,274,770
Nursing homes; homes for the aged, blind, orphans, mentally and physically disabled	3,985,681
Clubs, sporting and recreational camps	3,027,046
Community centers	1,956,269
Penal institutions	3,301,042
Convents and seminaries	63,556
TOTAL—Group II	$25,262,013
TOTAL—Groups I and II	$171,750,246
Food furnished foodservice employees (FSE) in Groups I and II	8,402,999
TOTAL—Groups I, II and FSE	$180,153,245
GROUP III—MILITARY RESTAURANT SERVICES	
Defense personnel	$2,168,523
Officers' and NCO clubs (Open mess)	426,846
Military exchanges	201,404
TOTAL—GROUP III	$2,796,773
GRAND TOTAL	**$182,950,018**

* Expenditures by establishments for their food-and-drink supplies
** Data for establishments with payroll only
*** Food purchases only
Source: National Restaurant Association



CONSUMER OUTLOOK

SECTION HIGHLIGHTS

- With the most adventurous palates in history, today's diners are sophisticated about taste and looking for lots of choice.
- Restaurateurs will be serving a different demographic mix in 10 years as Americans age and grow more diverse.
- Travelers and visitors are a key component of the customer market, accounting for a large proportion of sales for many restaurants.
- Seventy-two percent of adults say they are trying to eat more healthfully in restaurants than two years ago.
- Forty-three percent of adults say restaurants are an essential part of their lifestyles.

Freedom of choice, that quintessential American value, will continue to be a critical driver of restaurant patronage in 2006 and beyond.

Today's restaurant customers want options—to be able to eat what they want, when they want and where they want. They want restaurants where they can socialize, do business or relax with family or friends. They want options for comfort, entertainment, convenience and value. They want quick food, leisurely meals and everything in between.

With the most adventurous palates in American history, today's diners are sophisticated about taste, open to new flavors, knowledgeable about ingredients and food preparation, concerned about health and wellness, and focused on food safety.

And foodservice operators are delivering excellence to their dining public. As the nation's 925,000 restaurants serve a stunning array of customers—people of every age, lifestyle, ethnicity and culinary and dietary preference—the industry is getting high marks. Forty-three percent of adults call restaurants essential to their lifestyle and three of five adults say there are more restaurants they enjoy going to now than two years ago.

With more changes ahead, restaurateurs are well-poised to deliver in 2006 and beyond. As Americans get older, society gets more diverse and diners get increasingly food-savvy, restaurateurs will stay one step ahead in providing the options their customers want.

Demographics are destiny

Ten years from now, many restaurants will be serving a different demographic profile.

America's population, estimated to be 295.5 million in 2005, is growing at the slowest pace since the 1930s. Growth averaged 0.9 percent a year from 2000 to 2005, compared to average gains of 1.1 percent from 1995 to 2000 and 1.3 percent from 1990 to 1995.

The population is expected to continue expanding at an average rate of 0.9 percent through 2015, which would bring the U.S. population to nearly 310 million by 2010 and 323 million by 2015.

Some of the trends that will affect restaurants:

- **The U.S. population is getting older:** The long-term aging of the U.S. population will continue. The average age of the U.S. population

For today's restaurant patron, it's all about choice.

has steadily been creeping up, rising from 32.8 in 1990 to 36.0 in 2004. By 2015, people age 55 and older are expected to account for 27 percent of the total population, up from 23 percent in 2005.

• **The U.S. population is getting more diverse:** The Hispanic, Asian and African-American populations in the United States are expected to grow more quickly than the national average. While the U.S. population is expected to grow by an average of 0.9 percent a year between 2005 and 2015, the Hispanic population is expected to grow by an average of 5.1 percent a year—more than four times faster. Average annual population growth between 2005 and 2015 is forecast at 5.3 percent for Asians and 2.4 percent for African Americans.

Trends in state-by-state population growth are of interest as well. Between 2000 and 2004, for example, the fastest-growing Hispanic populations were in Arkansas, Georgia, North Carolina and Nevada. (More information on state population growth rates are available at www.restaurant.org/research/consumer.)

The Hispanic population in the United States is estimated at 41.8 million in 2005. That means that outside of Mexico, the United States has the largest Hispanic population in the world. By 2015, the Hispanic population in the United States is expected to stand at 53.6 million and account for 17 percent of the U.S. population, up from 14 percent in 2005.

• **More Americans in high-income households.** While the median household income in the United States in 2004 dipped slightly to $44,389, the share of the U.S. population living in higher-income households has risen. In 2004, nearly 27 percent of households had annual incomes of $75,000 or more, compared to 18 percent of households in 1984 (in 2004 dollars).

Household income has a strong influence on spending away from home, according to the National Restaurant Association's *Restaurant Spending* report (www.restaurant.org/ research/ consumer). *Restaurant Spending*, based on Bureau of Labor Statistics data, shows that households with pretax incomes of $70,000 or more spent an average of $1,390 per person on food away from home in 2004—compared to $974 for all households.

Restaurant Spending by Race and Hispanic Origin

Household expenditures on food away from home by race and Hispanic origin, 2004

	Average annual expenditures on food away from home	Per-capita annual expenditures on food away from home
All households	$2,434	$974
White and all other	$2,539	$1,058
African-American	$1,516	$583
Asian	$3,053	$1,090
Hispanic*	$2,027	$614

*May be of any race
Source: Bureau of Labor Statistics; National Restaurant Association, *Restaurant Spending*

Restaurant Spending by Household Income

Household expenditures on food away from home by household income before taxes, 2004

	Average annual expenditures on food away from home	Per-capita annual expenditures on food away from home
All households	$2,434	$974
Less than $5,000	$1,143	$714
$5,000–$9,999	$714	$446
$10,000–$14,999	$876	$487
$15,000–$19,999	$1,132	$566
$20,000–$29,999	$1,485	$675
$30,000–$39,999	$1,930	$804
$40,000–$49,999	$2,189	$842
$50,000–$69,999	$2,672	$954
$70,000 and over	$4,308	$1,390

Source: Bureau of Labor Statistics; National Restaurant Association, *Restaurant Spending*

AMERICAN CONSUMERS: A DEMOGRAPHIC PROFILE

AGE IS RISING

Twenty-seven percent of Americans will be age 55 or older by 2015

Percent distribution of the population by age

	2005	2010	2015
Under 14	19.1%	18.7%	18.9%
14 to 24	15.7%	15.2%	14.3%
25 to 34	13.4%	13.5%	13.7%
35 to 44	14.8%	13.3%	12.7%
45 to 54	14.4%	14.5%	13.4%
55 to 64	10.3%	11.7%	12.5%
65 to 74	6.3%	6.9%	8.3%
75 and older	6.1%	6.1%	6.3%

Note: Totals may not sum exactly to 100 percent due to rounding
Source: Bureau of the Census; National Restaurant Association

DIVERSITY IS INCREASING

Hispanics will account for nearly 17 percent of the U.S. population by 2015

Percent distribution of the population by race and Hispanic origin

	2005	2010	2015
White	80.2%	79.3%	78.4%
African American	12.9%	13.1%	13.3%
Asian	4.2%	4.6%	5.0%
All other/ 2 or more races	2.7%	3.0%	3.3%
Hispanic*	14.1%	15.5%	16.6%

*May be of any race
Note: Totals may not sum exactly to 100 percent due to rounding
Source: Bureau of the Census; National Restaurant Association

MORE HIGH-INCOME HOUSEHOLDS

More Americans live in high-income households

Percent of U.S. households by income brackets (income in 2004 dollars)

Income	1984	2004
Under $10,000	10.2%	8.7%
$10,000 to $24,999	22.0%	19.6%
$25,000 to $34,999	13.5%	11.9%
$35,000 to $49,999	17.0%	14.8%
$50,000 to $74,999	19.4%	18.3%
$75,000 or more	18.0%	26.7%

Source: U.S. Census Bureau

Consumer Insights

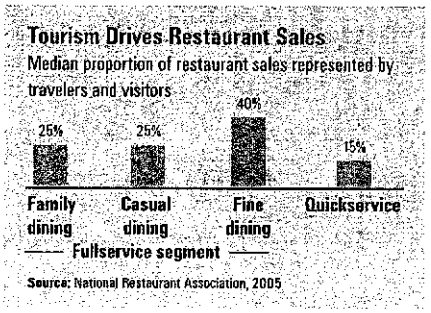
- Forty-three percent of adults say restaurants are an essential part of their lifestyles, with the percentage jumping to 57 percent for adults with household incomes of $75,000 or more.
- Thirty-four percent of adults say purchasing takeout food is essential to the way they live. Women (38 percent) were more likely than men (29 percent) to make this statement.
- Two of three consumers agree their favorite restaurant foods provide flavor and taste sensations that cannot easily be duplicated in their home kitchen.
- More than three of five adults report that there are more restaurants they enjoy going to now compared to two years ago.
- Restaurant gift certificates or gift cards got higher marks than clothing, books, CDs, DVDs, flowers, perfume/cologne, sports equipment and candy, when consumers were asked to rate their level of interest in receiving certain gifts.
- A typical adult purchased a meal or snack from a restaurant 5.3 times a week on average in 2004.
- Asked to rate seven attributes of fullservice restaurants, roughly nine of 10 adults indicated satisfaction with food quality, order accuracy, service, cleanliness and design and décor. Eighty-four percent were satisfied with value received for price paid. The satisfaction level dropped slightly in one area, 75 percent said they were satisfied with takeout packaging at fullservice restaurants.
- Americans age 15 and older spent 1.24 hours per day—about 74 minutes—eating and drinking in 2004, according to the Census Bureau and the U.S. Bureau of Labor Statistics.

Source: National Restaurant Association, 2005

FOCUS ON:

Travel and tourism

The critical link between a robust and successful tourism industry and restaurant sales has never been stronger. Travelers and visitors account for approximately 40 percent of sales at fine-dining operations and 25 percent of sales at casual-dining and fine-dining operations.



Tourism Drives Restaurant Sales

Domestic travel and international visits to the United States should increase in 2006

	Domestic travel Number of domestic person-trips*	International arrivals Number of international arrivals
2000	1,100.8 million	51.2 million
2001	1,123.1 million	46.9 million
2002	1,127.0 million	43.6 million
2003	1,140.0 million	41.2 million
2004	1,163.9 million	46.1 million
2005**	1,204.7 million	49.3 million
2006**	1,226.4 million	52.0 million
2007**	1,254.6 million	54.6 million

* The Travel Industry Association of America defines a person-trip as one person traveling 50 miles from home and staying away at least a night.
** projected
Source: Travel Industry Association of America, 2005

Many Operators See Higher Tourism-related Sales in 2006

Nearly 40 percent of fine-dining operators believe their tourism-related sales will grow as a proportion of total sales in 2006

Restaurateurs' estimates of whether travelers and visitors will account for a larger, small or the same proportion of total sales in 2006, compared to 2005

	Fullservice			
	Family dining	Casual dining	Fine dining	Quickservice
Larger proportion of sales	23%	22%	38%	9%
Smaller proportion of sales	15%	12%	10%	25%
About the same proportion of sales	61%	64%	50%	66%
Don't know	1%	2%	2%	*%

Source: National Restaurant Association, 2005

DINERS' CHOICE: In 1972, the ratio of eating places in the United States to the number of U.S. residents was 1 to 1,029. It's now roughly 1 to 664, according to Association research. Restaurants expanded faster than the U.S. population: The number of eating places more than doubled between 1972 and 2003 while the U.S. population increased at a slower 39 percent.

Menu Trends

HEALTHFUL DINING ON THE RISE?

As the average age of Americans increases and the first baby boomers turn 60, it seems logical that more people are paying attention to health and nutrition.

Nearly three of four adults (72 percent) are trying to eat more healthfully in restaurants than they did two years ago, according to a recent National Restaurant Association survey. Women (76 percent) are more likely than men (68 percent) to make this statement.

Restaurateurs are seeing some changes. More than half of all operators, in both the tableservice and quickservice segments, reported greater customer demand for items such as entrée salads and bottled water now compared to two years ago.

Ever sensitive to demand, restaurateurs also testify to the waning of the "low-carb" revolution. In the low-carbohydrate heyday of 2004, nearly three-quarters of restaurateurs surveyed by the Association reported heightened customer demand for low-carb menu items. Pasta orders had dropped, three in 10 restaurateurs reported, and operators rushed to retool their menus with low-carb items and bunless options. By October 2005, roughly one-third of tableservice restaurants reported that orders for pasta and Italian entrees were up compared to two years ago and similar percentages said the demand for low-carb items had fallen off.

Perhaps it's another sign that "extreme diets" and good-food, bad-food labels lack staying power and that Americans' evolving nutrition habits might be moving toward balance. The Association's annual survey to gauge which food and beverage items are gaining or losing in popularity reflect an eclectic mix. Majorities of operators reported in October 2005 that wraps, pitas and tortillas are more popular than two years ago. Nearly half of quickservice operators report growing popularity for Tex-Mex/Mexican items and Asian items.

Specialty coffees continue to gain popularity in both segments, and tableservice operators report greater demand for tea and wine.

Proportion of American adults who say they are trying to eat healthier now at restaurants than they did two years ago

All adults	72%
Women	76%
Men	68%

Source: National Restaurant Association, October 2005

Menu Trends: FULLSERVICE

Majorities of fullservice-restaurant operators see more orders for entrée salads and bottled water

Percentage of fullservice operators, by type of operation, who said their customers are buying more of the following items, compared to two years ago

	Fullservice segment		
	Family dining	Casual dining	Fine dining
FOOD			
Entrée salads	50%	66%	53%
Wraps/pitas/tortillas	52%	55%	55%
Poultry	53%	52%	34%
Beef items	32%	48%	47%
Vegetarian entrées	33%	34%	39%
Pasta/Italian entrées	29%	36%	25%
Desserts	30%	27%	32%
BEVERAGE			
Wine	52%	63%	75%
Bottled water	52%	55%	61%
Espresso/specialty coffees	43%	34%	27%
Iced tea/hot tea	39%	34%	24%

Source: National Restaurant Association, 2005; expanded data is available at www.restaurant.org/research/consumer

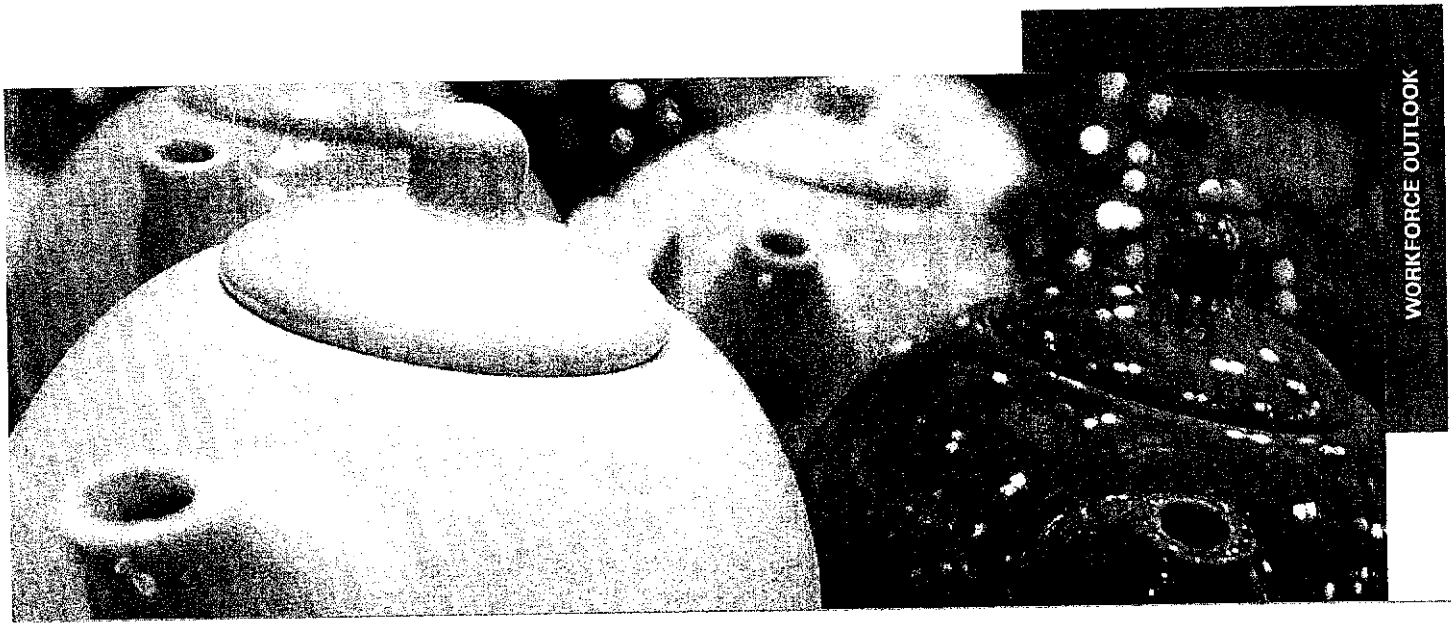
Menu Trends: QUICKSERVICE

Sandwiches rise in popularity

Percentage of quickservice operators reporting increase in popularity compared to two years ago:

Chicken sandwiches	77%
Deli-style sandwiches	63%
Espresso, specialty coffees	60%
Wraps/pitas/tortillas	59%
Bottled water	58%
Entrée salads	51%
Energy drinks	49%
Tex-Mex/Mexican items	48%
Chicken strips/nuggets/bits	43%
Asian items	41%
Smoothies	38%
Fruit juice	29%
Iced tea/hot tea	28%
Vegetarian entrées	27%
Beef items	24%
Iced cream/frozen yogurt	20%
Hamburgers/cheeseburgers	19%
Flavored milk/milk	17%

Source: National Restaurant Association, 2005



WORKFORCE OUTLOOK

SECTION HIGHLIGHTS

- Restaurants will employ 12.5 million people in 2006, making the restaurant industry the nation's largest private-sector employer.
- Restaurants will add 1.9 million jobs by 2016, increasing openings across all occupations, from managers to servers to chefs. The fastest growth is expected in Arizona, Nevada and South Carolina.
- Recruiting and retaining employees will be the top challenge for many operators in 2006 and beyond.
- More than one in four restaurant employees speaks a language other than English at home.

During the last 10 years, the restaurant industry added an average of 250,000 jobs each year.

The steady growth in sales and jobs has made the restaurant industry the nation's largest private-sector employer, reaching a projected 12.5 million employees in 2006 and representing more than 9 percent of the nation's total job base.

Looking ahead, restaurant-industry job growth is expected to continue well into the future. By 2016, the restaurant industry is projected to employ 14.4 million people—an increase of 1.9 million jobs over 10 years.

The restaurant industry will continue to have a significant impact on workforce development in the United States. Nearly half of all adults (47 percent) have worked in the restaurant industry at some point during their lives, and 28 percent of adults got their first job experience in a restaurant, new National Restaurant Association research shows.

Opportunity knocks

As the number of restaurant-industry jobs climbs from 12.5 million to 14.4 million over the next decade, the Association forecasts widespread job growth across occupations and states.

• **1.9 million new positions to be added:** In addition to high demand for food-preparation-and-serving workers, chefs and cooks, and servers, management positions will register steady growth during the next 10 years. The restaurant industry is projected to add 47,000 food-service managers between 2006 and 2016, a more than 11 percent increase. The number of first-line supervisors and managers of food-preparation-and-serving workers is expected to increase by 119,000, or nearly 16 percent. (See next page for full details on occupational growth.)

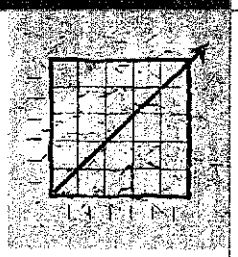
• **Get set, Arizona, Nevada and South Carolina:** The nation's fastest-growing state economies, particularly in the South and West, will generate some of the fastest growth in restaurant workforces over the next decade. Arizona is expected to set the pace with industry job growth of nearly 28 percent between 2006 and 2016, followed by Nevada and South Carolina, each with employment gains of roughly 24 percent. California will add 210,300 restaurant-industry jobs between 2006 and 2016, boosting the state's restaurant-industry workforce—the largest in the nation—to 1.6 million by 2016. (See page 27 for details.)

• **Workforce diversity will accelerate:** Roughly three of five quick-service-restaurant operators and one in five fullservice operators say they expect the demographics of their

Continued on Page 28

Restaurant-Industry Employment Growth by Occupation 2006–2016

Ten-Year Restaurant-Industry Job-Growth Projections Show Demand Increasing Across Range of Restaurant Occupations



As the restaurant workforce grows from 12.5 million in 2006 to an expected 14.4 million by 2016, that growth will be spread across a range of occupations.

In terms of proportional job growth, the strongest gains are projected among positions that combine both food preparation and service—particularly at quickservice restaurants. These positions are expected to number more than 2.7 million by 2016, an approximately 23 percent increase over their 2006 level.

The number of chefs and head cooks is projected to increase roughly 16 percent between 2006 and 2016, with the number of positions increasing to 168,000. Waiters and waitresses also are among the fastest-growth occupations, adding a projected 403,000 jobs—or more than 17 percent—between 2006 and 2016.

Management positions also should register steady growth during the next 10 years. The restaurant industry is projected to add 47,000 foodservice managers between 2006 and 2016, an increase of more than 11 percent. During the same period, the number of first-line supervisors and managers of food-preparation-and-serving workers is expected to increase by 119,000, or nearly 16 percent.

			— Employment Change, 2006–2016 —		
	2006	2016	Number of Jobs	Total % Change	Avg. Annual % Change
TOTAL RESTAURANT-INDUSTRY EMPLOYMENT	**12,489,000**	**14,406,000**	**1,917,000**	**15.3 %**	**1.4 %**
Foodservice managers	410,000	457,000	47,000	11.5	1.1
Food-preparation-and-serving-related occupations	11,064,000	12,822,000	1,758,000	15.9	1.5
Supervisors, food-preparation-and-serving workers	905,000	1,047,000	142,000	15.7	1.5
Chefs and head cooks	145,000	168,000	23,000	15.9	1.5
First-line supervisors/managers of food-preparation-and-serving workers	760,000	879,000	119,000	15.7	1.5
Cooks and food preparation workers	3,027,000	3,403,000	376,000	12.4	1.2
Cooks	2,087,000	2,273,000	186,000	8.9	0.9
Cooks, fast food	610,000	640,000	30,000	4.9	0.5
Cooks, institution and cafeteria	440,000	449,000	9,000	2.0	0.2
Cooks, private household	8,000	8,000	0	0.0	0.0
Cooks, restaurant	790,000	916,000	126,000	15.9	1.5
Cooks, short order	239,000	260,000	21,000	8.8	0.8
Food-preparation workers	940,000	1,130,000	190,000	20.2	1.9
Food-and-beverage-serving workers	5,714,000	6,770,000	1,056,000	18.5	1.7
Bartenders	484,000	526,000	42,000	8.7	0.8
Fast food and counter workers	2,725,000	3,315,000	590,000	21.7	2.0
Combined food preparation and serving workers, including fast food	2,220,000	2,726,000	506,000	22.8	2.1
Counter attendants, cafeteria, food concession, and coffee shop	505,000	589,000	84,000	16.6	1.6
Waiters and waitresses	2,300,000	2,703,000	403,000	17.5	1.6
Food servers, nonrestaurant	205,000	226,000	21,000	10.2	1.0
Other food-preparation-and-serving-related workers	1,418,000	1,602,000	184,000	13.0	1.2
Dining room and cafeteria attendants and bartender helpers	437,000	502,000	65,000	14.9	1.4
Dishwashers	532,000	580,000	48,000	9.0	0.9
Hosts and hostesses, restaurant, lounge, and coffee shop	323,000	376,000	53,000	16.4	1.5
All other food-preparation-and-serving-related workers	126,000	144,000	18,000	14.3	1.3
Other eating-and-drinking-place occupations*	1,015,000	1,127,000	112,000	11.0	1.1

* Includes operational, business, financial, entertainment, sales, administrative and transportation occupations

Source: National Restaurant Association, based on Bureau of Labor Statistics data

STATE RESTAURANT-INDUSTRY EMPLOYMENT

2006 TO 2016

	2006	2016	Employment Change, 2006–2016: Number of Jobs	Total % Change	Avg. Annual % Change
Alabama	172,800	207,000	34,200	19.8%	1.8%
Alaska	27,000	33,100	6,100	22.6	2.1
Arizona	258,800	330,600	71,800	27.7	2.5
Arkansas	103,100	123,600	20,500	19.9	1.8
California	1,369,700	1,580,000	210,300	15.4	1.4
Colorado	223,100	269,400	46,300	20.8	1.9
Connecticut	136,100	148,000	11,900	8.7	0.8
Delaware	40,400	47,100	6,700	16.6	1.5
District of Columbia	45,000	49,000	4,000	8.9	0.9
Florida	837,300	1,016,200	178,900	21.4	2.0
Georgia	366,000	427,800	61,800	16.9	1.6
Hawaii	82,900	88,900	6,000	7.2	0.7
Idaho	58,300	67,700	9,400	16.1	1.5
Illinois	509,600	570,700	61,100	12.0	1.1
Indiana	299,100	341,400	42,300	14.1	1.3
Iowa	144,900	161,200	16,300	11.2	1.1
Kansas	127,400	147,300	19,900	15.6	1.5
Kentucky	173,800	201,000	27,200	15.7	1.5
Louisiana	182,800	221,500	38,700	21.2	1.9
Maine	62,900	70,900	8,000	12.7	1.2
Maryland	227,600	258,700	31,100	13.7	1.3
Massachusetts	300,700	330,900	30,200	10.0	1.0
Michigan	421,200	467,700	46,500	11.0	1.1
Minnesota	253,200	284,300	31,100	12.3	1.2
Mississippi	108,200	130,000	21,800	20.1	1.9
Missouri	270,200	301,300	31,100	11.5	1.1
Montana	50,600	56,100	5,500	10.9	1.0
Nebraska	87,400	97,700	10,300	11.8	1.1
Nevada	185,000	229,500	44,500	24.1	2.2
New Hampshire	64,200	73,200	9,000	14.0	1.3
New Jersey	303,200	338,000	34,800	11.5	1.1
New Mexico	84,000	101,100	17,100	20.4	1.9
New York	647,400	698,300	50,900	7.9	0.8
North Carolina	364,500	441,700	77,200	21.2	1.9
North Dakota	35,700	39,600	3,900	10.9	1.0
Ohio	538,100	577,200	39,100	7.3	0.7
Oklahoma	140,300	161,100	20,800	14.8	1.4
Oregon	160,400	187,500	27,100	16.9	1.6
Pennsylvania	515,200	553,700	38,500	7.5	0.7
Rhode Island	53,500	59,900	6,400	12.0	1.1
South Carolina	195,400	242,000	46,600	23.8	2.2
South Dakota	43,700	51,200	7,500	17.2	1.6
Tennessee	258,700	296,300	37,600	14.5	1.4
Texas	905,000	1,110,700	205,700	22.7	2.1
Utah	98,300	120,300	22,000	22.4	2.0
Vermont	27,700	31,100	3,400	12.3	1.2
Virginia	309,100	358,300	49,200	15.9	1.5
Washington	255,000	301,700	46,700	18.3	1.7
West Virginia	69,300	75,900	6,600	9.5	0.9
Wisconsin	266,900	297,200	30,300	11.4	1.1
Wyoming	28,300	31,400	3,100	11.0	1.0

* Includes employment in all eating-and-drinking-place occupations, plus employment in foodservice positions that are not located at eating-and-drinking places

Source: National Restaurant Association, based on Bureau of Labor Statistics data

Restaurant job growth over the next decade is expected to be fastest in states with the strongest economic growth. These states are mostly located in the South and West.

FOCUS ON JOB GROWTH

TOP STATES BY NUMBER OF RESTAURANT JOBS

Number of restaurant and foodservice jobs in 2006

1.	California	1,369,700
2.	Texas	905,000
3.	Florida	837,300
4.	New York	647,400
5.	Ohio	538,100
6.	Pennsylvania	515,200
7.	Illinois	509,600
8.	Michigan	421,200
9.	Georgia	366,000
10.	North Carolina	364,500

TOP STATES FOR RESTAURANT JOB GROWTH

Expected growth in restaurant jobs, 2006 to 2016

	National average	**15.3%**
1.	Arizona	27.7%
2.	Nevada	24.1%
3.	South Carolina	23.8%
4.	Texas	22.7%
5.	Alaska	22.6%
6.	Utah	22.4%
7.	Florida	21.4%
8.	North Carolina, Louisiana	21.2%
9.	Colorado	20.8%

employees to become more diverse in 2006. Over the next decade, restaurants will continue to play a leading role as a training ground and a source of rewarding careers for millions of Americans from every demographic background.

Today's No. 1 concern: recruitment and retention

While today's labor situation is not as severe as the labor shortages restaurateurs faced in the mid-to-late 1990s, many restaurateurs still struggle with recruiting and retaining employees.

Thirty-one percent of quickservice-restaurant operators surveyed by the National Restaurant Association in October 2005 said recruiting and retaining employees would be their top challenge for 2006. Sizeable proportions of tableservice-restaurant operators—20 percent of family-dining operators, 15 percent of casual-dining operators, and 7 percent of fine-dining operators—also cited this as their No. 1 concern.

The challenges of attracting, hiring and retaining employees are likely to persist beyond 2006.

- The National Restaurant Association projects 15 percent growth in restaurant-industry employment between 2006 and 2016. Over that time, the U.S. labor force will grow 12 percent, and the pool of 16- to 24-year-olds—a key source of employees for the restaurant industry—will grow 9 percent, according to the Association's analysis of government data.
- Just 43.9 percent of 16- to 19-year-olds participated in the labor force in 2004—the lowest level on record and a sharp drop even from the 53.5 percent of teens in that age range who had a paying job in 1995. The rate is likely to drop again for 2005, according to Association and government projections. Teens account for roughly one-fourth of foodservice employees.
- Restaurateurs aren't the only ones looking for employees. As the restaurant industry looks to hire another 1.9 million employees over the next 10 years, the health-care industry will seek an extra 3.5 million workers; state and local governments will add 2.5 million; and retailers will hire another 2.1 million. And those are just a few of the high-growth industries. The recruiting pressure is on.

TREND WATCH

Best practices in recruitment and retention

More internships, mentoring, student outreach

Restaurant companies increasingly are working with high schools and colleges to tap future industry leaders. They're building on classroom knowledge through mentoring and internships. Exhibit A: The National Restaurant Association Educational Foundation's ProStart® program, which since its inception in 1997 has reached 53,000 high school juniors and seniors in more than 1,300 schools across 45 states, territories and districts.

Larger investments in training/professional development

At least 40 percent of quickservice-restaurant and 25 percent of tableservice-restaurant operators say they expect to allocate more of their 2006 budget to training. According to a recent National Restaurant Association survey, one in three quickservice and about one in five tableservice operators (23 percent) use the Internet for online training. One program that blends online resources with facilitated discussions and workplace exercises: the National Restaurant Association Educational Foundation's new Leadership & Management Program. It features Harvard ManageMentor®PLUS, a Harvard Business School Publishing online resource.

More language training

More than one of four restaurant employees speaks a language other than English at home (see page 30). Restaurants are helping foreign-born and other workers move up the career ladder by offering resources to help develop their language skills. The National Restaurant Association Educational Foundation's Daily Dose® English Program is one of a growing number of programs designed to improve restaurant employees' language proficiency along with their job skills, enabling them to achieve their career goals within the industry.

A push for affordable health insurance

Restaurateurs watching their health-insurance costs climb at double-digit rates each year are taking their concerns to Congress and state lawmakers. High costs prevent many restaurant operators from offering health benefits. The National Restaurant Association is lobbying Congress for changes to make it easier for small businesses to pool together across state lines to buy affordable insurance.

Rising costs make productivity paramount

Not only is recruiting a challenge; restaurateurs say the cost of retaining employees is on the rise. More than three of five operators expect to devote a larger proportion of their budget to wages in 2006, according to an October 2005 National Restaurant Association survey. Operators also expect benefits costs to be higher in 2006 than 2005.

Both quickservice and fullservice restaurants are struggling with climbing health-benefits costs. Operators with health insurance plans who saw costs increase in the last two years reported in a recent Association survey that the median annual increase was a stiff 15 percent.

With salaries, wages and benefits accounting for about one-third of restaurant sales—by far, a restaurant's largest operational cost, according to the National Restaurant Association's *Restaurant Industry Operations Report* (www.restaurant.org/research/operations)—restaurateurs are increasing their efforts to make their operations more productive.

The trend will continue in 2006 as restaurateurs increasingly integrate technology into their operations to boost efficiency and productivity. Roughly two of five quickservice operators report that technology will account for a larger portion of their budget in 2006.

No matter how productive restaurants get through technology and other innovations, the bottom line is that restaurants are extremely labor-intensive. Sales per full-time-equivalent employee in eating-and-drinking places in 2004 were $58,796. By comparison, sales per full-time-equivalent employee in grocery stores were $232,947; in gas stations, $484,735.

Labor-related Costs Expected to Increase

Percent of restaurant operators planning to allocate a larger proportion of their budget to the following items in 2006

	Family Dining	Casual Dining	Fine Dining	Quick-service
Wages	63%	74%	62%	60%
Benefits	28%	26%	30%	43%
Training	24%	25%	33%	44%

Source: National Restaurant Association, 2005

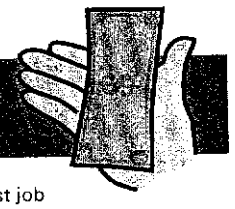
Restaurants: Industry of Opportunity

The restaurant industry is home to a diverse workforce, providing employment, career and business-ownership opportunities to people of all demographic backgrounds. Restaurants are the nation's:

- Largest private-sector employer. Outside of government, restaurants employ more people than any other industry.
- Largest employer of young people. About one of four teenagers with a job works in a restaurant.
- Largest employer of first-time workers. Twenty-eight percent of American adults got their first job experience in a restaurant.
- Largest employer of foreign-born people. The restaurant industry employs 1.5 million foreign-born employees, more than any other industry.
- Largest employer of minority managers. People of Hispanic origin account for about 11 percent of all foodservice managers and 16 percent of first-line supervisors of food-preparation-and-service workers.

A road to business ownership. The increasing diversity of the U.S. workforce has extended into business ownership, including in the restaurant industry. There were 23 million businesses in the United States in 2002, and according to preliminary figures drawn from the Census Bureau's 2002 Survey of Business Owners:

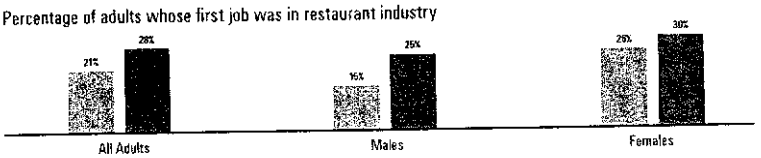
- Women: Own 28 percent of all businesses, a 20 percent increase since 1997, and roughly one of four (24.6 percent) businesses in the accommodations and foodservice sector, a Census category that includes restaurants and lodging places.
- Asian-Americans: Own 4.8 percent of all businesses (a 21 percent increase since 1997) and 15.5 percent of businesses in the accommodations and foodservices sector.
- African Americans: Own 5.2 percent of all businesses (a 45 percent increase since 1997) and 3.8 percent of businesses in the accommodations and foodservice sector.
- Hispanics: Own 6.9 percent of all businesses (a 31 percent increase since 1997) and 7.1 percent of businesses in the accommodations and foodservices sector.



MORE THAN ONE OF FOUR ADULTS FOUND THEIR FIRST JOB IN THE RESTAURANT INDUSTRY

Twenty-eight percent of adults say they received their first job experience in the restaurant industry, up from 21 percent in 1993.

Percentage of adults whose first job was in restaurant industry



Source: National Restaurant Association

Language Diversity

One of Four Restaurant-industry Employees Speaks a Foreign Language

The diversity of the restaurant industry workforce brings together people with different cultural backgrounds as well as those who speak different languages.

A special analysis conducted by the National Restaurant Association of the Census Bureau's 2003 American Community Survey data reveals:

- More than one in four eating-and-drinking-place employees (26 percent) speaks a language other than English at home, compared with 18 percent of the overall population.
- Roughly 17 percent of eating-and-drinking-place employees—or nearly two-thirds (64.8 percent) of the eating-and-drinking-place employees who speak a language other than English at home—use Spanish at home.
- Many eating-and-drinking-place employees are bilingual. Of restaurant-industry employees who speak a language other than English at home, close to two-thirds (63 percent) speak English "well" or "very well." The remaining 37 percent speak English either "not well" or "not at all."

With the restaurant industry expected to add 1.9 million jobs by 2016, every employee counts. Restaurants offer opportunity: Nine of 10 salaried employees in a fullservice restaurant got their start as hourly employees. Foreign-born employees are a critical source not only of front-line employees but also management staff and executives. Restaurateurs are working aggressively to understand and bridge cultural differences as well as provide language tools and resources to help employees with limited English-language proficiency move up the career ladder.

Languages Spoken at Home: Restaurant Employees Versus U.S. Population

	Overall population	Eating-and-drinking-place employees
Only English	82%	74%
Spanish	11%	17%
Asian and Pacific Island languages	3%	5%
Other Indo-European languages	4%	4%
Other languages	** %	** %

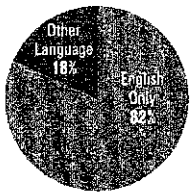
** less than 1 percent
Source: Bureau of the Census, 2003; National Restaurant Association

English-language Proficiency of Eating-and-Drinking Place Employees Who Speak a Foreign Language at Home

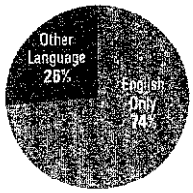
Speak English "very well"	41%
Speak English "well"	22%
Speak English "not well"	27%
Speak English "not at all"	10%

Source: Bureau of the Census, 2003; National Restaurant Association

Languages Spoken at Home



Overall Population



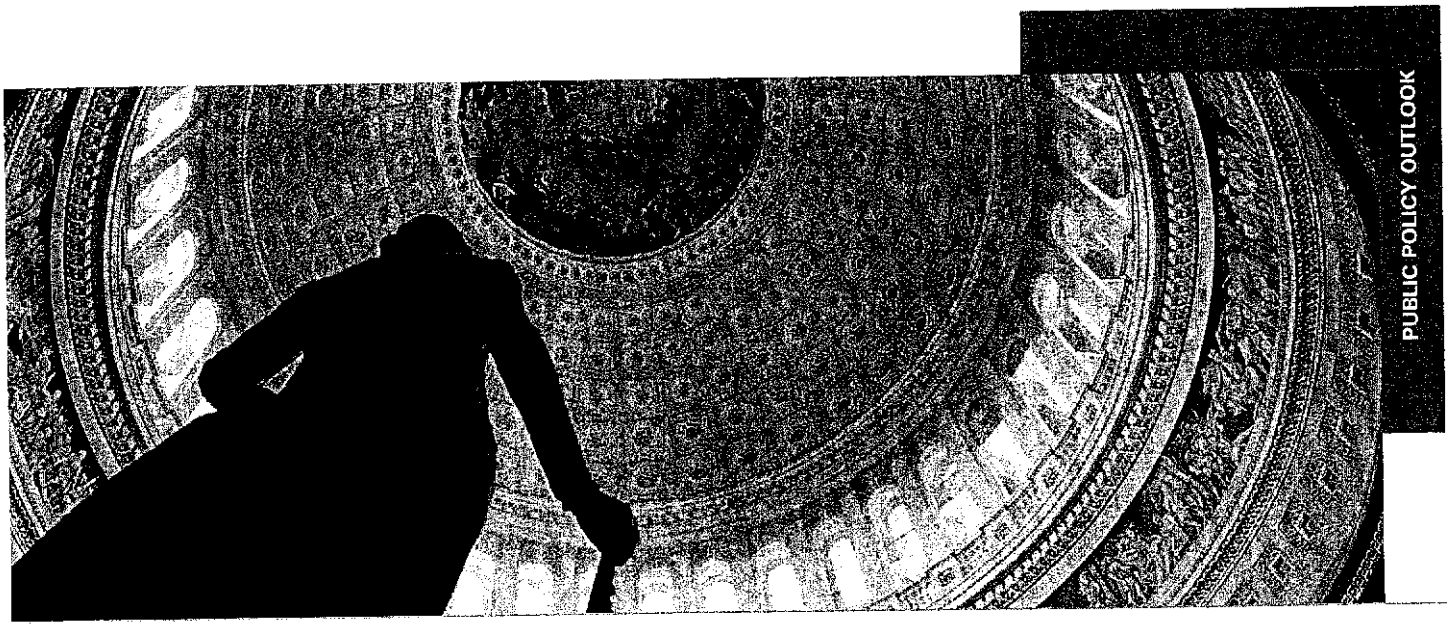
Eating-and-Drinking-Place Employees

Source: Bureau of the Census, 2003; National Restaurant Association

Languages Spoken at Home, by Foodservice Occupation

Languages spoken at home, for individuals in selected foodservice occupations	% who speak only English	% who speak Spanish	% who speak Asian and Pacific Island languages	% who speak other Indo-European languages	% who speak other languages
Foodservice managers	76%	9%	7%	6%	1%
Chefs and head cooks	60	20	12	7	1
First-line supervisors of food preparation/serving workers	83	11	3	3	1
Cooks	66	25	5	4	1
Food-preparation workers	70	22	4	4	1
Bartenders	90	6	1	2	1
Combined food-preparation-and-serving workers	83	12	3	2	**
Counter attendants, cafeteria/food concession/coffee shop	82	12	2	4	1
Waiters and waitresses	82	10	4	3	1
Food servers, nonrestaurant	76	16	3	4	1
Dining room/cafeteria attendants, bartender helpers	64	30	2	4	**
Dishwashers	62	31	2	3	1
Hosts and hostesses	87	8	2	3	**

** Less than 0.5 percent
Note: May not sum exactly to 100 percent due to rounding
Source: Bureau of the Census, 2003; National Restaurant Association



PUBLIC POLICY OUTLOOK

SECTION HIGHLIGHTS

- Restaurants support pro-growth tax policies that enable businesses to expand their operations and provide more jobs.
- Restaurateurs support an end to abusive litigation.
- Restaurants support policies that help nurture and grow the industry's workforce, including expanded access to health insurance and sensible immigration policies.
- The National Restaurant Association works closely with federal officials to ensure a safe and secure food supply.
- The Association believes balance, moderation and physical activity are the keys to a healthy lifestyle—not government mandates.

With 925,000 locations, 12.5 million employees, direct annual sales of $511 billion and a total economic impact of $1.3 trillion, restaurants are critical to U.S. economic health. The mission of the National Restaurant Association is to make sure the nation's policymakers understand what it takes to run a foodservice business. The Association's objective: For restaurants to be able to operate in an environment where they can thrive, grow and create jobs.

Promote Economic Growth

The National Restaurant Association supports pro-growth tax policies. When restaurants are able to invest money in their businesses, they create jobs and boost national, state and local economies.

- **Relief for hurricane-affected businesses:** The hurricanes of 2005 dealt a devastating blow to thousands of Gulf Coast restaurants and their employees. The National Restaurant Association estimates that hurricane-affected areas were home to about 6,800 restaurants employing roughly 90,000 people. The National Restaurant Association supports business incentives and other economic-stimulus initiatives to help these restaurants reopen and bring employees back to their jobs.
- **Restaurant-building depreciation:** The National Restaurant Association supports a permanent change in federal tax law to let restaurants depreciate the cost of restaurant improvements and new construction over 15 rather than 39½ years.
- **Business-meal deductibility:** The cost of doing business over a meal is a legitimate business expense that merits the same tax treatment as other legitimate business expenses. The National Restaurant Association supports restoring the federal tax deduction for business-meal expenditures to 100 percent.

Nurture and Grow the Industry's Workforce

Strong employment is critical to a strong U.S. economy. As the nation's largest private-sector employer, the restaurant industry is a cornerstone of career-and-employment opportunities for millions of Americans from every background.

- **Immigration reform:** Americans agree: The immigration system is broken. As Congress weighs how to reform the system, the Association is working closely with lawmakers to emphasize the need for a comprehensive reform bill that includes three elements: (1) increased national security and border control; (2) an efficient temporary-worker program that allows employers to recruit immigrant workers when there is a shortage of domestic workers; and (3) a process that provides legal status for qualified, screened, undocument-

ed migrants now in the United States.

• **Health insurance:** The National Restaurant Association urges Congress to pass a law creating "small-business health plans," which would let small and mid-size business join forces across state lines to buy insurance through their professional and business associations. The Association also supports streamlined rules to make it easier for employers to offer health savings accounts to employees.

• **Entry-level wage:** The Association remains opposed to any federally mandated increases in the entry-level wage. Such increases reduce opportunities for lesser-skilled workers and lessen job creation.

• **Work Opportunity Tax Credit:** Congress created this federal income tax credit to encourage employers to hire people who may have a hard time finding a job, including at-risk youth, ex-felons and welfare recipients. Congress has a history of letting the WOTC expire and then reauthorizing it for only a year or two. The National Restaurant Association believes a permanent WOTC would encourage employers to build the tax credit into their recruiting, hiring and training plans and help bring thousands of people into the workforce.

Promote Effective Health and Safety Regulations

The restaurant industry has no higher priority than the safety of the nation's food supply and the health and wellness of restaurant customers and employees.

• **Avian flu:** The Association is working with its restaurant members, the foodservice-supplier community, and leading federal officials to track this poultry disease and support efforts to aggressively treat the disease within the poultry population in order to prevent it from spreading to humans. In the event that the disease ever spread to humans, the Association has established close ties with federal officials at the U.S. Centers for Disease Control and Prevention, Food and Drug Administration, and throughout the government to understand the issues and challenges involved and keep operators and restaurant customers informed of next steps for the restaurant industry.

• **FDA Food Code:** The U.S. Food and Drug Administration's September 2005 release of a new Model Food Code to guide state and local officials in regulating food safety and sanitation in restaurants sets off a new round of state adoptions of the code. The Association is working closely with its state association partners to make sure the Food Code is implemented accurately, and also providing the industry's feedback to ensure the next version of the Code is even more workable for restaurants.

Reduce abusive litigation

Lawsuit abuse is a rising problem for restaurants. High-priced liability insurance and expensive out-of-court settlements should not be a cost of doing business. With seven in 10 restaurants employing fewer than 20 people and restaurant profit margins hovering around 4 percent, a single frivolous lawsuit is enough to put a restaurant out of business. The Association supports federal bills that would stop people from suing restaurants for their obesity-related health problems; sanction attorneys who file frivolous claims; and require that business owners receive advance notice of potential accessibility problems before being hit with lawsuits under the Americans with Disabilities Act.

Take the Lead on Nutrition

The restaurant industry is committed to the health and wellness of restaurant customers, and voluntarily and aggressively markets diverse menu offerings to nutrition-conscious customers.

The average American consumes the vast majority of meals at home, but when Americans do dine in one of the nation's 925,000 restaurants, they find a wide selection of foods in a variety of venues—meeting their demands for choice, value and flexibility, as well as their tastes and dietary needs. The Association believes that balance, moderation and physical activity are the keys to a healthy lifestyle—not government mandates, one-size-fits-all menu-labeling regulations, or punitive taxes.

In the States: Front-burner Issues Include Minimum Wage, Health Care, Menu Labeling

In 2006, 44 states will convene for regular legislative sessions. The National Restaurant Association expects minimum wage proposals, health-insurance initiatives and measures to mandate nutrition data on menus to be among the top issues facing restaurateurs at the state level.

Some of the most anti-business proposals may come in the form of ballot initiatives. Activist groups are working to get the voter signatures they need to put questions about wage hikes or health benefits mandates directly to the voters on state ballots in 2006.

The Association and its state restaurant association partners are extremely concerned about these measures. For more information visit www.restaurant.org/government/state or contact the state restaurant associations (www.restaurant.org/state).

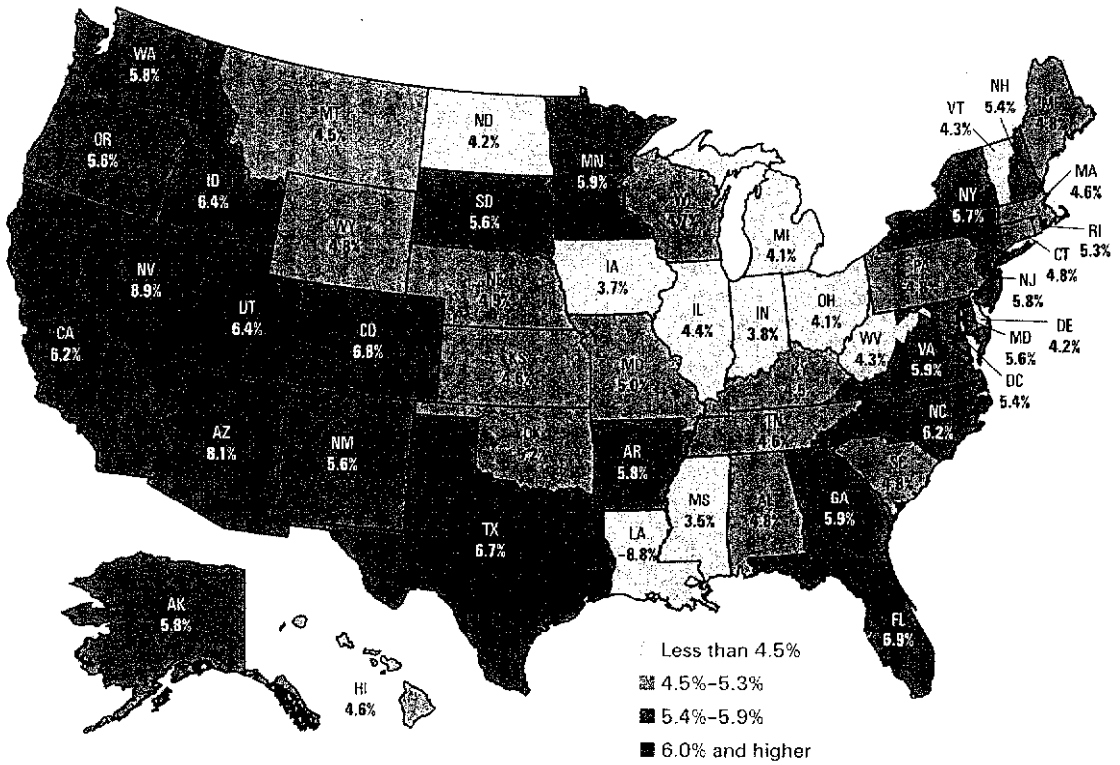
STATE & REGIONAL OUTLOOK

SECTION HIGHLIGHTS

- Jobs, income and population are expected to grow in all nine regions of the country in 2006—a good sign for restaurants.
- The top 15 states for restaurant-sales growth are in the South and West.
- The top region for restaurant-sales growth in 2006 is expected to be the Mountain region, where restaurant sales are projected to climb 7.1 percent.
- California is projected to post the highest restaurant-sales volume in the country, at $51.5 billion.

THE IMPACT OF THE HURRICANES: Hurricanes Katrina and Rita caused substantial disruption for the restaurant industry in Louisiana, Mississippi and Alabama in 2005 and will continue to have an impact well into the future as the rebuilding process gets underway. The National Restaurant Association estimated in September that the areas most heavily impacted by the hurricanes were home to about 6,800 restaurant-and-foodservice establishments employing roughly 90,000 individuals. The hurricane's effects on the restaurant industry in Louisiana and Mississippi (and, to a lesser degree, Alabama) continue to play themselves out. The timeline for the rebuilding process that will be required to return the restaurant industries in these states to their pre-hurricane levels is definitely long-term.

2006 Restaurant Sales Growth Projections (%)

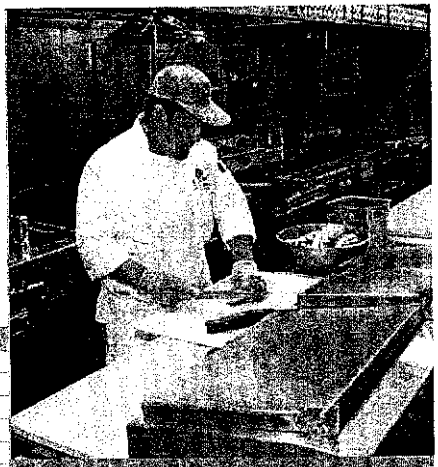


STATE & REGIONAL OUTLOOK

ECONOMIC INDICATORS, 2005 TO 2006

	Growth in Total Employment 2005–2006	Growth In Real Disposable Personal Income 2005–2006	Growth In Total Population 2005–2006	Restaurant Sales ($000) 2005	Restaurant Sales ($000) 2006	Restaurant Sales ($000) Percent Change
New England	**1.4%**	**2.7%**	**0.4%**	**$21,126,370**	**$22,133,200**	**4.8%**
Connecticut	1.2%	3.0%	0.5%	$4,571,163	$4,789,018	4.8%
Maine	1.4	2.5	0.4	1,592,464	1,668,903	4.8
Massachusetts	1.2	2.6	0.2	10,727,059	11,220,504	4.6
New Hampshire	2.1	3.2	0.9	1,874,602	1,975,831	5.4
Rhode Island	1.7	2.6	0.4	1,633,513	1,720,090	5.3
Vermont	1.9	2.4	0.3	727,569	758,854	4.3
Middle Atlantic	**1.5%**	**2.3%**	**0.3%**	**$48,704,099**	**$51,359,189**	**5.4%**
New Jersey	1.7%	2.9%	0.6%	$10,676,634	$11,290,885	5.8%
New York	1.4	2.1	0.2	24,166,230	25,543,292	5.7
Pennsylvania	1.5	2.2	0.3	13,862,035	14,525,012	4.8
South Atlantic	**2.3%**	**3.9%**	**1.4%**	**$71,999,313**	**$76,367,692**	**6.1%**
Delaware	1.0%	3.2%	1.0%	$1,212,485	$1,263,298	4.2%
District of Columbia	1.3	1.5	-0.2	1,914,953	2,018,933	5.4
Florida	3.5	4.0	2.0	22,463,696	24,013,691	6.9
Georgia	1.7	2.5	1.7	11,887,575	12,588,942	5.9
Maryland	2.3	3.1	0.8	7,270,167	7,677,297	5.6
North Carolina	1.8	3.9	1.2	10,531,802	11,184,774	6.2
South Carolina	1.1	3.2	0.9	5,307,282	5,564,557	4.8
Virginia	1.9	3.1	1.0	9,631,494	10,199,753	5.9
West Virginia	1.6	3.2	0.0	1,779,859	1,856,447	4.3
East North Central	**1.5%**	**2.2%**	**0.4%**	**$56,662,155**	**$59,061,578**	**4.2%**
Illinois	2.0%	2.1%	0.5%	$16,340,864	$17,057,983	4.4%
Indiana	1.8	2.8	0.4	7,652,971	7,947,233	3.8
Michigan	0.9	2.4	0.4	11,866,347	12,358,327	4.1
Ohio	1.1	2.0	0.2	14,839,467	15,453,162	4.1
Wisconsin	1.9	2.5	0.5	5,962,506	6,244,873	4.7
East South Central	**2.1%**	**3.4%**	**0.8%**	**$19,655,409**	**$20,534,837**	**4.5%**
Alabama	2.0%	3.4%	0.8%	$4,755,257	$4,983,509	4.8%
Kentucky	1.6	2.0	0.7	4,855,731	5,074,239	4.5
Mississippi	1.5	2.4	0.2	2,625,184	2,716,567	3.5
Tennessee	2.7	4.4	0.7	7,419,237	7,760,522	4.6
West North Central	**1.8%**	**2.2%**	**0.4%**	**$23,396,286**	**$24,572,551**	**5.0%**
Iowa	1.6%	2.0%	0.0%	$2,908,922	$3,016,553	3.7%
Kansas	1.7	2.8	0.2	3,069,330	3,210,519	4.6
Minnesota	2.0	2.0	0.8	6,598,205	6,987,499	5.9
Missouri	2.2	3.0	0.5	7,395,696	7,764,001	5.0
Nebraska	1.2	1.6	0.4	1,956,653	2,052,701	4.9
North Dakota	1.1	2.0	0.1	619,067	645,067	4.2
South Dakota	1.8	2.1	0.3	848,413	896,211	5.6
West South Central	**2.0%**	**3.7%**	**1.1%**	**$40,117,709**	**$41,902,112**	**4.4%**
Arkansas	2.0%	3.4%	0.7%	$2,715,664	$2,873,173	5.8%
Louisiana	0.0	1.0	-0.1	5,311,137	4,843,757	-8.8
Oklahoma	1.7	3.7	0.4	3,993,635	4,201,304	5.2
Texas	2.5	4.1	1.5	28,097,273	29,983,878	6.7
Mountain	**2.8%**	**3.8%**	**1.9%**	**$25,259,621**	**$27,058,077**	**7.1%**
Arizona	3.2%	4.6%	2.5%	$6,847,509	$7,402,157	8.1%
Colorado	2.9	4.1	1.6	7,076,748	7,557,967	6.8
Idaho	2.5	3.3	1.3	1,351,722	1,438,808	6.4
Montana	2.3	2.9	0.7	1,055,702	1,102,970	4.5
Nevada	3.7	3.8	2.9	3,427,183	3,732,202	8.9
New Mexico	2.3	2.7	1.1	2,312,596	2,441,790	5.6
Utah	2.2	3.5	1.5	2,560,367	2,724,230	6.4
Wyoming	1.7	2.5	0.4	627,794	657,953	4.8
Pacific	**2.0%**	**3.6%**	**1.3%**	**$64,717,980**	**$68,629,098**	**6.0%**
Alaska	2.0%	4.2%	1.4%	$994,622	$1,052,176	5.8%
California	1.9	3.7	1.3	48,480,871	51,490,602	6.2
Hawaii	1.8	3.1	0.6	2,703,358	2,827,713	4.6
Oregon	2.2	2.7	1.2	4,721,535	4,986,226	5.6
Washington	2.7	3.6	1.4	7,817,594	8,272,381	5.8

Source: National Restaurant Association



FOCUS ON: RESTAURANT-SALES GROWTH

STATES WITH HIGHEST RESTAURANT-SALES GROWTH

Projected increase in restaurant sales in 2006

1.	Nevada	8.9%
2.	Arizona	8.1%
3.	Florida	6.9%
4.	Colorado	6.8%
5.	Texas	6.7%
6.	Idaho, Utah	6.4%
7.	California, North Carolina	6.2%

STATES WITH HIGHEST RESTAURANT SALES VOLUME

Projected restaurant-sales volume in 2006

1.	California	$51.5 billion
2.	Texas	$30.0 billion
3.	New York	$25.5 billion
4.	Florida	$24.0 billion
5.	Illinois	$17.1 billion
6.	Ohio	$15.5 billion
7.	Pennsylvania	$14.5 billion
8.	Georgia	$12.6 billion
9.	Michigan	$12.4 billion
10.	New Jersey	$11.3 billion

REGIONS, RANKED BY RESTAURANT-SALES GROWTH

Projected increase in restaurant sales in 2006

1.	Mountain	7.1%
2.	South Atlantic	6.1%
3.	Pacific	6.0%
4.	Middle Atlantic	5.4%
5.	West North Central	5.0%
6.	New England	4.8%
7.	East South Central	4.5%
8.	West South Central	4.4%
9.	East North Central	4.2%

NEW ENGLAND

A look at key economic indicators for the restaurant industry in 2006

EMPLOYMENT: Job growth in New England is expected to continue to improve in 2006. The region is projected to add jobs at a 1.4 percent rate, up from a 1.0 percent gain in 2005 and the strongest employment growth since 2000. Still, the region's job growth would remain a half percentage point below the expected employment gain on the national level. New Hampshire is expected to set the pace in New England with a 2.1 percent employment gain, followed by a 1.9 percent gain in Vermont.

DISPOSABLE INCOME: New England is projected to register real disposable-personal-income growth of 2.7 percent in 2006, a solid improvement over 2005 and only slightly below the projected gain of 3.0 percent on the national level.

POPULATION: New England's population is expected to grow at a rate below the national average in 2006. The region is projected to add residents at a 0.4 percent rate—a half percentage point below the expected gain for the nation as a whole. Within the six-state region, New Hampshire is projected to register population growth of 0.9 percent, followed by a 0.5 percent gain in Connecticut and 0.4 percent gains in Maine and Rhode Island.

RESTAURANT SALES: Although New England's economy is projected to improve in 2006, the region's restaurant industry is expected to post sales gains below the national average. Restaurant sales in New England are projected to total $22.1 billion in 2006—a 4.8 percent increase over their 2005 level.

Within the region, New Hampshire is expected to lead the way with restaurant-sales growth of 5.4 percent, followed closely by a 5.3 percent gain in Rhode Island. Massachusetts, home to half of the restaurant sales in New England, is projected to post sales growth of 4.6 percent in 2006.

* Restaurant sales include sales at eating places and managed-restaurant-services providers (contract foodservice). National sales for this grouping are projected to increase at a 5.4 percent rate in 2005.

AT A GLANCE

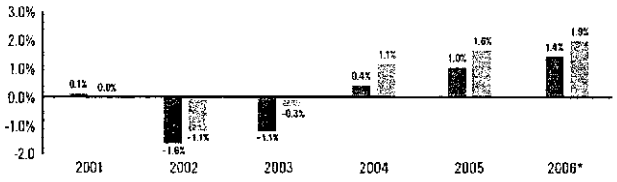
Economic Indicators

2005-2006 PROJECTED GROWTH IN ...	New England Region	National Average
Total employment	1.4%	1.9%
Real disposable personal income	2.7%	3.0%
Population	0.4%	0.9%

In Focus: JOB GROWTH

New England Projected to Post Strongest Job Growth Since 2000

Total Employment Growth: New England versus United States



Source: Bureau of Labor Statistics, National Restaurant Association; * projected

Projected Restaurant Sales 2005 to 2006 ($000)

	2005	2006	Percent Change
Connecticut	$4,571,163	$4,789,018	4.8%
Maine	1,592,464	1,668,903	4.8
Massachusetts	10,727,059	11,220,504	4.6
New Hampshire	1,874,602	1,975,831	5.4
Rhode Island	1,633,513	1,720,090	5.3
Vermont	727,569	758,854	4.3
New England	**$21,126,370**	**$22,133,200**	**4.8%**

Source: National Restaurant Association

MIDDLE ATLANTIC

A look at key economic indicators for the restaurant industry in 2006

EMPLOYMENT: The Middle Atlantic region is projected to register job growth of 1.5 percent in 2006, an improvement over the 1.1 percent gain in 2005 but slightly below the projected 1.9 percent job growth on the national level. Within the three-state region, New Jersey is expected to set the pace with payroll gains of 1.7 percent in 2006, followed by 1.5 percent and 1.4 percent gains in Pennsylvania and New York, respectively.

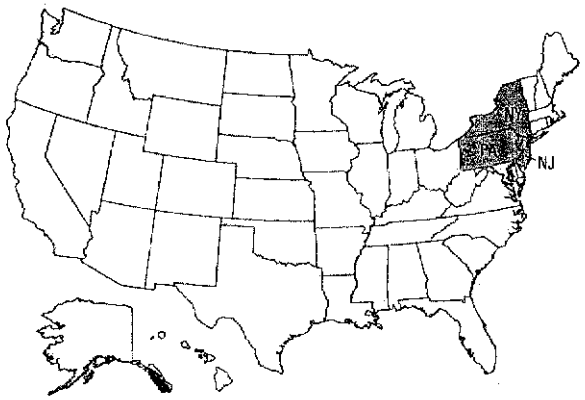
DISPOSABLE INCOME: Income growth in the Middle Atlantic region is expected to remain below the national average in 2006. The region is projected to post real disposable-personal-income growth of 2.3 percent, well below the expected 3.0 percent gain for the nation as a whole. New Jersey is projected to lead the way with a 2.9 percent gain in real disposable personal income, followed by a 2.2 percent gain in Pennsylvania.

POPULATION: Population in the Middle Atlantic region continues to grow at a rate below the national average. The region is projected to add residents at a 0.3 percent rate in 2006, well below the 0.9 percent gain expected for the nation as a whole. New Jersey is projected to register the strongest population gains at 0.6 percent, followed by 0.3 percent and 0.2 percent population growth in Pennsylvania and New York, respectively.

RESTAURANT SALES: Bolstered by an improving economy, the Middle Atlantic region is projected to see restaurant sales grow at a rate that matches the national average in 2006. Restaurant sales in the region are projected to total $51.4 billion in 2006, a 5.4 percent increase over their 2005 level.

Within the three-state region, New Jersey is expected to set the pace with restaurant-sales growth of 5.8 percent, followed by a 5.7 percent gain in New York and a 4.8 percent gain in Pennsylvania.

* Restaurant sales include sales at eating places and managed restaurant-services providers (contract foodservice). National sales for this grouping are projected to increase at a 5.4 percent rate in 2005.



AT A GLANCE

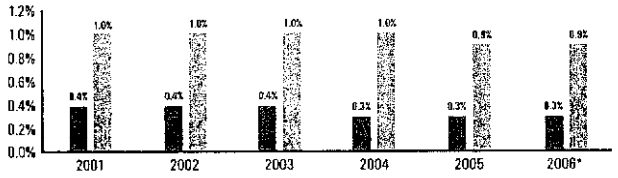
Economic Indicators

	Middle Atlantic Region	National Average
2005–2006 PROJECTED GROWTH IN ...		
Total employment	1.5%	1.9%
Real disposable personal income	2.3%	3.0%
Population	0.3%	0.9%

In Focus: POPULATION GROWTH

Middle Atlantic Region's Population Growth Lagging Behind National Average

Total Population Growth: Middle Atlantic Region versus United States



Source: U.S. Census Bureau, National Restaurant Association; * projected

Projected Restaurant Sales 2005 to 2006 ($000)

	2005	2006	Percent Change
New Jersey	$10,676,634	$11,290,885	5.8%
New York	24,166,230	25,543,292	5.7
Pennsylvania	13,862,035	14,525,012	4.8
Middle Atlantic	**$48,704,899**	**$51,359,189**	**5.4%**

Source: National Restaurant Association

SOUTH ATLANTIC

A look at key economic indicators for the restaurant industry in 2006

EMPLOYMENT: The South Atlantic region's economy is expected to continue to outpace the national average in 2006. The region is projected to post job growth of 2.3 percent in 2006, slightly above the national average of 1.9 percent. Florida is projected to set the pace with payroll gains of 3.5 percent in 2006, with Maryland following a distant second at 2.3 percent. Virginia is projected to register job growth at the national average of 1.9 percent in 2006.

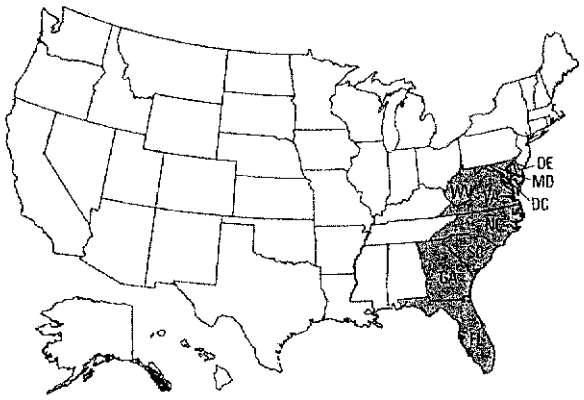
DISPOSABLE INCOME: The South Atlantic region is projected to register real disposable- personal-income growth of 3.4 percent in 2006, slightly above the expected 3.0 percent gain for the nation as a whole. Florida is expected to lead the region with income growth of 4.0 percent, followed closely by a 3.9 percent gain in North Carolina. Delaware, South Carolina and West Virginia are all projected to post real income gains of 3.2 percent in 2006.

POPULATION: Population in the South Atlantic region will continue to grow at a rate above the national average in 2006. The region is projected to add residents at a solid 1.4 percent rate in 2006, a half percentage point above the 0.9 percent gain expected on the national level. Florida is expected to post population growth of 2.0 percent in 2006, followed by a 1.7 percent population gain in Georgia.

RESTAURANT SALES: With economic and population growth well above the national average, the South Atlantic region is projected to post solid restaurant-sales gains in 2006. The region is expected to register restaurant sales of $76.4 billion in 2006, a 6.1 percent gain over their 2005 level and the second-strongest growth among the nine U.S. regions.

Florida is expected to lead the region with restaurant-sales growth of 6.9 percent in 2006, followed by a 6.2 percent increase in North Carolina. Georgia and Virginia are projected to post gains of 5.9 percent, with Maryland coming in slightly above the national average at 5.6 percent.

* Restaurant sales include sales at eating places and managed-restaurant-services providers (contract foodservice). National sales for this grouping are projected to increase at a 5.4 percent rate in 2005.



AT A GLANCE

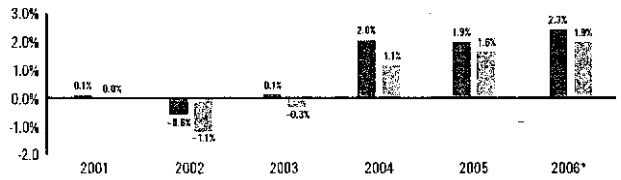
Economic Indicators

	South Atlantic Region	National Average
2005–2006 PROJECTED GROWTH IN ...		
Total employment	2.3%	1.9%
Real disposable personal income	3.4%	3.0%
Population	1.4%	0.9%

In Focus: JOB GROWTH

South Atlantic Region Projected to Post Job Growth Above National Average

Total Employment Growth: South Atlantic Region versus United States



Source: Bureau of Labor Statistics, National Restaurant Association; * projected

Projected Restaurant Sales 2005 to 2006 ($000)

	2005	2006	Percent Change
Delaware	$1,212,485	$1,263,298	4.2%
District of Columbia	1,914,953	2,018,933	5.4
Florida	22,463,696	24,013,691	6.9
Georgia	11,887,575	12,588,942	5.9
Maryland	7,270,167	7,677,297	5.6
North Carolina	10,531,802	11,184,774	6.2
South Carolina	5,307,282	5,564,557	4.8
Virginia	9,631,494	10,199,753	5.9
West Virginia	1,779,859	1,856,447	4.3
South Atlantic	**$71,999,313**	**$76,367,692**	**6.1**

Source: National Restaurant Association

EAST NORTH CENTRAL

A look at key economic indicators for the restaurant industry in 2006

EMPLOYMENT: The East North Central region is projected to post job growth of 1.5 percent in 2006—a solid improvement over the 0.4 percent gain registered in 2005 and the strongest employment gain since 2000. Illinois is expected to lead the way with job growth of 2.0 percent, followed by 1.9 percent and 1.8 percent employment gains in Wisconsin and Indiana, respectively.

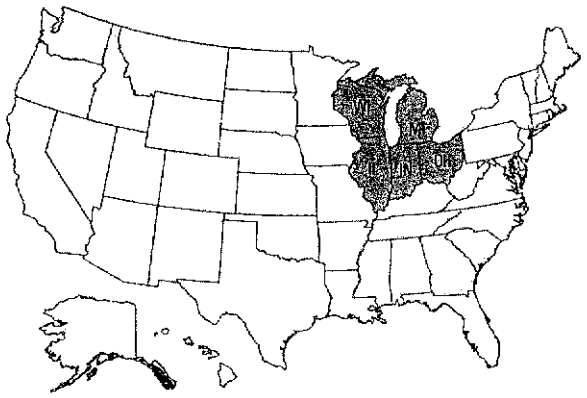
DISPOSABLE INCOME: The East North Central region is expected to post real disposable- personal-income growth of 2.2 percent in 2006, an improvement over the 2005 performance but well below the projected 3.0 percent gain for the nation as a whole. Within the five-state region, Indiana is projected to post real income growth of 2.8 percent in 2006, followed by 2.5 percent and 2.4 percent gains in Wisconsin and Michigan, respectively.

POPULATION: Population in the East North Central region is expected to continue to grow at a rate below the national average in 2006. The region is projected to add residents at a 0.4 percent rate, less than half of the growth rate expected for the nation as a whole. Illinois and Wisconsin are expected to post population gains of 0.5 percent, followed by 0.4 percent gains in Indiana and Michigan. Ohio is projected to add residents at a 0.2 percent rate in 2006.

RESTAURANT SALES: With economic and population growth that is expected to remain below the national average, restaurant-sales growth in the East North Central region is projected to rank last out of the nine U.S. regions in 2006. Restaurant sales in the region are expected to total $59.1 billion in 2006, a 4.2 percent increase over their 2005 level.

Within the region, Wisconsin is expected to set the pace with 4.7 percent restaurant-sales growth, followed by Illinois at 4.4 percent, Michigan and Ohio at 4.1 percent, and Indiana at 3.8 percent.

* Restaurant sales include sales at eating places and managed-restaurant-services providers (contract foodservice). National sales for this grouping are projected to increase at a 5.4 percent rate in 2005.



AT A GLANCE

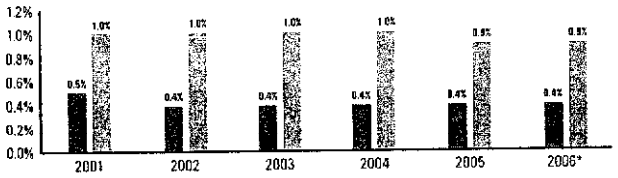
Economic Indicators

	East North Central Region	National Average
2005–2006 PROJECTED GROWTH IN ...		
Total employment	1.5%	1.9%
Real disposable personal income	2.2%	3.0%
Population	0.4%	0.9%

In Focus: POPULATION GROWTH

East North Central Region's Population Growth Less Than Half of National Average

Total Population Growth: East North Central Region versus United States



Source: U.S. Census Bureau, National Restaurant Association; * projected

Projected Restaurant Sales 2005 to 2006 ($000)

	2005	2006	Percent Change
Illinois	$16,340,864	$17,057,983	4.4%
Indiana	7,652,971	7,947,233	3.8
Michigan	11,866,347	12,358,327	4.1
Ohio	14,839,467	15,453,162	4.1
Wisconsin	5,962,506	6,244,873	4.7
East North Central	$56,662,155	$59,061,578	4.2

Source: National Restaurant Association

EAST SOUTH CENTRAL

A look at key economic indicators for the restaurant industry in 2006

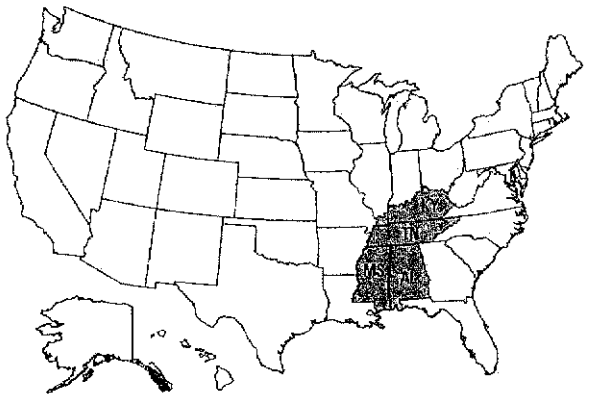
EMPLOYMENT: The East South Central region is projected to add jobs at a solid 2.1 percent rate in 2006—more than double its 2005 performance and slightly above the 1.9 percent job growth expected on the national level. Tennessee is projected to add jobs at a 2.7 percent rate, followed by a 2.0 percent gain in Alabama. Mississippi is expected to register employment growth of 1.5 percent in 2006—a solid recovery from the state's hurricane-related job losses in 2005.

DISPOSABLE INCOME: The East South Central region is expected to register a 3.4 percent gain in real disposable personal income in 2006—slightly above the projected 3.0 percent gain for the nation as a whole. Tennessee is projected to post strong income growth of 4.4 percent in 2006, setting the pace in the four-state region.

POPULATION: Population growth in the East South Central region is expected to remain below the national average in 2006. The region is projected to add residents at a 0.6 percent rate, compared to the 0.9 percent gain expected on the national level. Within the region, Alabama is expected to register population growth of 0.8 percent, followed by 0.7 percent gains in Kentucky and Tennessee. Mississippi is projected to add residents at a 0.2 percent rate in 2006.

RESTAURANT SALES: Restaurant sales in the East South Central region are projected to total $20.5 billion in 2006, a 4.5 percent increase over their 2005 level. Within the region, Alabama is expected to lead the way with a 4.8 percent sales increase, followed by 4.6 percent and 4.5 percent gains in Tennessee and Kentucky, respectively. As Mississippi's travel and tourism industry continues to rebuild from Hurricane Katrina in 2006, restaurant sales are expected to total $2.7 billion—up 3.5 percent from 2005.

* Restaurant sales include sales at eating places and managed-restaurant-services providers (contract foodservice). National sales for this grouping are projected to increase at a 5.4 percent rate in 2005.



AT A GLANCE

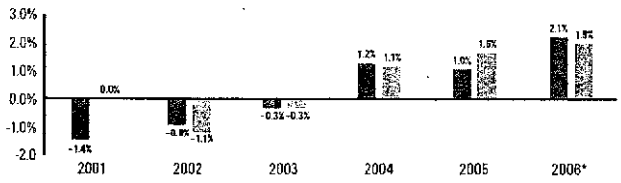
Economic Indicators

2005-2006 PROJECTED GROWTH IN ...	East South Central Region	National Average
Total employment	2.1%	1.9%
Real disposable personal income	3.4%	3.0%
Population	0.6%	0.9%

In Focus: JOB GROWTH

East South Central Region to Post Job Growth Above the National Average

Total Employment Growth: East South Central Region versus United States



Source: Bureau of Labor Statistics; National Restaurant Association; * projected

Projected Restaurant Sales 2005 to 2006 ($000)

	2005	2006	Percent Change
Alabama	$4,755,257	$4,983,509	4.8%
Kentucky	4,855,731	5,074,239	4.5
Mississippi	2,625,184	2,716,567	3.5
Tennessee	7,419,237	7,760,522	4.6
East South Central	$19,655,409	$20,534,837	4.5 %

Source: National Restaurant Association

WEST NORTH CENTRAL

A look at key economic indicators for the restaurant industry in 2006

EMPLOYMENT: The West North Central region's economy will continue to improve in 2006. The region is projected to add jobs at a 1.8 percent rate in 2006, an improvement over 2005's job growth of 1.3 percent and only slightly below the projected gain for the nation as a whole. Missouri is expected to set the pace with job growth of 2.2 percent.

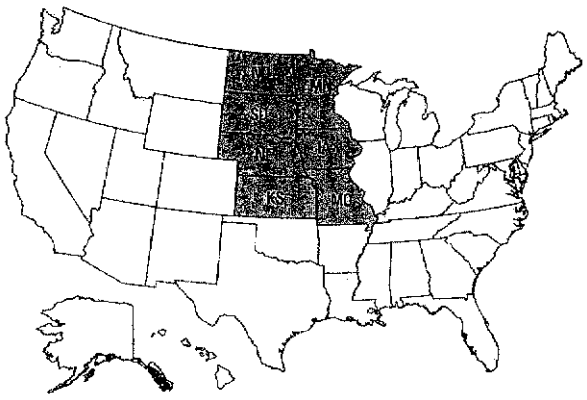
DISPOSABLE INCOME: The West North Central region is projected to register real disposable-personal-income growth of 2.2 percent in 2006, an improvement over the region's 2005 performance but well below the 3.0 percent gain expected on the national level. Missouri is projected to lead the way with income growth of 3.0 percent.

POPULATION: Population in the West North Central region will continue to grow at a rate below the national average in 2006. The region is expected to add residents at a 0.4 percent rate, a half percentage point below the 0.9 percent gain projected on the national level. Minnesota is expected to add residents at a 0.8 percent rate, followed by a 0.5 percent gain in Missouri. Iowa's population is expected to remain flat, while North Dakota is projected to add residents at a modest 0.1 percent rate.

RESTAURANT SALES: Fueled by an improving economy, the West North Central region is expected to post moderate restaurant-sales growth in 2006. Restaurant sales in the region are projected to total $24.6 billion in 2006, a 5.0 percent gain over their 2005 level.

Minnesota is projected to set the pace in the region with a solid 5.9 percent gain in restaurant sales, followed by a 5.6 percent increase in South Dakota. The remaining five states in the region are expected to post sales growth below the national average in 2006.

* Restaurant sales include sales at eating places and managed-restaurant-services providers (contract foodservice). National sales for this grouping are projected to increase at a 5.4 percent rate in 2005.



AT A GLANCE

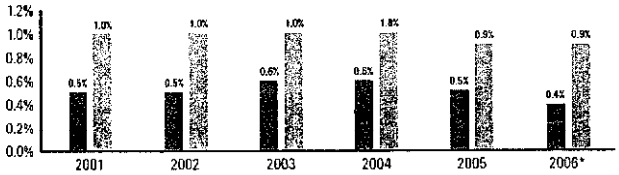
Economic Indicators

	West North Central Region	National Average
2005–2006 PROJECTED GROWTH IN ...		
Total employment	1.8%	1.9%
Real disposable personal income	2.2%	3.0%
Population	0.4%	0.9%

In Focus: POPULATION GROWTH

West North Central Region's Population Growth Remains Below National Average

Total Population Growth: West North Central Region versus United States



Source: U.S. Census Bureau, National Restaurant Association; * projected

Projected Restaurant Sales 2005 to 2006 ($000)

	2005	2006	Percent Change
Iowa	$2,908,922	$3,016,553	3.7%
Kansas	3,069,330	3,210,519	4.6
Minnesota	6,598,205	6,987,499	5.9
Missouri	7,395,696	7,764,001	5.0
Nebraska	1,956,653	2,052,701	4.9
North Dakota	619,067	645,067	4.2
South Dakota	848,413	896,211	5.6
West North Central	**$23,396,286**	**$24,572,551**	**5.0%**

Source: National Restaurant Association

WEST SOUTH CENTRAL

A look at key economic indicators for the restaurant industry in 2006

EMPLOYMENT: The West South Central region is projected to add jobs at a solid 2.0 percent rate in 2006, a strong improvement over the region's 0.6 percent employment gain in 2005. Texas is projected to set the pace with a 2.5 percent employment gain in 2006, while Arkansas and Oklahoma are expected to post job growth of 2.0 percent and 1.7 percent, respectively. Louisiana's employment is expected to remain flat in 2006, after losing jobs at a 4.4 percent rate in 2005.

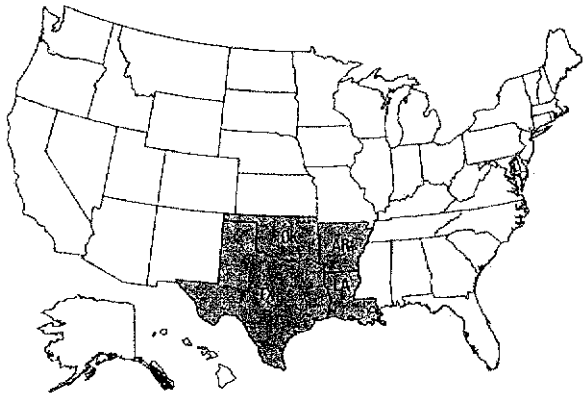
DISPOSABLE INCOME: The West South Central region is expected to register strong real disposable-personal-income growth of 3.7 percent in 2006, well above the national average of 3.0 percent. Within the four-state region, Texas is expected to lead the way with a 4.1 percent gain.

POPULATION: Population growth in the West South Central region is projected to be slightly above the gain for the nation as a whole. The region is expected to add residents at a 1.1 percent rate, compared to a national gain of 0.9 percent. Texas is expected to add residents at a strong 1.5 percent rate in 2006, while Arkansas is projected to post population growth of 0.7 percent. Louisiana's population is expected to register a modest decline in 2006.

RESTAURANT SALES: The West South Central region will be a mixed bag in 2006 in terms of restaurant sales. Overall, the region is projected to register sales of $41.9 billion, a 4.4 percent increase over restaurant sales in 2005. Within the region, however, the sales picture will be dramatically different.

Texas is expected to lead the region with a 6.7 percent increase in restaurant sales, followed by a 5.8 percent gain in Arkansas. Restaurant sales in Louisiana are projected to total $4.8 billion, a level well below pre-hurricane levels.

* Restaurant sales include sales at eating places and managed-restaurant-services providers (contract foodservice). National sales for this grouping are projected to increase at a 5.4 percent rate in 2005.



AT A GLANCE

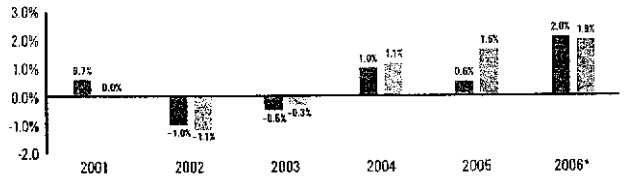
Economic Indicators

	West South Central Region	National Average
2005–2006 PROJECTED GROWTH IN ...		
Total employment	2.0%	1.9%
Real disposable personal income	3.7%	3.0%
Population	1.1%	0.9%

In Focus: JOB GROWTH

West South Central Region's Job Growth to Outpace the National Average

Total Employment Growth: West South Central Region versus United States



Source: Bureau of Labor Statistics, National Restaurant Association; * projected

Projected Restaurant Sales 2005 to 2006 ($000)

	2005	2006	Percent Change
Arkansas	$2,715,664	$2,873,173	5.8%
Louisiana	5,311,137	4,843,757	-8.8
Oklahoma	3,993,635	4,201,304	5.2
Texas	28,097,273	29,983,878	6.7
West South Central	**$40,117,709**	**$41,902,112**	**4.4***

Source: National Restaurant Association

MOUNTAIN

A look at key economic indicators for the restaurant industry in 2006

EMPLOYMENT: The economy of the Mountain region will continue to lead the nation in 2006. The region is projected to add jobs at a strong 2.8 percent rate, nearly a full percentage point above the expected national gain of 1.9 percent. Nevada is expected to set the pace with a robust 3.7 percent gain. Seven of the eight states in the Mountain region are projected to post job growth above the national average in 2006.

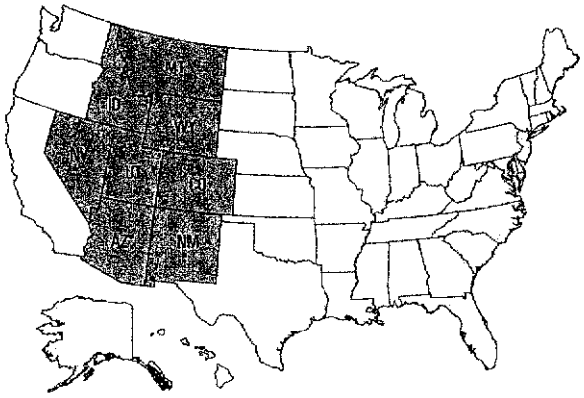
DISPOSABLE INCOME: The Mountain region also is expected to register strong income growth in 2006. Disposable personal income is projected to grow at a 3.8 percent inflation-adjusted rate in 2006, well above the 3.0 percent gain expected nationally. Arizona is projected to lead the way with a 4.6 percent real income gain.

POPULATION: In addition to solid economic growth, the Mountain region is expected to lead the nation in population growth in 2006. The region is projected to add residents at a 1.9 percent rate in 2006, with Nevada's population slated to grow 2.9 percent. Arizona is expected to post population growth of 2.5 percent, while Colorado and Utah are projected to register population gains of 1.6 percent and 1.5 percent, respectively.

RESTAURANT SALES: Driven by strong economic and population growth, the Mountain region is projected to lead the nation in restaurant-sales gains in 2006. Restaurant sales in the region are projected to total $27.1 billion in 2006, a 7.1 percent increase over their 2005 level.

Nevada is expected to lead the nation in restaurant-sales growth, with a projected 8.9 percent increase in 2006. Arizona's restaurant sales are projected to gain 8.1 percent, while Colorado's sales are expected to advance 6.8 percent. Restaurant sales in Idaho and Utah are projected to gain 6.4 percent.

* Restaurant sales include sales at eating places and managed-restaurant-services providers (contract foodservice). National sales for this grouping are projected to increase at a 5.4 percent rate in 2005.



AT A GLANCE

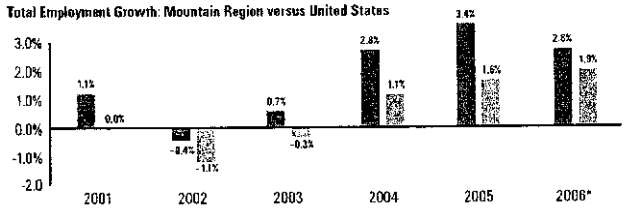
Economic Indicators

	Mountain Region	National Average
2005–2006 PROJECTED GROWTH IN ...		
Total employment	2.8%	1.9%
Real disposable personal income	3.8%	3.0%
Population	1.9%	0.9%

In Focus: JOB GROWTH

Mountain Region's Job Growth Expected to Lead the Nation

Total Employment Growth: Mountain Region versus United States



Source: Bureau of Labor Statistics, National Restaurant Association; * projected

Projected Restaurant Sales 2005 to 2006 ($000)

	2005	2006	Percent Change
Arizona	$6,847,509	$7,402,157	8.1%
Colorado	7,076,748	7,557,967	6.8
Idaho	1,351,722	1,438,808	6.4
Montana	1,055,702	1,102,970	4.5
Nevada	3,427,183	3,732,202	8.9
New Mexico	2,312,596	2,441,790	5.6
Utah	2,560,367	2,724,230	6.4
Wyoming	627,794	657,953	4.8
Mountain	**$25,259,621**	**$27,058,077**	**7.1%**

Source: National Restaurant Association

PACIFIC

A look at key economic indicators for the restaurant industry in 2006

EMPLOYMENT: The Pacific region is projected to post employment growth of 2.0 percent in 2006, which would mark the third consecutive year of job gains above the national average. Washington is expected to lead the way with job growth of 2.7 percent, followed by 2.2 percent and 2.0 percent gains in Oregon and Alaska, respectively. California is expected to add jobs at a 1.9 percent rate in 2006, matching the gain projected on the national level.

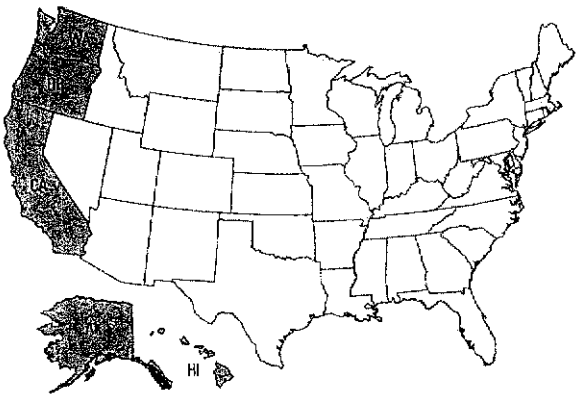
DISPOSABLE INCOME: Income growth in the Pacific region also is expected to outpace the national average in 2006. The region is projected to post real disposable-personal-income growth of 3.6 percent in 2006, compared to a national gain of 3.0 percent. Alaska is expected to set the pace with a 4.2 percent gain, followed by 3.7 percent and 3.6 percent gains in California and Washington, respectively.

POPULATION: The Pacific region is projected to post population growth of 1.3 percent in 2006, slightly above the national increase of 0.9 percent. Alaska and Washington are expected to add residents at 1.4 percent rates, while California is projected to register population growth of 1.3 percent. Hawaii is the only state in the five-state region with projected population growth below the national average, at 0.6 percent.

RESTAURANT SALES: With economic and population gains above the national average, the Pacific region is projected to post solid restaurant-sales growth in 2006. Restaurant sales in the region are expected to total $68.6 billion in 2006—a 6.0 percent gain over their 2005 level.

Within the region, California is projected to set the pace with a 6.2 percent gain in restaurant sales. Alaska and Washington are expected to post sales gains of 5.8 percent, while sales in Oregon are projected to advance 5.6 percent.

* Restaurant sales include sales at eating places and managed-restaurant-services providers (contract foodservice). National sales for this grouping are projected to increase at a 5.4 percent rate in 2005.



AT A GLANCE

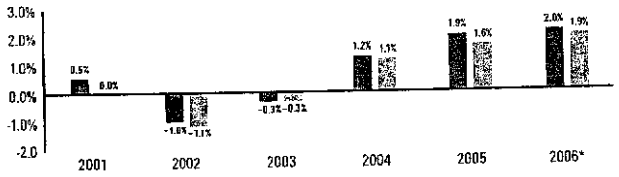
Economic Indicators

	Pacific Region	National Average
2005–2006 PROJECTED GROWTH IN ...		
Total employment	2.0%	1.9%
Real disposable personal income	3.6%	3.0%
Population	1.3%	0.9%

In Focus: JOB GROWTH

Job Growth in the Pacific Region Projected to Outpace the National Average

Total Employment Growth: Pacific Region versus United States



Source: Bureau of Labor Statistics, National Restaurant Association; * projected

Projected Restaurant Sales 2005 to 2006 ($000)

	2005	2006	Percent Change
Alaska	$994,622	$1,052,176	5.8%
California	48,480,871	51,490,602	6.2
Hawaii	2,703,358	2,827,713	4.6
Oregon	4,721,535	4,986,226	5.6
Washington	7,817,594	8,272,381	5.8
Pacific	$64,717,980	$68,629,098	6.0%

Source: National Restaurant Association

ABOUT THE NATIONAL RESTAURANT ASSOCIATION 2006 RESTAURANT INDUSTRY FORECAST

The National Restaurant Association's *2006 Restaurant Industry Forecast* projects nominal and real growth rates for all sectors of the restaurant industry. Real growth is calculated separately for each market segment.

To calculate real sales growth at eating-and-drinking places, the projected increase in menu prices (including projected price increases for alcoholic beverages served) is subtracted from the percent increase in sales.

For other industry sectors where food costs are the biggest determinant of expenses—such as colleges and universities—a modification of the Producer Price Index for food (which measures changes in wholesale food prices) is used to calculate the sector's real growth. Modifications to the PPI for food are based on historical patterns for each industry sector. The food-cost component constitutes the base percent increase, which is adjusted to reflect population changes and other pertinent factors, such as labor and overhead costs.

To arrive at 2006 real sales figures for the total restaurant industry, as well as for the Commercial and Noncommercial Restaurant Services groups, revised 2005 sales were multiplied by the respective 2005 real growth factors. The real sales figures for each of the industry sectors were added and compared with 2005 sales to obtain real growth for the industry overall and the industry's two major segments.

A word of caution

The National Restaurant Association's projections for 2006 industry sales are based on the best data available in mid-October 2005. If the outlook for general conditions or the food situation changes significantly in 2006, those projections will require adjustment. The latest developments are posted at www.restaurant.org/research. In addition, the performance of individual companies or sales in local market areas may differ substantially from the U.S. outlook.

Sales data for previous years

Getting final estimates for restaurant-industry sales in previous years is an ongoing process. The National Restaurant Association's Restaurant TrendMapper offers updated sales estimates as they become available. Visit www.restaurant.org/trendmapper to subscribe to this service.

ABOUT THE STATE AND REGIONAL FORECAST

State restaurant-sales data is arranged according to the nine U.S. Census Bureau regions. Included for each state are revised eating-place-sales data for 2005, projected 2006 eating-place-sales figures, and percent-change calculations for population, employment and disposable personal income. Much of the historical economic data in this report are based on information obtained from such sources as the Bureau of Economic Analysis, which is part of the U.S. Department of Commerce, and the Bureau of Labor Statistics, which is part of the U.S. Department of Labor.

The estimates for eating-place sales used here were prepared in consultation with the research firm Malcolm M. Knapp, Inc. State-by-state historical eating-place sales in 1972, 1977, 1982, 1987, 1992, 1997 and 2002 form the basis for those projections. Sales figures were then adjusted to reflect current and projected employment, income and population data.

A few reminders

- Sales projections for 2006 are based on the best available data in mid-October 2005. If the outlook for general economic conditions or the food situation changes significantly in 2006, those projections will require adjustments.
- Adjustments were made to arrive at a predetermined U.S. total.
- Sales figures for each state are subject to a larger margin of error than the national projections.
- Actual sales figures represent an overall allocation of total sales in the United States. Although percent changes are subject to more variation, they have been shown here as a convenience to 2006 Forecast readers.
- "Restaurant sales" includes sales in foodservice operations with and without payrolls that meet the North American Industry Classification System definition of "foodservices" (NAICS Code 722, "Food Services and Drinking Places," excluding 7224, which covers establishments primarily engaged in preparing and serving alcoholic beverages for immediate consumption). Sales totals also cover managed services (contract foodservice). As a result, the sales figures for states and regions will not equal the U.S. total for eating places.

The information in this report was prepared in consultation with the research firm Malcolm M. Knapp, Inc.

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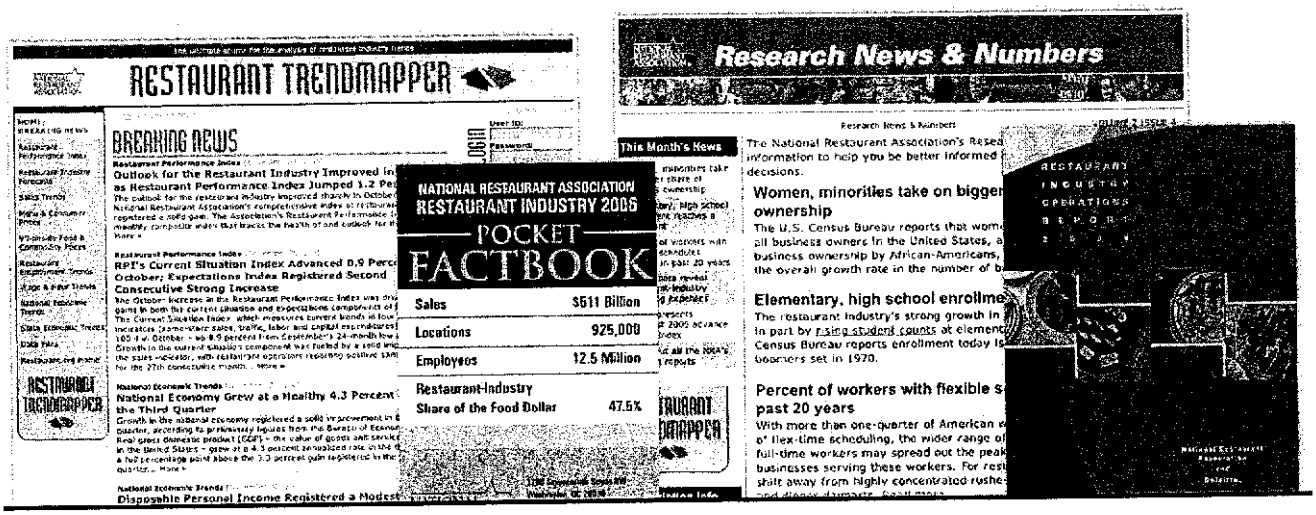

Restaurant TrendMapper

Restaurant TrendMapper provides real-time data and analysis on restaurant-industry performance and indicators—everything from the monthly National Restaurant Association Restaurant Performance Index to monthly eating-and-drinking place sales, employment and menu-price growth.

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Last updated July 25, 2005

The restaurant industry has a longstanding commitment to promoting healthy lifestyles, which can best be obtained via balance and moderation in diet combined with physical activity. Healthy options have always been available on restaurant menus everywhere. While 76 percent of meals are eaten at home, when individuals do dine out, the nation's 878,000 restaurants are responding to consumer demand with even more menu options.

As an industry of choice, restaurants offer myriad menu options to satisfy the diverse needs of a diverse population. In addition, 75 percent of consumers customize their meals by asking for alternative preparation methods, off-the-menu orders and substitutions -- requests which virtually all restaurants welcome and encourage.

To cater to increasingly health-conscious diners, restaurants across the country are increasing their efforts to provide what their guests ask for, including developing special menu items for those watching their calorie, carbohydrate and/or fat intake, voluntarily providing nutritional information in brochures and on Web sites, and establishing their own initiatives to assist consumers live a healthy lifestyle. Below is a sampling of those efforts.

Note: Information is collected from restaurant companies and public statements. The National Restaurant Association cannot guarantee the accuracy of the information, nor does a listing connote an Association endorsement or recommendation. Options may vary by restaurant location. Visit each company's Web site for complete information.

Applebee's International, Inc.™
Teamed up with Weight Watchers, International™ in May 2004 to launch line of menu items, including appetizers, entrees and desserts, for health-conscious guests (read more on company Web site). Item descriptions include the number of calories, plus fat and fiber grams. Also offers healthy options on its children's menu.

ARAMARK
ARAMARK serves meals to more than 15 million customers daily, and company research has shown that half of those customers are interested in healthy meal offerings. To meet those needs, ARAMARK introduced its innovative Just4U® healthy-menu program at hospitals, businesses and universities across the United States. Based on the company's DiningStyles® research that explores adult dining habits, Just4U makes it easy for customers to find healthier menu items through menu identifiers and point-of-sale nutritional information. Customer feedback at every location helps to create a customized mix of traditional and Just4U menu items -- all designed to appeal to the taste profiles

of today's consumers. Just4U nutritional information is available at point-of-service locations. Some locations also provide nutritional information for other menu items as well. Both the American Dietetic Association and the American Diabetes Association provided guidance in the development of the Just4U program. Each of these groups has favorably reviewed the program and approved the use of their logos on all Just4U printed materials. In addition, ARAMARK has a long-standing commitment to provide nutritious meals for America's schoolchildren. Menu development is conducted with an eye toward student-tested healthier meals, often exceeding U.S. Department of Agriculture requirements for healthy school breakfasts and lunches. Nutrition awareness programs include live shows, videos and informational materials that showcase Spike®, ARAMARK's own nutrition mascot for grades K-5; the new middle school and high school brands 12 Spot and U.B.U. Lounge feature healthy menu items; and the new Celebrity Lunch Lady campaign relies on famous entertainment and sports personalities recognized by middle and high school students to underscore the messages of health and nutrition.

Au Bon Pain

- Offers patrons a wide variety of healthy options at its cafes, including fruit; vegetables; soy milk; enriched drinks; granola; oatmeal; salad dressings enhanced with vitamin E, omega 3 or low-fat yogurt; and low-fat and reduced sodium vegetarian soups.
- Au Bon Pain's Web site offers nutrition information for all menu items, plus a Healthy Choices section to help customers sort products by various criteria.
- Provides nutrition kiosks in its cafes, where consumers can access nutrition information before ordering. And under a pilot program launched in 2005, some suburban locations offer children's nutrition kiosks to teach the values of proper diet.

Chili's

See listing for all Brinker International restaurants.

Auntie Anne's

Auntie Anne's offers Smart Bites low-carbohydrate menu items, and bakes six pretzels with 5 grams of fat or less: Whole Wheat, Original, Jalapeño, Sour Cream & Onion, Garlic, and Glazin' Raisin®. Auntie Anne's Hand-Rolled Soft Pretzels stores also can choose to carry a milk beverage product for their younger consumers. Nutrition guides are available at Auntie Anne's Hand-Rolled Soft Pretzel locations. Guests also can access a partial nutrition chart on the Auntie Anne's Web site, where a PDF file of the complete nutrition chart can be downloaded. A general nutrition e-mail address is available for additional assistance.

BLIMPIE

BLIMPIE's menu appeals to a variety of palates and nutrition needs. In addition to panini-grilled sandwiches, BLIMPIE restaurants feature Gardenburger® vegetarian patties, low-carb bread and premium and freshly sliced Dietz & Watson meats. The company provides nutrition information for all menu items on its Web site and in-store posters.

Bob Evans Restaurants

Bob Evans Restaurants currently feature a Low-Carb and Lighter Fare section on its menu, which guides customers to smart choices among existing Bob Evans menu items and offers tips for adjusting menu items to fit specific dietary needs. Two of the most popular items on the Low-Carb and Lighter Fare menu are two carb-conscious menu items -- the Protein Lover's Breakfast and the Protein Lover's Plus Breakfast, both with only 2 grams of carbohydrates. In addition, Bob Evans posts nutrition information for all menu items on its Web site. Also, consumers can see nutritional information in Bob Evans Restaurants upon request.

Brinker International

In January 2004, Brinker International formed its Nutrition Advisory Council -- consisting of recognized authorities in health and wellness, culinary arts and food science -- that lends guidance to ongoing culinary development and nutrition strategy. Brinker also has hired a full-time registered dietician to consult with concept culinary teams, and food-and-beverage purchasing teams. Currently, Brinker is developing new menu initiatives at Chili's Grill & Bar, Romano's Macaroni Grill and On the Border. In addition, Brinker concepts now use a trans fat-free cooking oil in all restaurants. All concepts prepare their food to order and can accommodate requests for substitutions on almost any menu item.

- Chili'shas introduced two new Guiltless Grill menu selections, accompanied by an updated menu design displaying six key nutritional values, including fiber amounts, for each Guiltless Grill meal choice. Additionally, the new menu offers a variety of side items -- such as steamed broccoli; sautéed mushrooms, onions and bell peppers; and fresh veggies -- that can be substituted with any entree. Chili's recently added its new Pepper Pals kids menu, which features a variety of nutritious options in an easy, three-step ordering process. On this menu, children get to customize their meals by picking an entree (such as a grilled chicken sandwich or Pepper Pals Pasta), side item (including mashed potatoes, cinnamon apples or steamed broccoli) and beverage (such as milk, juice or lemonade). Young diners also receive an activity book with coloring activities, games and crosswords focused on fitness and nutrition.
- Romano's Macaroni Grill restaurants offer guests lower-carbohydrate side-dish substitutes, whole wheat pasta, and new Sensible Fare entrees with reduced fat, carbohydrate and calorie content. In addition, the restaurants encourage guests to customize menu options to fit individual dietary preference and needs. Romano's Macaroni Grill's kids menus features 10 entrees (including grilled chicken and broccoli, and spaghetti with red or meat sauce) that come with a choice of fresh fruit or ice cream for dessert.
- On the Border: On the Border restaurants recently introduced a new children's menu that includes grilled chicken entrees and an expanded choice of side items. Adult diners may substitute low-carbohydrate sides for traditional rice and beans. Additional lower-fat and lower-calorie entrees continually are being explored.

Buca di Beppo

Buca di Beppo currently offers its Watching Your Carbs? program that highlights 16 dishes that have 8 net grams or less of carbohydrates per serving. Available at all Buca di Beppo restaurants upon request, the Watching Your Carbs? menu includes Chicken With Lemon, Shrimp Parmigiana, Italian Sausage, Baked Manicotti and Latini Meat Platter.

Guests also can order several healthy alternative items, such as Tuscan Beans and Escarole, Roasted Vegetables, and Green Beans With Olive Oil and Lemon. Newly introduced to the menu is Warm Tomato and Spinach Salad With Balsamic Dressing and Goat Cheese.

Keeping up with current dining trends, the new Buca Small menu offers the opportunity to enjoy smaller portions of favorite items at lower prices.

In addition, Buca Inc. teamed up with Con Agra Foods and the ADA to develop a national Food-Safety Labeling Program. All items a guest takes home as leftovers or picks up as Buca ToGo have a custom-designed food-safety label with a place to record the date the food was purchased. Several tips for safe food handling also are included. Buca di Beppo's Web site provides additional

food-safety handling information.

Burger King
Burger King has an interactive Nutrition Guide available on the company's Web site. The guide allows diners to access nutritional information, ingredients and allergens on each menu item, to build their own meals, and to calculate nutritional content of customized items. Guests also can look at nutrition exchanges, print nutrition handouts and check out "Eating Strategies" for carbohydrates, fat, and/or calories.

Burger King also has a new easy-to-follow nutrition information poster in its stores. Symbols on the poster guide customers on fat-, carbohydrate- and calorie-conscious diets to customize meals. In addition to the poster, a nutrition brochure, available at restaurants, highlights this same nutrition information and offers "Eating Strategies" that feature low-carb, low-fat and low-calorie items. Both the poster and the brochure contain nutrition breakdown, ingredients and allergen information of all Burger King core menu items.

Burger King has a low-carbohydrate version of its signature Whopper hamburger that omits the bun. The low-carb Whoppers also can be ordered as part of a value meal with a side salad and diet soda. Additional low-carbohydrate menu items are the Angus Steak Burger, and the Angus Bacon and Cheese Burger without the bun. Low-calorie items include the BK Veggie burger without mayo, Fire Grilled Salads, side salad and honey mustard dressing.

During the fall of 2004, Burger King started offering additional nutritious options in its kids meals, including a side of applesauce instead of french fries, milk and apple juice. In addition, the restaurant is sponsoring 207 schools nationwide to participate in the President's Challenge, the physical activity and fitness awards program of the President's Council on Physical Fitness and Sports.

CKE Restaurants, Inc.
CKE Restaurants, Inc., provides nutritional information online for its Carl's Jr. (www.carlsjr.com) and Hardee's (www.hardees.com) restaurants. For new products and limited-time offers, nutritional information is available upon request and is frequently made public in the media. Carl's Jr. also provides in-store nutritional information via posters.

- **Carl's Jr.** offers consumers several healthy options, ranging from charbroiled chicken sandwiches and a garden salad to Low Carb Breakfast Bowl, Low Carb Chicken Club Sandwich and Low Carb Six Dollar Burger.
- **Hardee's** also offers healthy menu items, including the third-pound Low Carb Thickburger, charbroiled chicken sandwiches and Low Carb Breakfast Bowl.

Cousins Subs
Cousins Subs recently introduced two new salads—Chicken Sedona Salad and Oriental Sesame Chicken Salad—as additions to its salad line. The sub shop also offers a "Better Bunch" program that features seven sub sandwiches without mayonnaise, cheese or salt that have 7 grams of fat or less. Nutritional information for Cousins Subs menu items is available online.

Dairy Queen
Dairy Queen offers consumers a variety of no-fat and no-sugar-added novelty bars, including DQ Fudge bar, DQ Vanilla Orange bar, DQ Raspberry bar and DQ Vanilla/Fudge bar, which has no fat and only 60 calories. Dairy Queen's

soft-serve ice cream contains only 5 percent butterfat. The restaurant menu includes garden salads with low-fat dressings, grilled chicken salads and a low-fat grilled chicken sandwich (without mayonnaise). Customers also can substitute a side salad for french fries. This July, Dairy Queen will be launching milk as a drink replacement for a children's meal and applesauce for a fry replacement. Dairy Queen continually tests other healthy options as well.

Nutritional brochures and posters are available at every Dairy Queen location, and nutritional information can be found on the company's Web site. Nutritional information, which includes trans-fatty acids, is updated for new products on a quarterly basis.

Darden Restaurants
Darden Restaurants provide patrons with selections that allow them to "eat as light as they wish or be as indulgent as they wish."

- Red Lobster's (www.redlobster.com) LightHouse menu features items low in fat, calories and carbs, and its kids menu has lighter alternatives, such as grilled fish and chicken, snow crab legs and steamed vegetables.
- Olive Garden has offered its lower-calorie Garden Fare menu since 1986. That menu now includes a lower-carb whole-wheat pasta alternative.
- Bahama Breeze and Smokey Bones Barbeque & Grill offer chicken and seafood salads.
- Seasons 52, the company's test fresh grill and wine bar, serves only offerings that are less than 475 calories and nutritionally balanced.

Denny's
During the mid-1990s, Denny's introduced its low-fat Fit Fare menu selections and has since added more items. Each item has less than 15 grams of fat. The restaurant also offers healthy alternatives, such as fat-free salad dressing, reduced-calorie syrup, low-cholesterol egg substitute, and fruit and cottage cheese, in many of its dishes. Denny's also offers nine Carb-Watch options and provides carbohydrate, calorie, fat and fiber information for those selections. Nutritional information for Denny's menu items can be found on the restaurant's Web site.

During the summer of 2004, Denny's introduced its new D-Zone kids' menu and program. The menu includes nutritious options, including fruit and fresh vegetables, and new games and activities designed for children under age 10. D-Zone also highlights the importance of quality family time shared during a meal.

Domino's Pizza
Domino's Pizza provides a nutritional brochure in a PDF format on its Web site. Additionally, the pizza chain offers nutritional brochures through its customer-care center; consumers also can request a copy to be sent via the U.S. Post Office. The nutritional information covers all side items, all feast pizzas and eight of the most requested pizza combinations.

Don Pablo's
Don Pablo's has a low-carbohydrate fajita line, along with a low-carbohydrate margarita. The fajita features lettuce instead of a tortilla for wrapping, and the drink is sweetened with fruit-juice and artificial sweetener. Nutritional information for Don Pablo's menu items can be accessed on its Web site. In addition, each restaurant has a copy of the nutritional guide to answer guest inquiries.

El Pollo Loco
El Pollo Loco provides fresh, hormone-free chicken marinated in herbs, spices

and fruit juices, and then cooked over an open grill. This technique contributes a deep flavor without adding fat and calories. Individual and family meals are served with warm tortillas, fresh salsas and a wide variety of sides that include fresh steamed vegetables, pinto beans, salads and rice. El Pollo Loco also serves a variety of fresh, healthy Mexican entrees, including its signature Pollo Bowl and Monterrey Pollo Salad. El Pollo Loco offers an interactive nutrition calculator on its Web site, which invites users to customize menu selections and adjust ingredients according to dietary intake and lifestyle.

El Pollo Loco partners with Healthy Dining, a team of nutritional professionals committed to helping people identify healthy menu selections at their favorite restaurants. Focusing on Southern California counties, Healthy Dining publishes county-specific restaurant guides that provide nutritional information for each featured menu item. El Pollo Loco features numerous items that meet the nutritional guidelines recommended by leading health organizations. Also, El Pollo Loco participates in community events throughout the year aimed at helping consumers dine out healthfully.

In October 2004, El Pollo Loco announced an alliance with Lindora, California's number-one medical weight-control program, to provide Lean for Life Certified meal choices. El Pollo Loco is the first restaurant chain to receive Lindora's Lean for Life Certified stamp of approval, which guides the public in making healthy food choices. Certification, which cannot be purchased by restaurants, is awarded only after careful nutritional analysis. Items bearing the Lindora Lean for Life Certified healthy heart logo are low-calorie, low-fat, moderate-protein choices in accordance with guidelines set forth by the Lindora Medical Advisory Council.

Figaro's Italian Pizza
Later this year, Figaro's Italian Pizza will be offering nutritional information on its Web site.

Golden Corral
In May 2005, Golden Corral launched a healthy dining national platform that showcases the buffet chain's nutritional values. As part of this initiative, Golden Corral will label close to half of its buffet items with the food's fat grams, calories and carbohydrate information. No-sugar-added desserts also will be identified. Additionally, the same items will have their "point value" available on the Weight Watchers Web site, and the items will appear in a Weight Watchers book scheduled for release in January 2006. Complete nutritional information for all Golden Corral menu items is available online.

Hops Grillhouse & Brewery
Hops Grillhouse & Brewery provides nutritional information on its Web site. In addition, each restaurant has a copy of the nutritional guide to answer guest inquiries.

Jack in the Box
Jack in the Box provides nutritional information on all menu items online, as well as offering nutritional information brochures, available upon request, in all its restaurants. Also on its Web site is an interactive nutrition calculator called "Build Your Meal" that provides guests with the ability to evaluate nutritional information and to customize their menu favorites. For children, Jack in the Box serves a 4-ounce serving of Mott's Applesauce and the choice of 2 percent milk with its Kid's Meal®.

In addition to nutritional information offered in restaurants and on its company Web site, Jack in the Box serves a variety of menu items to fit guests' tastes and appetites. In 2003, the company introduced the Jack's Ultimate Salads® line. The salad line, which includes Asian Chicken, Southwest Chicken, Chicken Club and Chicken Caesar, all feature a mix of greens topped with chicken and

vegetables. Additional toppings—nuts, croutons and dressings, such as low-fat balsamic and light ranch—are served on the side. Jack in the Box also has a side salad.

In 2004, Jack in the Box introduced the Southwest Chicken Pita. Stuffed with fajita-style chicken, black beans and roasted corn, the pita has only 260 calories and 4.5 grams of fat. That same year, the company began offering guests the option to customize their favorite burgers and chicken sandwiches by choosing reduced-fat herb mayonnaise over regular sauce. Guests also can order a "bunless" low-carb option featuring a burger or chicken patty served in a container with a knife and fork.

Landry's Restaurants
To accommodate customer desires for healthy alternatives, any of Landry's Restaurants are more than happy to honor any requests for dishes not present on the menus. The following restaurants are in the Landry's Restaurants family: Aquarium, Babin's Seafood House, Big Fish, Brenner's Steakhouse, Cadillac Bar, Charley's Crab, Chart House, Chuck and Harold's, Crab House, Fish Tales, Fisherman's Wharf, Gandy Dancer, Grand Concourse, Grotto, Joe's Crab Shack, La Griglia, Landry's Seafood House, Peohe's, Pesce, Rainforest Cafe, River Crab, Rusty Duck, Saltgrass Steak House, Vic & Anthony's Steakhouse, and Willie G's Seafood and Steak House.

Legal Sea Foods
Legal Sea Foods has eliminated trans fat from its menu items, switching to a trans fat-free vegetable oil. Legal Sea Foods promotes healthy eating for kids by serving a fruit and vegetable with every entree and by offering several kid-friendly seafood choices, such as crunchy baked cod and a half lobster. The seafood restaurant also offers a Wheat and Gluten Sensitive Menu.

Max & Erma's
Max & Erma's offers low-carb selections and "no guilt" items that are lower in fat and calories. Nutritional information is available for these items. In addition, the restaurant's Web site provides smart eating tips for diners. Suggestions include ordering salads without cheese and croutons, and baked potatoes with salsa instead of butter and sour cream.

McDonald's
As a global leader, McDonald's has a long-standing commitment to be responsive to customers' needs. As part of this commitment, the company is helping its customers understand the importance of leading a balanced, active lifestyle. McDonald's worldwide Balanced, Active Lifestyles initiative is comprised of three priorities: offering menu choice, promoting physical activity, and providing education programs and information to consumers worldwide. The goal of this outreach is to empower individuals to make informed choices about how to maintain the essential balance in their daily lives.

In March 2005, McDonald's unveiled its new initiative to help customers understand the importance of energy balance through a new public awareness campaign–" it's what i eat and what i do ... i'm lovin' it." This new education program further extends McDonald's commitment to inspire and motivate people to live balanced, active lives and captures the message that people should pay attention to energy in—the foods they eat—and energy out—their level of activity or exercise.

McDonald's has enlisted the help of worldwide Olympians past and present, Olympic hopefuls in training and Olympic moms to be ambassadors for the balanced, active lifestyles message. Rolling out soon, McDonald's team of athletes, hopefuls and mothers will present a "Finding Your Balance" quiz to provide a global "pulse check" of the overall knowledge about energy balance.

The quiz, developed in conjunction with health professionals and physical activity experts, features basic questions about nutrition and physical activity and appears on McDonald's refreshed GoActive!™ Web site, www.GoActive.com.

In March 2003, McDonald's added three entree-sized Premium Salads to the menu. Each salad is topped with a grilled or crispy chicken breast paired with Newman's Own® all-natural salad dressings. Each Premium Salad provides two servings of vegetables. During the spring of 2005, the company will launch a new Premium Salad—Fruit & Walnut—that will provide 2.5 servings of the recommended daily fruit and vegetable servings.

In May 2004, McDonald's introduced the Go Active! Happy Meal for adults, which contained a Stepometer™, a Step with It!™ booklet developed by noted exercise physiologist, personal trainer to Oprah Winfrey and best-selling author Bob Greene, a McDonald's Premium Salad and bottled water or a soft drink.

McDonald's also offers a Chicken McGrill sandwich, Fruit 'n Yogurt Parfaits, 100 percent orange juice, 1 percent low-fat white and chocolate milk. and, at many restaurants, soup. Customers may special-order menu items to help meet their nutrition needs. In November 2003, McDonald's introduced new Chicken McNuggets made with white meat, reducing both the fat and calories of the product.

In June 2004, McDonald's introduced new menu choices for Happy Meals that include 1 percent low-fat white and chocolate milk, 100 percent pure apple juice and Apple Dippers (sliced apples served with an optional low-fat caramel dip). Each package of Apple Dippers contains one serving of the recommended daily intake of fruit.

McDonald's USA continues to partner with Greene to bring his expertise about health and fitness to a range of educational materials available in McDonald's U.S. restaurants. In 2005, Greene and McDonald's will continue to work in partnership to provide motivational resources and programming as part of Go Active! American Challenge II. Since February 2005, while supplies last, McDonald's customers can receive a coupon for a 60 percent discount on Greene's new book, Bob Greene's Total Body Makeover.

McDonald's inspires children to be more active with a unique program called "Get Moving with Ronald McDonald." Since 2003, more than 1 million children in the United States have seen this show at McDonald's restaurants and in other community venues. Ronald McDonald gets children up and moving in a fun and playful way to teach exercise and fitness facts.

McDonald's All-American High School Basketball Game celebrated its 27th year in March 2005. This premier high school basketball classic recognizes exceptional student athletes around the country for accomplishments both on and off the basketball court. In 2004, 2,500 top male and female high school basketball players were nominated and 48 final team members selected. The program raises funds for Ronald McDonald House Charities.

The goal of the McDonald's USA Food & Nutrition Web site is to help educate consumers about the nutrition content of McDonald's menu items and plan menu choices that fit their needs. Site features include "Bag a McMeal," which lets customers get nutrition facts on a meal of their choice; "Customize a Menu Item," which allows customers to recalculate the nutrition information of menu items based on personal changes they specify, such as leaving off mayonnaise; printable nutrition tip sheets that cover topics such as how to cut calories, fat and carbohydrates at McDonald's, as well as meal choices for people who are vegetarians or have diabetes; McDonald's meal suggestions; Happy Meal nutrition values; health topics; and frequently asked questions about nutrition.

McDonald's also offers a variety of nutrition materials in its restaurants. These include McDonald's & You brochures (wallet cards that show nutrient breakdowns and food exchanges), menu information for people with food allergies and sensitivities, and nutrition fact sheets on topics such as how to cut calories, carbohydrates or fat at McDonald's and choices for people with diabetes. In 2004, McDonald's introduced trayliners that feature nutrition information for McDonald's menu items, as well as quick tips for achieving balanced, active lifestyles.

In partnership with health and fitness experts, McDonald's introduced Happy Meal packaging in 2004 that offers children fun information and activities on nutrition and physical activity under the banner of "it's what i eat and what i do."

Originally introduced and embraced by nutritionists in 1992, "What's On Your Plate®," featuring host Willie Munchright, teaches elementary schoolchildren throughout the United States about the importance of physical activity and making smart food choices in school and at home. The program, which includes vignettes, leader guides and activity books, has been updated to reflect current knowledge in the nutrition community and to address the relevant needs of today's children. McDonald's offers this curriculum to schools free of charge.

Papa John's
On its Web site, Papa John's provides nutritional information on its standard and promotional pizzas, along with a telephone number consumers can call for more dietary data on specific pizzas. Papa John's offers chicken and vegetable toppings and light cheese as healthy options.

P.F. Chang's China Bistro
In conjunction with its sponsorship of the P.F. Chang's Rock N Roll Arizona Marathon and Half Marathon, P.F. Chang's created the Training Table Menu for guests who are in training for the marathon or who participate in other physical activities. An elite group of athletes helped to develop the menu, which highlights 14 entrees high in protein and carbohydrates that are ideal for fitness training. The Training Table Menu lists nutritional information next to each dish and is available in all restaurant locations for both lunch and dinner.

P.F. Chang's also provides nutritional information (calories, protein, carbohydrates, total fat and saturated fat) for all dishes on the company's Web site. A printed version of the information also is available in each restaurant.

Popeye's
Popeyes, an AFC Enterprises, Inc., restaurant, is currently testing Naked Chicken—a zero-carb, skinless, bone-in alternative to fried chicken.

Rock Bottom Restaurants
Rock Bottom Restaurants recently revamped its children's menu to delete unhealthy items and to add grilled items and vegetable options. In addition, the restaurant also promotes a salad option for children. Currently, consumers can access partial nutritional information on Rock Bottom menu items on its Web site. Soon, Rock Bottom intends to expand the information about menu items and nutrition.

Rubio's Fresh Mexican Grill (SM)
Since its more than a decade ago, Rubio's® HealthMex® menu—afull line of salads, and low-calorie, low-fat menu items—offers guests items with 20 percent or less of its calories from fat. Today, Rubio's HealthMex menu includes a variety of distinctive items that are lower in fat, including the

HealthMex Chicken Salad, made with its own signature, fat-free Serrano Grape dressing; HealthMex burritos and tacos, made with chargrilled all-white-meat chicken; and a HealthMex Veggie Burrito, made with freshly grilled vegetables. Introduced in 2004, the popular Low Carb Chicken Salad features only 7 net carbs.

Nutritional information for these items is available on the company's Web site, which also educates guests on the variety of healthy options available on the menu. Visitors can download nutritional information and use the new online nutritional calculator to determine the total nutritional value of their meal. Rubio's promotes its HealthMex menu online with a link to its line of HealthMex products that have less than 20 percent of calories from fat.

Ryan's Restaurant Group, Inc.
Ryan's Grill Buffet & Bakery and Fire Mountain restaurants promote low-carb items and sugar-free/no-sugar-added items on its all-you-can-eat Mega Bar®. Low-carb selections are tagged with the number of carbohydrate grams. The menus include a variety of grilled or baked meat, chicken and fish items daily, in addition to cooked vegetables, fresh vegetables, fresh fruits, low-fat cottage cheese and low-fat sour cream. Dessert selections have a variety of sugar-free or no-sugar-added options, which are promoted within the restaurant, including a low-fat frozen yogurt and a fat-free, no-sugar-added frozen yogurt. At both restaurants, food to-go is priced by the pound. Ryan's Grill Buffet & Bakery has a Sensible Choices™ section of its menu board that indicates lean meat selections.

Children have a wide variety of nutritious options at Ryan's and Fire Mountain, including caffeine-free or sugar-free beverages and milk. Macaroni and cheese, corn, and cantaloupe are among favorite selections for kids.

Nutritional information is available on Ryan's Restaurant Group Web site, and guests also can e-mail specific questions about allergies and gluten-free diets. Also online is a section devoted to gluten-free items on the buffets. In addition, customers can request printed nutritional information at any Ryan's or Fire Mountain restaurant. Ryan's is listed in the Dining Out Companion, a Weight Watchers book that features Weight Watchers-friendly restaurants.

Sizzler
Sizzler offers guests a fresh salad bar in the middle of every restaurant with more than 90 items. For years, the buffet-style restaurant has given guests a choice of side dishes, including steamed broccoli. Last year, Sizzler developed several Low-Carb Grill options, which highlight the steamed broccoli side dish option paired with a grilled protein. Low-Carb Grill options include Hibachi Chicken, Steak and Grilled Shrimp Skewers, and Grilled Salmon.

Sizzler's number-one selling children's menu item is its salad bar, and the restaurant continues to look at other healthy offerings for kids. All kids' meals at Sizzler come with fresh fruit. Healthy Dining recently completed an entire analysis of Sizzler's core menu, and the restaurant's nutrition information is displayed on its Web site.

Sodexho USA

- *School Services*
  In Spring 2003, Sodexho USA announced a series of healthy lifestyle initiatives aimed at school-age children. Programs include School Stars, an initiative that teaches elementary schoolchildren skills for healthy living, and Performance Zone, a similar program for middle and high school students that not only focuses on healthy living but also encompasses the mental and physical characteristics that teenagers face. The programs are part of Sodexho's longtime commitment to

nutrition and healthy lifestyles in schools, which also includes nutritious menu items and software for foodservice directors to create menus with nutritious items.

- *Campus Services*
  Balance, Mind Body and Soul is a holistic approach to wellness that introduces college-aged students to not only eating healthy but learning more about how to maintain overall mental and physical physique. The cornerstone of the program is a Web site that allows visitors access to a registered dietitian, as well as nutrition information for all 6,000-plus recipes in Sodexho USA's database. Freshmen students receive welcome kits to assist them in navigating their new dining halls, and brochures and informational packets are located at many dining facilities.

- *Corporate Services*
  Your Health, Your Way (SM) is Sodexho USA's innovative wellness program developed by leading professional dietitians and executive chefs. It combines sensible nutrition guidelines with top quality ingredients and healthful cooking methods to deliver a collection of satisfying menu offerings. Your Health, Your Way meals can be customized to fit most any dietary lifestyle and share three main essential characteristics: all taste great, all are power- packed with essential nutrients, and all meet the guidelines of less than 30 percent of calories from fat, no more than 3 grams of saturated fat, less than 100 mg of cholesterol, less than 1000 mg of sodium, less than 600 calories and at least 3 grams of fiber.

- *Healthcare*
  Create Your Weight is an outpatient program that uses cutting-edge technology to help people make healthier choices at mealtime and to manage their weight more effectively. It addresses issues surrounding obesity by educating and guiding patients through a nine-week program that provides tools and training for effective weight management. One tool uses a handheld breath-test device to measure a patient's metabolic rate, thus determining an accurate individualized assessment of caloric requirements for their diet within 10 minutes. The second tool provides immediate, on-demand feedback using wellness software and dietitian interaction via the Internet. Both tools allow the patient and the Sodexho USA dietitian to monitor and maintain the patient's progress.

Sonic Drive-In
During the spring and summer of 2004, Sonic Drive-In introduced new menu items for consumers watching their calorie intake, including salads and beverages. Nutritional information is available on its Web site.

SUBWAY
The SUBWAY restaurant chain launched its new F.R.E.S.H. Steps childhood obesity prevention initiative in 2004, a multi-layered national campaign to raise awareness and to educate communities on the need to prevent and treat childhood obesity. The SUBWAYy F.R.E.S.H. Steps initiative empowers kids and adults to Feel Responsible, Energized, Satisfied and Happy by seeking healthy choices in their food intake and overall lifestyle. Information about F.R.E.S.H. Steps can be found under the Guide to Healthier Living on the company's Web site. The chain also expanded its relationship with the American Heart Association (AHA), as the first sponsor of their Jump Rope for Heart program. SUBWAY is already a national sponsor of the AHA's American Heart Walks and company weight-loss hero Jared Fogle serves as chairman at many of the walks. The restaurant's Web site for children (www.subwaykids.com) includes educational games and health information for kids. The chain also provides nutritional information for its customers in its restaurants and on its Web site. For several years, SUBWAY has offered consumers a range of healthy menu

options. The restaurant's "7 Under 6" menu features seven sub-sandwiches with 6 grams of fat or less, and all items on the menu are customizable to fit each consumer's dietary needs. Options include turning any sandwich into a salad or a wrap. In January 2005, those options were expanded with the introduction of new speed ovens, which can toast any sandwich.

Taco John's
In 2004, Taco John's extensively tested a low-carb product called Taco in a Bag, which will possibly be re-tested in 2005 and introduced broadly in 2006. In May and June 2005, Taco John's will promote its line of salads. The restaurant offers consumers a nutrition brochure in all its stores, which it plans on updating in 2005. In addition, nutritional information is posted on its Web site, which the company keeps up-to-date as new products are introduced, or other ingredient or menu changes are made.

T.G.I. Friday's
Forming a partnership with Atkins Nutritionals, Inc., T.G.I. Fridays introduced new Atkins®-approved, low-carb menu items in December 2003 to cater to consumers who are limiting their carbohydrate intake. The menu lists the net carb information for the Atkins-approved dishes. Periodically, the restaurant debuts new items, which include appetizers, salads, entrees and desserts. Some are completely new creations, while others are slightly altered signature dishes. T.G.I. Friday's recently added a few items low in fat and calories to its menu. Also in 2005, T.G.I. Friday's launched new menu options for children, which include a macaroni-and-cheese dish that has only 240 calories and 7 fat grams.

Wendy's Old-Fashioned Hamburgers
Wendy's continues to offer a variety of menu options for customers who are watching their calorie and/or fat intake, including a selection of entree salads with reduced fat or fat-free dressings, and grilled sandwiches. For consumers looking for other nutritious menu options, Wendy's also offers a Fresh Fruit Cup and Fresh Fruit Bowl, with fresh cantaloupe, honeydew melon, pineapple chunks and red seedless grapes. The entree-sized fruit bowl comes with a low-fat, strawberry-flavored yogurt for dipping.

In December 2004, Wendy's introduced a Combo Choices menu whereby customers can substitute, at no additional charge, either a baked potato, small chili or one of two side salads for french fries when ordering a combo meal.

Also in 2004, the company gave a choice between a mandarin orange cup or french fries when purchasing a Kids' Meal. In addition, 2 percent reduced-fat white milk or 1 percent low-fat chocolate milk can be substituted for a soft drink at no additional charge. Both the milk and the mandarin oranges can be purchased a la carte.

Wendy's has provided nutritional information since the 1970s, and now offers nutrition brochures in Wendy's restaurants nationwide and on the company's Web site. A Spanish version of the Web site (www.wendysenespanol.com) also provides nutritional information. The site also includes a "Build a Meal" section, where customers can create their own Wendy's meal—from sandwiches with favorite toppings to side dishes and beverages—and determine the nutrition information.

During the summer of 2004, Wendy's entered into a nutrition education initiative with the American Dietetic Association. In addition to the nutrition information it already provides, the restaurant will give healthy eating tips on the back of trayliners and encourage consumers to consult a registered dietitian to learn how to make smart food choices.

Whataburger

Whataburger offers nutritional information on its Web site.

White Castle
White Castle provides complete nutritional information on its Web site. In addition, nutrition brochures are available upon request in restaurants and via White Castle's toll-free phone number.

Yum! Brands, Inc
Yum! Brands believes consumers should lead a balanced lifestyle; Yum! provides educational information, tools and product choices to help them accomplish that. With input from Chief Nutrition and Regulatory Officer, Marilyn Schorin, PhD, RD, the company has created Keep It Balanced (www.keepitbalanced.com) posters for its restaurants that offer consumers practical health, nutrition and fitness tips. The company offers nutritional information for all its brands via guides and interactive calculators for customized meals. In addition to nutritional brochures available in stores, consumers can download a printable version by visiting any of the company's Web sites. The Web sites also feature easy-to-use meal calculators to look up menu nutritional information instantly.

- KFC allows customers to create a variety of relevant meals from its menu. For example, removing the skin and breading on KFC's Original Recipe® chicken breast lowers its fat grams to three. Homestyle sides, such as corn on the cob (3 fat grams), mashed potatoes and gravy (4 fat grams), green beans (1.5 fat grams) or barbecue beans (1 fat gram), also have low fat grams. Customers also can select the Tender Roast® Sandwich without the sauce (5 fat grams), a marinated white-meat filet slow-roasted and topped with fresh lettuce and tomato served on a signature split-top bun or the Tender Roast® Meal (where available) with a side of long-grain rice and Southern-style green beans.
- Pizza Hut® offers a new Fit 'N Delicious™ menu, making it the first national pizza company to offer choices to those tracking carbs or watching fat grams. The Fit 'N Delicious menu offers Carb Tracker™ pizza, Lower Fat Pizza and Fresh Express® salads. The Carb Tracker™ pizza is a 6-inch individually-sized pizza specially formulated to give customers between 22 grams and 26 grams of net carbs. Carb Tracker pizza is available in Pepperoni; Meat Lover's®; Pepperoni and Mushroom. With half the amount of cheese, more original sauce, and select lean meats and vegetable toppings, the Lower Fat Pizza has 25 percent less fat than the regular-recipe Thin 'N Crispy® pizzas. Lower Fat Pizzas come in medium and large sizes. Customers can choose from three set recipes or create their own by selecting either chicken or ham, and choosing two or three vegetables from green peppers, red onions, mushrooms, tomatoes, pineapples or jalapenos. Fresh Express® salads can provide families with a quick, easy solution for a more balanced meal. The pre-packaged salads are available for carryout or delivery (where available), serve a family of four, and include romaine and iceberg lettuce, cabbage and carrots with Ranch dressing (regular and fat-free). For additional nutritional information on these products, customers can obtain a copy of the nutritional brochure in the restaurants or go to the Pizza Hut Web site.
- Taco Bell® offers its Fresco Style alternative on nearly all menu items for diners looking to cut fat and calories. When ordered Fresco Style, cheese and sauce ingredients are replaced with daily prepared fresh Fiesta Salsa, a zesty yet mild mix of chopped tomatoes, onions and cilantro, which contains only 5 calories and zero fat grams.

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Research and Professional Briefs

Consumers May Not Use or Understand Calorie Labeling in Restaurants

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ABSTRACT

This study was an investigation of the possible utility of calorie labeling legislation in restaurants in community (n=649) and college student (n=316) samples. Only 48% to 66% of participants presently looked at food labels, and 64% to 73% were able to report accurate knowledge of daily caloric needs. Furthermore, 44% to 57% reported that they were not likely to use food label information in restaurants if it were available. Therefore, public education campaigns focused on calorie requirements may need to precede restaurant labeling, and perhaps other possibilities in labeling formats should be considered (eg, defining foods as "low," "moderate," and "high" calorie).

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The prevalence of overweight and obese individuals has sharply increased in the United States in recent years (1), as a result, in part, of changes in the eating environment (2). Specifically, expanding portion sizes and increased consumption of food away from home have been implicated (3-6). The largest portion sizes for most foods have been found at fast-food establishments (4), where prices are set to create the illusion of getting more value for your money by ordering larger portions of food (7). As portion size influences overall caloric intake (8), large portion sizes at fast-food restaurants are particularly concerning, considering that 37% of adults in a large representative sample reported eating at a fast-food restaurant at least once during a 2-day period (5).

Recently, public health professionals and consumer advocacy groups have been calling for legislation that would mandate nutrition labeling for calories on menus at fast-food and other chain restaurants (8). One such bill (H.R. 3444) introduced to the House of Representatives in November of 2003 states that "food, beverages, and meals served in restaurants and similar retail food establishments that are part of a chain with twenty or more outlets doing business under the same trade name, regardless of the type of ownership of the restaurant locations, shall list, adjacent to each food item listed, on menus, menu boards, and other signs, the total number of calories, grams of saturated plus trans fat, and milligrams of sodium per menu item, as offered for sale, in a clear and conspicuous manner." This bill is currently being considered by the Subcommittee on Health.

This type of legislation could certainly assist individuals in making more healthful food choices while eating at restaurants. However, the utility of this new nutrition labeling in restaurants for decreasing rates of obesity in our country rests upon a critical assumption—that people read and comprehend the information on nutrition labels. There are two critical pieces of information on each nutrition label that are essential for weight control—serving size and the number of calories in each serving. In particular, caloric content is only helpful if one understands how many calories need to be eaten daily to maintain weight. If only a small portion of our society has the ability and desire to read and comprehend these labels, the usefulness of this proposed legislation may be in question.

In order to investigate this issue, three main questions were examined in two population-based samples: (a) Do most people have a reasonable estimate of how many calories should be eaten each day?; (b) Do people read food labels, and if so, what information do they look for?; and (c) Is there a desire for more caloric information about foods served in restaurants? In addition, the possibility of whether there were other variables (eg, sex, sample, frequency of eating out, and weight status) that may influence the current and possible future use of food labels was examined.

METHODS

Participants

Data were obtained from two separate but similar telephone surveys conducted by the researchers for this study: the 2004 Vermonter Poll Food and Agriculture Survey, Center for Rural Studies (n=649; the Community sample) and a comparable survey of Vermont college students (n=316; the College sample). Community members older than 18 years old (actual age range=18 to 92) and college students older than 18 years old (actual age range=18 to 48) were eligible to participate in the survey.

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The sampling for both samples was random, and the response rates were 39.8% and 60.4% for the community and college samples, respectively. Written consent for participation was waived, as no identifying information was collected. This study was approved by the University of Vermont Institutional Review Board.

Questionnaire Development

Both surveys consisted of a set of core questions on demographic characteristics and attitudes and behaviors related to food labels (eg, frequency of food label use, information examined on food labels, number of calories each participant believed they should eat each day, frequency of eating at fast-food restaurants, attitude toward potential restaurant food labeling). (No further explanation of the terms *fast-food restaurant* and *restaurant* was given to participants in regard to the latter two questions.) The questions were developed by a team of professionals (eg, nutritionists, consumer economists) based on current gaps in the literature on food labeling. The survey was piloted on a student sample and revised accordingly, but validity and reliability were not formally evaluated.

Statistical Analyses

χ^2 statistics were calculated using SPSS (version 11.5, 2002, SPSS Inc, Chicago, IL) to test for sex, sample, frequency of eating out, and weight status differences for these questions with $P<0.05$ as the criterion for statistical significance. Descriptive statistics (means and standard deviations) were also calculated.

Participants were considered accurate with regard to their daily caloric intake if their estimates fell between 1,500 and 2,500 kcal per day. This range was selected as it corresponds to the Food and Drug Administration recommended Daily Value for calories on food labels (ie, 2,000 kcal). Because age, sex, and physical activity level affect calorie requirements, ±500 kcal was added to establish a conservative estimate of energy needs. Participants were classified as overweight if they had a body mass index ≥25 (calculated as kg/m^2 using self-reported height and weight).

RESULTS AND DISCUSSION

There were 346 women and 284 men in the Community sample (19 individuals refused to report sex), and 177 women and 139 men in the College sample. Other demographic information can be found in Table 1.

Consistent with several previous studies (9,10), approximately half of the surveyed college students (52%) and a third of the individuals in the community sample (33%) reported that they did not generally look at food labels. A significantly greater proportion of respondents in the Community sample reported using food labels often compared to the College respondents [Table 1; $\chi^2(2)=34.90$; $P<0.001$]. In both samples, a significantly greater proportion of women (Community: 76.9%; College: 62.7%) reported using food labels often compared to men (Community: 53.2%; College: 29.9%) [Community: $\chi^2(2)=45.84$, $P<0.001$; College: $\chi^2(2)=47.07$; $P<0.001$] (Table 1). These findings are consistent with the previous literature (9,11,12) in terms of prevalence of food label use. In this study, even fewer individuals were found to consistently look at the key information for weight control on food labels; in the Community sample, 31% of participants looked for caloric information and 5% looked at serving size, while in the College sample, 56% looked for caloric information and 12% looked at serving size.

Table 1. Subject characteristics and reported food label use in a study to investigate the possible utility of calorie labeling legislation in restaurants

	Community (n=649)	College (n=316)
	mean±standard deviation	
Age (y)	50±14	20.5±3.5
	← % →	
Male	45.1	44
Education	33.4	
≤High school	19.7	
Some college	6.1	NA[a]
Associates/technical school	21.9	
Bachelor's degree	18.4	
Postgraduate education	11.8	
Income (salary/year)		
<$20,000	27.5	
<$35,000	19.7	NA
<$50,000	29.9	
<$65,000		
Overweight (BMI[b] ≥25)	49	22.3
	mean±standard deviation	
Meals eaten at fast-food restaurants per week	1±6.8	1.7±2.1
Home-cooked meals per week	12.5±10.1	9.6±6.4
Use of food labels	← % →	
Often	66.2	48.4
Sometimes	18.9	22.9
Rarely	14.9	28.7
Use of specific food label information		
Calories	31	56
Fat	47.8	49.1

[a]NA=not available.
[b]BMI=body mass index; calculated as kg/m^2.

Overall, only 67% of the participants were able to identify the number of calories that they should be consuming (based on our liberal definition of 1,500 to 2,500 kcal per day). Women were typically more accurate in their self-reported estimation of daily energy requirements (Table 2). Further analyses that dichotomized this variable (ie, accurate vs inaccurate) revealed that the significant sex difference was only present in the College sample (ie, college women were significantly more likely to know the calorie range for which they were aiming than the other three groups).

If it were available, 44% to 57% of the combined sample self-reported that they would not likely use restaurant food caloric information. A significantly greater proportion of women in both samples reported that they would use restaurant food labels to look for low-calorie foods as compared to men [$\chi^2(2)=45.60$, $P<0.001$] (Table 2). A significantly greater proportion of respondents in the

Table 2. Knowledge of calorie intake and interest in restaurant labeling by sex and sample

	Men				Women				Total				Sex difference	Sample difference
	n	Too low	Accurate	Too high	n	Too low	Accurate	Too high	n	Too low	Accurate	Too high		
Knowledge of recommended caloric intake (ie, between 1,500-2,500 kcal)														
Community (%)	231	19.0	64.9	16.0	299	30.1	65.2	4.7	543	26.1	64.3	9.6	$P<0.001$	$P<0.001$
College (%)	116	8.6	61.2	30.2	162	13.0	80.9	6.2	278	11.1	72.7	16.2	$P<0.001$	
Interest in calorie information at restaurants														
	Men				Women				Total					
	n	Would look for low-calorie foods	Would not use information	Would look for high-calorie foods	n	Would look for low-calorie foods	Would not use information	Would look for high-calorie foods	n	Would look for low-calorie foods	Would not use information	Would look for high-calorie foods	Sex difference	Sample difference
Community (%)	275	31.3	66.9	1.8	339	48.7	49.3	2.1	614	40.9	57.2	1.9	$P<0.001$	$P<0.001$
College (%)	139	31.7	64.0	4.3	176	69.9	28.4	1.7	315	53.0	44.1	2.9	$P<0.001$	

Community sample reported that they would use restaurant food labels to look for low-calorie foods compared to the College students [Table 2, $\chi^2(2)=13.73$, $P<0.001$].

In further analyses, other variables that may influence the frequency of label use were examined. There were clear sex differences, with women consistently reporting greater use of food labels and desire for further information than men. The sample differences (which are largely based on age differences) were less clear—the men in both samples consistently had similar food label behavior and desire for more information, but whether college or community women had better food label use behavior depended upon the behavior.

In addition, those individuals who had 50% or more home-cooked meals were significantly more likely to report looking at food labels often (68%) compared to those who had <50% home-cooked meals (54%) [$\chi^2(2)=20.45$, $P<0.001$]. Compared to those who ate zero or one fast-food meal in the past week, the individuals who ate more than one fast-food meal in the past week were significantly more likely to report that they rarely look at food labels [$\chi^2(2)=49.15$, $P<0.001$] and would not use restaurant food labels to look for low-calorie foods [$\chi^2(2)=92.15$, $P<0.001$]. Consistent with previous research (13-15), these results may indicate that those that have a less nutritious diet are less likely to use food labels and have less interest in doing so.

The influence of weight status on the use of food labels was examined and no significant patterns in reported food label use or desire for more information in restaurants were found. This finding is somewhat inconsistent with previous research that has suggested that those who have less healthful dietary habits are more likely to ignore food label information (13-15); however, weight status and the quality of one's dietary habits are not always related. Information about reasons why the participants in our study would not want more nutrition information about restaurant foods was not collected; this topic could be interesting to examine in future studies.

The results of this study may be restricted in their generalizability based on the low response rate (39.8%) in the Community sample. Another limitation of this study is the self-reported nature of the data; it could be important to further investigate the hypotheses of this study by comparing consumers' behavior in situations in which nutrition information is and is not available. The lack of information on reliability and validity of the survey is a further limitation of this study. In interpreting these results, it is also important to consider the restrictions that many college students have on their food choices and access to food label information, particularly those eating in university cafeterias. In addition, information about dieting status of the participants was not collected; it is possible that individuals attempting to lose weight would report more awareness and desire for food labeling.

Regardless, these pilot data suggest that the recent legislation advocating for greater labeling of restaurant food may not be particularly effective in combating the obesity epidemic if people are not looking at existing food labels and are not able to use this information for nutrition planning. While it is always better for consumers to have access to more, rather than less, information, these preliminary results indicate that public health efforts to

control obesity perhaps should first focus on an education campaign designed to teach appropriate calorie intake values and food label reading skills to the general public. Without this knowledge, calorie labels may not be able to be fully utilized. The development of definitions for "low-," "moderate-," and "high"-calorie foods (similar to the low-fat designation) may also be more meaningful than calorie labels. Finally, strategies to change portion size and pricing of foods (16) may be more effective than continuing to stress personal responsibility.

CONCLUSIONS

Dietetics professionals have a clear role to play in educating the public about the principles of energy balance. This information should include calorie intake guidelines, as well as how to use available information on food labels or other nutritional information in other forms (eg, menus, menu boards, signs, websites) to facilitate energy balance and prevent obesity.

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ORIGINAL CONTRIBUTION

Low-Fat Dietary Pattern and Risk of Cardiovascular Disease

The Women's Health Initiative Randomized Controlled Dietary Modification Trial

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Context Multiple epidemiologic studies and some trials have linked diet with cardiovascular disease (CVD) prevention, but long-term intervention data are needed.

Objective To test the hypothesis that a dietary intervention, intended to be low in fat and high in vegetables, fruits, and grains to reduce cancer, would reduce CVD risk.

Design, Setting, and Participants Randomized controlled trial of 48 835 postmenopausal women aged 50 to 79 years, of diverse backgrounds and ethnicities, who participated in the Women's Health Initiative Dietary Modification Trial. Women were randomly assigned to an intervention (19 541 [40%]) or comparison group (29 294 [60%]) in a free-living setting. Study enrollment occurred between 1993 and 1998 in 40 US clinical centers; mean follow-up in this analysis was 8.1 years.

Intervention Intensive behavior modification in group and individual sessions designed to reduce total fat intake to 20% of calories and increase intakes of vegetables/fruits to 5 servings/d and grains to at least 6 servings/d. The comparison group received diet-related education materials.

Main Outcome Measures Fatal and nonfatal coronary heart disease (CHD), fatal and nonfatal stroke, and CVD (composite of CHD and stroke).

Results By year 6, mean fat intake decreased by 8.2% of energy intake in the intervention vs the comparison group, with small decreases in saturated (2.9%), monounsaturated (3.3%), and polyunsaturated (1.5%) fat; increases occurred in intakes of vegetables/fruits (1.1 servings/d) and grains (0.5 serving/d). Low-density lipoprotein cholesterol levels, diastolic blood pressure, and factor VIIc levels were significantly reduced by 3.55 mg/dL, 0.31 mm Hg, and 4.29%, respectively; levels of high-density lipoprotein cholesterol, triglycerides, glucose, and insulin did not significantly differ in the intervention vs comparison groups. The numbers who developed CHD, stroke, and CVD (annualized incidence rates) were 1000 (0.63%), 434 (0.28%), and 1357 (0.86%) in the intervention and 1549 (0.65%), 642 (0.27%), and 2088 (0.88%) in the comparison group. The diet had no significant effects on incidence of CHD (hazard ratio [HR], 0.97; 95% confidence interval [CI], 0.90-1.06), stroke (HR, 1.02; 95% CI, 0.90-1.15), or CVD (HR, 0.98; 95% CI, 0.92-1.05). Excluding participants with baseline CVD (3.4%), the HRs (95% CIs) for CHD and stroke were 0.94 (0.86-1.02) and 1.02 (0.90-1.17), respectively. Trends toward greater reductions in CHD risk were observed in those with lower intakes of saturated fat or *trans* fat or higher intakes of vegetables/fruits.

Conclusions Over a mean of 8.1 years, a dietary intervention that reduced total fat intake and increased intakes of vegetables, fruits, and grains did not significantly reduce the risk of CHD, stroke, or CVD in postmenopausal women and achieved only modest effects on CVD risk factors, suggesting that more focused diet and lifestyle interventions may be needed to improve risk factors and reduce CVD risk.

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CLINICAL TRIALS AND OBSERVATIONAL studies have identified strong associations between low-density lipoprotein cholesterol (LDL-C) level and other cardiovascular disease (CVD) risk factors and dietary intake of fats, particularly

See also pp 629, 643, and 693.

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saturated and *trans* fats, cholesterol, plant products, and grains or fiber. Epidemiologic studies have demonstrated that diets low in saturated fat and cholesterol are associated with lower rates of CVD and have implicated several nutrients as determinants of CVD risk.[1-6] Replacing saturated fat with polyunsaturated fat reduced cardiovascular events in some early trials.[7-9] In more recent secondary prevention trials, a Mediterranean-type dietary pattern[10,11] or a very low-fat eating pattern[12] prevented recurrent events, and meta-analyses[13,14] of recent trials of lipid-lowering drugs have documented a strong relationship between changes in LDL-C level and decreased incidence of coronary heart disease (CHD).

Whether a single "healthy" diet could result in decreased risks of cancer and CVD has not been previously evaluated. The primary aim of the Women's Health Initiative (WHI) Dietary Modification Trial was to test whether behavioral intervention intended to produce a dietary pattern low in total fat, along with increased intakes of vegetables, fruits, and grains, would decrease the incidence of breast and colorectal cancer in postmenopausal women.[15] A secondary aim was to test whether such a dietary intervention, which did not focus on the intake of specific fats, would also reduce the risk of CVD. This report compares incidence of CHD and CVD among postmenopausal women randomly assigned to either the dietary modification intervention or usual-diet comparison group during a mean of 8.1 years of follow-up.

METHODS

Recruitment and Dietary Intervention

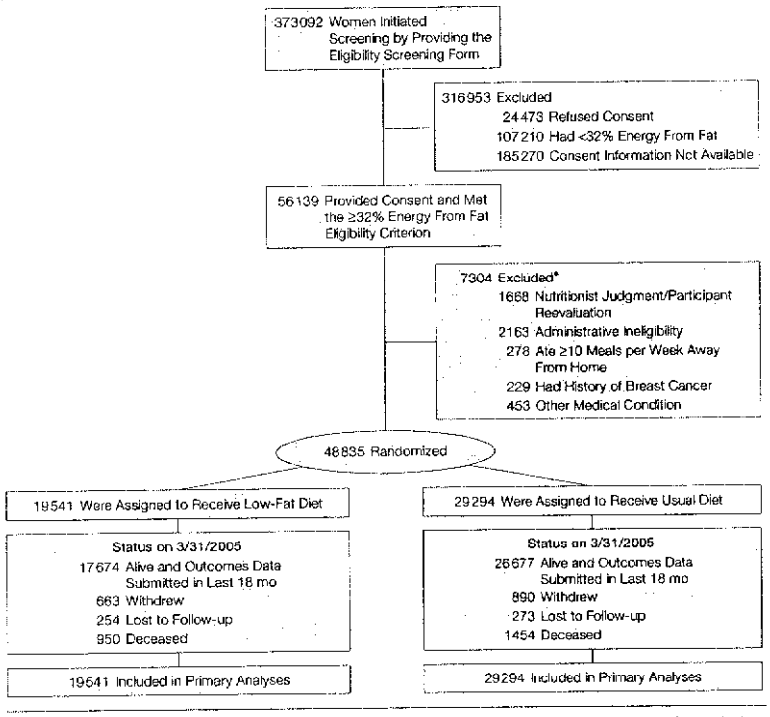
Details of the study design and methods have been published.[16,17] All women provided written informed consent, and the study was approved by the local institutional review boards as well as by the Coordinating Center institutional review board and the National Institutes of Health. Briefly, 48 835 women between the ages of 50 and 79 years were enrolled between 1993 and 1998 at 40 US clinical centers and were randomly assigned to an intervention group (40%, n = 19 541) or a usual-diet comparison group (n = 29 294) (FIGURE 1) using a randomized permuted block algorithm with blocks of size 5, 10, or 15, stratified by clinical center site and age group. Race/ethnicity was classified by self-report, using options outlined on the personal data form completed by all participants at baseline.

Eligibility criteria included being postmenopausal and consuming at baseline a diet with fat intake of 32% or more of total calories, as assessed by a food frequency questionnaire (FFQ). Major exclusions for WHI included prior breast or colorectal cancer, other cancers except nonmelanoma skin cancer in the last 10 years, medical conditions with predicted survival less than 3 years, and adherence concerns such as alcoholism. Additional trial-specific exclusions included type 1 diabetes and frequent consumption of meals prepared away from home.

The intervention was designed to promote dietary change with the goals of reducing intake of total fat to 20% of energy intake (in kilocalories) by increasing intake of vegetables and fruits to at least 5 servings daily and of grains to at least 6 servings daily. The intervention did not include total energy reduction or weight loss goals. Although not a separate focus of the intervention, it was presumed that by reducing total fat intake to 20% kcal, intake of saturated fat would also be reduced (7% energy intake).

The intensive behavioral modification program involved 18 group sessions in the first year and quarterly maintenance sessions thereafter, led by specially trained and certified nutritionists. Each participant was as-

Figure 1. Participant Flow in the Dietary Modification Component of the Women's Health Initiative



*Categories are presented for which exclusions are known. More than 1 reason could be given for exclusion.

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signed her own fat-gram goal, calculated on the basis of height. Participants self-monitored total fat-gram intake and also servings of vegetables, fruits, and grains. No formal intervention regarding saturated fat, cholesterol, *trans* fatty acids, or other known atherogenic factors was provided. Details of the dietary intervention have been published.[16-18]

Group activities were supplemented during the intervention period by individual interviews that used validated reflective listening techniques,[19] targeted-message campaigns, and personalized feedback on fat intake. Individual contacts were completed by telephone or mail.

Women in the comparison group received a copy of the *Dietary Guidelines for Americans*,[20] as well as other health-related materials, but had no contact with the nutrition interventionists.

All participants were also invited to participate concurrently in one of the other WHI controlled trials of hormone therapy (HT) (estrogen alone or with progestin).[21] Participation in a trial of calcium and vitamin D supplementation (CaD) was offered after 1 year.[22] In total, 20 592 (42.2%) joined only the Dietary Modification Trial, 8050 (16.5%) the Dietary Modification plus HT Trial, 25 210 (51.6%) the Dietary Modification plus CaD Trial, and 5017 (10.3%) all 3 trials. Details of the HT and CaD trials have been published.[15,21,22,24]

Based on the intent-to-treat criteria, participants were followed up from the date of entry until death, loss to follow-up, time of a request for no further contact, or until the trial's planned completion date, regardless of their adherence to the dietary intervention. All participants were contacted by clinic staff at 6-month intervals to provide information on health outcomes. Height, weight, waist circumference, and blood pressure were measured at annual visits using standardized procedures. Fasting blood samples were collected at baseline and at year 1 from all participants and from a 5.8% (n=2816) subsample of women at years 3 and 6. The subsample was randomly chosen with oversampling of minority women in which the odds for selection were 6-fold higher than for white women. Physical activity was assessed at baseline and at years 1, 3, 6, and 9; questions assessed walking and participation in sports, and hours of activity per week were calculated for each participant. Physical activity was expressed as metabolic equivalent tasks per week for the analysis.

All participants completed an FFQ designed specifically for the study[23] at baseline and 1 year. Thereafter, one third of the participants completed the FFQ each year in a rotating sample; completion rates were 100% at baseline and 81% thereafter. Data on follow-up dietary intake were computed from FFQs administered from years 5 through 7 (designated as year 6 follow-up), thus including all participants. Four-day food records were provided by all women prior to randomization.

Outcome Ascertainment

Methods for ascertaining and classifying outcomes have been published previously.[24-26] Electrocardiograms (ECGs) were digitally acquired every 3 years and analyzed by a core laboratory. Women completed a medical update questionnaire every 6 months; medical records for all overnight hospitalizations and outpatient coronary revascularization procedures were reviewed by central physician adjudicators (for CHD death) or trained local adjudicators (for all other coronary end points), all blinded to treatment assignment. For this analysis, major CHD, the outcome variable that was designated in the trial design, was defined as acute myocardial infarction (MI) requiring overnight hospitalization or silent MI determined from serial ECGs or CHD death; composite CHD was defined to include MI, CHD death, and coronary revascularization. Cardiovascular disease includes composite CHD and ischemic and hemorrhagic stroke.

The diagnosis of acute MI was established according to an algorithm that included cardiac pain, enzyme levels, and ECG readings. Aborted MIs and those occurring during surgery were included if they met established criteria. Silent MI was diagnosed by comparing baseline and follow-up ECGs at 3, 6, and 9 years after randomization. Coronary heart disease death was defined as death consistent with CHD as the underlying cause plus 1 or more of the following: preterminal hospitalization with MI within 28 days of death; previous angina or MI and no potentially lethal noncoronary disease process; death resulting from a procedure related to coronary artery disease; or death certificate consistent with CHD as the underlying cause. Stroke diagnosis was based on the rapid onset of a neurologic deficit lasting more than 24 hours or until death, requiring hospitalization and supported by imaging studies when available. Coronary revascularization procedures were validated by medical record review.

Design and Data Analysis

Adherence assumptions included 13% lower percentage energy intake from fat in the intervention compared with the comparison group 1 year after randomization, diminishing to an 11% energy difference at 9 years. These assumptions led to a projected 14% lower CHD incidence in the intervention vs the comparison group. However, the achieved difference in percentage energy from fat was only about 70% of design assumptions. This reduction, along with a comparison group incidence rate that is about two thirds of the design rate, leads to a projected power of only approximately 40% over the 8.1-year follow-up period, under other design assumptions.

All primary analyses were based on the intent-to-treat principle and used time-to-event methods, defined to be the number of days from randomization to the first postrandomization diagnosis. For silent MIs, the date of the follow-up ECG applied. A woman with self-report but without the diagnosis was censored for that event at the time of her last follow-up contact.

Primary outcome comparisons are presented as hazard ratios (HRs) and

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Table 1. Baseline Characteristics of the Dietary Modification Trial Participants (N = 48 835)

Characteristic	No. (%) Intervention (n = 19 541)	Comparison (n = 29 294)	*P* Value
Age group at screening, y			
50-59	7206 (36.9)	10 797 (36.9)	>.99
60-69	9086 (46.5)	13 626 (46.5)	
70-79	3249 (16.6)	4871 (16.6)	
Mean (SD)	62.3 (6.9)	62.3 (6.9)	.99
Race/ethnicity			
White	15 869 (81.2)	23 890 (81.6)	.76
Black	2137 (10.9)	3129 (10.7)	
Hispanic	755 (3.9)	1099 (3.8)	
American Indian/Alaskan Native	88 (0.5)	115 (0.4)	
Asian/Pacific Islander	433 (2.2)	674 (2.3)	
Unknown	259 (1.3)	387 (1.3)	
Annual family income, $			
<10 000	683 (3.7)	1100 (4.0)	.40
10 000-19 999	2091 (11.4)	3203 (11.6)	
20 000-34 999	4501 (24.5)	6814 (24.7)	
35 000-49 999	3954 (21.5)	5868 (21.3)	
50 000-74 999	3887 (21.1)	5662 (20.5)	
≥75 000	3293 (17.9)	4948 (17.9)	
Body mass index*			
<25	5072 (26.1)	7585 (26.0)	.94
25-<30	6940 (35.7)	10 446 (35.8)	
≥30	7442 (38.3)	11 126 (38.2)	
First-degree relative with premature MI			
No	14 064 (81.3)	21 079 (81.2)	.79
Yes	3239 (18.7)	4857 (18.8)	
Postmenopausal hormone therapy, y			
Estrogen alone			
None	12 262 (62.8)	18 452 (63.0)	.36
<5	2711 (13.9)	3933 (13.4)	
≥5	4568 (23.4)	6909 (23.6)	
Estrogen plus progestin			
None	14 196 (72.7)	21 299 (72.7)	.92
<5	2768 (14.2)	4114 (14.0)	
≥5	2576 (13.2)	3881 (13.3)	
Smoking			
Never or past	18 039 (93.4)	27 009 (93.2)	.33
Current	1273 (6.6)	1977 (6.8)	
Hypertension (treated or BP ≥140/90 mm Hg)			
No	10 315 (57.5)	15 271 (56.8)	.15
Yes	7617 (42.5)	11 596 (43.2)	
History of hypercholesterolemia requiring medication			
No	15 231 (88.2)	22 761 (87.9)	.29
Yes	2034 (11.8)	3138 (12.1)	
Treated for diabetes (pills or injections)			
No	18 673 (95.6)	27 955 (95.4)	.50
Yes	866 (4.4)	1336 (4.6)	
History of cardiovascular disease			
MI	363 (1.9)	548 (1.9)	.92
Stroke	205 (1.0)	328 (1.1)	.46
CABG surgery or PCI	241 (1.2)	321 (1.1)	.17
Aspirin use (≥80 mg/d)			
No	16 149 (82.7)	23 980 (81.9)	.03
Yes	3391 (17.4)	5314 (18.1)	
The metabolic syndrome†			
No	679 (64.4)	1056 (64.0)	.94
Yes	393 (35.6)	608 (36.0)	

Abbreviations: BP, blood pressure; CABG, coronary artery bypass graft; MI, myocardial infarction; PCI, percutaneous coronary intervention.
*Calculated as weight in kilograms divided by the square of height in meters.
†Defined retrospectively by Adult Treatment Panel III criteria and determined on a 5.8% subsample.

95% confidence intervals (CIs) from Cox proportional hazard analyses, stratified by age at screening, prevalent disease, and randomization status in the hormone trials. Assumptions of proportionality were met and tested by testing for a treatment by time-to-event interaction. Outcomes were also evaluated after exclusion of women with CVD at baseline (n=1656 [3.4%]). No time-dependent variables were included in the analyses.

Changes in individual LDL-C levels in the 5.8% subsample were compared with those predicted using the equation of Mensink and Katan[27]:

$$\Delta\text{LDL-C} = 1.28(\Delta\text{sat}) - 0.24(\Delta\text{mono}) - 0.55(\Delta\text{poly})$$

where sat indicates saturated fat; mono, monounsaturated fat; and poly, polyunsaturated fat.

Secondary analyses compared event rates in the intervention and comparison groups in women stratified by baseline characteristics (eg, ethnicity, age, and body mass index [BMI]), as well as other health characteristics known to influence CVD. For the analysis of baseline percentage energy from fat, data from baseline 4-day food records of those women who developed CHD were also used as described previously.[28]

The possibility of important subgroup effects was explored by testing for interactions in expanded Cox models. Twenty-seven subgroups were tested; thus, at least 1 would be expected to be significant by chance alone at the .05 level of significance.

Secondary analyses were also conducted, using Cox models, examining the relationship in the intervention group between CHD events after year 1 and quartiles of specific nutrient intakes at year 1 (ie, percentage energy from intakes of fat, vegetables and fruits, and grains). Other dietary components not specific to the intervention but believed to influence CVD were similarly assessed, including saturated fats, *trans* fatty acids, cholesterol, fiber, and the ratio of polyunsaturated to saturated fat. The analysis

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provided adjustment for energy intake, for known correlates of trial adherence, and for characteristics known to influence CVD risk; the CVD rate in the comparison group was used as the reference. All analyses were performed using SAS version 9.1 (SAS Institute Inc, Cary, NC).

RESULTS

Baseline Characteristics

The mean (SD) age of the 48 835 participants was 62.3 (6.9) years. Demographic characteristics, medical history, and behavioral characteristics of the study population have been described in detail[16] and appear in TABLE 1 by intervention group. The cohort was ethnically diverse (18.6% minority) and included a range of education and income levels; 3.4% reported a history of CVD. No significant differences were found between the randomization groups for any of the measures presented in Table 1 and TABLE 2, except for a 0.4-mm Hg difference in systolic blood pressure and a 0.7% difference in use of aspirin. The women in this trial reflect the characteristics of the general population of women of this age throughout the United States, except that they had somewhat higher obesity measures, income, and education and lower rates of smoking.[16] Baseline levels of lipids and other biomarkers measured in a 5.8% sample were similar between the 2 groups, except that high-density lipoprotein cholesterol (HDL-C) level in the comparison group was 1.7 mg/dL (0.04 mmol/L) lower (Table 2).

TABLE 3 presents overall baseline and follow-up nutrient data for both groups based on the FFQ. No meaningful changes were seen in any of the dietary factors in the comparison group. Compared with the comparison group, the intervention group reported significant changes in all dietary components, resulting in year 6 in an 8.2% lower mean total fat intake ($P<.001$) and a 2.9% lower mean saturated fat intake ($P<.001$), as well as reduced intakes of *trans*, monounsaturated, and polyunsaturated fat and cholesterol (but no change in ratio of polyunsaturated to saturated fat) and increased intakes of fiber, vegetables and fruits, total and whole grains, and soy.

Table 2. Differences Between the Mean Changes in Cardiovascular Disease Risk Factors From Baseline to Year 3 in the Intervention vs the Comparison Group

Risk Factor	Baseline, Mean (SD)		Year 3, Mean (SD)		Change at Year 3		
	Intervention	Comparison	Intervention	Comparison	Intervention, Mean (SD)	Comparison, Mean (SD)	Difference, Mean (95% CI)
Clinical Values							
Weight, kg	76.8 (16.6)	76.7 (16.5)	75.7 (17.1)	76.7 (16.6)	−0.7 (9.0)	0.6 (9.2)	−1.29 (−1.47 to −1.11)*
Body mass index†	29.1 (5.9)	29.1 (5.9)	28.8 (6.0)	29.2 (5.9)	−0.2 (2.7)	0.3 (2.7)	−0.49 (−0.54 to −0.44)*
Waist circumference, cm	89.0 (13.9)	89.0 (13.7)	88.2 (13.9)	89.3 (14.1)	−0.4 (7.3)	0.5 (7.7)	−0.98 (−1.19 to −0.76)*
Physical activity, METs/wk	10.0 (11.7)	10.1 (12.0)	11.6 (13.0)	11.3 (12.8)	1.4 (11.7)	1.0 (11.4)	0.39 (0.16 to 0.63)*
Blood pressure, mm Hg							
Systolic	127.5 (17.2)	127.9 (17.2)	125.1 (16.9)	125.7 (16.8)	−2.2 (16.3)	−2.1 (16.4)	−0.17 (−0.49 to 0.15)
Diastolic	75.9 (9.1)	76.0 (9.1)	73.1 (9.4)	73.6 (9.3)	−2.6 (9.4)	−2.3 (9.4)	−0.31 (−0.50 to −0.13)*
Laboratory Values							
Cholesterol, mg/dL							
Total‡	224.0 (36.5)	224.2 (39.2)	214.1 (35.3)	216.6 (35.9)	−10.2 (32.0)	−6.9 (31.9)	−3.26 (−6.53 to −0.00)§
LDL-C‡	133.3 (35.3)	134.2 (35.1)	123.2 (33.1)	127.0 (34.0)	−9.7 (29.3)	−6.2 (29.1)	−3.55 (−6.58 to −0.52)§
HDL-C‡	60.1 (16.1)	58.4 (15.4)	59.7 (15.8)	58.2 (15.5)	−0.7 (9.4)	−0.3 (10.2)	−0.43 (−1.42 to 0.57)
Total cholesterol–HDL-C ratio‡	4.0 (1.2)	4.1 (1.3)	3.8 (1.1)	4.0 (1.2)	−0.2 (0.8)	−0.1 (1.0)	−0.04 (−0.13 to 0.5)
Non–HDL-C‡	163.9 (39.5)	165.8 (41.1)	154.3 (36.5)	158.4 (37.0)	−9.7 (32.0)	−6.6 (32.6)	−3.08 (−6.37 to 0.22)
Triglycerides, mg/dL‡‖	138.6 (65.1)	141.1 (66.3)	142.3 (67.5)	144.6 (63.7)	1.0 (0.4)	1.0 (0.3)	0.00 (−0.03 to 0.04)
Lipoprotein(a), mg/dL‡‖	15.7 (17.5)	15.4 (17.0)	13.2 (15.1)	13.8 (15.5)	0.9 (0.5)	0.9 (0.5)	−0.01 (−0.07 to 0.05)
Glucose, mg/dL‡	100.4 (26.6)	100.0 (26.9)	98.8 (25.6)	99.5 (27.3)	−1.7 (19.9)	−0.7 (21.6)	−1.06 (−3.06 to 0.93)
Insulin, μIU/mL‡‖	9.9 (4.9)	10.2 (5.3)	10.5 (5.3)	11.2 (5.9)	1.1 (0.5)	1.1 (0.5)	−0.03 (−0.07 to 0.02)
HOMA insulin resistance‡‖	2.4 (1.4)	2.5 (1.6)	2.5 (1.5)	2.7 (1.7)	1.1 (0.5)	1.1 (0.6)	−0.04 (−0.09 to 0.01)
Total carotenoids, μg/mL‡	0.7 (0.4)	0.7 (0.4)	0.7 (0.4)	0.6 (0.4)	0.0 (0.3)	−0.0 (0.3)	0.04 (0.01 to 0.07)§
Factor VIIc, %‡	131.0 (33.3)	129.1 (29.0)	130.0 (35.7)	131.6 (32.7)	−1.9 (27.3)	2.4 (28.7)	−4.29 (−7.29 to −1.29)*
Fibrinogen, mg/dL‡	301.5 (59.3)	298.7 (61.7)	288.0 (58.1)	290.2 (60.0)	−11.1 (49.9)	−10.2 (54.0)	−0.97 (−6.41 to 4.47)

Abbreviations: CI, confidence interval; HDL-C, high-density lipoprotein cholesterol; HOMA, homeostasis model assessment; LDL-C, low-density lipoprotein cholesterol; METs, metabolic equivalent tasks.

SI conversion factors: To convert total cholesterol, LDL-C, and HDL-C to mmol/L, multiply values by 0.0259; triglycerides to mmol/L, by 0.0113; lipoprotein(a) to μmol/L, by 0.0357; glucose to mmol/L, by 0.0555; insulin to pmol/L, by 6.945; and fibrinogen to μmol/L, by 0.0294.

*Difference significant at $P<.001$ from a 2-sample test.

†Calculated as weight in kilograms divided by the square of height in meters.

‡Blood measures were performed on a 5.8% subsample at year 3. Means and SDs have been weighted by ethnicity using the ethnicity distribution of participants randomized to the entire clinical trial. Tests for differences between the randomization groups are performed on the weighted means and SDs.

§Difference significant at $P<.05$ from a 2-sample test.

‖Means shown are geometric means.

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Follow-up

At trial conclusion, 2404 women (4.9%) were deceased, 1553 (3.2%) had stopped follow-up, and 527 (1.1%) were lost to follow-up. Five percent (4.7%) of women in the intervention and 4.0% in the comparison group withdrew, were considered lost to follow-up, or had stopped providing outcomes information for longer than 18 months (Figure 1). Eleven percent (11.4%) of women had terminated the intervention, as defined by neither attending group sessions nor providing self-monitoring information through phone or individual visits for 18 months.

CVD Risk Factors

At year 3, women in the intervention group compared with those in the comparison group showed small but significant decreases in body weight,[29] waist circumference,[29] diastolic blood pressure, LDL-C level (3.55 mg/dL [0.09 mmol/L]), and factor VIIc level (Table 2). The dietary intervention had no statistically significant effects on levels of triglycerides or HDL-C; ratio of total cholesterol to HDL-C; levels of non–HDL-C, lipoprotein(a), glucose, or insulin; or insulin resistance as estimated by homeostasis model assessment[30]; in the latter 3 factors, there were trends toward improvement. The observed absolute LDL-C change of 2.7 mg/dL (0.07 mmol/L) after 6 years was similar to the 2.3-mg/dL (0.06-mmol/L) change predicted using current equations based on differences in fatty acid intakes.[27] Carotenoid levels, a reflection of increased vegetable consumption, were significantly higher.

CVD Outcomes

After a mean of 8.1 years of follow up, the observed incidence rate for major CHD (MI/CHD death, 3.6 per 1000 person-years) in the comparison group was 30% lower than projected in the design. No significant effects of the dietary intervention were observed for major CHD (HR, 0.98; 95% CI, 0.88-1.09) or composite CHD (CHD/revascularization; HR, 0.97; 95% CI, 0.90-1.06) vs the comparison group (TABLE 4). The incidences of total, fatal, or nonfatal stroke were not influenced by the dietary intervention (HR, 1.02; 95% CI, 0.90-1.15), nor was a composite measure of CVD (CHD/revascularization/stroke; HR, 0.98; 95% CI, 0.92-1.05). The monitoring plan for the Dietary Modification Trial specified 2 primary outcomes (breast and colorectal cancer) and 2 secondary outcomes (major CHD and death from other causes). The 95% CI for major CHD, adjusted for these 4 outcomes using a Bonferroni correction,

Table 3. Baseline and Follow-up Nutrient Intakes*

	Baseline, Mean (SD)		Year 1, Mean (SD)			Year 6, Mean (SD)		
	Intervention	Comparison	Intervention	Comparison	Difference, Mean (95% CI)†	Intervention	Comparison	Difference, Mean (95% CI)†
Total energy, kcal/d	1790.2 (710.1)	1789.4 (703.0)	1500.5 (544.2)	1593.8 (644.0)	−93.4 (−104.6 to −81.9)	1431.8 (551.7)	1546.2 (639.5)	−114.3 (−126.8 to −101.8)
Daily intakes, % of energy								
Total fat	37.8 (5.1)	37.8 (5.0)	24.3 (7.5)	35.1 (6.9)	−10.7 (10.9 to −10.6)	28.8 (8.4)	37.0 (7.3)	−8.2 (−8.3 to −8.0)
Saturated fat	12.7 (2.5)	12.7 (2.5)	8.1 (2.8)	11.8 (2.9)	−3.7 (−3.7 to −3.6)	9.5 (3.2)	12.4 (3.1)	−2.9 (−3.0 to −2.8)
Monounsaturated fat	14.4 (2.3)	14.4 (2.3)	8.9 (3.1)	13.3 (2.9)	−4.4 (−4.5 to −4.4)	10.8 (3.5)	14.2 (3.1)	−3.3 (−3.4 to −3.3)
Polyunsaturated fat	7.8 (2.0)	7.8 (2.0)	5.2 (1.8)	7.2 (2.1)	−2.0 (−2.0 to −2.0)	6.1 (2.1)	7.5 (2.1)	−1.5 (−1.5 to −1.4)
P/S fat ratio	0.6 (0.2)	0.6 (0.2)	0.7 (0.2)	0.6 (0.2)	0.0 (0.0 to 0.0)	0.7 (0.2)	0.6 (0.2)	0.0 (0.0 to 0.0)
Total *trans* fatty acid	2.7 (1.1)	2.8 (1.1)	1.6 (0.8)	2.5 (1.1)	−0.8 (−0.9 to −0.8)	1.8 (0.9)	2.4 (1.1)	−0.6 (−0.6 to −0.6)
Protein	16.5 (3.0)	16.4 (3.0)	17.7 (3.1)	16.9 (3.2)	0.8 (0.8 to 0.9)	17.7 (3.4)	17.1 (3.3)	0.6 (0.5 to 0.6)
Carbohydrate	45.6 (6.3)	45.6 (6.2)	58.3 (8.9)	48.0 (8.0)	10.3 (10.2 to 10.5)	53.9 (9.9)	45.9 (8.8)	8.1 (7.9 to 8.3)
Dietary fiber, g/d	15.4 (6.4)	15.4 (6.4)	18.1 (7.5)	14.9 (6.5)	3.2 (3.0 to 3.3)	16.9 (7.5)	14.4 (6.4)	2.4 (2.3 to 2.6)
Soluble fiber, g/d	4.2 (1.7)	4.2 (1.8)	4.9 (2.0)	4.0 (1.8)	0.8 (0.8 to 0.9)	4.5 (2.0)	3.8 (1.7)	0.6 (0.6 to 0.7)
Dietary folate equivalent, μg/d	259.2 (136.6)	259.3 (138.1)	398.5 (215.0)	346.1 (195.1)	52.4 (48.6 to 56.2)	469.1 (205.9)	422.5 (189.0)	46.6 (42.5 to 50.6)
Cholesterol, mg/d	260.5 (139.0)	260.0 (135.5)	172.4 (99.3)	229.8 (128.7)	−57.5 (−59.7 to −55.3)	193.6 (118.7)	243.5 (143.2)	−49.9 (−52.7 to −47.2)
Intakes, servings/d								
Vegetables and fruits	3.6 (1.8)	3.6 (1.6)	5.1 (2.3)	3.9 (2.0)	1.2 (1.2 to 1.2)	4.9 (2.4)	3.8 (2.0)	1.1 (1.1 to 1.2)
Grains	4.7 (2.5)	4.8 (2.5)	5.1 (2.7)	4.2 (2.3)	0.8 (0.8 to 0.9)	4.3 (2.4)	3.8 (2.2)	0.5 (0.4 to 0.5)
Whole grains	1.1 (0.8)	1.1 (0.8)	1.4 (0.9)	1.1 (0.7)	0.3 (0.3 to 0.3)	1.2 (0.9)	1.0 (0.7)	0.2 (0.2 to 0.2)
Intakes, servings/wk								
Soy‡	0.1 (0.7)	0.1 (0.7)	0.2 (0.8)	0.2 (0.7)	0.0 (0.0 to 0.0)	0.3 (1.0)	0.2 (0.9)	0.0 (0.0 to 0.1)
Nuts	1.5 (2.3)	1.5 (2.3)	0.5 (1.1)	1.3 (1.9)	−0.8 (−0.8 to −0.7)	1.0 (1.7)	1.8 (2.5)	−0.8 (−0.9 to −0.8)
Fish	1.9 (1.8)	1.9 (1.7)	1.9 (1.7)	1.8 (1.7)	0.1 (0.0 to 0.1)	2.0 (1.7)	2.0 (1.9)	0.0 (−0.1 to 0.0)

Abbreviations: CI, confidence interval; P/S, ratio of polyunsaturated fat to saturated fat.
*Nutrient intakes were available on 19 470 and 29 216 participants at baseline, and 18 058 and 26 743 at year 1 and 14 885 and 22 958 at year 6 in the intervention and comparison groups, respectively. Data on servings of types of food was available on 19 470 and 29 216 participants at baseline, 18 057 and 26 743 at year 1, and 14 774 and 22 713 at year 6 in the intervention and comparison groups respectively.
†All differences significant at $P<.001$ from a 2-sample test except for soy at year 3 ($P = .02$), and fish at year 6 ($P = .40$).
‡No soy intake was reported by 87.0%, 84.9%, and 80.1% of participants at baseline, year 1, and year 6, respectively.

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was 0.86 to 1.12. After women with history of CVD at baseline were removed (n=1656 [3.4%]), HRs (95% CIs) for major CHD, composite CHD, stroke, and total CVD were 0.93 (0.83-1.05), 0.94 (0.86-1.02), 1.02 (0.90-1.17), and 0.96 (0.89-1.03), respectively. The HR for the 3.4% of women with CVD at baseline was 1.26 (95% CI, 1.03-1.54). We considered the potential confounding effects of changing medication use during the trial by examining use of statins, aspirin, and angiotensin-converting enzyme inhibitors at year 6. All differences in medication use between groups were less than 1%.

In examining trends over time (FIGURE 2), there was no apparent influence of the dietary intervention on stroke at any point up to 9 years of follow-up. There appeared to be a slight, nonsignificant trend toward decreased CHD rates in the intervention group in the later years, and this was more pronounced for women with no CVD at baseline. Likewise, exploratory analyses of CHD outcomes in groups stratified by race/ethnicity, age, BMI, waist circumference, smoking, statin use, diabetes, randomization to the HT and CaD trials, and baseline fat intake revealed no significant interactions between the intervention group and any of these variables (FIGURE 3), either in the group as a whole or if women with baseline CVD were excluded. A significant interaction was observed between the intervention effect and baseline disease ($P=.006$).

Additional Analyses

When the effect of the intervention was assessed using adherence criteria based on participation in intervention activities,[28] the HRs did not change. Trends for changes in specific components of the diet were examined by evaluating CHD risk in individuals stratified by quartiles of achieved levels of key nutrients at year 1, using the rate in the comparison group as the reference. Analyses were adjusted for age, baseline CHD, and HT randomization group; full models included CVD risk factors (age, BMI, hypertension, high cholesterol level, smoking, diabetes, physical activity, and energy expenditure) and correlates of adherence (ethnicity, education, income, and psychosocial factors).

Compared with those in the entire comparison group, a trend was observed toward reduction of CHD risk among those in the intervention group who reached the lowest levels of saturated fat (HR, 0.81; 95% CI, 0.69-0.96 in the group that consumed <6.1% energy; $P<.001$ [adjusted HR, 0.82; 95% CI, 0.67-0.99; $P=.05$]) and *trans* fat (HR, 0.81; 95% CI, 0.69-0.95 in group consuming <1.1% energy intake; $P<.001$ [adjusted HR, 0.84; 95% CI, 0.69-1.02; $P=.10$]) or the highest intakes of vegetables and fruits (HR, 0.88; 95% CI, 0.76-1.03 in the group that consumed ≥6.5 servings/d; $P<.001$ [adjusted HR, 0.89; 95% CI, 0.74-1.06; $P=.11$]). While these additional analyses are subject to residual confounding because of reporting bias or the lack of a comparable comparison group, some confidence in their validity is supported by parallel patterns of LDL-C reductions in participants stratified by changes in saturated fat at year 1 (−10.1; 95% CI, −13.5 to −6.6 mg/dL [0.26; 95% CI, −0.36 to −0.17 mmol/L] in the quartile with the greatest reduction; $P=.005$ for trend), and *trans* fat (−9.0; 95% CI, −12.5 to −5.6 mg/dL [0.23; 95% CI, −0.32 to −0.14 mmol/L] in the quartile with the greatest reduction; $P=.03$).

Table 4. Clinical Outcomes (Annualized Percentage) of the Dietary Modification Trial Participants by Randomization Assignment

	All Participants, No. (%)			Participants Without History of CVD, No. (%)		
	Intervention (n = 19 541)	Comparison (n = 29 294)	HR (95% CI)*	Intervention (n = 18 633)	Comparison (n = 27 925)	HR (95% CI)*
Mean follow-up time, mo	96.9	97.1		97.2	97.4	
Major CHD (nonfatal MI or CHD death)†‡	559 (0.35)	863 (0.36)	0.98 (0.88-1.09)	452 (0.30)	733 (0.32)	0.93 (0.83-1.05)
Nonfatal MI	435 (0.28)	671 (0.28)	0.98 (0.87-1.11)	353 (0.23)	581 (0.26)	0.91 (0.80-1.04)
CHD death	158 (0.10)	234 (0.10)	1.02 (0.84-1.25)	124 (0.08)	185 (0.08)	1.01 (0.81-1.27)
CABG/PCI	717 (0.45)	1113 (0.47)	0.96 (0.88-1.06)	569 (0.38)	935 (0.41)	0.91 (0.82-1.01)
Composite CHD (nonfatal MI, CHD death, or CABG/PCI)	1000 (0.63)	1549 (0.65)	0.97 (0.90-1.06)	806 (0.53)	1292 (0.57)	0.94 (0.86-1.02)
Stroke	434 (0.28)	642 (0.27)	1.02 (0.90-1.15)	384 (0.25)	564 (0.25)	1.02 (0.90-1.17)
Fatal§	55 (0.03)	86 (0.04)	0.97 (0.69-1.36)	46 (0.03)	73 (0.03)	0.94 (0.65-1.35)
Nonfatal	379 (0.24)	556 (0.23)	1.03 (0.90-1.17)	338 (0.22)	491 (0.22)	1.04 (0.90-1.19)
Stroke class						
Ischemic	256 (0.16)	383 (0.16)	1.01 (0.86-1.18)	228 (0.15)	334 (0.15)	1.03 (0.87-1.22)
Hemorrhagic	67 (0.04)	113 (0.05)	0.90 (0.66-1.22)	62 (0.04)	106 (0.05)	0.88 (0.64-1.20)
Total cardiovascular disease‖	1357 (0.86)	2088 (0.88)	0.98 (0.92-1.05)	1132 (0.75)	1777 (0.78)	0.96 (0.89-1.03)

Abbreviations: CABG, coronary artery bypass graft; CHD, coronary heart disease; CI, confidence interval; HR, hazard ratio; MI, myocardial infarction; PCI, percutaneous coronary intervention.

*From an unweighted proportional hazards model stratified by prevalent condition, age, and hormone therapy randomization group.

†MI includes clinical MI and silent MI. Fifty-five and 47 MIs were identified only by serial electrocardiography among all participants and those without history of CVD, respectively.

‡Nonfatal MI is defined as no definite CHD death within 28 days of MI.

§Fatal stroke is defined as death within 30 days of stroke, or source of outcome is cause of death only.

‖Total cardiovascular disease includes clinical MI, silent MI, death due to CHD, CABG/PCI, and stroke.

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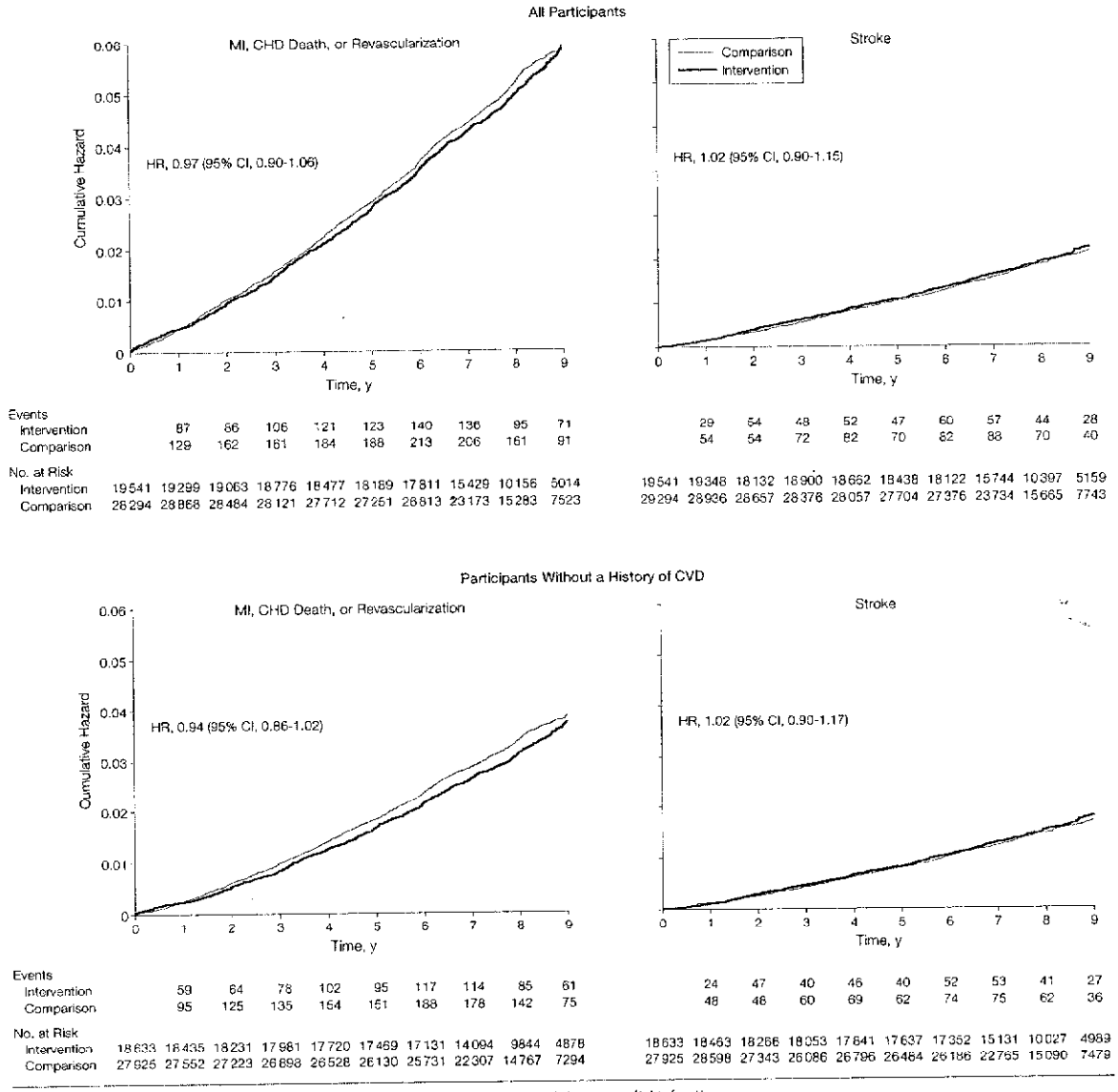
COMMENT

The WHI Dietary Modification Trial is the largest long-term randomized trial of a dietary intervention ever conducted to our knowledge, and it achieved an 8.2% reduction at year 6 in total fat intake and a mean daily increase of 1.1 servings of vegetables and fruits and 0.5 serving of grains. No significant effects on incidence of CHD or stroke were observed during 8.1 years of follow-up. Analysis of subcomponents of CVD, including MI, coronary interventions, and stroke separately showed no beneficial or adverse effects of the dietary changes. Although power was limited for subgroup analyses, stratification by ethnicity, age, BMI, or the presence of baseline CVD risk factors did not reveal any subgroup in which there were significant effects. An interaction with prior CVD was observed; women without baseline CVD had an HR close to significant, but the absolute reduction was only 7%. The intervention was associated with increased risk in the 3.4% of women with

Figure 2. Kaplan-Meier Estimates of Cumulative Hazards for CHD (MI, CHD Death, or Revascularization) and Stroke



CHD indicates coronary heart disease; CI, confidence interval; HR, hazard ratio; MI, myocardial infarction.

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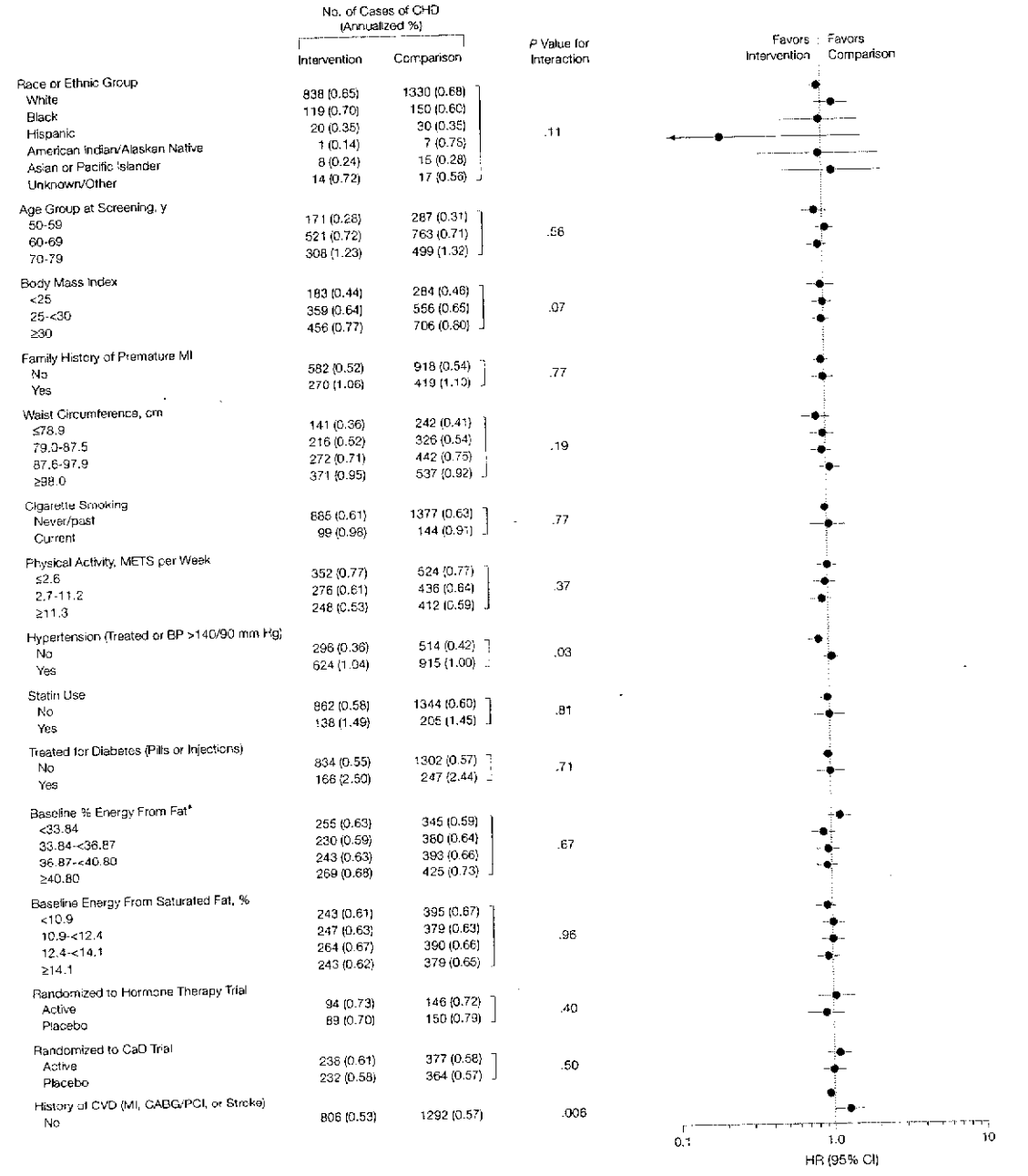
Figure 3. Risk of Composite Coronary Heart Disease (CHD) in Various Subgroups



Body mass index was calculated as weight in kilograms divided by the square of height in meters. BP indicates blood pressure; CABG, coronary artery bypass graft; CaD, calcium and vitamin D; CI, confidence interval; CVD, cardiovascular disease; HR, hazard ratio; HT, hormone therapy; METs, metabolic equivalent tasks; MI, myocardial infarction; PCI, percutaneous coronary intervention.
*Conclusions do not change if results from 4-day food records are used.

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baseline CVD; this may be a chance observation, or rates in this small subset may be confounded by concurrent therapy or comorbid conditions.

The primary focus of the WHI Dietary Modification Trial intervention was on lowering rates of breast and colorectal cancer, not those of CVD, by targeting total dietary fat reduction.[28,31] Women in the intervention group achieved intakes of saturated fat and cholesterol that were less than 10% of energy intake and less than 300 mg/d, respectively. However, intakes of polyunsaturated fat, vegetables and fruits, and fiber were lower than now recommended,[32-34] and there was no focus on consumption of fish. However, while the WHI Dietary Modification Trial intervention was not specifically designed to lower rates of CVD, at least 3 findings relevant to CVD are worth noting.

First, contrary to previous suggestions about adverse effects of increasing carbohydrate intake on CVD risk factors,[35,36] no long-term adverse effects were observed on lipid profiles or levels of glucose or insulin. There were no significant increases in triglycerides levels or decreases in HDL-C levels, and trends for glucose and insulin levels and for estimated insulin resistance all were slightly favorable. Body weight, waist circumference, and diastolic blood pressure were significantly lower, as were levels of factor VIIc. Because there are no apparent changes that would have mitigated a potentially favorable effect on CVD, the lack of an appreciable CVD effect may be attributable to the limited decrease (only 2.7 mg/dL [0.07 mmol/L]) in LDL-C level, as well as the modest differences in other potentially favorable dietary components. Based on a large body of evidence from LDL-C–lowering trials,[13,14] this magnitude of change in LDL-C level would be predicted to produce only a small (2%-4%) decrease in CVD risk, a value far below the power for detection in the current study. As delivered, the dietary intervention was not expected to have substantial effects on lipoprotein levels, but it is possible that a diet specifically lower in saturated and *trans* fat combined with increased intakes of vegetables, fruits, and grains might have led to a decrease in CVD risk. The trial is not a test of the dietary guidelines currently recommended for prevention of CVD[32-34] that specify a plant-based, high-fiber diet rich in vegetables, fruits, whole grains, nuts, beans, low-fat dairy products, and fish and replacement of saturated and *trans* fat with monounsaturated and polyunsaturated fat and plant sterols.

Second, there is value in the comparison of these results to the limited existing clinical trial results. Six previous randomized dietary trials, conducted many years ago, examined the effect of dietary fat on rates of CVD with at least 2 years of follow-up.[7-9,37-39] In 4 of these trials,[7-9,39] individuals started with diets extremely high in saturated fat; saturated fat intake was decreased by approximately 10% of energy intake, resulting in a 12% to 15% decrease in blood levels of total cholesterol and a significant reduction in CHD. In 2 other studies in which total cholesterol levels were reduced by only 3% to 4%, no reduction was seen in CHD.[37,38] These previous studies further support the implication that the lack of effect on CVD in the current study was attributable to the small decrease in saturated fat and reduced intakes of monounsaturated and polyunsaturated fat that yielded the subsequent minimal change in LDL-C levels. These data further imply that, because the current mean saturated fat intake in the United States is now approximately 11% kcal vs 18% to 20% in the 1970s,[40] very aggressive and targeted dietary intervention would be required to achieve substantial LDL-C lowering through dietary approaches. This might be difficult to attain within the context of the general societal framework of food processing and availability.

Third, this study provides the opportunity for subgroup analyses. These results show no effect of this diet on stroke, but a possible trend toward benefit with regard to CHD was observed. The large diverse cohort and long duration provide the unique opportunity to evaluate the effects of different levels of dietary adherence and to examine whether specific qualitative and quantitative changes in the diet affected CVD outcomes. Stratification by attainment of lowest levels of saturated or *trans* fat or highest intakes of vegetables and fruits showed positive trends, with women who achieved the more optimal levels showing lower LDL-C levels and rates of CHD. Several previous observational studies have indicated that intakes of specific fatty acids are more strongly related to CHD risk than is total fat intake.[1,2,6] Collectively, these analyses, despite their inherent limitations, suggest that a diet lower in saturated and *trans* fat intake and higher in intakes of vegetables and fruits and polyunsaturated fat than what was achieved in this trial might show significant benefit in preventing CHD.

Strengths of this study include its randomized design, long-term follow-up, large sample size, ethnic and socioeconomic diversity, and high retention rate. Limitations include the lack of targeting key nutrients relevant to CVD and the focus on women aged between 50 and 79 years; the possibility that the effect might have been greater in men or if the diet had been initiated at younger ages cannot be ruled out. Why trends toward protective effects for CHD events were observed only in women without baseline disease also needs further consideration. Limitations associated with the FFQ methodology include bias caused by self-report[41] and the need to recall food intake throughout a 3-month period; also, our validation study suggested that baseline percentage of energy from fat may have been overestimated by 2% to 3%.[42]

In conclusion, this long-term dietary intervention in postmenopausal women, intended to reduce fat intake and increase intake of vegetables, fruits, and grains, achieved an 8.2% of energy decrease in total fat intake but only a 2.9% of energy

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decrease in saturated fat intake and only modest increases in intakes of vegetables, fruits, and grains. The intervention did not reduce risk of CHD or stroke. To achieve a significant public health impact on CVD events, a greater magnitude of change in multiple macronutrients and micronutrients and other behaviors that influence CVD risk factors may be necessary.

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Author Contributions: Dr Howard had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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Drafting of the manuscript: Howard, Van Horn, Stefanick, Rossouw, Trevisan, Vitolins.

Critical revision of the manuscript for important intellectual content: Howard, Van Horn, Hsia, Manson, Stefanick, Wassertheil-Smoller, Kuller, LaCroix, Langer, Lasser, Lewis, Limacher, Margolis, Mysiw, Ockene, Parker, Perri, Phillips, Prentice, Robbins, Rossouw, Sarto, Schatz, Snetselaar, Stevens, Tinker, Trevisan, Anderson, Assaf, Bassford, Beresford, Black, Brunner, Brzyski, Caan, Chlebowski, Gass, Granek, Greenland, Hays, Heber, Heiss, Hendrix, Hubbell, Johnson, Kotchen.

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Study supervision: Howard, Van Horn, Manson, Stefanick, Wassertheil-Smoller, LaCroix, Limacher, Ockene, Parker, Perri, Prentice, Robbins, Stevens, Trevisan, Anderson, Assaf, Beresford, Black, Brunner, Caan, Chlebowski, Hays, Heiss, Hendrix, Johnson.

Critical input to representation of the intervention program: Tinker.

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Independent Statistical Analyses: All statistical analyses for the study were performed by statisticians at the Fred Hutchinson Cancer Research Center, Division of Public Health Sciences, under the direction of the principal investigator of the Coordinating Center, Dr Prentice.

WHI Investigators: For a complete list of the WHI investigators, see the companion article in this issue, "Dietary Pattern and Risk of Invasive Breast Cancer: the Women's Health Initiative Randomized Controlled Dietary Modification Trial" (*JAMA*. 2006;296:629-642).

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> I may as well tell you, here and now, that if you are going about the place thinking things pretty, you will never make a modern poet. Be poignant, man, be poignant!
> —P. G. Wodehouse (1881-1975)

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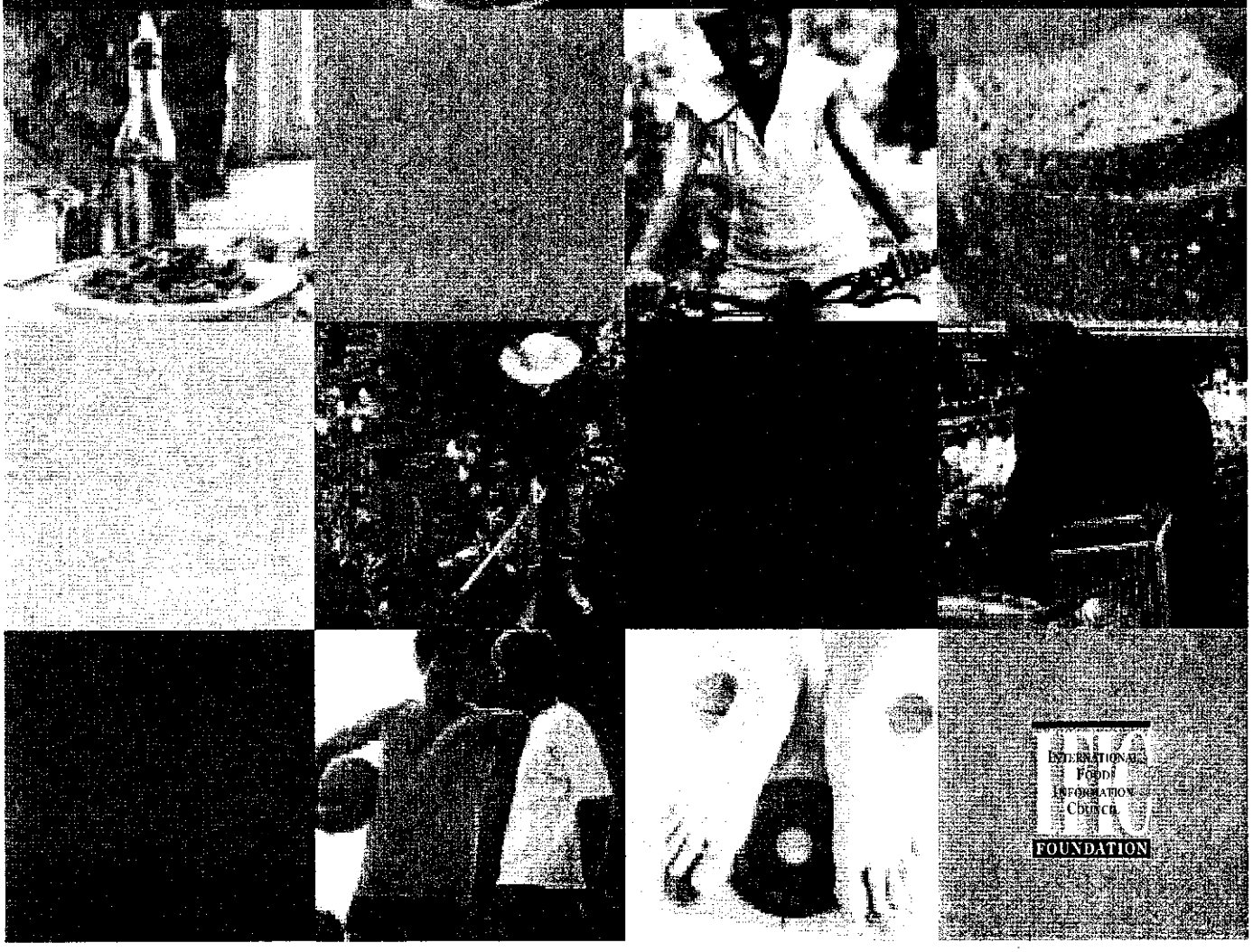
International Food Information Council (IFIC) Foundation

FOOD & HEALTH SURVEY

Consumer Attitudes toward Food, Nutrition & Health

A Benchmark Survey ***2006***



International Food Information Council (IFIC) Foundation Food & Health Survey: Consumer Attitudes toward Food, Nutrition & Health

2006

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INTERNATIONAL FOOD INFORMATION COUNCIL (IFIC) FOUNDATION

The International Food Information Council (IFIC) Foundation will effectively communicate science-based information on health, nutrition, and food safety for the public good. The IFIC Foundation is affiliated with the International Food Information Council, an organization supported by the broad-based food, beverage, and agricultural industries. This report and other IFIC Foundation materials can be accessed at http://ific.org.

COGENT RESEARCH

This research was conducted in partnership with Cogent Research. Cogent Research is a marketing research and strategic consulting firm that supports government, associations, and industry in their efforts to understand and track consumer behavior and attitudes in a variety of areas related to food and nutrition. More information regarding the mission and services of Cogent Research can be found at http://cogentresearch.com.

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2006

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Three-quarters of consumers describe their health status as "good" to "excellent." However, only slightly more than half describe themselves as being satisfied ("somewhat" or "extremely") with their health status.

Desire for Change. While nearly all consumers believe that weight, diet, and physical activity influence health, many consumers say they are not performing well in those areas. Specifically:

- *Diet.* Only half describe their diet as "healthful," and even fewer (one in six) say they eat five or more fruits and vegetables per day.
- *Physical activity.* One-third say they are not physically active for health benefits, and a similar number describe themselves as "sedentary."
- *Weight.* Two-thirds are concerned with their weight, and a similar number describe themselves as "overweight" or "extremely overweight or obese."

Efforts to Change. In an effort to improve their health, more than half of consumers say they are making dietary changes. The most common dietary changes include consuming less of specific types of foods, attempting to manage portions, and reducing caloric intake. Two-thirds of consumers are trying to increase consumption of fiber and whole grains.

Barriers to Change. Potentially hindering consumers' success in improving their health is a lack of understanding of calories and current weight status, as well as purchase priorities and perceptions that health information is inconsistent.

- *Calories.* Nine out of ten consumers are unable to provide an accurate estimate of their recommended daily caloric intake, nearly half would not even guess, and only one in three understands that a "calorie is a calorie."
- *Weight.* Three-fourths of consumers classified as obese describe themselves as only "overweight" (classification is based on Body Mass Index calculated from self-reported height and weight).*
- *Purchase Priorities.* Taste and price win out over healthfulness as top factors influencing food and beverage purchase decisions.
- *Consistent Information.* Only one-third of consumers believe the health information they receive is consistent.

*BMI calculated from self-reported weight and height and categorized according to Centers for Disease Control and Prevention (CDC) standards.

Additional barriers to change include consumers' confusion regarding the healthfulness of dietary fats and sugars.

Dietary Fats:

- Although two-thirds of consumers are concerned about consumption of fats or fatty acids, between one-third to one-half of consumers perceive them to be neither healthful nor unhealthful.
- Close to four in ten consumers aware of monounsaturated and polyunsaturated fats consider them to be *un*healthful despite dietary guidance to consume more.
- Nearly half of all consumers indicate they are neither trying to consume more nor less of most dietary fats.

Carbohydrates and Sugars:

- One in five consumers believe the calories contained in carbohydrates (as opposed to calories in and of themselves) are most likely to cause weight gain.
- With the exception of fiber, whole grains, and sugar, the majority of consumers are not trying to change their consumption of carbohydrates and sugars.

Opportunities for Change. Consumers are using information sources and packaging to help them make food-related decisions.

- Nearly nine in ten consumers say they have heard or read something about *MyPyramid*. Of those who have heard "a lot" or a "fair amount" about *MyPyramid*, two in ten say they have customized a diet for themselves on the *MyPyramid* Web site.
- Food packages are also consulted when consumers are deciding to purchase or consume foods and beverages, particularly when purchasing a product for the first time. Nine out of ten consumers use at least one element on the package. They most often report consulting the packaging for expiration dates, the Nutrition Facts Panel, and ingredients.
- Of those who have ever used the Nutrition Facts Panel, a majority of consumers report it is easy to use.
- A greater number of consumers use the amount per serving than the Percent Daily Value on the Nutrition Facts Panel.

INTRODUCTION

INTRODUCTION

Background & Objectives

The benchmark *IFIC Foundation Food & Health Survey* provides insights regarding specific catalysts and barriers to healthful eating. This consumer data is important to guide communication efforts with the goal of improving public health. In addition, this research will serve as a basis for valuable longitudinal information to monitor and interpret consumer attitudinal and behavior trends regarding key health issues including diet, physical activity, and weight.

Areas of Inquiry

Broadly, the *IFIC Foundation Food & Health Survey* explores two key issues:

- How American consumers think and feel about health, diet (including overall diet and principal nutrients such as fats, sugars, and carbohydrates), physical activity, and weight.
- How American consumers' knowledge and attitudes impact behavior and use of health information and tools when making food choices.

Specific areas of inquiry include:

- Perceptions of and satisfaction with overall health
- Perceptions of overall diet
- Prevalence of dietary changes and drivers/influencers of change
- Awareness, perceptions, and reported behavior regarding key nutrients
- Perceived and actual* weight status
- Awareness and behaviors regarding calories
- Perceptions and frequency of physical activity levels
- Perceptions and usage of health and nutrition information sources

*BMI calculated from self-reported weight and height and categorized according to Centers for Disease Control and Prevention (CDC) standards.

INTRODUCTION

Methodology

This research was conducted by Cogent Research. All data for this study were collected in November 2005 via a Web-based survey consisting of 134 questions. The outgoing e-mail list for this study was constructed to be reflective of the U.S. population on key census characteristics, adjusting for populations with lower response rates. To ensure the final results were representative of the adult population in the United States, the survey data were weighted against the latest U.S. Census projections on a few key attributes. The data presented in this report reflect these weighted data. A comparison of key demographic variables to those of the U.S. population can be found in the Appendix of this report.

The findings presented here rely primarily on univariate analyses and cross-tabulations. All questions were cross-tabulated by a set of key variables, including primary demographic characteristics (e.g., age, income), health-based characteristics (e.g., BMI*, health history), and attitudinal characteristics (e.g., satisfaction with health status).

A sample of 1,000 interviews is subject to a sampling error of ± 3.1 percentage points (at the 95 percent confidence level).

METHODOLOGY	**Web survey**
POPULATION	**Representative sample of Americans aged 18+****
DATA COLLECTION PERIOD	**November 7-20, 2005**
SAMPLE SIZE (ERROR)	**n=1,000 (± 3.1 pp)**
DATA WEIGHTING***	**Data weighted to the U.S. Census by age, education, and gender**

*BMI calculated from self-reported weight and height and categorized according to Centers for Disease Control and Prevention (CDC) standards.

**U.S. Census and survey data comparisons included in the Appendix.

***Weighting is a widely accepted statistical technique that is used to ensure that the distribution of the sample reflects that of the population on key demographics. With any data collection method, even when the outgoing sample is balanced to the Census, some populations are more likely than others to respond.

IFIC Foundation Food & Health Survey
2006

RESEARCH FINDINGS

OVERALL HEALTH

Perceptions of and Satisfaction with Health Status. Three-quarters of consumers (75 percent) describe their health status as "good" to "excellent." While one-fourth of consumers describe their health in negative terms, only six percent describe their health as "poor."

A majority of consumers (54 percent) say they are satisfied with their health status. Further analysis explains the gap between *perceptions of health* and *satisfaction with health;* only half of those who describe their health as being "good" are satisfied ("extremely" or "somewhat") with their health status.

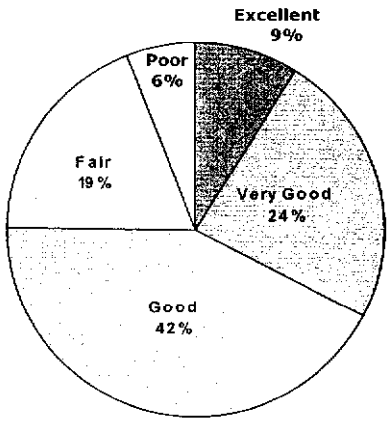
Consumers who are more likely to perceive themselves as unhealthy or to be dissatisfied with their health status include:

- Those who consider their diet unhealthful
- Those who describe themselves as "moderately active" or "sedentary"
- Those with a BMI* in the overweight or obese range
- Those with less than a college degree
- Those over the age of 34 (perceptions vary; satisfaction does not)
- Those concerned with their weight (satisfaction varies; perceptions do not)
- Caucasians (satisfaction varies; perceptions do not)

Perceptions of and Satisfaction with Health Status

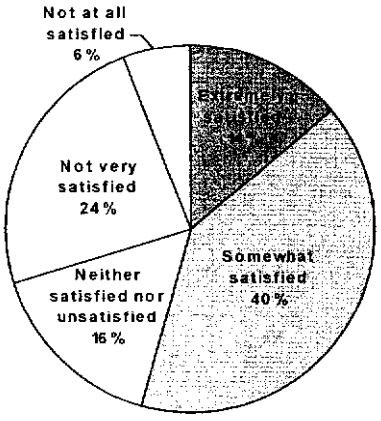
Which of the following best describes your overall health status?

(n=1000)



How satisfied are you with your overall health status?

(n=1000)



*BMI calculated from self-reported weight and height and categorized according to Centers for Disease Control and Prevention (CDC) standards.

IFIC Foundation Food & Health Survey 2006

OVERALL HEALTH

Factors Influencing Health Status. When asked to rate the influence diet,* weight, and physical activity have on a person's overall health, consumers rate all three factors as being highly influential.

Segments of the American public that are more apt to feel a specific factor is influential are detailed below.

Diet:

- Consumers who are concerned with their weight
- Consumers who are college-educated
- Consumers over the age of 34

Weight:

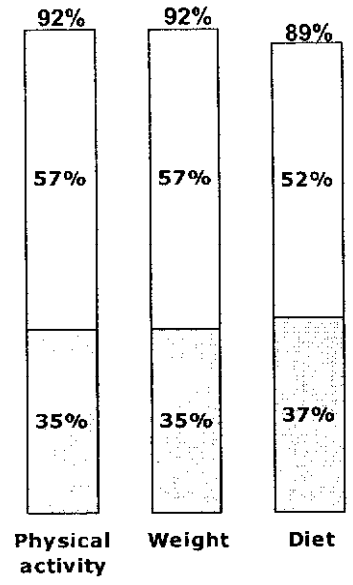
- Consumers who describe themselves as "sedentary"
- Consumers over the age of 34
- Women

Physical Activity:

- Consumers who describe their health as "very good" or better
- Consumers who say they are active

Perceptions of Health Influencers

What influence, if any, does each of the following factors have on a person's overall health?
(n=1000)



*The survey instrument explained diet to respondents as follows: *By diet, we mean everything you consume including foods, beverages, and dietary supplements.*

DIET

The survey instrument explained diet to respondents as follows: *By diet, we mean everything you consume including foods, beverages, and dietary supplements.*

Perceptions of Healthfulness of Diet. More than half of consumers (54 percent) describe their diet as healthful, most of whom describe their diet as "somewhat healthful" (46 percent). In contrast, less than one in four (22 percent) describe their diet as either "not very" or "not at all" healthful.

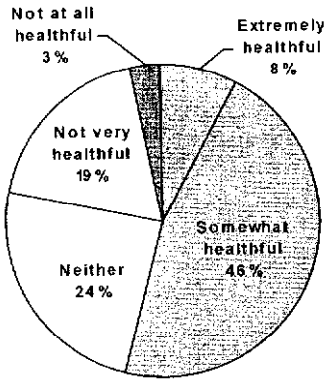
Segments of the American public that are more apt to view their diet as unhealthful include:

- Those who describe their health as "fair" or "poor"
- Those who are dissatisfied with their health status
- Those under the age of 35
- Those who describe themselves as "moderately active" or "sedentary"
- Those with a BMI* in the overweight or obese range
- Those concerned with their weight
- Those with lower education levels

Perceptions of Diet

How would you rate the healthfulness of your overall diet? *By diet, we mean everything you consume including foods, beverages, and dietary supplements.*

(n=1000)



Servings of Fruits and Vegetables per Day. As one indicator of the health of a person's diet, the survey asked respondents to indicate the number of servings of fruits and vegetables they eat per day.** Only 14 percent of consumers report eating at least five servings of fruits and vegetables per day. In contrast, more than half of consumers (52 percent) say they eat only one or two servings of fruits and vegetables per day.

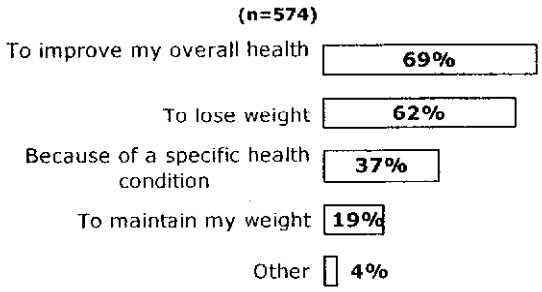
*BMI calculated from self-reported weight and height and categorized according to Centers for Disease Control and Prevention (CDC) standards.

**A serving was defined for respondents to be one medium-sized piece of fruit or one cup of vegetables which fits into the size of a woman's hand.

Prevalence of Dietary Changes. More than half of consumers (57 percent) say they have made a change to improve the healthfulness of their diet within the past six months. Consumers most apt to have made a change include those who describe their diets as "healthful," women, African Americans, and those concerned with their weight.

Reasons for Improving Healthfulness of Diet

For which of the following reasons, if any, are you trying to improve the healthfulness of your diet?

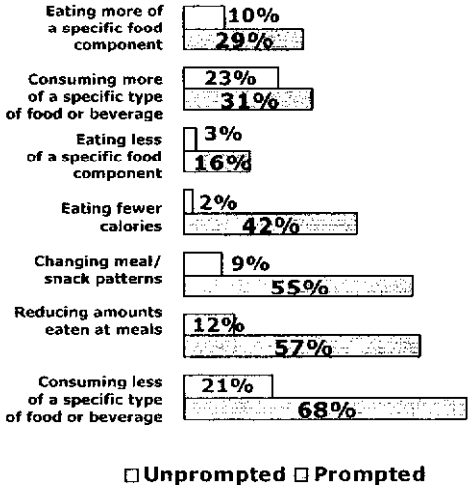


Two-thirds of consumers who made dietary changes say they made the change for a general health benefit or to lose weight, while about four in ten made the change because of a specific health condition.

Specific Changes Made in an Effort to Improve the Healthfulness of Diets. In a series of questions, consumers who have made dietary changes were asked to describe the nature of those changes. The first question was open-ended—that is, the question did not prompt them with specific actions. The second question was closed-ended—that is, it listed potential actions for consumers. When prompted, consumers mention a wide range of activities including eating fewer calories, changing meal/snack patterns, and reducing the amounts eaten at meals. Without prompting, they tend to focus solely on efforts to consume less of a specific type of food or beverage.

Changes Made to Improve Healthfulness of Diet

What have you done to improve the healthfulness of your diet in the past six months? (n=574)



DIET

Influencers of Diet-Related Changes. The sources that have been most influential in prompting consumers to make dietary changes are health professionals, family/friends, and food product labels.

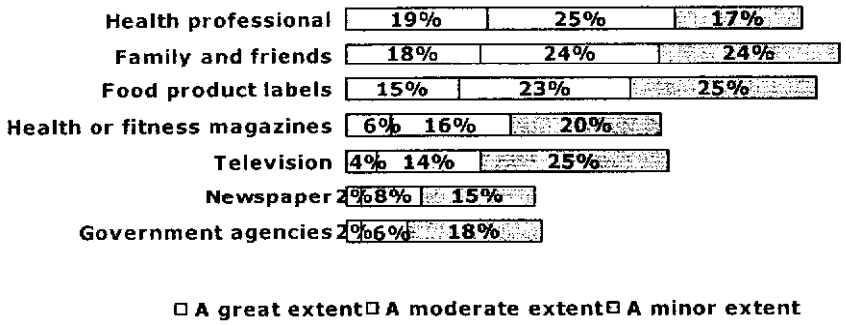
Of the 57 percent of consumers who cited making dietary changes, close to two-thirds say these three sources played at least some role in prompting them to make diet-related changes.

Health or fitness magazines and television are second-tier influencers, with just under half of consumers saying that these sources played some role in prompting them to make diet-related changes.

Influencers of Diet-Related Changes

To what extent, if any, has information from the following sources prompted you to make diet-related changes in the past six months?

(n=574)



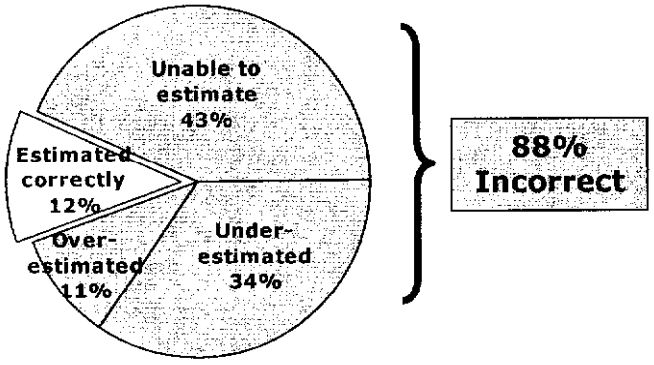
Calories. When asked to estimate the number of calories they should be consuming in an average day, 88 percent of consumers were unable to provide an accurate estimate.

Among those unable to accurately estimate the correct amount of calories, about half say they "don't know" how many calories they should consume, while the remainder either over or under estimate the correct amount.

Knowledge of Calories per Day

As far as you know, how many calories should a person of your age, weight, and height consume per day?

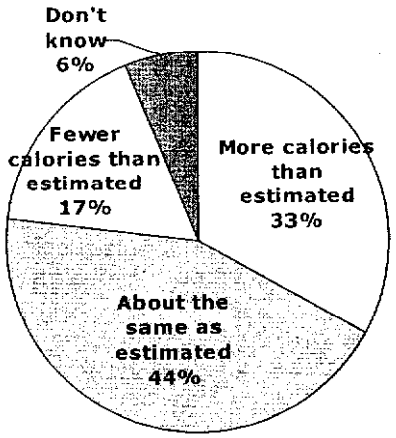
(n=1000)



Perception of Calorie Consumption

Most days, would you say you consume...

(n=568)



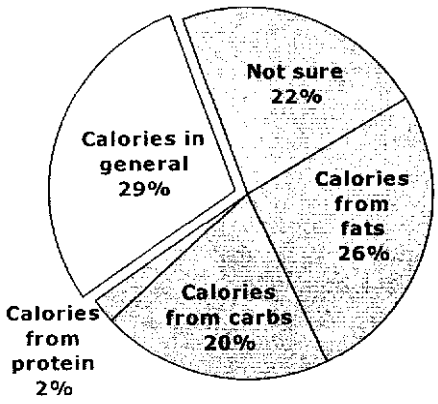
Among those consumers who provided an estimate of the calories they believe they should be consuming per day, about one-third say they are consuming more calories per day than the estimate they provided.

Calories and Weight Gain. When asked about the relationship between the source of calories and the associated impact on weight gain, less than one in three consumers (29 percent) agree with the correct statement that "calories in general are what cause weight gain." Similar numbers of consumers believe calories from fats (26 percent) or calories from carbohydrates (20 percent) are most likely to cause weight gain. About one-fourth of consumers say they are unsure of the relationship between calories and weight gain.

Calorie Sources and Weight Gain

Most likely to cause weight gain...?

(n=1000)



Some differences in opinion by demographic characteristics include the following:

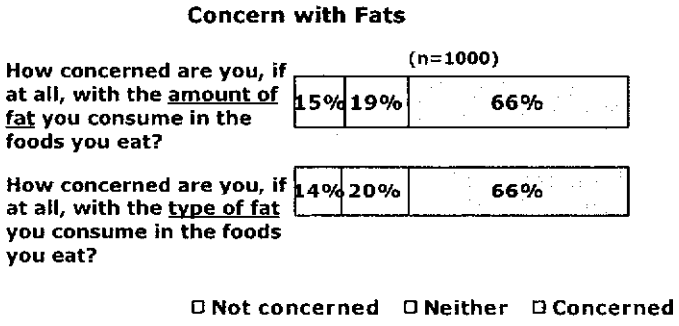
- Consumers with a college education or higher are more likely to agree that calories in general cause weight gain.
- Less educated and lower income consumers are more likely to say they are unsure about the relationship between calories and weight gain.
- Consumers concerned about the amount and type of carbohydrates and sugars they consume are more likely to believe calories from carbohydrates are most likely to cause weight gain.

IFIC Foundation Food & Health Survey 2006

FATS

Concern about Fats. About two-thirds of consumers are concerned with the amount and type of fat they consume. Those more likely to be concerned with both include:

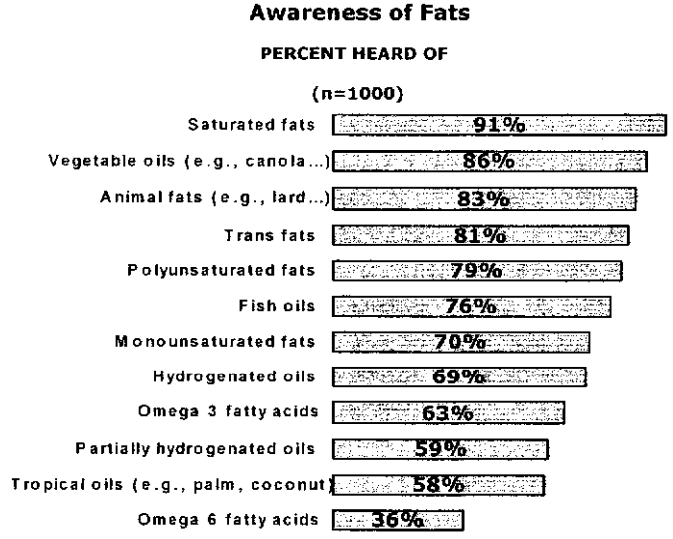
- Those concerned with their weight
- Those with a BMI* of overweight or obese
- Women
- Older consumers
- Those concerned with the type and amount of sugars and carbohydrates they consume



Awareness of Fats. A majority of Americans have heard of most types of fats and fatty acids, with saturated fats topping the list at 91 percent awareness. More than three-fourths have heard of fish oils, polyunsaturated fats, trans fats, animal fats, and vegetable oils, while more than half have heard of tropical oils, partially hydrogenated oils, hydrogenated oils, omega-3 fatty acids, and monounsaturated fats.

Comparisons reveal:

- Awareness of saturated fats is significantly higher than that of polyunsaturated or monounsaturated fats.
- Awareness of polyunsaturated fats is higher than that of monounsaturated fats.
- Awareness of fish oils is significantly higher than that of omega-3 fatty acids.
- Less than one in five consumers are aware of DHA (docosahexaenoic acid), EPA (eicosapentaenoic acid), CLA (conjugated linoleic acid), or ALA (alpha-linolenic acid).



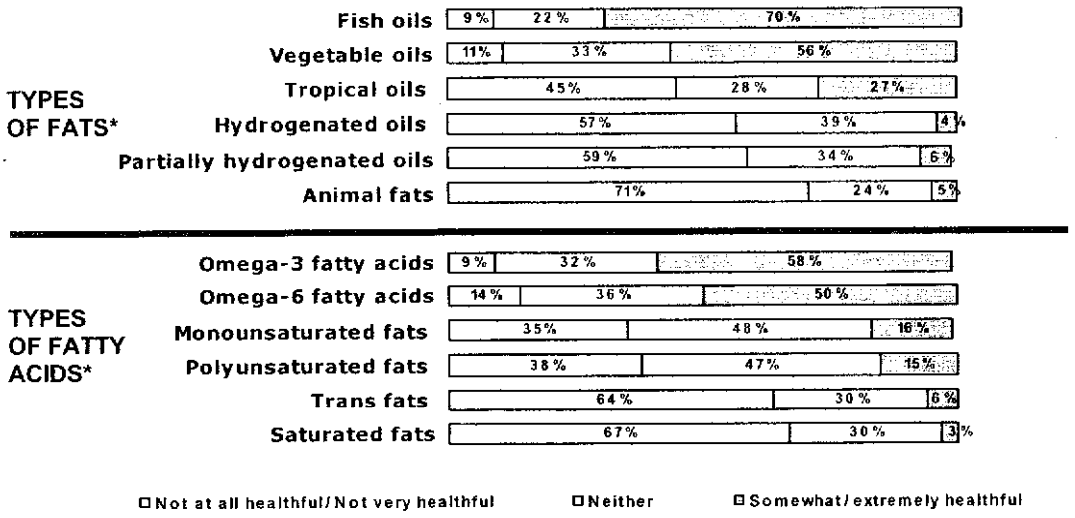
See the Appendix for a complete listing of the examples provided for some of the fats

*BMI calculated from self-reported weight and height and categorized according to Centers for Disease Control and Prevention (CDC) standards.

FATS

Perceptions. Consumers appear to be unclear when it comes to the healthfulness of dietary fats. When asked to rate the healthfulness of the types of fats and fatty acids they were aware of, 30 to 50 percent perceive most fats as "neither healthful nor unhealthful." Furthermore, close to four in ten consumers aware of monounsaturated and polyunsaturated fats say they are "*un*healthful" despite dietary guidance to consume more of these fats. That said, there is consensus around the level of healthfulness of some fats. Specifically, fish oils, vegetable oils, omega-3 fatty acids, and omega-6 fatty acids are more likely to be rated as healthful. Animal fats, partially hydrogenated oils, hydrogenated oils, saturated fats, and *trans* fats are more likely to be rated as "unhealthful."

Perceptions of Fats



**See the Appendix for a complete listing of the examples provided for some of the fats.*

In a question about the healthfulness of specific types of vegetable oils, 50 to 70 percent of consumers rate soybean, sunflower, canola, and olive oil as healthful (with olive oil topping the list). Corn oil fares least well, with less than 40 percent rating it as healthful.

Close to half of consumers say they perceive that food products have been using more healthful oils over the past year. Consumers more apt to perceive a change to more healthful oils include those with a BMI** of obese or overweight, those concerned with their weight, consumers over the age of 34, those with incomes of $35,000 or more, and women.

**BMI calculated from self-reported weight and height and categorized according to Centers for Disease Control and Prevention (CDC) standards.

Consumption Trends. For every type of fat and fatty acid asked about in the survey, consumers are more likely to say they have *not* changed their consumption behavior than to say they *are trying* to change their behavior.

Although the *2005 Dietary Guidelines for Americans* recommend that most of the fats people consume come from polyunsaturated or monounsaturated fats, the vast majority of those aware of both fats are not trying to increase their consumption. In fact, the vast majority of consumers aware of any type of unsaturated fatty acid say they don't know what foods contain them. Although six to seven percent say they are trying to consume more of either type of unsaturated fat, about one-quarter say they are trying to consume *less* of both types of fat.

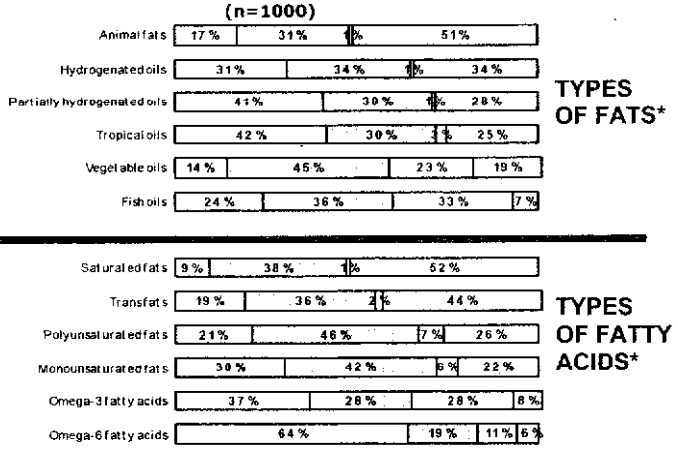
Among the 30 to 50 percent of consumers trying to make changes to dietary fats intake, we see some clear patterns:

- About 50 percent say they are trying to consume less saturated and animal fats.
- Forty-four percent indicate they are trying to consume less *trans* fat.
- About one-third are trying to consume less hydrogenated oil or partially hydrogenated oil.
- About 40 percent are trying to make changes to their consumption of vegetable oil: about half of whom are trying to consume more of the oil; while about half are trying to consume less.
- Consumers making changes to consumption of fish oil or omega-3 fatty acids are about four times as likely to be trying to consume more, rather than less, of these oils.

Consumption Trends

Please indicate whether you are trying to consume more or less of the following:

(n=1000)



** See the Appendix for a complete listing of the examples provided for some of the*

CARBOHYDRATES AND SUGARS

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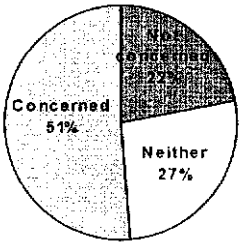
Concern with Carbohydrates. More than half of consumers (51 percent) say they are concerned with the *amounts* of carbohydrates they consume in the foods they eat. Slightly less—although nearly a majority—say they are concerned with the *types* of carbohydrates they consume.

Consumers more likely to be concerned with either the amounts or types of carbohydrates they consume include:

- Those concerned about weight
- Those with a BMI* in the overweight or obese range
- Those who describe their health as "poor" or "fair"
- Those dissatisfied with health
- Women and older consumers
- African Americans (more so than Caucasians)
- Those concerned with the amount and type of sugar and fat

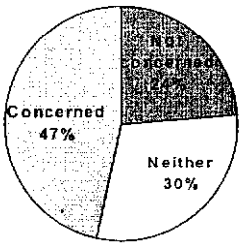
Concern with Carbohydrates

How concerned are you, if at all, with the amounts of carbohydrates you consume in the foods you eat?



(n=1000)

How concerned are you, if at all, with the types of carbohydrates you consume in the foods you eat?

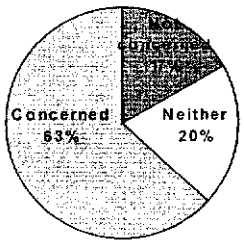


Concern with Sugar. Consumers' concern with the amount and type of sugar they consume exceeds that of carbohydrates, particularly when it comes to the *amounts* of sugar they are consuming.

Regarding demographic and attitudinal differences, we see a nearly identical pattern to that of carbohydrates. Specifically, BMI,* concern with weight, health status, satisfaction with health, gender, ethnicity, age, and concern with other nutrients all impact concern with sugar.

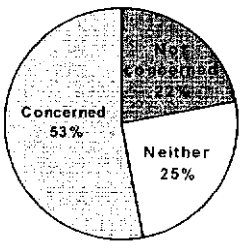
Concern with Sugars

How concerned are you, if at all, with the amounts of sugars you consume in the foods you eat?



(n=1000)

How concerned are you, if at all, with the types of sugars you consume in the foods you eat?



*BMI calculated from self-reported weight and height and categorized according to Centers for Disease Control and Prevention (CDC) standards.

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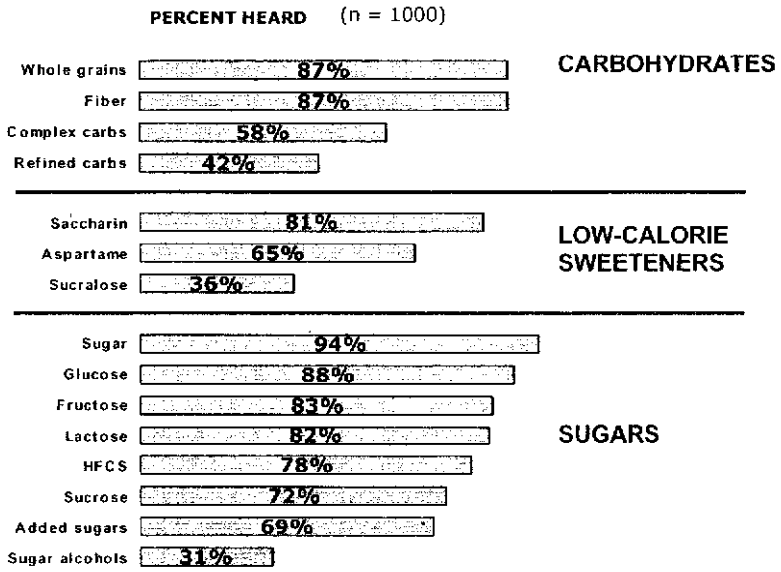
CARBOHYDRATES AND SUGARS

Awareness of Carbohydrates and Sugars. Nearly all consumers have heard of whole grain and fiber, while more than half have heard of complex carbohydrates. Within low-calorie sweeteners, consumers are most apt to have heard of saccharin.

Awareness of aspartame is somewhat lower at 65 percent, with sucralose being lowest at 36 percent. With the exception of sugar alcohols, the vast majority of consumers have heard of the various types of sugars. Sugar and glucose top the list; however, upwards of three-fourths of consumers have heard of sucrose, high fructose corn syrup, lactose, and fructose. Awareness of added sugars is relatively low at 69 percent.

Awareness of Sugars, Low-Calorie Sweeteners, and Carbohydrates

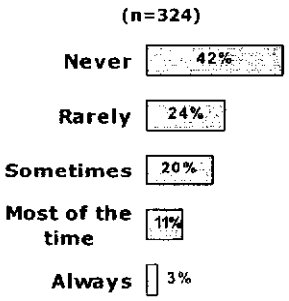


Consumers were also asked about their awareness of the terms glycemic index and glycemic load. Only one in three consumers has heard of glycemic index and even fewer (15 percent) have heard of glycemic load. Among those familiar with either term, very few (14 percent—or less than 5 percent of *all* consumers) say they consider it on a regular basis ("always" or "most of the time").

Consumers with a family history of diabetes are more likely to consider either term "most of the time" or "always."

Consideration of Glycemic Index or Load

How often, if at all, do you consider the glycemic index (or glycemic load) of a food or beverage when deciding to eat it?



CARBOHYDRATES AND SUGARS

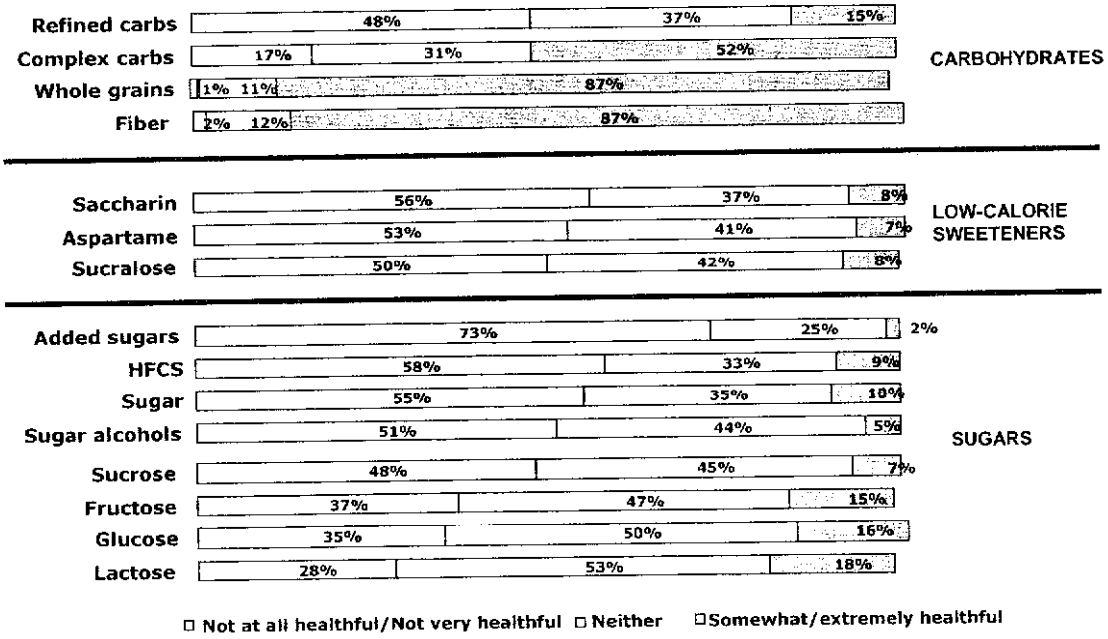
Perceptions

Carbohydrates. Among consumers who say they are aware of specific carbohydrates, close to nine in ten believe fiber and whole grains are "healthful." Just over half believe complex carbohydrates are "healthful," while very few believe refined carbohydrates to be "healthful."

Low-Calorie Sweeteners. About half of all consumers view low-calorie sweeteners including aspartame, saccharin, and sucralose as being "unhealthful." Of the remaining consumers, most hold neutral, as opposed to positive, views.

Sugars. More than half of those consumers who say they are aware of added sugars, high fructose corn syrup, and sugar view them as being "unhealthful," with the remainder holding mostly neutral, rather than positive, views. Slightly fewer consumers (although still at or just below 50 percent) view sugar alcohols and sucrose as "unhealthful." In contrast, fructose, glucose, and lactose are more apt to receive neutral ratings than either negative or positive ratings.

Perceptions of Sugars, Low-Calorie Sweeteners, and Carbohydrates



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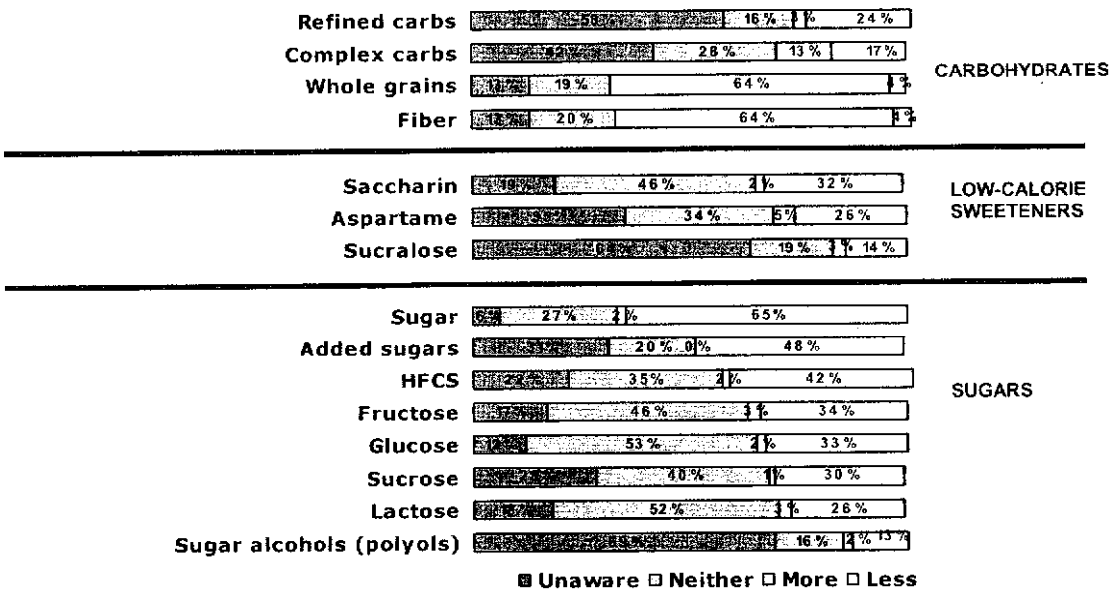
CARBOHYDRATES AND SUGARS

Consumption Trends. With the exception of fiber, whole grains, and sugar, the majority of consumers are not trying to change their consumption of carbohydrates and sugars. In the case of fiber and whole grains, most are attempting to consume more, while in the case of sugar, most are attempting to consume less. For all others, anywhere between 50 and 85 percent are making no changes.

Consumption Trends

Please indicate whether you are trying to consume more or less of the following:

(n=1000)

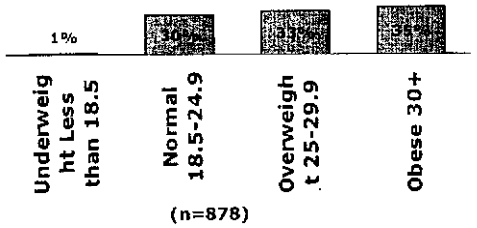


WEIGHT

Perceptions of Weight Status. When asked to describe their weight, only one in three consumers say they are at an "ideal" weight, while 56 percent say they are "overweight." Only 10 percent describe themselves as "extremely overweight or obese."

Body Mass Index (BMI).* As a separate measure of weight status, respondents were asked to provide their height and weight, which were used to calculate Body Mass Index (BMI) scores. According to these BMI scores, about one-third of respondents are in the obese range, one-third are in the overweight range, and one-third are in the normal range. These findings are consistent with the CDC National Health and Nutrition Examination Survey (1999-2002) data.

BMI based upon reported height and weight



(n=878)

The chart to the right illustrates the disparity between consumers' descriptions of their weight status and the BMI scores calculated using their reported height and weight.

Close to one-third of consumers who are in the overweight range describe themselves as being at an "ideal weight." Nearly three-quarters of those whose BMI is in the obese range describe themselves as being only "overweight."

Perceived and Calculated Weight Status

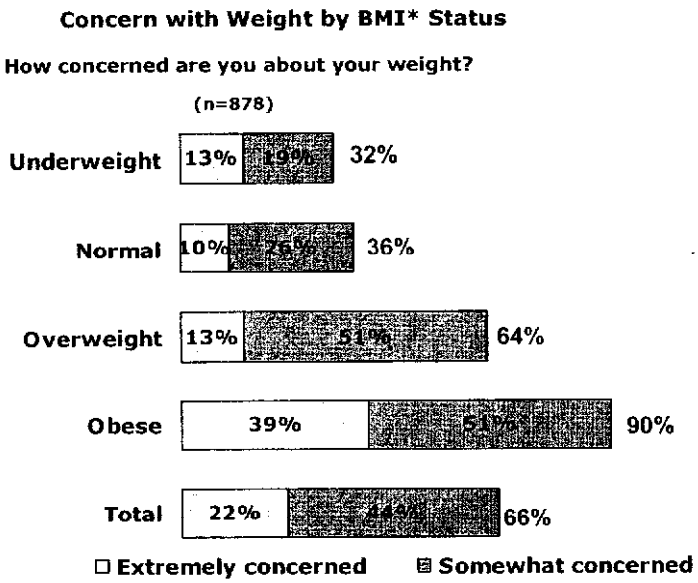
(n=878)

	Calculated Weight			
Perception of Weight	Under-weight *< 18.5* (n=11)	Normal *18.5-24.9* (n=265)	Over-weight *25-29.* (n=290)	Obese *30.0+* (n=312)
Underweight	**56%**	**9%**	**1%**	--
Ideal weight	**44%**	**75%**	**29%**	**2%**
Overweight	--	**16%**	**70%**	**74%**
Extremely overweight or obese	--	--	--	**24%**
	100%	**100%**	**100%**	**100%**

*BMI calculated from self-reported weight and height and categorized according to Centers for Disease Control and Prevention (CDC) standards.

Concern with Current Weight. Two-thirds of *all* consumers are concerned about their current weight (22 percent "extremely" and 44 percent "somewhat" concerned).

Overall concern ("somewhat" and "extremely" concerned) increases as one's weight increases. While about one-third of those in the underweight and normal ranges are concerned, two-thirds of those in the overweight range are concerned. Nearly all of those in the obese range are concerned.



That said, the percentage of consumers who are "extremely" concerned does not vary across those in the underweight, normal, or overweight ranges.

*BMI calculated from self-reported weight and height and categorized according to Centers for Disease Control and Prevention (CDC) standards.

PHYSICAL ACTIVITY

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Physical Activity Frequency. About one-third of consumers say they are physically active for health benefits between three and five days a week. However, more than a third of consumers say they are not active.

Those most active (six to seven days) include:

- Men
- Those with a BMI* in the normal or overweight range
- Those who are not concerned with the type of fat they consume

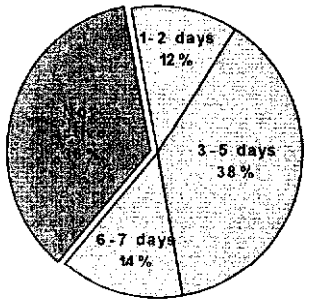
Those who are inactive include:

- Those who describe their health as "fair" or "poor"
- Those who describe their diet as "unhealthful"
- Those with a BMI* in the obese range
- Those with lower education levels
- Those not satisfied with their health status

Frequency of Physical Activity

On average, how often, if at all, would you say you are physically active, for health benefits, in a given week?

(n=1000)



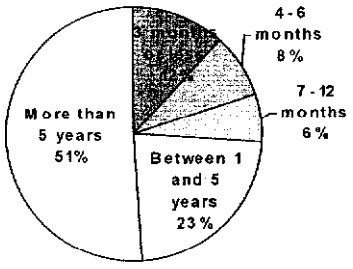
Physical Activity History. Among consumers who report being active at least one day per week, 74 percent say they have been active for at least one year.

Those who are beginning to engage in activity (less than six months) are active less frequently than other groups. They are also *more* likely to be concerned about their weight, to say they are not satisfied with their health status, and to describe their diet as "unhealthful." These consumers are more likely to be classified as obese.*

Physical Activity History

[IF ACTIVE] For how long have you been regularly physically active?

(n=638)



In contrast, those who have been physically active for more than five years are more likely to be active six to seven days per week. Their perceptions of their health and diet, as well as their satisfaction with their health and weight, are all positive.

*BMI calculated from self-reported weight and height and categorized according to Centers for Disease Control and Prevention (CDC) standards.

IFIC Foundation Food & Health Survey 2006

PHYSICAL ACTIVITY

Perceptions of Physical Activity. Two-thirds of consumers describe themselves as being "active." Just under a third of consumers say they are "sedentary."

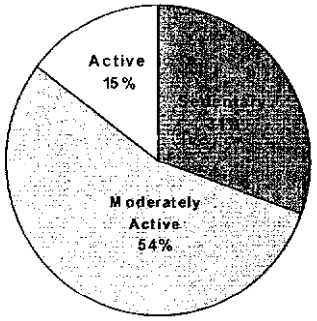
Consumers who are more apt to describe themselves as "active" include:

- Those who describe their health as "very good" or "excellent"
- Those satisfied with their health status
- Those who describe their diet as "healthful"
- Those with a BMI* in the normal or overweight range
- Those who are not concerned with their weight

Perceptions of Physical Activity

How would you describe your current level of physical activity?

(n=1000)



Sedentary consumers fit the opposite profile, being more likely to view their health and diet poorly, to be dissatisfied with their health, to have a BMI* of obese, and to be concerned with their weight. These consumers are more apt to have a household income of less than $35,000 per year.

The chart below illustrates the relationship between consumers' classification of their physical activity level and frequency.

Close to nine out of ten consumers (87 percent) who describe themselves as "active" engage in physical activity between three and seven days per week. Similarly, two-thirds of those who describe themselves as "moderately active" engage in physical activity between one and five days per week.

Perceived Activity Level By Reported Frequency

(n=1000)

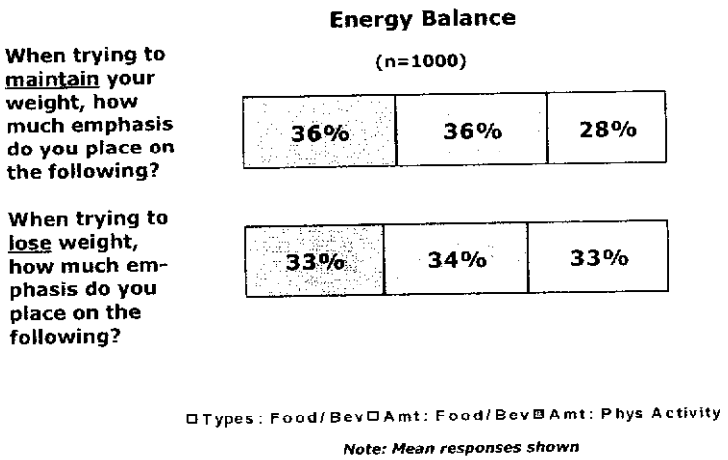
	Days per week active			
Describe self as:	**0**	**1-2**	**3-5**	**6-7**
Active	**12%**	**1%**	**45%**	**42%**
Moderately active	**22%**	**15%**	**51%**	**13%**
Sedentary	**73%**	**13%**	**11%**	**2%**

*BMI calculated from self-reported weight and height and categorized according to Centers for Disease Control and Prevention (CDC) standards.

PHYSICAL ACTIVITY

IFIC Foundation Food & Health Survey 2006

Energy Balance. In general, consumers place nearly equal emphasis on the types and amount of food they consume and their level of physical activity, regardless of whether they are trying to maintain or lose weight.



Age-related differences show that for both weight loss and maintenance, consumers who are over the age of 34 are more likely to focus on the *amount of food/beverages* they consume, while consumers under the age of 35 are more likely to focus on *physical activity*.

INFORMATION SOURCES

MyPyramid. Close to 90 percent of consumers say they have heard or read something about *MyPyramid*.

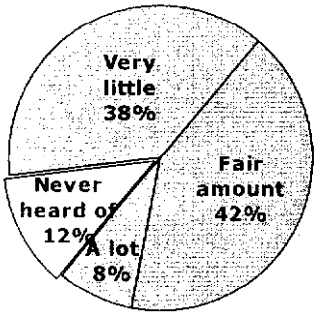
Consumers who are more apt to have heard of *MyPyramid* include:

- Consumers satisfied with their health status
- Consumers who describe themselves as being "active"
- Consumers who view their diets as "healthful"
- Consumers concerned with the type of fat or sugar in their diets

***MyPyramid* Awareness**

Which of the following best describes your familiarity with the government's Food Pyramid, called "*MyPyramid*?"

(n=1000)



Of the consumers who have heard "a lot" or a "fair amount" about *MyPyramid*, two in ten say they have customized a diet for themselves on the *MyPyramid* Web site. Consumers who are concerned about their weight or their consumption of sugars, carbohydrates, or fats are more likely than others to have customized a diet.

Consumers who are aware of *MyPyramid*, but have not customized a diet, mention a wide range of reasons for not acting, many of which relate to a lack of perceived need (e.g., "don't need to" or "not important enough") or confidence that it is the right approach for them (e.g., "following a different diet," "don't believe in accuracy").

Reasons for not using *MyPyramid*
(n=760)

Don't personally need to, or following different diet	24%
Don't know enough about it	19%
Too difficult (restrictive/confusing/time consuming)	14%
Don't care enough, or find it important enough	12%
Don't "believe" in its accuracy	10%
Never thought about it	4%
Good intentions, just haven't	1%
Too costly to follow it	1%
Other	3%

INFORMATION SOURCES

Factors Influencing Food and Beverage Purchase Decisions. Taste and price top the list of criteria that drive consumers' purchasing decisions, followed by healthfulness, and then convenience. Consumers over the age of 54 prioritize healthfulness over price.

Segments of the American public that are more apt to say a specific factor is influential are detailed below.

Taste:

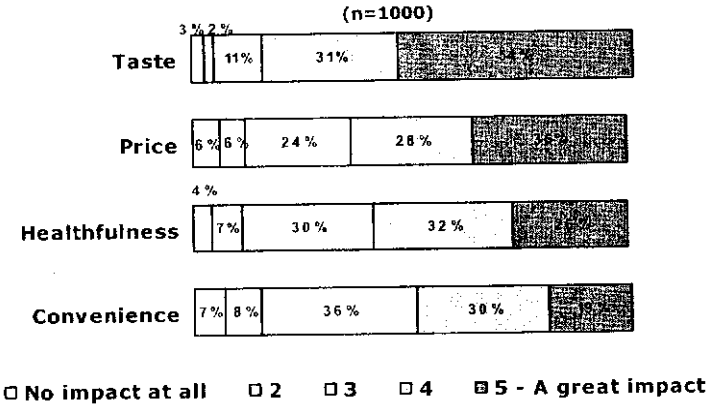
- Women

Price:

- Those who describe their health as "poor" or "fair"
- Those dissatisfied with their health status
- Women
- Those less than 35 years of age
- Those with lower household incomes

Purchasing Impact

How much of an impact do the following have on your decision to buy foods and beverages?



Healthfulness:

- Those who describe their diet as "healthful"
- Those who describe themselves as being "active" or "moderately active"
- Women
- Primary household shoppers
- Those over the age of 54
- Those who are college-educated

Convenience:

- Those who describe their diet as "unhealthful"
- Those who describe themselves as being "sedentary"

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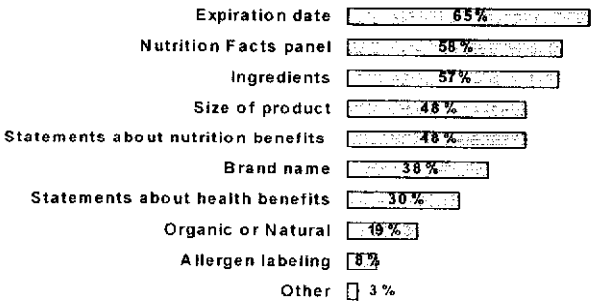
INFORMATION SOURCES

Labels. Consumers are actively using food and beverage packaging elements when deciding to purchase or consume products. They most often consult packaging for expiration dates, the Nutrition Facts Panel (NFP), and ingredients. More than half of consumers (53 percent) report using at least four elements when making decisions regarding whether to buy or consume a specific product.

Information Used on the Label

What information do you look for on the food or beverage package when deciding to purchase or eat a food or beverage?

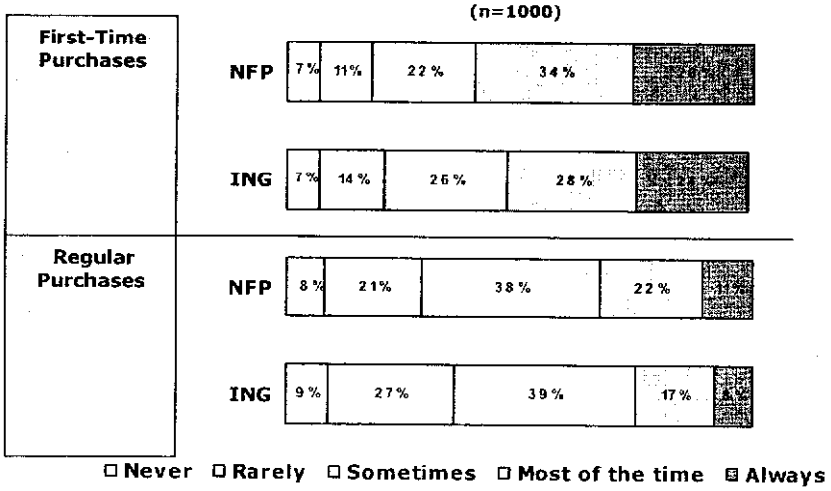
(n=1000)



The Nutrition Facts Panel and Ingredients Listing. Consumers report using both the NFP and the ingredients listing more frequently when they are making first-time purchases than when making regular purchases. However, for both first-time and regular purchases, the NFP is used more often than the ingredients list. Sixty percent of consumers say they use the NFP "most of the time" or "always" for first-time purchases, while only 33 percent do so for regular purchases. Similarly, 52 percent use the ingredients list for first-time purchases while 25 percent do so for regular purchases.

Use of Nutrition Facts Panel and Ingredients List

(n=1000)



INFORMATION SOURCES

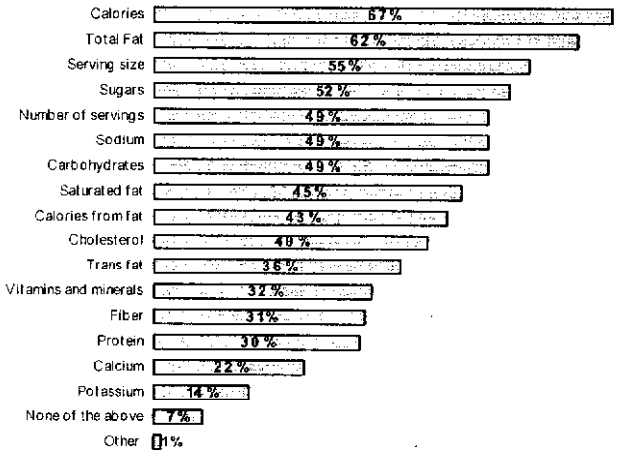
The Nutrition Facts Panel—Usage of Specific Elements. Calories top the list of elements used (67 percent), followed very closely by total fat (62 percent), and serving size (55 percent). Of the three macronutrients, total fat is used most often, with carbohydrates being used by 49 percent, and protein being used by only 30 percent. Similarly, of the fat-related elements, total fat (62 percent) is used considerably more often than saturated fat (45 percent) or *trans* fat (36 percent).

Vitamins and minerals (both in general and when asked specifically) are among the least used elements of the NFP.

Elements Used on NFP

Which of the following information, if any, do you use on the Nutrition Facts Panel?

(n=945)

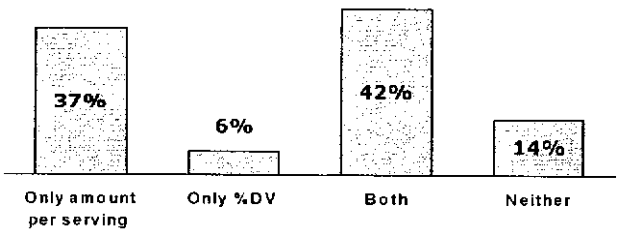


The Nutrition Facts Panel—Usage of Percent Daily Value. Less than half of all consumers who are using the NFP say they use the Percent Daily Value (%DV) information. In contrast, close to eight in ten (79 percent) are using the amount per serving information. In fact, close to four in ten consumers (37 percent) *only* use the amount per serving information. About one in six consumers say they use neither the %DV nor the amount per serving information.

Usage of Percent Daily Value

When looking at information in the Nutrition Facts Panel, which of the following do you use?

(n=945)



INFORMATION SOURCES

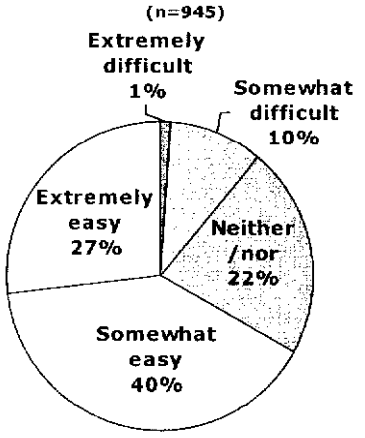
The Nutrition Facts Panel—Ease of Use. Two-thirds of consumers who say they use the NFP say it is "extremely" or "somewhat" easy to use.

Consumers who are more apt to find the NFP to be *difficult* to use include:

- Consumers who describe themselves as being "sedentary"
- Consumers who describe their health as being "fair" or "poor"
- Consumers who are less educated and with lower income
- Consumers with a BMI* in the obese range

Ease of Use—NFP

How easy or difficult is it for you to use the Nutrition Facts Panel on food and beverages?

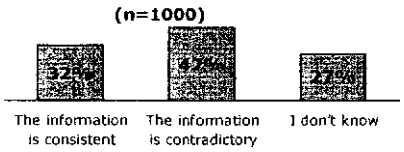


Perceptions of Consistency. Only one-third of consumers say the food and health information they get from different sources is consistent.

Those consumers more apt to say the information is contradictory include consumers who have a college degree or higher, as well as those who have a household income over $35,000.

Perceptions of Information

Which of the following best describes how you feel about the food and health information you get from different sources?



*BMI calculated from self-reported weight and height and categorized according to Centers for Disease Control and Prevention (CDC) standards.

APPENDIX

OVERALL HEALTH

TABLE 1: OVERALL HEALTH STATUS

Which of the following best describes your overall health status?

		Diet		Activity			BMI				Income				Age			Education		
	Total	Not Healthful	Healthful	Sedentary	Moderate	Active	Under	Ideal	Over	Obese	<$35K	$35-50K	$50-75K	>$75K	<34	35-54	55+	HS or Less	Some College	College+
Base	1000	219	540	307	547	146	11.1	265	290	312	406	208	155	166	273	443	276	455	274	264
Poor	**6%**	10%	3%	14%	2%	1%	0%	1%	5%	12%	8%	6%	2%	3%	2%	7%	8%	8%	4%	3%
Fair	**19%**	30%	15%	30%	16%	7%	17%	12%	18%	23%	21%	17%	16%	16%	14%	20%	21%	20%	20%	14%
Good	**43%**	44%	39%	43%	47%	26%	18%	40%	43%	43%	44%	46%	41%	37%	42%	45%	39%	44%	45%	36%
Very good	**24%**	14%	30%	9%	29%	38%	12%	33%	25%	21%	20%	22%	30%	31%	31%	21%	23%	19%	25%	33%
Excellent	**9%**	2%	13%	3%	6%	28%	53%	14%	10%	2%	7%	8%	12%	13%	11%	7%	9%	9%	4%	13%
Top 2	33%	16%	43%	13%	36%	66%	65%	47%	35%	23%	27%	30%	41%	44%	42%	28%	32%	28%	30%	46%
Bottom 2	24%	40%	18%	44%	18%	8%	17%	13%	22%	34%	29%	24%	17%	19%	16%	27%	29%	28%	25%	18%
Mean	3.12	2.69	3.34	2.58	3.22	3.85	4	3.47	3.19	2.79	2.96	3.07	3.34	3.35	3.34	3.02	3.05	3.01	3.05	3.38

OVERALL HEALTH

TABLE 2: SATISFACTION WITH HEALTH STATUS

How satisfied are you with your overall health status?

			Health		Diet		Activity			BMI			
	Total		Not Healthy	Healthy	Not Healthful	Healthful	Sedentary	Moderately	Active	Under	Ideal	Over	Obese
Base	1000		243	330	219	540	307	547	146	11	265	290	312
Not at all satisfied	**6%**		23%	0%	11%	4%	13%	3%	1%	4%	1%	3%	14%
Not very satisfied	**24%**		57%	3%	44%	17%	40%	19%	7%	24%	13%	21%	32%
Neither satisfied nor unsatisfied	**16%**		15%	5%	17%	12%	17%	18%	7%	4%	16%	16%	16%
Somewhat satisfied	**41%**		5%	55%	25%	48%	26%	47%	48%	16%	50%	44%	34%
Extremely satisfied	**14%**			37%	3%	19%	4%	12%	37%	52%	20%	16%	5%
Top 2	54%		5%	92%	28%	68%	30%	60%	85%	68%	70%	60%	39%
Bottom 2	30%		80%	3%	55%	21%	53%	22%	8%	28%	14%	23%	46%
Mean	3.32		2.02	4.26	2.65	3.62	2.68	3.47	4.13	3.87	3.75	3.5	2.83

TABLE 2: SATISFACTION WITH HEALTH STATUS cont'd

How satisfied are you with your overall health status?

		Income				Age			Weight Concern		Education			Race				
									Concerned									
	Total	<$35K	$35-50K	$50-75K	>$75K	<34	35-54	55+	Yes	No	HS or Less	Some College	College +	Caucasian	African American	Asian	Hispanic	Other
Base	1000	406	208	155	166	273	442.8	276	657	225	455	274	264	741	78	26	121	20
Not at all satisfied	**6%**	8%	6%	3%	6%	2%	7%	9%	8%	3%	8%	4%	4%	7%	2%	4%	4%	6%
Not very satisfied	**24%**	27%	25%	15%	19%	23%	26%	20%	28%	18%	24%	28%	19%	24%	17%	11%	26%	33%
Neither satisfied nor unsatisfied	**16%**	17%	14%	14%	14%	18%	13%	18%	15%	13%	17%	17%	13%	15%	16%	32%	17%	11%
Somewhat satisfied	**41%**	35%	44%	53%	43%	44%	42%	37%	38%	46%	36%	43%	47%	40%	52%	46%	42%	36%
Extremely satisfied	**14%**	13%	11%	15%	19%	13%	13%	16%	11%	20%	14%	8%	18%	14%	13%	7%	11%	14%
Top 2	54%	48%	54%	68%	62%	57%	54%	53%	49%	66%	51%	51%	65%	54%	65%	53%	53%	50%
Bottom 2	30%	35%	31%	18%	25%	25%	33%	29%	36%	21%	32%	32%	22%	31%	19%	15%	30%	39%
Mean	3.32	3.18	3.28	3.62	3.5	3.42	3.28	3.31	3.16	3.62	3.24	3.23	3.56	3.31	3.57	3.42	3.30	3.19

TABLE 3: INFLUENCE OF KEY FACTORS ON HEALTH STATUS

What influence, if any, does each of the following factors have on a person's overall health?

DIET

			Weight		Education			Age				Fat Amount		Fat Type		Carb Amount		Carb Type		Sugar Amount		Sugar Type	
			Concerned									Concerned		Concerned		Concerned		Concerned		Concerned		Concerned	
	Total		Yes	No	HS or Less	Some College	College +	18-24	25-34	35-54	55+	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Base	995		654	225	453	273	263	111	162	441	273	654	153	657	142	515	219	461	236	622	173	523	220
Not at all influential	**2%**		1%	4%	2%	2%	1%	2%	4%	1%	1%	1%	8%	1%	9%	0%	5%	1%	5%	1%	4%	1%	5%
Not very influential	**2%**		1%	2%	2%	1%	1%	2%	5%	0%	1%	1%	3%	1%	4%	2%	2%	2%	2%	1%	3%	1%	3%
Neither	**7%**		4%	8%	7%	8%	4%	11%	8%	6%	5%	4%	7%	3%	9%	3%	6%	4%	6%	4%	8%	4%	6%
Somewhat influential	**37%**		36%	42%	39%	36%	37%	38%	33%	40%	36%	35%	41%	34%	41%	34%	38%	32%	41%	33%	42%	33%	42%
Extremely influential	**52%**		57%	44%	50%	53%	57%	47%	50%	52%	57%	60%	40%	61%	36%	60%	49%	62%	46%	61%	44%	60%	44%
Top 2	90%		93%	86%	89%	89%	94%	85%	83%	92%	93%	95%	81%	95%	78%	95%	87%	94%	87%	94%	86%	94%	86%
Bottom 2	4%		3%	6%	4%	3%	2%	4%	9%	2%	2%	2%	11%	2%	13%	2%	7%	2%	7%	3%	7%	3%	7%
Mean	4.37		4.45	4.20	4.32	4.36	4.49	4.26	4.20	4.41	4.46	4.52	4.02	4.53	3.92	4.53	4.23	4.53	4.21	4.51	4.19	4.50	4.19

TABLE 3: INFLUENCE OF KEY FACTORS ON HEALTH STATUS cont'd

What influence, if any, does each of the following factors have on a person's overall health?

WEIGHT

		Activity			Gender		Age				Fat Amount Concerned		Fat Type Concerned		Sugar Amount Concerned		Sugar Type Concerned	
	Total	Sedentary	Moderately	Active	Male	Female	18-24	25-34	35-54	55+	Yes	No	Yes	No	Yes	No	Yes	No
Base	998	305	547	146	470	523	111	162	443	274	658	153	658	142	621	175	522	222
Not at all influential	**1%**	0%	1%	3%	1%	1%		1%	1%	1%	1%	4%	1%	4%	1%	2%	1%	2%
Not very influential	**2%**	1%	3%	0%	3%	2%	2%	7%	1%	1%	2%	5%	2%	7%	2%	3%	2%	4%
Neither	**5%**	3%	6%	5%	6%	3%	7%	9%	3%	3%	2%	6%	3%	6%	3%	6%	3%	6%
Somewhat influential	**35%**	40%	35%	24%	39%	32%	39%	31%	38%	32%	32%	45%	32%	42%	31%	38%	32%	36%
Extremely influential	**57%**	55%	55%	68%	51%	63%	53%	51%	57%	63%	63%	40%	63%	41%	63%	50%	63%	51%
Top 2	92%	95%	90%	92%	90%	94%	91%	83%	94%	95%	95%	85%	95%	83%	94%	89%	95%	88%
Bottom 2	3%	2%	4%	4%	4%	3%	2%	8%	2%	2%	2%	9%	2%	11%	3%	5%	3%	6%
Mean	4.44	4.47	4.41	4.53	4.36	4.54	4.42	4.25	4.48	4.54	4.56	4.13	4.55	4.1	4.54	4.32	4.54	4.31

TABLE 3: INFLUENCE OF KEY FACTORS ON HEALTH STATUS cont'd

What influence, if any, does each of the following factors have on a person's overall health?

PHYSICAL ACTIVITY

			Overall Health		Activity			Fat Amount		Fat Type	
								Concerned		Concerned	
	Total		Very Good Excellent	Fair Poor	Sedentary	Moderately	Active	Yes	No	Yes	No
Base	997		320	243	307	547	146	658	153	658	142
Not at all influential	**1%**		0%	2%	2%	1%	2%	1%	3%	1%	4%
Not very influential	**2%**		1%	2%	2%	2%	1%	1%	2%	1%	3%
Neither	**5%**		4%	5%	4%	6%	3%	3%	6%	2%	6%
Somewhat influential	**35%**		28%	31%	40%	36%	19%	32%	44%	31%	46%
Extremely influential	**57%**		67%	60%	52%	56%	74%	63%	45%	64%	40%
Top 2	92%		95%	91%	92%	92%	94%	95%	89%	95%	87%
Bottom 2	3%		2%	4%	4%	2%	3%	2%	5%	2%	8%
Mean	4.45		4.60	4.44	4.37	4.45	4.62	4.55	4.26	4.57	4.15

DIET

TABLE 1: HEALTHFULNESS OF DIET

Now a few questions about diet. By *"diet," we mean everything you consume, including foods, beverages, and dietary supplements.*

How would you rate the healthfulness of your overall diet?

			Overall Health		Health Satisfaction		Weight Concern		Education		
							Concerned				
	Total		Very Good Excellent	Fair Poor	Satisfied	Not Satisfied	Yes	No	HS or Less	Some College	College +
Base	1000		330	243	544	297	657	225	455	274	264
Not at all healthful	**3%**		1%	7%	1%	7%	3%	2%	4%	2%	1%
Not very healthful	**19%**		10%	29%	10%	34%	25%	9%	20%	25%	12%
Neither healthful nor unhealthful	**24%**		19%	23%	22%	22%	23%	23%	28%	22%	19%
Somewhat healthful	**46%**		54%	36%	54%	34%	44%	52%	41%	46%	55%
Extremely healthful	**8%**		16%	5%	13%	4%	6%	14%	7%	4%	13%
Top 2	54%		70%	41%	67%	38%	49%	65%	49%	50%	68%
Bottom 2	22%		11%	36%	11%	40%	28%	12%	24%	27%	13%
Mean	3.37		3.75	3.03	3.67	2.94	3.24	3.65	3.28	3.25	3.67

TABLE 1: HEALTHFULNESS OF DIET cont'd

Now a few questions about diet. *By "diet," we mean everything you consume, including foods, beverages, and dietary supplements.*

How would you rate the healthfulness of your overall diet?

		Age				Activity			BMI			
	Total	18-24	25-34	35-54	55+	Sedentary	Moderately	Active	Under Weight	Ideal Weight	Over Weight	Obese Weight
Base	1000	111	162	443	276	307	547	146	11	265	290	312
Not at all healthful	**3%**	4%	2%	4%	0%	6%	1%	1%			2%	5%
Not very healthful	**19%**	29%	29%	17%	14%	32%	17%	2%	26%	8%	22%	27%
Neither healthful nor unhealthful	**24%**	32%	27%	25%	17%	28%	24%	19%	13%	21%	24%	25%
Somewhat healthful	**46%**	26%	39%	48%	56%	32%	53%	51%	21%	60%	43%	38%
Extremely healthful	**8%**	10%	4%	7%	12%	2%	6%	27%	40%	11%	10%	4%
Top 2	54%	35%	42%	54%	68%	34%	59%	79%	61%	71%	52%	42%
Bottom 2	22%	33%	31%	20%	15%	39%	18%	3%	26%	8%	24%	32%
Mean	3.37	3.08	3.13	3.37	3.65	2.91	3.46	4.02	3.74	3.74	3.37	3.09

DIET

TABLE 2: DAILY SERVING OF FRUITS AND VEGETABLES

On average, approximately how many servings of fruits and vegetables do you eat per day?

	Total
Base	**1000**
0	6%
1	29%
2	23%
3	20%
4-6	19%
7-9	3%
10+	1%
Mean	*2.70*

TABLE 3: CHANGES TO DIET IN PAST SIX MONTHS

Over the past six months, have you made any changes in an effort to improve the healthfulness of your diet?

	Total
Base	**1000**
Yes	57%
No	43%

TABLE 4: REASONS FOR DIETARY CHANGES

[IF CHANGES] For which of the following reasons, if any, are you trying to improve the healthfulness of your diet? *Select all that apply*

	Total
Base	**574**
To improve my overall health	69%
To lose weight	62%
Because of a specific health condition (e.g., diabetes, high cholesterol, high blood pressure, allergies)	37%
To maintain my weight	19%
Other	4%

TABLE 5: UNAIDED TYPES OF DIETARY CHANGES

[IF CHANGES] What, specifically, have you done to improve the healthfulness of your diet in the past six months? [open end]

	Total
Base	**574**
Consuming more of a specific type of food or beverage	23%
Consuming less of a specific type of food or beverage	21%
Changing eating habits/eating healthier/watching what I eat (but no specifics given)	18%
Change the amount of sugars	17%
Exercise	15%
Change the amount of fat	14%
Reducing the amounts of food and beverages served/eaten at meals (Limiting portions)	12%
Change the amount of carbs	11%
Eating more of a certain food component (e.g., a vitamin, mineral, nutrient)	10%
Changing meal/snack patterns (i.e., Skipping meals, snacks, and/or desserts; eating smaller meals, more frequently)	9%
Following a specific diet plan	3%
Eating less of a certain food component (e.g., a vitamin, mineral, nutrient)	3%
Eating fewer calories	2%
Change the type of carbs	2%
Change the type of fat	1%
Other	2%
I am not taking any steps to improve the healthfulness of my diet (Nothing)	1%

TABLE 6: AIDED TYPES OF DIETARY CHANGES

[IF CHANGES] Which of the following specific changes, if any, have you made in the past 6 months to improve the healthfulness of your diet? *Check all that apply*

	Total
Base	**574**
Consuming less of a specific type of food or beverage	68%
Reducing the amounts of food and beverages served/eaten at meals (Limiting portions)	57%
Changing meal/snack patterns (i.e., skipping meals, snacks, or desserts; eating smaller meals, more frequently)	55%
Eating fewer calories	42%
Consuming more of a specific type of food or beverage	31%
Eating more of a certain food component (e.g., a vitamin, mineral, nutrient)	29%
Eating less of a certain food component (e.g., a vitamin, mineral, nutrient)	16%
Following a specific diet plan	11%
Other	3%
I am not taking any steps to improve the healthfulness of my diet	1%

TABLE 7: INFORMATION SOURCES PROMPTING DIETARY CHANGES

To what extent, if any, has information from the following sources prompted you to make diet-related changes in the past six months?
Scale: 1= "not at all," 2= "a minor extent," 3= "a moderate extent," 4= "a great extent"

Base= 574	**1**	**2**	**3**	**4**
Health professional	38%	17%	25%	19%
Television	57%	25%	14%	4%
Newspaper	76%	15%	8%	2%
Health or fitness magazines	57%	20%	16%	6%
Food product labels	38%	25%	23%	15%
Family and friends	33%	24%	24%	18%
Government agencies	75%	18%	6%	2%

TABLE 8: AWARENESS OF RECOMMENDED DAILY CALORIC CONSUMPTION

As far as you know, how many calories should a person of your age, weight, and height consume per day?

	Total
Base	**1000**
Don't know	43%
Base	**568**
1000 or less	5%
1001-1500	33%
1501-2000	42%
2001-2500	15%
2501-3000	3%
More than 3000	1%
Mean	1811

TABLE 9: CALORIES CONSUMED PER DAY

[IF ANSWERED CONSUMPTION] Most days, would you say you consume:

	Total
Base	**568**
More than [CONSUMPTION] per day	33%
About [CONSUMPTION] per day	44%
Less than [CONSUMPTION] per day	17%
Don't know	6%

TABLE 10: AWARENESS OF CALORIC IMPACT ON WEIGHT GAIN

Which of the following statements do you agree with regarding the relationship between calories and weight gain?

		Gender		Income				Education			Carb Amount		Carb Type		Sugar Amount		Sugar Type	
											Concerned		Concerned		Concerned		Concerned	
	Total	Male	Female	<35K	$35K-<50K	$50K-<100K	100K+	HS or Less	Some College	College+	Yes	No	Yes	No	Yes	No	Yes	No
Base	1000	472	523	406	208	255	66	455	274	264	515	219	464	236	623	175	524	222
Calories from fats are most likely to cause weight gain	**26%**	27%	26%	25%	30%	25%	36%	25%	31%	24%	26%	27%	26%	30%	29%	25%	28%	26%
Calories from carbohydrates are most likely to cause weight	**20%**	21%	20%	22%	19%	22%	17%	20%	19%	22%	31%	8%	31%	10%	24%	16%	26%	16%
Calories from protein are most likely to cause weight gain	**2%**	4%		3%	1%	2%	3%	3%	2%	1%	1%	1%	1%	1%	1%	1%		1%
Calories in general are what causes weight gain (i.e., all calories are the same)	**29%**	25%	32%	23%	28%	33%	33%	24%	29%	38%	27%	32%	29%	31%	30%	24%	27%	29%
Not sure	**22%**	23%	21%	27%	21%	18%	11%	28%	19%	15%	14%	31%	14%	29%	17%	35%	18%	28%

TABLE 1: AWARENESS OF DIETARY FATS

Which of the following types of fat have you heard of?

	Total
Base	**1000**
Saturated fats	91%
Vegetable oils (e.g., canola, corn, soybean, olive)	86%
Animal fats (e.g., lard, tallow, butter)	83%
Trans fats	81%
Polyunsaturated fats	79%
Fish oils	76%
Monounsaturated fats	70%
Hydrogenated oils	69%
Omega-3 fatty acids	63%
Partially hydrogenated oils	59%
Tropical oils (e.g., palm, coconut)	58%
Omega-6 fatty acids	36%
Stearic acid	21%
DHA (docosahexaenoic acid)	16%
ALA (alpha-linolenic acid)	9%
CLA (conjugated linoleic acid)	8%
EPA (eicosapentaenoic acid)	8%
None of the above	4%

TABLE 2: CONCERN WITH AMOUNT OF DIETARY FATS

How concerned are you, if at all, with the amount of fat you consume in the foods you eat?

			Fat Amount		Fat Type		Concern with Weight		BMI				Gender		Age				Type of Sugar		Amount of Sugar	
			Concerned		Concerned		Concerned								18-24	25-34	35-54	55+	Concerned		Concerned	
	Total		Yes	No	Yes	No	Yes	No	Under	Ideal	Over	Obese	Male	Female					Yes	No	Yes	No
Base	1000		658	153	660	142	657	225	11	265	290	312	472	523	111	162	443	276	524	222	623	175
Not at all concerned	**7%**		0%	46%	1%	40%	3%	18%	47%	10%	7%	4%	10%	4%	17%	7%	5%	6%	2%	23%	1%	31%
Not very concerned	**8%**		0%	54%	2%	41%	4%	20%	16%	15%	7%	5%	10%	6%	11%	10%	9%	6%	4%	23%	4%	23%
Neither concerned nor unconcerned	**19%**		0%	0%	4%	5%	15%	20%	25%	22%	14%	18%	19%	18%	27%	15%	20%	15%	11%	12%	12%	11%
Somewhat concerned	**48%**		72%	0%	64%	14%	56%	33%	12%	40%	52%	51%	43%	52%	34%	57%	49%	47%	57%	36%	57%	31%
Extremely concerned	**18%**		28%	0%	27%		22%	9%	0%	13%	21%	22%	17%	19%	11%	11%	18%	26%	26%	7%	26%	4%
Top 2	**66%**		100%	0%	92%	14%	78%	43%	12%	54%	73%	73%	61%	71%	45%	68%	67%	73%	83%	43%	82%	35%
Bottom 2	**15%**		0%	100%	4%	81%	8%	37%	63%	25%	14%	9%	20%	11%	28%	17%	13%	12%	6%	45%	6%	54%
Mean	**3.62**		4.28	1.54	4.14	1.92	3.89	2.97	2.01	3.32	3.73	3.82	3.48	3.75	3.11	3.55	3.66	3.80	4.00	2.81	4.01	2.54

FATS

TABLE 3: CONCERN WITH TYPE OF DIETARY FATS

How concerned are you, if at all, with the types of fat you consume in the foods you eat?

	Total
Base	**1000**
Not at all concerned	6%
Not very concerned	8%
Neither concerned nor unconcerned	20%
Somewhat concerned	44%
Extremely concerned	22%
Top 2	*66%*
Bottom 2	*14%*
Mean	*3.68*

Note: Top 2 and Bottom 2 may be +/- 1% due to rounding

TABLE 4: PERCEPTION OF CHANGE IN HEALTHFULNESS OF OILS IN FOOD PRODUCTS

Over the past year, would you say food products...?

			BMI				Weight Concern		Gender		Age				Income			
	Total		Under Weight	Ideal Weight	Over Weight	Obese Weight	Concerned Yes	Concerned No	Male	Female	18-24	25-34	35-54	55+	< 35K	$35K-<50K	$50K-<100K	100K +
Base	1000		11	265	290	312	657	225	472	523	111	162	443	276	406	208	255	66
Have been using more healthful oils	**45%**		19%	38%	49%	50%	48%	39%	41%	49%	29%	30%	49%	55%	38%	51%	49%	54%
Have been using less healthful oils	**9%**		0%	12%	6%	8%	9%	6%	11%	6%	17%	9%	9%	4%	10%	8%	7%	7%
Stayed the same (i.e., made no change)	**46%**		81%	50%	45%	42%	43%	55%	48%	45%	54%	62%	42%	40%	52%	41%	44%	38%

FATS

TABLE 5: PERCEIVED HEALTHFULNESS OF SPECIFIC DIETARY FATS

[SPLIT SAMPLE (A) AND HEARD OF] How would you rate the healthfulness of each of the following types of fat? *Scale: 1= "not at all healthful," 2= "not very healthful," 3= "neither healthful nor unhealthful," 4="somewhat healthful," 5="extremely healthful"*

	1	2	3	4	5
Monounsaturated fats (n= 356)	13%	22%	48%	13%	3%
Polyunsaturated fats (n= 407)	14%	24%	47%	13%	2%
Saturated fats (n= 471)	34%	33%	30%	2%	1%
Trans fats (n= 413)	36%	28%	30%	6%	-
Hydrogenated oils (n= 346)	33%	24%	39%	4%	-
Partially hydrogenated oils (n= 302)	36%	23%	34%	6%	-
Tropical oils (e.g., palm, coconut, kernel) (n= 284)	25%	20%	28%	23%	4%
Vegetable oils (e.g., canola, corn, soybean, olive) (n= 442)	4%	7%	33%	44%	12%
Fish oils (n= 387)	5%	4%	22%	33%	37%
Animal fats (e.g., lard, tallow, butter) (n= 435)	41%	30%	24%	4%	1%
Omega-3 fatty acids (n= 323)	4%	5%	32%	23%	35%
Omega-6 fatty acids (n= 189)	2%	12%	36%	21%	29%

TABLE 6: PERCEIVED HEALTHFULNESS OF VEGETABLE OILS

[SPLIT SAMPLE (A) ONLY] How would you rate the healthfulness of each of the following types of vegetable oil? *Scale: 1= "not at all healthful," 2= "not very healthful," 3= "neither healthful nor unhealthful," 4="somewhat healthful," 5="extremely healthful," 6=unaware*

Base= 525	1	2	3	4	5	6
Canola	3%	5%	23%	41%	15%	13%
Corn	4%	12%	30%	34%	5%	16%
Sunflower	1%	3%	24%	45%	12%	16%
Soybean	2%	2%	19%	42%	20%	15%
Olive	1%	3%	16%	33%	36%	11%

FATS

TABLE 7: PERCEIVED HEALTHFULNESS OF SOLID VS. LIQUID FATS

As far as you know, which of the following types of fat is less healthful?

	Total
Base	**1000**
Fats that are solid at room temperature are less healthful	34%
Fats that are liquid at room temperature are less healthful	4%
They are of equal health value	19%
Not sure	43%

TABLE 8: AWARENESS OF UNSATURATED FATTY ACIDS

[IF HEARD OF MONOUNSATURATED, POLYUNSATURATED, OMEGA 3, OMEGA 6, DHA, EPA, ALA] What foods or types of foods contain unsaturated fatty acids? [open end]

	Total
Base	**855**
Net Correct Mentions	22%
Fish/fish oils	20%
Nuts and seeds	2%
Plant oils (vegetable, canola, corn, soybean, olive)	2%
Flax/flaxseed oil	1%
Fruit (only avocadoes and olives)	1%
Eggs	-
Net Incorrect Mentions	6%
Vegetables	1%
Plant based (w/o specifying oils)	1%
Dairy	1%
Fruits	1%
Other	3%
Don't know	73%
No answer	1%

FATS

TABLE 9: DESIRED CHANGE IN CONSUMPTION OF DIETARY FATS

[SPLIT SAMPLE (A) AND HEARD OF] Please indicate whether you are trying to consume more or less of the following. *Scale= 1=trying to consume more, 2=trying to consume less, 3=neither*

	More	Less	Neither
Monounsaturated fats (n= 356)	8%	32%	60%
Polyunsaturated fats (n= 407)	9%	33%	58%
Saturated fats (n= 471)	1%	57%	42%
Trans fats (n= 413)	2%	54%	45%
Hydrogenated oils (n= 346)	1%	49%	49%
Partially hydrogenated oils (n= 302)	2%	47%	51%
Tropical oils (e.g., palm, coconut, kernel) (n= 284)	6%	43%	51%
Vegetable oils (e.g, canola, corn, soybean, olive) (n= 442)	27%	22%	52%
Fish oils (n= 387)	43%	9%	48%
Animal fats (e.g., lard, tallow, butter) (n= 435)	1%	61%	37%
Omega-3 fatty acids (n= 323)	44%	12%	44%
Omega-6 fatty acids (n= 189)	30%	18%	52%

CARBOHYDRATES AND SUGARS

TABLE 1: CONCERN WITH AMOUNT OF CARBOHYDRATES

Now a few questions about carbohydrates and sugars. How concerned are you, if at all, with the amount of carbohydrates/sugars you consume? *Scale: 1= "not at all concerned," 2="not very concerned," 3=neither concerned nor unconcerned," 4="somewhat concerned," 5="extremely concerned"*

Base= 1000	**1**	**2**	**3**	**4**	**5**
Amount of carbohydrates	11%	11%	27%	36%	15%
Type of carbohydrates	11%	13%	30%	31%	16%
Amount of sugar	8%	9%	20%	39%	24%
Type of sugar	10%	12%	25%	32%	21%

AMOUNT OF CARBOHYDRATES

			Health Status		**Health Satisfaction**		**BMI**				**Weight Concern**		**Gender**	
	Total		Very Good Excellent	Fair Poor	Satisfied	Not Satisfied	Under Weight	Ideal Weight	Over Weight	Obese Weight	Concerned Yes	Concerned No	Male	Female
Base	1000		330	243	544	297	11	265	290	312	657	225	472	523
Not at all concerned	**11%**		13%	9%	13%	9%	54%	20%	9%	5%	5%	27%	13%	9%
Not very concerned	**11%**		11%	10%	12%	10%	9%	11%	12%	10%	7%	21%	14%	8%
Neither concerned nor unconcerned	**27%**		28%	21%	27%	23%	25%	30%	25%	24%	24%	26%	27%	26%
Somewhat concerned	**36%**		37%	38%	36%	37%	4%	30%	37%	39%	44%	22%	32%	40%
Extremely concerned	**15%**		11%	22%	12%	20%	7%	8%	16%	22%	20%	4%	14%	17%
Top 2	52%		48%	60%	48%	57%	12%	38%	53%	61%	64%	26%	46%	57%
Bottom 2	22%		24%	19%	25%	20%	63%	32%	22%	15%	13%	48%	27%	17%
Mean	3.34		3.21	3.54	3.22	3.48	2.01	2.94	3.37	3.63	3.66	2.56	3.20	3.48

TABLE 1: CONCERN WITH AMOUNT OF CARBOHYDRATES cont'd

Now a few questions about carbohydrates and sugars. How concerned are you, if at all, with the amount of carbohydrates/sugars you consume? *Scale: 1= "not at all concerned," 2="not very concerned," 3=neither concerned nor unconcerned," 4="somewhat concerned," 5="extremely concerned"*

Base= 1000	**1**	**2**	**3**	**4**	**5**
Amount of carbohydrates	11%	11%	27%	36%	15%
Type of carbohydrates	11%	13%	30%	31%	16%
Amount of sugar	8%	9%	20%	39%	24%
Type of sugar	10%	12%	25%	32%	21%

AMOUNT OF CARBOHYDRATES

		Age				Ethnicity					Fat Amount		Fat Type		Sugar Amount		Sugar Type	
											Concerned		Concerned		Concerned		Concerned	
	Total	18-24	25-34	35-54	55+	Caucasian	African American	Asian	Hispanic	Other	Yes	No	Yes	No	Yes	No	Yes	No
Base	1000	111	162	443	276	741	78	26	121	20	658	153	660	142	623	175	524	222
Not at all concerned	**11%**	17%	10%	11%	10%	12%	10%	8%	7%	6%	4%	49%	5%	45%	4%	45%	5%	36%
Not very concerned	**11%**	9%	14%	11%	10%	11%	7%	15%	10%	2%	9%	19%	9%	23%	7%	27%	5%	27%
Neither concerned nor unconcerned	**27%**	33%	25%	29%	20%	27%	15%	32%	28%	20%	19%	13%	19%	15%	18%	11%	16%	12%
Somewhat concerned	**36%**	34%	39%	36%	37%	34%	46%	36%	40%	51%	47%	14%	46%	14%	48%	14%	48%	21%
Extremely concerned	**15%**	7%	12%	14%	23%	15%	22%	8%	14%	21%	20%	5%	21%	4%	23%	4%	26%	4%
Top 2	52%	40%	51%	50%	60%	50%	68%	45%	54%	71%	67%	19%	67%	18%	71%	18%	74%	25%
Bottom 2	22%	26%	23%	21%	20%	23%	17%	23%	17%	9%	14%	68%	15%	68%	11%	71%	10%	63%
Mean	3.34	3.03	3.30	3.32	3.54	3.30	3.62	3.21	3.44	3.77	3.69	2.07	3.67	2.09	3.79	2.06	3.86	2.29

TABLE 2: CONCERN WITH TYPE OF CARBOHYDRATES

How concerned are you, if at all, with the type of carbohydrates you consume in the foods you eat?

TYPE OF CARBOHYDRATES

			Health Status		Health Satisfaction		BMI				Weight Concern		Gender	
	Total		Very Good Excellent	Fair Poor	Satisfied	Not Satisfied	Under Weight	Ideal Weight	Over Weight	Obese Weight	Concerned Yes	Concerned No	Male	Female
Base	1000		330	243	544	297	11	265	290	312	657	225	472	523
Not at all concerned	**11%**		12%	9%	12%	10%	59%	19%	9%	6%	5%	26%	13%	9%
Not very concerned	**13%**		14%	13%	14%	12%	10%	17%	14%	11%	8%	25%	15%	10%
Neither concerned nor unconcerned	**30%**		29%	26%	29%	28%	19%	33%	29%	27%	28%	27%	32%	28%
Somewhat concerned	**31%**		32%	31%	31%	30%	4%	22%	32%	34%	38%	17%	28%	34%
Extremely concerned	**16%**		13%	22%	13%	20%	7%	9%	17%	22%	21%	5%	13%	19%
Top 2	46%		45%	52%	44%	51%	12%	32%	48%	56%	58%	22%	40%	52%
Bottom 2	24%		26%	21%	27%	22%	69%	36%	22%	17%	14%	51%	28%	19%
Mean	3.28		3.20	3.44	3.18	3.39	1.91	2.87	3.34	3.55	3.60	2.50	3.13	3.43

TABLE 2: CONCERN WITH TYPE OF CARBOHYDRATES cont'd

How concerned are you, if at all, with the type of carbohydrates you consume in the foods you eat?

TYPE OF CARBOHYDRATES

			Age				Ethnicity					Fat Amount		Fat Type		Sugar Amount		Sugar Type	
												Concerned		Concerned		Concerned		Concerned	
	Total		18-24	25-34	35-54	55+	Caucasian	African American	Asian	Hispanic	Other	Yes	No	Yes	No	Yes	No	Yes	No
Base	1000		111	162	443	276	741	78	26	121	20	658	153	660	142	623	175	524	222
Not at all concerned	**11%**		20%	8%	9%	11%	12%	7%	8%	9%	9%	4%	50%	5%	47%	4%	46%	4%	37%
Not very concerned	**13%**		8%	19%	13%	10%	13%	13%	18%	8%	7%	12%	21%	11%	24%	9%	26%	7%	30%
Neither concerned nor unconcerned	**30%**		41%	31%	30%	23%	30%	21%	28%	36%	22%	24%	15%	23%	17%	22%	11%	18%	12%
Somewhat concerned	**31%**		26%	30%	32%	31%	29%	36%	38%	33%	39%	40%	10%	40%	10%	41%	14%	45%	17%
Extremely concerned	**16%**		6%	12%	15%	24%	16%	24%	8%	13%	23%	21%	4%	22%	2%	23%	4%	26%	4%
Top 2	46%		32%	42%	47%	56%	45%	60%	46%	46%	62%	60%	14%	62%	12%	65%	18%	71%	21%
Bottom 2	24%		28%	27%	23%	21%	25%	19%	26%	17%	15%	16%	71%	15%	71%	13%	72%	11%	67%
Mean	3.28		2.90	3.18	3.30	3.47	3.24	3.58	3.20	3.32	3.62	3.62	1.99	3.63	1.95	3.71	2.04	3.81	2.20

TABLE 3: CONCERN WITH AMOUNT OF SUGARS

How concerned are you, if at all, with the amount of sugars you consume in the foods you eat?

AMOUNT OF SUGARS

		Health Status		Health Satisfaction		BMI				Weight Concern		Gender	
	Total	Very Good Excellent	Fair Poor	Satisfied	Not Satisfied	Under Weight	Ideal Weight	Over Weight	Obese Weight	Concerned Yes	Concerned No	Male	Female
Base	1000	330	243	544	297	11	265	290	312	657	225	472	523
Not at all concerned	**8%**	10%	6%	11%	6%	47%	15%	7%	4%	3%	26%	12%	5%
Not very concerned	**9%**	9%	8%	11%	9%	5%	9%	9%	9%	7%	13%	9%	9%
Neither concerned nor unconcerned	**20%**	21%	15%	20%	15%	20%	23%	16%	19%	16%	24%	22%	18%
Somewhat concerned	**39%**	41%	36%	39%	39%	21%	37%	43%	37%	44%	27%	33%	44%
Extremely concerned	**24%**	20%	34%	19%	31%	7%	16%	25%	31%	30%	11%	24%	24%
Top 2	62%	61%	71%	58%	70%	28%	53%	68%	68%	74%	38%	57%	67%
Bottom 2	17%	19%	14%	22%	15%	52%	24%	16%	13%	10%	38%	21%	14%
Mean	3.60	3.52	3.84	3.44	3.80	2.37	3.30	3.69	3.83	3.91	2.85	3.48	3.72

TABLE 3: CONCERN WITH AMOUNT OF SUGARS cont'd

How concerned are you, if at all, with the amount of sugars you consume in the foods you eat?

AMOUNT OF SUGARS

			Age				Ethnicity					Fat Amount		Fat Type		Carb Amount		Carb Type	
												Concerned		Concerned		Concerned		Concerned	
	Total		18-24	25-34	35-54	55+	Caucasian	African American	Asian	Hispanic	Other	Yes	No	Yes	No	Yes	No	Yes	No
Base	1000		111	162	443	276	741	78	26	121	20	658	153	660	142	515	219	464	236
Not at all concerned	**8%**		9%	9%	9%	7%	9%	8%	17%	2%	21%	2%	39%	4%	37%	1%	33%	1%	30%
Not very concerned	**9%**		19%	10%	7%	9%	9%	5%	18%	13%		7%	23%	7%	27%	6%	24%	6%	23%
Neither concerned nor unconcerned	**20%**		29%	17%	22%	14%	20%	13%	27%	22%	7%	13%	15%	12%	12%	8%	12%	6%	12%
Somewhat concerned	**39%**		31%	50%	39%	35%	40%	35%	20%	40%	35%	48%	15%	46%	21%	46%	27%	44%	29%
Extremely concerned	**24%**		12%	13%	23%	35%	22%	39%	18%	24%	36%	30%	8%	32%	4%	40%	4%	43%	5%
Top 2	62%		43%	64%	63%	70%	62%	74%	39%	63%	72%	78%	23%	78%	24%	86%	31%	87%	34%
Bottom 2	17%		28%	19%	15%	16%	18%	13%	34%	15%	21%	9%	62%	10%	64%	6%	57%	7%	53%
Mean	3.60		3.18	3.49	3.62	3.82	3.57	3.91	3.06	3.71	3.66	3.97	2.30	3.95	2.27	4.20	2.45	4.22	2.57

TABLE 4: CONCERN WITH TYPE OF SUGARS

How concerned are you, if at all, with the type of sugars you consume in the foods you eat?

TYPE OF SUGARS

			Health Status		Health Satisfied		BMI				Weight concern		Gender	
	Total		Very Good Excellent	Fair Poor	Satisfied	Not Satisfied	Under Weight	Ideal Weight	Over Weight	Obese Weight	Concerned Yes	Concerned No	Male	Female
Base	1000		330	243	544	297	11	265	290	312	657	225	472	523
Not at all concerned	**10%**		12%	8%	13%	8%	59%	17%	9%	6%	5%	28%	14%	7%
Not very concerned	**12%**		15%	9%	14%	11%	6%	15%	10%	12%	11%	16%	13%	11%
Neither concerned nor unconcerned	**25%**		27%	20%	25%	19%	10%	24%	25%	25%	23%	25%	25%	26%
Somewhat concerned	**32%**		28%	35%	31%	37%	25%	29%	34%	31%	36%	21%	29%	35%
Extremely concerned	**21%**		18%	28%	17%	25%		15%	23%	26%	26%	11%	20%	21%
Top 2	52%		47%	63%	47%	62%	25%	44%	56%	57%	62%	31%	49%	56%
Bottom 2	22%		27%	17%	27%	18%	65%	32%	19%	18%	15%	44%	26%	19%
Mean	3.40		3.26	3.66	3.24	3.62	2.01	3.10	3.51	3.59	3.68	2.71	3.29	3.51

TABLE 4: CONCERN WITH TYPE OF SUGARS cont'd

How concerned are you, if at all, with the type of sugars you consume in the foods you eat?

TYPE OF SUGARS

		Age				Ethnicity					Fat Amount		Fat Type		Carb Amount		Carb Type	
											Concerned		Concerned		Concerned		Concerned	
	Total	18-24	25-34	35-54	55+	Caucasian	African American	Asian	Hispanic	Other	Yes	No	Yes	No	Yes	No	Yes	No
Base	1000	111	162	443	276	741	78	26	121	20	658	153	660	142	515	219	464	236
Not at all concerned	**10%**	11%	11%	10%	10%	11%	8%	8%	3%	21%	4%	45%	5%	43%	2%	37%	2%	36%
Not very concerned	**12%**	19%	17%	9%	12%	12%	7%	31%	14%		10%	21%	10%	26%	9%	27%	8%	28%
Neither concerned nor unconcerned	**25%**	33%	22%	28%	20%	27%	15%	22%	24%	10%	20%	14%	18%	15%	14%	12%	10%	12%
Somewhat concerned	**32%**	27%	41%	32%	29%	31%	36%	21%	39%	26%	40%	14%	39%	13%	40%	20%	41%	20%
Extremely concerned	**21%**	9%	10%	22%	29%	19%	34%	18%	20%	44%	26%	6%	28%	3%	35%	4%	39%	4%
Top 2	52%	37%	50%	54%	58%	50%	71%	39%	59%	69%	66%	20%	67%	16%	75%	24%	80%	25%
Bottom 2	22%	30%	28%	18%	22%	23%	15%	39%	17%	21%	14%	66%	15%	69%	11%	64%	10%	63%
Mean	3.40	3.05	3.21	3.48	3.56	3.33	3.82	3.09	3.59	3.70	3.74	2.16	3.75	2.06	3.98	2.26	4.07	2.30

CARBOHYDRATES AND SUGARS

TABLE 5: AWARENESS OF SPECIFIC CARBOHYDRATES/SUGARS

Which of the following have you heard of?

	Total
Base	**1000**
Sugar	94%
Glucose	88%
Fiber	87%
Whole grains	87%
Fructose	83%
Lactose	82%
Saccharin	81%
High fructose corn syrup	78%
Sucrose	72%
Added sugars	69%
Aspartame	65%
Complex carbohydrates	58%
Refined carbohydrates	42%
Sucralose	36%
Glycemic Index	32%
Sugar alcohols (polyols)	31%
Glycemic Load	15%
None of the above	3%

TABLE 6: CONSIDERATION OF GLYCEMIC INDEX/LOAD

[IF HEARD OF GLYCEMIC INDEX OR GLYCEMIC LOAD] How often, if at all, do you consider the glycemic index (or glycemic load) of a food or beverage when deciding to eat it?

	Total	Yes, family history	No family history
Base	**324**	**127**	**197**
Never	42%	32%	48%
Rarely	24%	25%	23%
Sometimes	20%	21%	19%
Most of the time	11%	18%	7%
Always	3%	4%	2%
Top 2	*14%*	*21%*	*9%*
Bottom 2	*66%*	*57%*	*72%*
Mean	*2.09*	*2.36*	*1.92*

TABLE 7: PERCEIVED HEALTHFULNESS OF CARBOHYDRATES/SUGARS

[SPLIT SAMPLE (B) AND HEARD OF] How would you rate the healthfulness of each of the following? *Scale: 1= "not at all healthful," 2= "not very healthful," 3= "neither healthful nor unhealthful," 4="somewhat healthful," 5="extremely healthful"*

	1	2	3	4	5
Sugar (n= 451)	17%	38%	35%	9%	-
Added sugars (n= 339)	28%	45%	25%	2%	-
Sucrose (n= 352)	15%	33%	45%	6%	-
Fructose (n= 401)	12%	26%	47%	15%	-
Glucose (n= 429)	10%	25%	50%	15%	1%
Lactose (n= 402)	8%	20%	53%	18%	1%
Refined carbohydrates (n= 223)	18%	30%	37%	13%	2%
Complex carbohydrates (n= 301)	4%	13%	31%	34%	18%
Whole grains (n= 424)	1%	-	11%	23%	65%
Fiber (n= 427)	1%	1%	12%	21%	66%
High fructose corn syrup (n= 395)	22%	36%	33%	7%	2%
Aspartame (n= 307)	34%	18%	41%	6%	1%
Saccharin (n= 388)	30%	25%	37%	6%	2%
Sucralose (n= 166)	26%	24%	42%	6%	1%
Sugar alcohols (polyols) (n= 146)	19%	31%	44%	3%	2%

TABLE 8: DESIRED CHANGE IN CARBOHYDRATES/SUGARS

[SPLIT SAMPLE (B) AND HEARD OF] Please indicate whether you are trying to consume more or less of the following. *Scale= 1=trying to consume more, 2=trying to consume less, 3=neither*

	More	Less	Neither
Sugar (n= 451)	2%	69%	29%
Added sugars (n= 339)	-	70%	29%
Sucrose (n= 352)	1%	42%	56%
Fructose (n= 401)	4%	41%	55%
Glucose (n= 429)	2%	37%	60%
Lactose (n= 402)	4%	32%	64%
Refined carbohydrates (n= 223)	6%	56%	38%
Complex carbohydrates (n= 301)	23%	29%	48%
Whole grains (n= 424)	73%	5%	22%
Fiber (n= 427)	73%	5%	23%
High fructose corn syrup (n= 395)	2%	54%	45%
Aspartame (n= 307)	7%	40%	53%
Saccharin (n= 388)	3%	40%	57%
Sucralose (n= 166)	7%	40%	53%
Sugar alcohols (polyols) (n= 146)	6%	42%	52%

WEIGHT

TABLE 1: BODY MASS INDEX

How much do you weigh? How tall are you?
BMI CALCULATION: Multiply weight in pounds by 705, divide the result by height in inches, and then divide that by height in inches again.

	Total
Base	**878**
Underweight Less than 18.5	1%
At an ideal weight 18.5-24.9	30%
Overweight 25-29.9	33%
Net Obese	35%
Obese 30-39.9	28%
Severely obese 40+	7%
Mean BMI	*28.94*
Prefer not to answer excluded	

TABLE 2: PERCEIVED CURRENT WEIGHT STATUS

Which of the following best describes your current weight? **[ANSWER NOT FORCED]**

			BMI			
	Total		Under Weight	Ideal Weight	Over Weight	Obese Weight
Base	997		11	265	290	312
Underweight	**4%**		56%	9%	1%	
At an ideal weight	**31%**		44%	75%	29%	2%
Overweight	**56%**			16%	70%	74%
Extremely overweight or obese	**10%**				0.148%	24%

TABLE 3: CONCERN WITH CURRENT WEIGHT

How concerned are you about your weight?

			BMI			
	Total		Under Weight	Ideal Weight	Over Weight	Obese Weight
Base	1000		11	265	290	312
Not at all concerned	**9%**		54%	23%	6%	1%
Not very concerned	**13%**		7%	23%	18%	4%
Neither concerned nor unconcerned	**12%**		6%	18%	12%	5%
Somewhat concerned	**44%**		19%	26%	51%	51%
Extremely concerned	**22%**		13%	10%	13%	39%
Top 2	66%		32%	36%	64%	90%
Bottom 2	22%		62%	46%	24%	5%
Mean	3.56		2.29	2.77	3.48	4.23

Note: Top 2 and Bottom 2 may be +/- 1% due to rounding

PHYSICAL ACTIVITY

TABLE 1: WEEKLY ACTIVITY LEVEL

Now a few questions about physical activity. *By physical activity we mean something that would increase your heart rate like walking, jogging, etc.* Days per week - On average, how often, if at all, would you say you are physically active, for health benefits, in a given week?

		Health Status		Health Satisfaction		Healthy Diet		BMI				Weight Concern		Activity		
	Total	Very Good Excellent	Fair Poor	Satisfied	Not Satisfied	Healthy	Not Healthy	Under Weight	Ideal Weight	Over Weight	Obese Weight	Concerned Yes	Concerned No	Sedentary	Moderately	Active
Base	1000	330	243	544	297	540	219	11	265	290	312	657	225	307	547	146
Do not exercise for health benefits at all	**36%**	17%	54%	27%	53%	23%	59%	21%	25%	32%	45%	37%	32%	73%	22%	12%
Net exercise	**64%**	83%	46%	73%	47%	77%	41%	79%	75%	68%	55%	63%	68%	27%	78%	88%
1	**3%**	2%	4%	2%	5%	3%	3%		2%	4%	2%	4%	1%	6%	2%	
2	**9%**	10%	10%	10%	8%	10%	7%		12%	6%	10%	10%	6%	7%	13%	
3	**17%**	23%	11%	19%	14%	21%	15%		17%	19%	18%	18%	16%	6%	24%	15%
4	**9%**	12%	6%	10%	6%	13%	4%	13%	14%	9%	5%	8%	10%	2%	11%	16%
5	**12%**	13%	8%	14%	8%	14%	9%	19%	13%	13%	11%	12%	12%	4%	16%	15%
6	**5%**	10%	2%	7%	3%	7%	1%		10%	6%	2%	3%	10%		4%	18%
7	**9%**	13%	5%	11%	4%	10%	2%	47%	8%	11%	7%	8%	12%	2%	8%	24%
NET 1-2 Days	12%	11%	13%	12%	13%	12%	10%		14%	10%	12%	14%	7%	13%	15%	1%
NET 3-5 Days	38%	49%	25%	43%	28%	47%	28%	32%	43%	41%	34%	39%	39%	11%	51%	45%
NET 6-7 Days	14%	22%	8%	18%	6%	17%	3%	47%	17%	17%	8%	11%	22%	2%	13%	42%
Mean: Among all	2.59	3.54	1.72	3.10	1.69	3.17	1.42	4.74	3.06	2.85	2.10	2.44	3.10	0.80	3.07	4.56
Mean: Among exercisers	4.07	4.28	3.72	4.24	3.60	4.14	3.43	6.03	4.10	4.19	3.84	3.87	4.57	2.99	3.93	5.21

TABLE 1: WEEKLY ACTIVITY LEVEL cont'd

Now a few questions about physical activity. *By physical activity we mean something that would increase your heart rate like walking, jogging, etc.* Days per week - On average, how often, if at all, would you say you are physically active, for health benefits, in a given week?

			Gender		Income				Education			Fat type	
												Concerned	
	Total		Male	Female	<35K	$35K-<50K	$50K-<100K	100K+	HS or Less	Some College	College+	Yes	No
Base	1000		472	523	406	208	255	66	455	274	264	660	142
Do not exercise for health benefits at all	**36%**		36%	36%	41%	42%	28%	27%	41%	37%	27%	32%	49%
Net exercise	**64%**		64%	64%	59%	58%	72%	73%	59%	63%	73%	68%	51%
1	**3%**		4%	2%	2%	3%	3%		3%	3%	3%	3%	2%
2	**9%**		9%	10%	7%	11%	13%	8%	8%	10%	11%	10%	4%
3	**17%**		13%	20%	16%	14%	19%	16%	17%	16%	19%	18%	11%
4	**9%**		8%	9%	9%	9%	9%	12%	5%	13%	10%	10%	5%
5	**12%**		12%	12%	9%	12%	15%	21%	11%	11%	16%	13%	9%
6	**5%**		6%	4%	5%	4%	6%	8%	5%	4%	7%	5%	8%
7	**9%**		12%	6%	12%	5%	7%	10%	11%	7%	7%	10%	11%
NET 1-2 Days	12%		13%	12%	9%	14%	17%	8%	11%	13%	14%	13%	7%
NET 3-5 Days	38%		33%	42%	33%	34%	43%	48%	33%	39%	46%	41%	25%
NET 6-7 Days	14%		17%	11%	17%	9%	13%	18%	16%	10%	13%	14%	19%
Mean: Among all	2.59		2.70	2.52	2.52	2.21	2.82	3.29	2.50	2.44	2.92	2.77	2.35
Mean: Among exercisers	4.07		4.23	3.91	4.29	3.84	3.90	4.47	4.22	3.88	3.99		

PHYSICAL ACTIVITY

TABLE 2: HISTORY OF PHYSICAL ACTIVITY LEVEL

[IF PHYSICALLY ACTIVE] For how long have you been regularly physically active?

			Health Status		Health Satisfied		Healthy Diet		BMI				Weight Concern		Activity		
	Total		Very Good Excellent	Fair Poor	Satisfied	Not Satisfied	Healthy	Not Healthy	Under Weight	Ideal Weight	Over Weight	Obese Weight	Concerned Yes	Concerned No	Sedentary	Moderately	Active
Base	638		273	112	397	140	414	91	9	198	198	171	415	152	83	427	128
3 months or less	**12%**		10%	16%	8%	22%	10%	18%	9%	5%	6%	21%	14%	5%	16%	13%	4%
4-6 months	**8%**		6%	6%	7%	6%	7%	15%		6%	5%	13%	11%	5%	6%	11%	2%
Less than 6 months	**20%**		16%	22%	15%	28%	17%	33%	9%	11%	12%	34%	25%	10%	22%	24%	6%
7-12 months	**6%**		3%	11%	5%	10%	6%	6%		5%	4%	10%	7%	3%	9%	5%	7%
Between 1 and 5 years	**23%**		20%	25%	21%	25%	21%	22%	67%	24%	25%	18%	21%	27%	30%	21%	23%
More than 5 years	**51%**		61%	43%	59%	37%	57%	39%	24%	60%	59%	38%	47%	61%	39%	49%	63%

TABLE 3: PERCEPTIONS OF PHYSICAL ACTIVITY

How would you describe your current level of physical activity?

			Health Status		Health Satisfaction		Healthy Diet		BMI				Weight Concern		Income			
	Total		Very Good Excellent	Fair Poor	Satisfied	Not Satisfied	Healthy	Not Healthy	Under Weight	Ideal Weight	Over Weight	Obese Weight	Concerned Yes	Concerned No	<35K	$35K-<50K	$50K-<100K	100K+
Base	1000		330	243	544	297	540	219	11	265	290	312	657	225	406	208	255	66
Sedentary	31%		12%	56%	17%	55%	19%	54%	28%	18%	26%	43%	36%	19%	37%	33%	23%	24%
Moderately active	55%		59%	40%	60%	41%	60%	44%	33%	57%	58%	52%	54%	52%	49%	53%	64%	51%
Active	15%		29%	5%	23%	4%	21%	2%	40%	25%	15%	5%	9%	29%	15%	14%	14%	25%

PHYSICAL ACTIVITY

TABLE 4: AWARENESS OF ENERGY BALANCE

When trying to maintain your weight, how much emphasis do you place on the following? *Please distribute 100 points to demonstrate the amount of emphasis you place on each.*

Base=1000	The types of foods or beverages you eat.	The amount of foods or beverages you eat.	How much physical activity you do.
0-25	36%	35%	50%
26-50	53%	55%	43%
51-75	8%	5%	5%
76-100	3%	4%	1%
Mean	*35.82*	*35.87*	*28.31*

Mean scores out of 100 points			Age			
	Total		18-24	25-34	35-54	55+
Base	1000		111	162	443	276
The types of foods or beverages you eat	**35.82**		33.41	34.68	35.88	37.37
The amount of foods or beverages you eat	**35.87**		33.91	30.52	36.59	38.79
How much physical activity you do	**28.31**		32.67	34.80	27.53	23.84

TABLE 4: AWARENESS OF ENERGY BALANCE cont'd

When trying to lose weight, how much emphasis do you place on the following?
Please distribute 100 points to demonstrate the amount of emphasis you place on each.

Base= 1000	The types of foods or beverages you eat.	The amount of foods or beverages you eat.	How much physical activity you do.
0-25	42%	39%	39%
26-50	49%	52%	48%
51-75	6%	5%	9%
76-100	3%	4%	3%
Mean	32.56	34.27	33.17

Mean scores out of 100 points		Age			
	Total	18-24	25-34	35-54	55+
Base	1000	111	162	443	276
The types of foods or beverages you eat	**32.56**	29.10	29.61	33.32	34.42
The amount of foods or beverages you eat	**34.27**	29.34	28.97	34.54	39.35
How much physical activity you do	**33.17**	41.57	41.43	32.14	26.23

INFORMATION SOURCES

TABLE 1: FAMILIARITY WITH *MYPYRAMID*

Which of the following best describes your familiarity with the government's Food Pyramid, called "*MyPyramid*?"

			Health Satisfaction		Healthy Diet		Activity			Fat Type		Sugar Type	
										Concerned		Concerned	
	Total		Satisfied	Not Satisfied	Healthy	Not Healthy	Sedentary	Moderately	Active	Yes	No	Yes	No
Base	1000		544	297	540	219	307	547	146	660	142	524	222
I have never heard of it	**12%**		11%	16%	8%	17%	15%	12%	8%	12%	16%	10%	11%
I know very little about it	**38%**		34%	43%	37%	39%	40%	41%	23%	35%	42%	34%	47%
I know a fair amount about it	**42%**		45%	36%	45%	37%	39%	42%	47%	44%	38%	45%	37%
I know a lot about it	**8%**		10%	5%	11%	6%	5%	6%	22%	9%	4%	10%	5%
Mean	2.45		2.53	2.30	2.58	2.31	2.34	2.41	2.82	2.51	2.31	2.55	2.36

TABLE 2: USAGE OF *MYPYRAMID*

[IF HEARD OF *MYPYRAMID*] Have you used *MyPyramid* to customize an eating pattern for yourself?

			Fat Amount		Fat Type		Carb Amount		Carb Type		Sugar Amount		Sugar Type		Weight Concern	
			Concerned		Concerned		Concerned		Concerned		Concerned		Concerned		Concerned	
	Total		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Base: heard of:	876		578	131	584	120	460	193	417	208	557	151	469	198	580	193
Yes	**13%**		16%	7%	16%	10%	17%	7%	19%	8%	17%	5%	17%	6%	16%	6%
No	**87%**		84%	93%	84%	90%	83%	93%	81%	92%	83%	95%	83%	94%	84%	94%
Base: Everyone:	1000		658	153	660	142	515	219	464	236	623	175	524	222	657	225
Yes	**12%**		14%	6%	14%	8%	15%	7%	17%	7%	15%	4%	15%	6%	14%	5%
No	**88%**		86%	94%	86%	92%	85%	93%	83%	93%	85%	96%	85%	94%	86%	95%

TABLE 3: REASONS FOR NOT USING *MYPYRAMID*

[IF NOT CUSTOMIZED DIET] Why haven't you used *MyPyramid* to customize a diet for yourself? [open end]

	Total
Base	**760**
Don't personally need to, or following different diet plan	24%
Don't know enough about it	19%
Too difficult/restrictive/confusing/time consuming	14%
Don't care enough, or find it important enough	12%
Don't "believe" in its accuracy/Don't trust the government	10%
Never thought about it	4%
Good intentions, just haven't	1%
Too costly to follow it	1%
Other	3%
Don't know	12%
No answer	4%

TABLE 4: IMPACT OF VARIABLES ON PURCHASING DECISIONS

How much of an impact do the following have on your decision to buy foods and beverages?

CONVENIENCE

			Healthy Diet		**Activity**		
	Total		Healthy	Not Healthy	Sedentary	Moderately	Active
Base	1000		540	219	307	547	146
No impact at all	**7%**		8%	9%	8%	7%	8%
2	**8%**		11%	6%	6%	9%	9%
3	**36%**		37%	22%	31%	37%	44%
4	**30%**		28%	27%	31%	30%	25%
A great impact	**19%**		16%	35%	24%	17%	14%
Top 2	48%		44%	63%	55%	47%	40%
Bottom 2	16%		19%	15%	14%	16%	17%
Mean	3.44		3.32	3.74	3.57	3.41	3.29

TABLE 4: IMPACT OF VARIABLES ON PURCHASING DECISIONS cont'd

How much of an impact do the following have on your decision to buy foods and beverages?

HEALTHFULNESS

			Healthy Diet		Activity			Grocery Buyer			Gender		Age				Education		
	Total		Healthy	Not Healthy	Sedentary	Moderately	Active	Self	Other Member	Both	Male	Female	18-24	25-34	35-54	55+	HS or Less	Some College	College+
Base	1000		540	219	307	547	146	617	153	230	472	523	111	162	443	276	455	274	264
No impact at all	**4%**		1%	12%	7%	3%	2%	3%	6%	7%	6%	3%	7%	4%	4%	4%	6%	3%	2%
2	**7%**		4%	15%	9%	6%	9%	7%	8%	7%	9%	6%	15%	12%	5%	5%	8%	9%	4%
3	**30%**		21%	37%	35%	31%	19%	27%	36%	35%	36%	25%	33%	37%	33%	20%	31%	34%	25%
4	**32%**		37%	20%	34%	32%	29%	35%	33%	23%	29%	35%	29%	25%	33%	36%	29%	32%	38%
A great impact	**26%**		37%	16%	16%	28%	42%	28%	18%	28%	21%	32%	17%	22%	25%	35%	27%	22%	30%
Top 2	58%		75%	36%	49%	60%	71%	63%	50%	51%	50%	66%	46%	47%	58%	71%	55%	54%	68%
Bottom 2	11%		5%	27%	16%	9%	11%	10%	13%	14%	14%	9%	21%	16%	9%	9%	14%	12%	6%
Mean	3.69		4.06	3.13	3.42	3.76	4.00	3.78	3.49	3.58	3.50	3.86	3.35	3.49	3.71	3.93	3.62	3.61	3.89

TABLE 4: IMPACT OF VARIABLES ON PURCHASING DECISIONS cont'd

How much of an impact do the following have on your decision to buy foods and beverages?

PRICE

			Health status		Health Satisfaction		Gender		Age				Income			
	Total		Very Good Excellent	Fair Poor	Satisfied	Not Satisfied	Male	Female	18-24	25-34	35-54	55+	<35K	$35K=<50K	$50K-<100K	100K+
Base	1000		330	243	544	297	472	523	111	162	443	276	406	208	255	66
No impact at all	**6%**		8%	5%	8%	5%	8%	5%	5%	3%	9%	6%	5%	8%	8%	13%
2	**6%**		8%	5%	6%	4%	7%	4%	6%	1%	4%	10%	3%	6%	8%	8%
3	**24%**		29%	16%	26%	19%	26%	23%	15%	23%	26%	26%	20%	26%	29%	30%
4	**28%**		26%	28%	30%	27%	29%	28%	34%	34%	28%	24%	23%	30%	32%	27%
A great impact	**35%**		29%	46%	30%	46%	29%	40%	40%	39%	33%	34%	48%	29%	23%	21%
Top 2	64%		55%	74%	60%	73%	58%	68%	74%	73%	61%	58%	71%	60%	55%	49%
Bottom 2	12%		16%	10%	14%	8%	16%	9%	11%	4%	13%	16%	8%	14%	16%	21%
Mean	3.80		3.59	4.05	3.68	4.06	3.64	3.94	3.98	4.05	3.73	3.70	4.07	3.67	3.54	3.36

TABLE 4: IMPACT OF VARIABLES ON PURCHASING DECISIONS cont'd

How much of an impact do the following have on your decision to buy foods and beverages?

TASTE

			Gender	
	Total		Male	Female
Base	1000		472	523
No impact at all	**3%**		4%	2%
2	**2%**		3%	1%
3	**11%**		12%	10%
4	**31%**		31%	30%
A great impact	**54%**		50%	58%
Top 2	85%		81%	88%
Bottom 2	4%		7%	2%
Mean	4.31		4.19	4.43

TABLE 5: USAGE OF PACKAGING ELEMENTS

Now a few questions about the information on food and beverage packages and how you use it.

What information do you look for on the food or beverage package when deciding to purchase or eat a food or beverage? *Check all that apply*

	Total
Base	**1000**
Expiration date	65%
Nutrition Facts Panel	58%
Ingredients	57%
Size of product (e.g., net weight, fluid ounces)	48%
Statements about nutrition benefits (e.g., a good source of calcium, low in fat)	48%
Brand name	38%
Statements about health benefits (e.g., reduces risk of heart disease)	30%
Organic or Natural	19%
Allergen labeling	8%
Other	3%
None of the above	7%

TABLE 6: NUTRITION FACTS PANEL—USAGE

How often do you look at the Nutrition Facts Panel on packaged foods or beverages that you are purchasing for the first time?

	Total
Base	**1000**
Never	7%
Rarely	11%
Sometimes	22%
Most of the time	34%
Always	26%
Top 2	*60%*
Bottom 2	*18%*
Mean	*3.60*

How often do you look at the Nutrition Facts Panel on packaged foods or beverages that you purchase regularly?

	Total
Base	**1000**
Never	8%
Rarely	21%
Sometimes	38%
Most of the time	22%
Always	11%
Top 2	*33%*
Bottom 2	*29%*
Mean	*3.06*

TABLE 7: INGREDIENTS—USAGE

How often do you look at the ingredients list on packaged foods or beverages that you purchase for the first time?

	Total
Base	**1000**
Never	7%
Rarely	14%
Sometimes	26%
Most of the time	28%
Always	24%
Top 2	*52%*
Bottom 2	*22%*
Mean	*3.48*

How often do you look at the ingredients list on packaged foods or beverages that you purchase regularly?

	Total
Base	**1000**
Never	9%
Rarely	27%
Sometimes	39%
Most of the time	17%
Always	8%
Top 2	*25%*
Bottom 2	*37%*
Mean	*2.87*

Note: Top 2 and Bottom 2 may be +/- 1% due to rounding

TABLE 8: NUTRITION FACTS PANEL—%DV VS. AMOUNT PER SERVING

[IF USAGE GREATER THAN NEVER] When looking at information in the Nutrition Facts Panel, which of the following do you use?

			Health Status		Income			
	Total		Very Good Excellent	Fair Poor	<35K	$35K-<50K	$50K-<100K	100K+
Base	945		317	223	373	196	248	65
Amount per serving (e.g. Total Fat: 8g)	**37%**		38%	37%	35%	32%	38%	51%
%DV (Percent Daily Value, e.g.: Total Fat: 11%)	**6%**		7%	4%	6%	4%	8%	10%
Both	**42%**		46%	40%	43%	49%	42%	33%
Neither	**14%**		10%	18%	16%	16%	12%	6%

TABLE 9: NUTRITION FACTS PANEL--ELEMENTS USED

[IF USAGE GREATER THAN NEVER] Which of the following information, if any, do you use on the Nutrition Facts Panel? *Check all that apply*

	Total
Base	**945**
Calories	67%
Total Fat	62%
Serving size	55%
Sugars	52%
Number of servings per package	49%
Sodium	49%
Carbohydrates	49%
Saturated Fat	45%
Calories from fat	43%
Cholesterol	40%
Trans Fat	36%
Vitamins and minerals	32%
Fiber	31%
Protein	30%
Calcium	22%
Potassium	14%
Other	1%
None of the above	7%

TABLE 10 NUTRITION FACTS PANEL—EASE OF USE

[IF GREATER THAN NEVER IN USAGE] How easy or difficult is it for you to use the Nutrition Facts Panel on food and beverages?

			Health Status		Healthy Diet		BMI				Activity			Income			Education		
	Total		Very Good Excellent	Fair Poor	Healthy	Not Healthy	Under Weight	Ideal Weight	Over Weight	Obese Weight	Sedentary	Moderately	Active	$35K-<50K	$50K-<100K	100K+	HS or Less	Some College	College+
Base	945		317	223	520	200	11	255	275	292	287	521	138	196	248	65	418	265	256
Very difficult	**1%**		0.295%	4%	0.288%	4%		1%	0.167%	3%	3%	1%		1%	0.190%		2%	1%	0.185%
Somewhat difficult	**10%**		5%	18%	8%	13%	7%	7%	7%	14%	14%	8%	9%	15%	9%	4%	13%	9%	7%
Neither	**22%**		19%	26%	17%	25%	13%	21%	22%	19%	22%	24%	14%	23%	24%	15%	24%	20%	20%
Somewhat easy	**40%**		37%	33%	42%	40%	15%	41%	42%	38%	40%	42%	30%	36%	41%	38%	37%	43%	41%
Extremely easy	**27%**		39%	19%	34%	19%	65%	30%	29%	26%	20%	25%	47%	25%	26%	42%	24%	27%	31%
Top 2	66%		76%	52%	75%	58%	80%	71%	70%	64%	60%	67%	77%	60%	67%	81%	61%	70%	72%
Bottom 2	12%		6%	22%	8%	16%	7%	8%	8%	17%	18%	9%	9%	17%	9%	4%	15%	10%	7%
Mean	3.80		4.08	3.45	4.01	3.57	4.37	3.92	3.91	3.70	3.59	3.83	4.15	3.67	3.84	4.18	3.67	3.86	3.96

Note: Top 2 and Bottom 2 may be +/- 1% due to rounding

TABLE 11: PERCEPTIONS OF CONSISTENCY

Which of the following best describes how you feel about the food and health information you get from different sources?

			Income				Education		
	Total		<35K	$35K-<50K	$50K-<100K	100K+	HS or Less	Some College	College+
Base	1000		406	208	255	66	455	274	264
The information is consistent	**32%**		34%	31%	31%	38%	29%	36%	32%
The information is contradictory	**42%**		34%	49%	46%	51%	39%	27%	52%
I don't know	**27%**		32%	20%	23%	11%	32%	37%	16%

DEMOGRAPHICS

TABLE 1: PRIMARY HOUSEHOLD SHOPPER

Who in your household does the majority of the grocery shopping?

	Total
Base	**1000**
You	62%
Other household member	15%
Both	23%

TABLE 2: FAMILY MEDICAL HISTORY

Which of the following, if any, do you or your immediate family have in your medical history?

	Total
Base	**1000**
High blood pressure	54%
Arthritis	41%
High cholesterol	41%
Overweight/Obesity	39%
Diabetes	38%
Heart disease	31%
Cancer	29%
Asthma	19%
Stroke	18%
Osteoporosis	14%
Food allergy	13%
Alzheimer's	7%
None of the above	15%

TABLE 3: SMOKING

Do you smoke cigarettes, cigars or a pipe?

	U.S.	Total
Base	**Census**	**1000**
Yes	20.9%	28%
No	79.1%	70%

DEMOGRAPHICS

TABLE 4: MARITAL STATUS

What is your marital status?

	U.S. Census	Total 1000
Base		
Single	29%	25%
Married	53.4%	51%
Divorced	9.6%	14%
Widowed	6.1%	5%
Other	2%	4%

TABLE 5: CHILDREN UNDER 18 IN HOUSEHOLD

Do you have any children under the age of 18 who currently live at home with you?

	U.S. Census	Total 1000
Base		
Yes	32.2%	30%
No	67.8%	69%

[IF CHILD] How many are...

	Total 300
Base	
0 to 2 years old	23%
3 to 6 years old	38%
7 to 12 years old	47%
13 to 17 years old	40%
Prefer not to answer	1%

TABLE 6: AGE

Which of the following categories includes your age?

	U.S. Census	Total 1000
Base		
18-24	9.9%	11%
25-34	19.0%	16%
35-44	21.2%	23%
45-54	19.5%	22%
55-64	13.3%	14%
65-74	8.7%	12%
75+	8.4%	2%

TABLE 7: EDUCATION

What was the highest level of education you completed?

	U.S. Census	Total 1000
Base		
Less than high school	16.4%	10%
Graduated from high school	29.8%	36%
Some college/Tech./Vocational school	27.3%	27%
Graduated from college	16.9%	17%
Graduate/professional school	9.7%	9%

TABLE 8: ETHNICITY—RACE

Do you consider yourself of Hispanic/Latino/Spanish descent?

	U.S. Census	Total 1000
Base		
Yes	13.9%	12%
No	86.2%	87%
Prefer not to answer		1%

Which of the following best describes your race?

	U.S. Census	Total 1000
Base		
Caucasian	76.2%	80%
Black or African American	12.5%	9%
American Indian or Alaska Native	1.4%	2%
Asian or Pacific Islander	4.5%	3%
Other	5.1%	5%

TABLE 9: INCOME

Which of the following categories includes your total annual household income?

	U.S. Census	Total 1000
Base		
Less than $35,000	40.27%	41%
$35,000 to less than $50,000	15.76%	21%
$50,000 to less than $75,000	19.1%	16%
$75,000 to less than $100,000	10.87%	10%
$100,000 to less than $150,000	8.95%	5%
$150,000 and above	5.05%	2%

DEMOGRAPHICS

TABLE 10: GENDER

Are you...?

	U.S. Census	Total 1000
Base		
Male	47.5%	47%
Female	52.5%	52%

TABLE 11: REGION

Region *(Determined by zip code)*

	Total 1000
Base	
Northeast	19%
Midwest	25%
South	31%
West	25%

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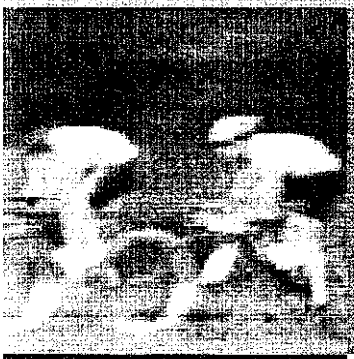

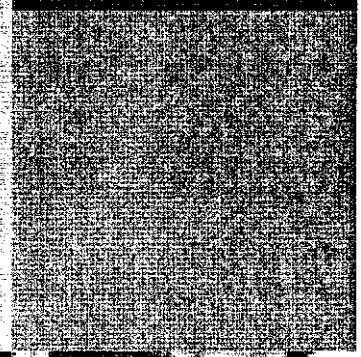

May 2006

Government perspective: food labeling[1–3]

Tomas Philipson

ABSTRACT

The Food and Drug Administration acknowledges the severity of the obesity epidemic. The Food and Drug Administration recognizes the importance of food labeling as a vehicle for dietary messages and, thus, enforces stringent guidelines to maintain the integrity of the food label. As food labels await another upgrade to make them more effective and easier to understand, the Food and Drug Administration considers what information will be most useful for consumers to make healthy choices. The causal relationship between food labels and subsequent diet choice is not well understood; more research in this area is needed. The Commissioner of the Food and Drug Administration has recently appointed an Obesity Working Group to develop proposals on pertinent topics of obesity, including the role of food labeling as a dietary guide. *Am J Clin Nutr* 2005; 82(suppl):262S–4S.

KEY WORDS Food labels, nutrition labels, Food and Drug Administration, dietary guide, Obesity Working Group, calories count, health claims, consumer advice

INTRODUCTION

The Food and Drug Administration (FDA) recognizes the obesity epidemic as an urgent public health issue, and we are committed to the search for solutions. The experience of the Food and Drug Administration regarding the utility of food labeling as a dietary guide is an important component of the blueprint for a healthier United States. The FDA's attempt to use the food label for dietary advocacy goes back to 1989. At that time, the food label had not been updated for almost 20 y, its format was anybody's choice, and labeled health claims were both exuberant and undocumented. The Surgeon General's Report on Nutrition and Health in 1988 instigated the label change. The FDA decided to develop a new food label that would be uniform, science based, and rigorously truthful. The updated food label would inaugurate a new era in food labeling by telling shoppers the main ingredients in every manufactured food item and how much of that food was good for their health. The Nutrition Facts Panel is now a familiar component of the food label.

After Congress endorsed this effort in the Nutrition Labeling and Education Act of 1990 (1), the FDA launched one of the most extensive undertakings in its history. The agency held nationwide hearings to gather facts and expert views, considered scores of scientific documents and studies, drafted nearly 900 pages of proposed regulations, analyzed 40 000 comments submitted by leaders in food science and industry, and, in 1993, produced a food label that was designed to help the public chose a low-fat, high-fiber daily diet of 2000 or 2500 calories. The climax of the effort was a coast-to-coast, multi-lingual educational campaign launched in March 1994 and delivered the FDA's message into virtually every American household. It was projected that the new label would save the nation up to $26 billion in health care costs over 20 y and prevent many of the 300 000 deaths per year that were then associated with diet. The results have not lived up to the early expectations entirely, but they have not been uniformly bleak either.

Surveys report 60–80% of food shoppers had read food labels before buying a new food item, and 30–40% said the label had influenced their choice. The surveys also revealed frequent misunderstanding of the meaning of the daily/value column that shows how each nutrient fits into a healthy diet (2–6). There was also considerable confusion caused by the frequently conflicting dietary advice by nutritionists, fad diet advocates, and studies reported by the media. This bewilderment has generated distrust of all dietary recommendations and a corresponding desire for nutrition information that is clear, authoritative, and easy to understand.

UPGRADING THE FOOD LABEL

The FDA decided to undertake an effort to make the food label a more effective vehicle for dietary messages. Our first step was a proposal, issued in December 2002, to relax the enforcement of a provision of the Nutrition Labeling and Education Act requiring that all health claims on food labels be supported by a "significant scientific agreement." This standard has been so difficult to achieve that the FDA has approved only 12 unqualified cause-and-effect health claims in the past 10 y, such as the linkage between calcium and osteoporosis, fat and cancer, and folic acid and neural tube defects. Two more health claims were added under a new law that allows such labeling based on an "authoritative statement" from the National Academy of Sciences or a scientific body of the federal government. The legislated restrictions have prevented manufacturers from labeling claims based on emerging, and therefore incomplete, scientific evidence, such as the well-documented findings that omega-3 fatty acids in certain kinds of fish can help reduce the risk of coronary heart disease (7).

[1] From The University of Chicago, Chicago, IL.

[2] Presented at the symposium "Science-Based Solutions to Obesity: What Are the Roles of Academia, Government, Industry, and Health Care?", held in Boston, MA, March 10–11, 2004 and Anaheim, CA, October 2, 2004.

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TABLE 1
The Obesity Working Group topics[1]

- An effective public health message about the need to balance food intake with expended energy
- A consumer education program with the same aim
- Better food labeling
- Research on consumer behavior in regards to food consumption
- Enhancement of the development of effective weight-loss and weight-control drugs and devices

[1]Source: Reference 9.

In our opinion, labeling statements of this type should be permissible because they can bring two important benefits: they can make consumers better informed and more health conscious when they shop for food, and they can motivate industry to develop more healthful products and use their potential health effects as a competitive factor, alongside price, taste, and the convenience of packaging. Thus, the FDA proposed to allow food firms to make, in addition to the unqualified health claims authorized by the law, certain qualified health claims that would be truthful, nonmisleading, and preapproved by the FDA on the basis of a new standard defined as "the weight of scientific evidence" (8).

The FDA took two additional steps to upgrade the food label: we issued a requirement for the listing of trans fatty acids on the nutrition facts panel, and we described the four categories of the health claims we intend to allow on food packages. The top category, A, is for unqualified claims supported by significant scientific agreement. The B category is for qualified claims that are supported by substantial but inconclusive evidence. The C category covers claims based on evidence that is limited and not conclusive. D, the lowest category, is for claims for which there is little scientific evidence.

THE OBESITY WORKING GROUP

The FDA reached the conclusion that the obesity epidemic is likely to require additional measures both by our agency alone and in concert with others, including the government, academia, industry, health care providers, and consumers. Commissioner McClellan appointed an Obesity Working Group in August 2004 and charged it with the development of a comprehensive blueprint of the steps that could and should be taken to confront this public health issue. See the FDA's website at http://www.cfsan.fda.gov/~dms/owg-rpt.html for more information about the Obesity Working Group and their "Counting Calories" report (9). This project was subsequently endorsed and given department-wide scope by Secretary Thompson. The Obesity Working Group has been asked to develop proposals for 5 pertinent topics. (**Table 1**).

The Obesity Working Group found little evidence that indicates the effects the food label may have on obesity (10). There seems to be a need for well-controlled studies that examine the effects of food labeling on diets. Current labeling, on the product level, does not facilitate learning about diets, which come from a combination of products. Therefore, the Obesity Working Group considered restaurant labeling as a partial remedy to this problem by labeling entire meals rather than single products. We also considered better labeling of diets and weight-loss products. Consumers spend billions of dollars per year on these products, although many studies show that diets fail for 95% of those who try. If diets are "treatments" for weight reduction, then the "intent-to-treat effects" of these treatments are very poor, partly attributable to the difficulties with compliance or adherence to the treatment prescribed. The following question arises: if consumers were better informed of the intent-to-treat effects of these products, would the demand remain as high?

The Obesity Working Group, in conjunction with advice from its stakeholders, questioned how the current Nutrition Facts Panel on packaged food could better persuade or influence consumers to maintain their energy balance. The suggestions confirmed that food labeling should be an effective vehicle for raising the public's consciousness of the importance of calories when making dietary decisions. For example, the FDA was urged to encourage manufacturers to indicate the total caloric content on the food label of an entire food package if it is likely to be consumed in one sitting. The FDA was also asked to urge food firms to print the caloric count in bold digits on the face of each food package, to encourage labeling statements suggesting alternative food choices with fewer calories, and to develop labeling statement that would inform the consumer how much exercise would be necessary to burn the calories in the food package. A label was also proposed that would list the health consequences of eating too much, something similar to the Surgeon General's warning on packs of cigarettes. These ideas require substantial research on consumer responses to labeling.

CONCLUSION

The FDA invites any and all present behavioral scientists who are interested in these issues to assist us. We need better-controlled studies of the effects of labeling on the demand for different foods. There are many studies on this topic, but most of them focus on correlations of labeling use and diet choice. Such correlations may be spurious when unobserved factors drive both the demand for label information and diets. This would be the case when health-conscious people, who already have healthy diets without the label, are observed to have healthy diets when using the label. We also need better-controlled experimental designs to assess predemand and postdemand behavior surrounding a change in labeling, randomly assigned to different parts of the consumer population. Such studies would be extremely helpful; the FDA hopes to work with manufacturers to conduct them in the future.

The use of food labeling for dietary advocacy is an endeavor the FDA intends to advance very intensively, imaginatively, and as efficiently as possible, but also with great care. Without solid scientific conclusions bearing on the issues of food labeling and the obesity epidemic, the proposals would not be in the interest of public health or in the tradition of a science-based agency such as the FDA.

TP is the senior economic advisor to the Commissioner of the Food and Drug Administration. There are no conflicts of interest.

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Patient Understanding of Food Labels

The Role of Literacy and Numeracy

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Background: Comprehension of food labels can be important for patients, including those with chronic illness, to help follow dietary recommendations. Patient comprehension of food labels was examined, along with the relationship of comprehension to their underlying literacy and numeracy skills.

Methods: From June 2004 to April 2005, a cross-sectional study of 200 primary care patients was performed. A 24-item measure of food label comprehension was administered. Literacy was measured with the Rapid Estimate of Adult Literacy in Medicine (REALM), and numeracy with the Wide Range Achievement Test, third edition (WRAT-3).

Results: Most patients (89%) reported using food labels. While 75% of patients reported at least a high school education and 77% had 9th-grade literacy skills, only 37% had 9th-grade math skills. On average, patients answered 69% (standard deviation, 21%) of the food-label questions correctly. Common reasons for incorrect responses included misapplication of the serving size, confusion due to extraneous material on the food label, and incorrect calculations. For example, only 37% of patients could calculate the number of carbohydrates consumed from a 20-ounce bottle of soda that contained 2.5 servings. Higher comprehension of food labels was significantly correlated (all p values were less than 0.001) with higher income (rho=0.39), education (rho=0.49), literacy (rho=0.52), and numeracy (rho=0.67).

Conclusions: Patients demonstrated deficits in understanding nutrition labels. Poor label comprehension was highly correlated with low-level literacy and numeracy skills, but even patients with higher literacy could have difficulties interpreting labels. Providers need to consider patients' literacy and numeracy when providing dietary recommendations. Opportunities may exist for the U.S. Food and Drug Administration to promote changes to make food labels more comprehensible.

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Introduction

Nutrition labeling is mandatory for most packaged food in the United States, and is regulated by the Food and Drug Administration (FDA) and the U.S. Department of Agriculture. In 1993, the nutrition label format was revised to improve consumer use. The majority of the nutritional information is condensed into a nutrition facts panel located on the product. The nutrition facts panel typically consists of the following components: (1) serving size information, (2) calorie information, (3) percent daily value (based on a 2000-calorie diet), (4) nutrient information, and (5) a footnote of recommended daily values for standard 2000- and 2500-calorie diets.

Understanding nutrition labels may be important for patients to follow dietary recommendations. This is particularly true for patients with chronic illnesses such as hypertension, heart failure, diabetes, and obesity. Healthcare providers often recommend specific dietary guidelines such as those developed by the National Cholesterol Education Program,[1] or the American Heart Association,[2] expecting that patients can read and interpret nutrition labels well enough to follow these recommendations. Commercial diet plans, particularly those advocating low-carbohydrate diets, also often require patients to read and understand nutrition labels.[3,4] Label information pertaining to newer "low-carb" products are not well regulated by the U.S. Food and Drug Administration (FDA) and may be more challenging to understand. To date, limited research

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has been performed to examine patient comprehension of nutrition labels, and no published research has examined patient understanding of new low-carb food labels.[5–14] Comprehension of current food labels may be difficult for many patients, particularly those with low literacy and numeracy skills, but this has not been examined. This is critical because as many as 90 million Americans have inadequate literacy and numeracy skills to function in today's healthcare environment.[15–17] Numeracy, the ability to use and understand numbers in daily life, may play a particularly important role in patients' ability to read and interpret nutritional information.

This study examines patients' ability to read and understand nutrition information from food labels. It hypothesized that patients would find food labels difficult to understand, and that poorer patient comprehension of food labels would be significantly associated with worse underlying literacy and numeracy skills. The results of this study may help shape provider practice and inform recent FDA discussions on altering food labels to improve their use.[18]

Methods

A cross-sectional study was performed to examine patient understanding of nutrition labels and the relationship between patient characteristics and their nutrition label comprehension. The Institutional Review Board at Vanderbilt University (Nashville TN) approved exemption of study review since no specific patient identifiers were collected. All subjects did provide oral consent to participate after the risks and benefits of the study were explained.

Patients and Study Setting

A convenience sample of patients was recruited from an academic primary care clinic where faculty and residents care for a socioeconomically diverse range of patients. From June 2004 to April 2005, physicians referred patients aged 18 to 80 years for possible participation. Patients were excluded if they had poor vision (>20/50 on Rosenbaum pocket screener), had significant dementia or psychiatric illness, or were non-English speaking.

Measures

All interested patients were administered (1) a questionnaire to assess demographics and behaviors related to nutrition label usage, (2) a validated health-literacy measure (Rapid Estimate of Adult Literacy in Medicine [REALM]),[19,20] (3) a validated measure of mathematics skills (Wide Range Achievement Test, third edition [WRAT-3]),[21] and (4) a Nutrition Label Survey (NLS). The NLS was designed with input from registered dietitians, primary care providers, and experts in health literacy/numeracy to evaluate patient understanding of current nutrition labels. Questions were developed based on food label educational materials offered by the Center for Food Safety and Applied Nutrition of the FDA.[22] The NLS consisted of 24 questions. All questions involved patients examining actual food labels that had been collected from a local grocery store. The first 12 items of the survey were open-ended and asked subjects to interpret the food labels, such as determining carbohydrate or caloric content of an amount of food consumed. The second 12 items asked patients to choose which of two foods had more or less of a certain nutrient, giving patients a 50/50 chance to guess the correct food item. Half of the survey questions involved products that were clearly labeled on their package as "reduced carb," "low carb," or designed for "a low-carb diet." These items all used the term "net carbs" to define the carbohydrates thought to have less impact on blood glucose; the amount of net carbs was clearly calculated somewhere on the label as total carbohydrates minus dietary fiber and sugar alcohols (if present).

Data were collected by trained research assistants in the clinic rooms. Patients typically completed the materials right before or after a clinic visit. There was no time limit for completion of the NLS. Survey questions were read to the subject by the research assistant. Subjects were provided paper and pencil to perform calculations as needed. To accommodate subjects who may have answered the latter questions of the test incorrectly due to fatigue with the material, the order of the questions on the NLS was altered with every other patient.

Analyses

Statistical analyses were performed using Stata, version 8.0 (College Park TX, 2003), and R 2.1.0 (www.r-project.org). Descriptive statistics of all variables, including the individual items of the NLS, were performed. Literacy, measured with the REALM, was examined as both a continuous variable (raw score) and a categorical variable (grade level). Numeracy, as measured with the WRAT-3, was also examined as both a continuous variable (standard score) and a categorical variable (grade-level equivalent). Patient characteristics were stratified by literacy and numeracy status using t-tests or Wilcoxon rank-sum tests for continuous variables, and Fisher's exact test or chi square tests for categorical variables. For these analyses, a stratification of WRAT-3 and REALM scores at the 9th-grade level was chosen a priori.

Total NLS performance was calculated as percent of questions answered correctly (score 0% to 100%). The Kuder–Richardson coefficient of reliability (KR-20), a variant of the Cronbach's coefficient alpha designed for dichotomous items,[23] was calculated to measure internal reliability of the NLS questions, and was high (KR-20=0.87). Incorrect responses to the first 12 questions of the NLS were coded by two reviewers into three possible categories: (1) did not apply serving size/servings per container appropriately, (2) confused by extraneous or complex information, and (3) calculation or other errors. Agreement on the coding of responses by the two reviewers was high (κ for all items was 0.89). The mean number of errors identified by the reviewers in each category is reported.

The relationship between nutrition label scores and patient characteristics was analyzed using Wilcoxon rank-sum tests or Kruskal–Wallis tests. Correlations between performance on NLS and continuous outcomes, including literacy (REALM raw score) and numeracy (standardized WRAT-3 score) were performed using Spearman's rank correlation coefficients

(rho). Multiple linear regression was used to identify factors that were independently associated with improved performance on the NLS. Literacy skills (REALM raw score) and numeracy skills (standardized WRAT-3 score) were included in the multivariable analysis along with covariates that were chosen a priori, including age, gender, race/ethnicity, income, insurance status, presence of a chronic illness, education level, diet status, and label-reading frequency. All continuous variables on the outcome variable in the model were assessed for nonlinearity effect. Raw scores on the REALM and age were included in the model using restricted cubic splines to allow nonlinear association with the NLS score.[24] Residuals analyses of the linear regression were performed graphically to assess normality. Because data on body mass index (BMI) were missing for the first 48 (24%) consecutive patients enrolled, BMI was not included in the main multivariable model. In a sensitivity analysis including BMI in the multivariable model, BMI was not found to have significant impact on the primary findings.

Results

From July 2004 to May 2005, 234 patients were referred, and 200 (85%) of them completed the study. Five patients were not eligible (failed vision screen), 14 patients refused, and 15 patients started but did not finish the survey. Baseline characteristics are presented in Table 1. Sixty-eight percent of patients had at least some college education, and 77% had a minimum of 9th-grade level literacy skills. However, numeracy skills for 63% of patients were less than 9th-grade level. Over 40% had a chronic illness where specific dietary intervention is important (e.g., hypertension, diabetes), and 23% reported being on a specific diet plan. Most patients reported using food labels and found labels easy to understand. Patient characteristics, stratified by literacy and numeracy status, can be seen in Table 2. Patients with lower literacy on the REALM were more likely to be African American, have less education and lower income, lack private insurance, and have worse numeracy skills. Patients with lower numeracy performance on the WRAT-3 were more likely to be older and African American, have lower education and lower income, lack private insurance, report worse math skills, and have worse literacy skills than those with higher numeracy performance.

Overall, patients correctly answered 69% (standard deviation, 21%) of the NLS questions. Figure 1 represents patient response to selected NLS questions. For example, only 32% of patients could correctly calculate the amount of carbohydrates in a 20-oz bottle of soda that had 2.5 servings in the bottle. Only 60% of patients could calculate the number of carbohydrates consumed if they ate half a bagel, when the serving size was a whole bagel. Patients also had significant difficulties determining the net carbohydrates of a product. Only 22% of patients could determine the amount of net carbohydrates in two slices of low-carb bread, and only 23% could determine the amount of net carbohydrates in a serving of low-carb spaghetti. There were 970 errors identified on the subjects' responses to the first 12 items of the NLS. Common errors included (1) did not attempt to apply serving size/servings per container information or used it inappropriately (n=325), (2) confused by extraneous or complex information (n=369), and (3) calculation and other errors (n=276). Many patients were confused by the complexity of the nutrition label and could not find the proper information on the label, or incorrectly used the information in the percent daily value column or the 2000-calorie recommended daily allowance (RDA) footnote when this information was not relevant. Patients were also more likely to make errors if interpreting the label involved understanding fractions or decimals.

Table 1. Patient characteristics and behaviors (n=200)

Patient characteristic	n (%)
Mean age (SD), years	43.0 (14.6)
Female	143 (72)
Race/ethnicity	
White	133 (67)
Black	50 (25)
Other	16 (8)
Education	
≤High school	65 (33)
Some college	68 (34)
College or more	67 (34)
Annual family income	
<$20,000	50 (25)
$20,000–39,999	48 (24)
$40,000–59,999	44 (22)
≥$60,000	56 (28)
Private insurance	145 (73)
Chronic disease[a]	82 (41)
Mean BMI (SD)[b]	29.8 (7.1)
Literacy status (REALM)	
≤3rd grade	4 (2)
4th–6th grade	12 (6)
7th–8th grade	30 (15)
≥High school	154 (77)
Numeracy skills (WRAT-3)	
≤3rd grade	21 (11)
4th–6th grade	71 (35)
7th–8th grade	34 (17)
≥High school	74 (37)
On specific diet plan[c]	46 (23)
Reads food labels	177 (89)
Frequency of food label usage	
Daily	43 (22)
Few times per week	70 (35)
Few times per month	42 (21)
Rarely or never	45 (23)

[a]Chronic disease requiring dietary restriction. Includes hypertension, coronary artery disease, high cholesterol, diabetes, and heart failure.
[b]BMI calculated by kg/m^2 (n=152 for this variable).
[c]Includes calorie-restricted diets, low-carbohydrate diets, vegetarian diets, Weight Watchers, and others.
BMI, body mass index; REALM, Rapid Estimate of Adult Literacy in Medicine; SD, standard deviation; WRAT-3, Wide Range Achievement Test, third edition.

Table 2. Characteristics by literacy and numeracy status

Variable	Literacy level (REALM)			Numeracy level (WRAT-3)		
	<HS[b] (n=46)	≥HS (n=154)	p value[c]	<HS (n=126)	≥HS (n=74)	p value[c]
Mean age (SD), years	44 (17)	43 (14)	0.77	45 (15)	40 (13)	**0.02***
Age ≥65 years (%)	13	7	0.21	11	4	0.08
Female (%)	78	69	0.25	76	64	0.06
Race/ethnicity (%)			**<0.0001*****			**<0.0001*****
White	36	76		58	81	
Black	58	16		35	8	
Other	7	8		6	11	
≤ High school education (%)	65	23	**<0.0001*****	45	11	**<0.0001*****
Income <$40,000 (%)	80	41	**<0.0001*****	59	32	**<0.0001*****
Private insurance	53	79	**0.001****	65	86	**0.001****
Chronic illness[a] (%)	52	38	0.08	44	35	0.20
Obese (BMI ≥30) (%)	53	43	0.31	48	40	0.30
Reads food labels (%)	87	89	0.71	86	93	0.11
Mean WRAT-3 score (SD)	77 (14)	92 (15)	**<0.0001*****	—	—	—
<9th grade math on WRAT-3 (%)	91	55	**<0.0001*****	—	—	—
Mean REALM score (SD)	—	—	—	58 (13)	65 (2)	**<0.0001*****
<9th grade literacy on REALM (%)	—	—	—	67	95	**<0.0001*****

[a]Chronic disease requiring dietary restriction. Includes hypertension, coronary artery disease, high cholesterol, diabetes, and heart failure.
[b]HS=high school level (9th grade or above) on the REALM or WRAT-3.
[c]p values were obtained using Pearson chi-squared test (or Fishers Exact) or Wilcoxon rank sum tests.
*$p<0.05$;
**$p<0.01$;
***$p<0.0001$ (all bolded).
BMI, body mass index; SD, standard deviation; REALM, Rapid Estimate of Adult Literacy in Medicine; WRAT-3, Wide Range Achievement Test, third edition.

T3 Scores on the NLS (Table 3) were lower for patients who were older, female, African American, obese, lacked private insurance, or had lower educational levels or chronic illness. Patients with less than 9th-grade literacy skills performed worse on the NLS than patients with higher literacy skills (51% vs 75% correct responses, $p<0.0001$). Similarly, patients with less than 9th-grade numeracy skills performed worse than those with higher numeracy skills (61% vs 84%, $p<0.0001$). Higher performance on the NLS was significantly correlated ($p<0.001$ for all comparisons) with higher income ($rho=0.39$), higher education ($rho=0.49$), higher literacy skills ($rho=0.52$), and higher numeracy skills ($rho=0.67$). In multivariate regression analysis, lower literacy and numeracy skills remained significantly ($p<0.001$) associated with poorer performance on the NLS, even after adjusting for age, gender, race/ethnicity, income, education, and other factors. Of note, there was a nonlinear relationship between literacy and performance on the nutrition label survey, but a strong linear relationship for numeracy skill and
F2 NLS performance (Figure 2).

Discussion and Conclusion

This study is one of the first attempts to systematically characterize how patients comprehend nutrition labels and the relationship between patient comprehension and underlying literacy and numeracy skills. The study demonstrates that patients can have many difficulties interpreting current food labels, and their performance is highly correlated with their underlying literacy and numeracy skills. Even patients with higher levels of education can struggle to interpret current food labels. Of particular concern are situations that involve interpretation and application of the serving size. This error can lead to both over-estimation and under-estimation of the amount of nutrients consumed. Patients also struggled with understanding the percent daily value information. Some patients inappropriately read the percent daily value information instead of the actual amount of a nutrient, perhaps because the percent daily value is the final column of information on the Nutrition Facts Panel. The footnote of daily values also appears to be a source of confusion. Some patients thought that the footnote of daily values was providing the nutrient information for the product they were consuming rather than providing recommended values for an entire day. This led to a gross over-estimation of the amount of nutrients consumed. Finally, newer low-carb products were particularly difficult for patients to understand—particularly when the net carbs information was located outside of the nutrition facts panel.

A 1996 survey found that food-label use increased after the FDA revised the food label in 1994; however, 70% of subjects still wanted labels to be easier to understand.[25] A recent systematic review noted few

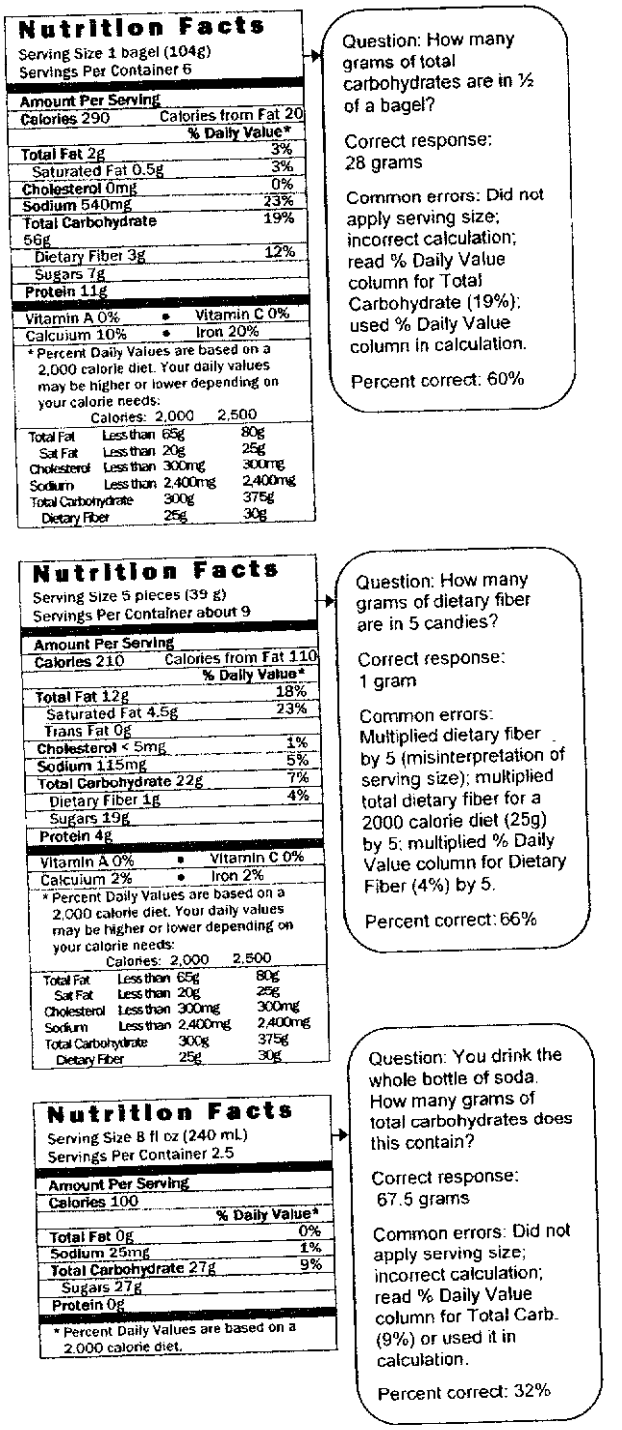

Figure 1. Selected Nutrition Label Survey (NLS) questions.[22]

high-quality studies about the comprehension of nutrition labels.[5] Many previous studies have relied on patient self-report of comprehension without actually testing comprehension, used small focus groups of volunteers, or examined the subjects' understanding of theoretical label formats.[5–14,26–31] In a study conducted at a shopping mall, 78% of subjects could compare two products, but only 20% could correctly calculate the contribution of a product to a daily diet, a task that required complex math.[10]

To the knowledge of the authors, this study is the first to demonstrate that patient understanding of current

Table 3. Patient characteristics and Nutrition Label Survey performance

Variable (n=200)	Mean nutrition score (SD)[a]	p value[b]
Age (years)		**0.04***
<65	70 (21)	
≥65	59 (19)	
Gender		**0.03***
Female	67 (21)	
Male	74 (20)	
Race/ethnicity		**<0.0001*****
White	74 (19)	
Black	57 (18)	
Other	77 (18)	
Education		**<0.0001*****
≤High school	55 (18)	
>High school	76 (19)	
Annual family income		**<0.0001*****
<$40,000	63 (21)	
≥$40,000	76 (18)	
Private insurance		**<0.0001*****
Yes	73 (20)	
No	59 (19)	
Chronic illness[c]		**0.03***
Yes	65 (20)	
No	72 (20)	
Body mass index[d]		**0.04***
<30	73 (21)	
≥30	66 (20)	
Literacy status (REALM)		**<0.0001*****
<High school	51 (16)	
≥High school	75 (19)	
Numeracy skills (WRAT-3)		**<0.0001*****
<High school	61 (19)	
≥High school	84 (13)	
On specific diet plan[e]		0.07
Yes	74 (19)	
No	68 (21)	
Reads food labels		**0.003****
Yes	71 (20)	
No	56 (21)	
Frequency of food label usage		**0.002****
Few times per month to daily	72 (20)	
Rarely or never	60 (22)	

[a]Percent correct on Nutrition Label Survey.
[b]p values were obtained using Wilcoxon rank sum tests or Kruskal-Wallis tests.
[c]Includes hypertension, coronary artery disease, high cholesterol, diabetes, and heart failure.
[d]Body mass index calculated by kg/m^2 (n=151 for this variable).
[e]Includes calorie-restricted diets, low-carbohydrate diets, vegetarian diets, Weight Watchers, and others.
*p<0.05;
**p<0.01;
***p<0.0001 (all bolded).
SD, standard deviation; REALM, Rapid Estimate of Adult Literacy in Medicine; WRAT-3, Wide Range Achievement Test, third edition.

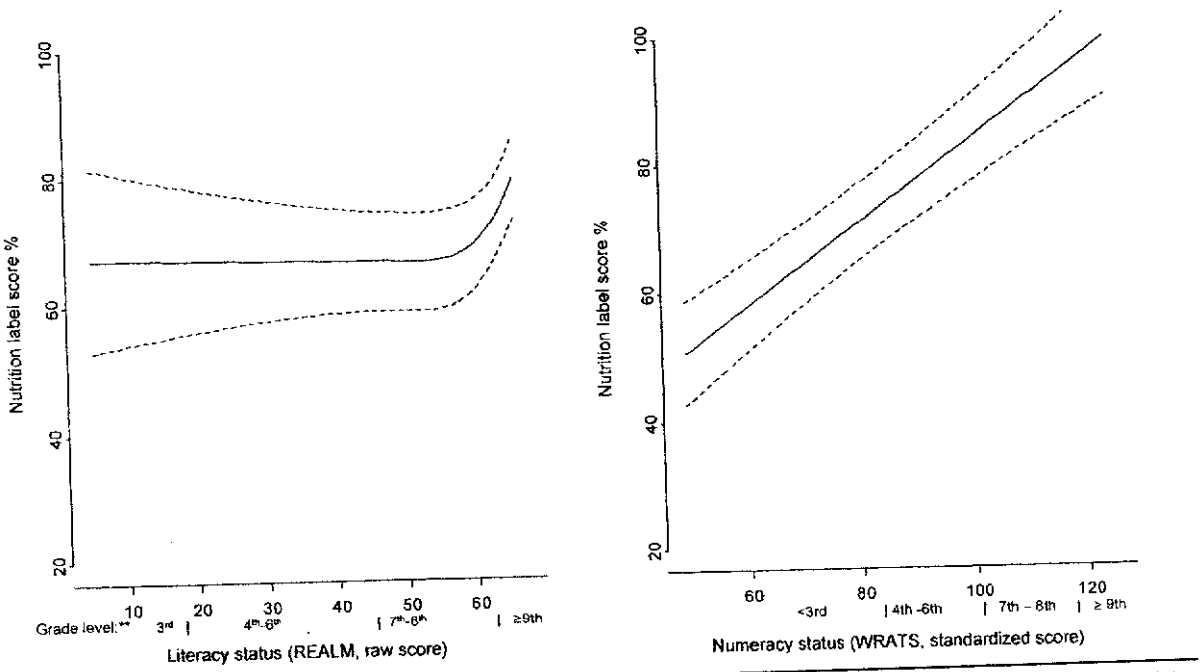

Figure 2. Predicted nutrition label score by literacy or numeracy status. Models were adjusted for age, gender, race/ethnicity, income, insurance status, presence of chronic disease, education level, literacy or numeracy, status of being on a specific diet, and label reading frequency. Dashed lines represent 95% confidence intervals. **Grade levels are approximations based on the REALM and WRAT-3 scores. REALM, Rapid Estimate of Adult Literacy in Medicine; WRAT-3, Wide Range Achievement Test, edition 3.

nutrition labels is highly correlated to their underlying literacy and numeracy skills. In multivariable analyses lower literacy status and numeracy status remained significantly associated with poorer understanding of nutrition labels even after adjusting for income, education, and other factors. Previous studies have demonstrated that patients with poor literacy skills have worse knowledge of their chronic illness and can have worse clinical outcomes.[15,17,32] Numeracy, the ability to read and interpret numbers in daily life, is an important component of overall literacy that has not been well studied.[33,34] Numeracy consists of a host of skills that includes basic computation, but also the ability to understand measurement, estimation, and logic, to perform multistep operations, and to infer what mathematical concepts need to be applied when interpreting a situation and then problem solve.[33,34] In this study, a strong linear relationship was found between a patient's numeracy level and his or her ability to read and interpret nutritional information. Paying special attention to a patient's numeracy ability may be particularly important, since many patients may have adequate literacy skills but still have inadequate numeracy skills. Notably, the sample group was generally well educated and 77% had adequate literacy skills, and yet 63% had less than 9th-grade numeracy skills.

This study demonstrates that even patients with higher education can have difficulty understanding nutrition labels and has important implications for how to educate patients about nutrition. Opportunities to improve patient nutrition knowledge and subsequent behavior include (1) improving patients underlying literacy and numeracy skills through the education system or adult literacy programs, and (2) providing accommodations, such as improved communication and education techniques, to help patients with poorer skills. Healthcare providers need to consider difficulties that patients may have in interpreting nutrition labels when they provide dietary recommendations—particularly for patients with chronic illness or obesity, for whom reading and processing information on labels may be particularly important. Providers need to be careful, for example, about asking a patient with heart failure or hypertension to limit their sodium intake to 2 g if the patient cannot accurately interpret food labels. Speaking clearly and concisely, avoiding jargon, setting realistic goals, and using low-literacy—oriented materials can aid patient comprehension.[32,35–42] Asking patients to "teach back" information to confirm understanding may also improve patient understanding.[40,43] Finally, the use of clinical educators, such as registered dieticians, who have resources and training to educate patients with low literacy or numeracy skills, may be beneficial.

Opportunities may also exist to improve comprehension of nutrition labels by improving their design. The FDA is in the process of considering changes to food labels aimed at improving comprehension. Any im-

provements should consider population literacy and numeracy deficits. Based on this study, five possible changes to the nutrition label to improve patient comprehension are suggested. First, better highlighting of the serving size and servings per container is recommended, perhaps even with written explanation when needed. Second, present nutrient information for the entire container for smaller items (e.g., 20-oz bottle of soda). Third, consider presenting minimum nutrient information for several possible servings of a product. For example, on the side of an ice cream pint, the label could state the following: "If you eat up to a line on the container (one fourth of total), you have consumed this many calories, carbohydrates, fat, and other nutrients," and "If you eat to this line (one half of the container), you have consumed this much," and so on. Fourth, remove extraneous information that few people appear to understand and is a constant source of confusion or misinterpretation (e.g., percent daily value and the footnote of daily values). Finally, indicate more clearly the net carbohydrates of a product and how it is defined, if this is considered an important factor for patients to know. This information should be placed in the carbohydrate section of the nutrition facts panel rather than in other locations on the food label. Making any of these suggested changes would obviously need to be formally tested before implementation.

There are several limitations to this study. As with all cross-sectional studies, the results can demonstrate associations but not causation. Patient performance on the NLS may have been inflated by the survey design (with 12 of the questions designed as dichotomous, giving patients a 50/50 chance on those questions with guessing alone), and the administration to a fairly well-educated population. Greater deficits in nutrition label comprehension may be apparent if this survey was given to a broader population. The study's measure of numeracy, the WRAT-3, is primarily a measure of calculation skills, although it has been shown to correlate with other numeracy skills.[21] The study's measure of literacy, the REALM, provides a gross estimate of literacy level and may be hampered by ceiling effects, with the highest level of literacy defined as 9th grade or above. This study was not able to examine independent relationships between patient understanding of nutrition labels and specific patient illness. Finally, at this point, the authors of this study do not know if patient misunderstanding of nutrition labels actually translates into poorer dietary habits or worse clinical outcomes.

This study is one of the first to rigorously demonstrate that patient understanding of current nutrition labels can be challenging and is highly correlated to patients' literacy and numeracy skills. The results of this study suggest that there may be important opportunities for healthcare providers and the FDA to improve nutrition education and nutrition labels to improve patient understanding of nutrition information. Future studies should examine the optimal design of food labels and the role of improved patient–provider communication to enhance patient comprehension and behavior.

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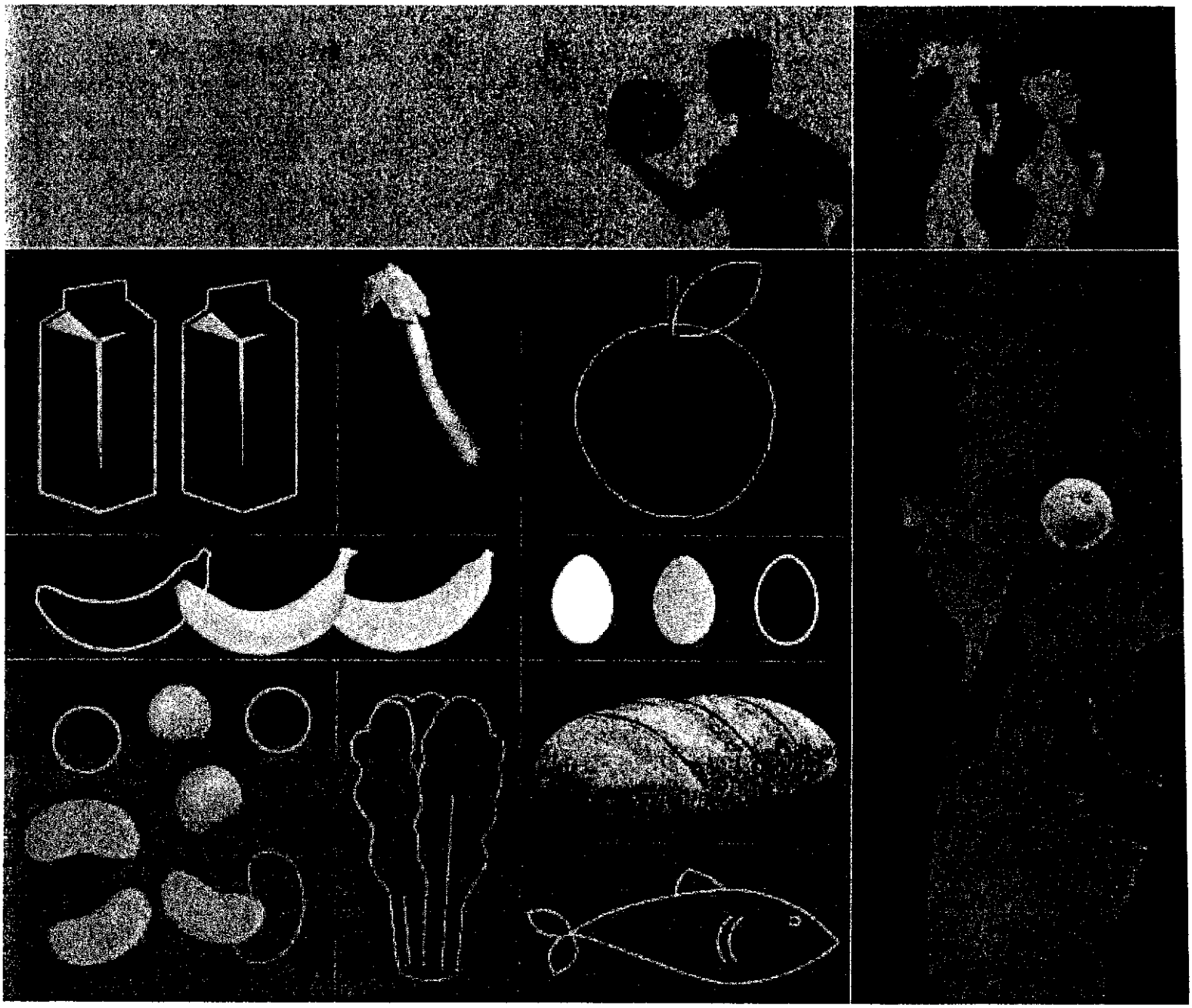

Dietary Guidelines for Americans 2005

U.S. Department of Health and Human Services
U.S. Department of Agriculture
www.healthierus.gov/dietaryguidelines

MESSAGE FROM THE SECRETARIES

We are pleased to present the 2005 *Dietary Guidelines for Americans*. This document is intended to be a primary source of dietary health information for policymakers, nutrition educators, and health providers. Based on the latest scientific evidence, the 2005 *Dietary Guidelines* provides information and advice for choosing a nutritious diet, maintaining a healthy weight, achieving adequate exercise, and "keeping foods safe" to avoid foodborne illness.

This document is based on the recommendations put forward by the Dietary Guidelines Advisory Committee. The Committee was composed of scientific experts who were responsible for reviewing and analyzing the most current dietary and nutritional information and incorporating this into a scientific evidence-based report. We want to thank them and the other public and private professionals who assisted in developing this document for their hard work and dedication.

The more we learn about nutrition and exercise, the more we recognize their importance in everyday life. Children need a healthy diet for normal growth and development, and Americans of all ages may reduce their risk of chronic disease by adopting a nutritious diet and engaging in regular physical activity.

However, putting this knowledge into practice is difficult. More than 90 million Americans are affected by chronic diseases and conditions that compromise their quality of life and well-being. Overweight and obesity, which are risk factors for diabetes and other chronic diseases, are more common than ever before. To correct this problem, many Americans must make significant changes in their eating habits and lifestyles.

We live in a time of widespread availability of food options and choices. More so than ever, consumers need good advice to make informed decisions about their diets. The 2005 *Dietary Guidelines* will help Americans choose a nutritious diet within their energy requirements. We believe that following the recommendations in the *Dietary Guidelines* will assist many Americans in living longer, healthier, and more active lives.

Tommy G. Thompson
Secretary of Health and Human Services

Ann M. Veneman
Secretary of Agriculture

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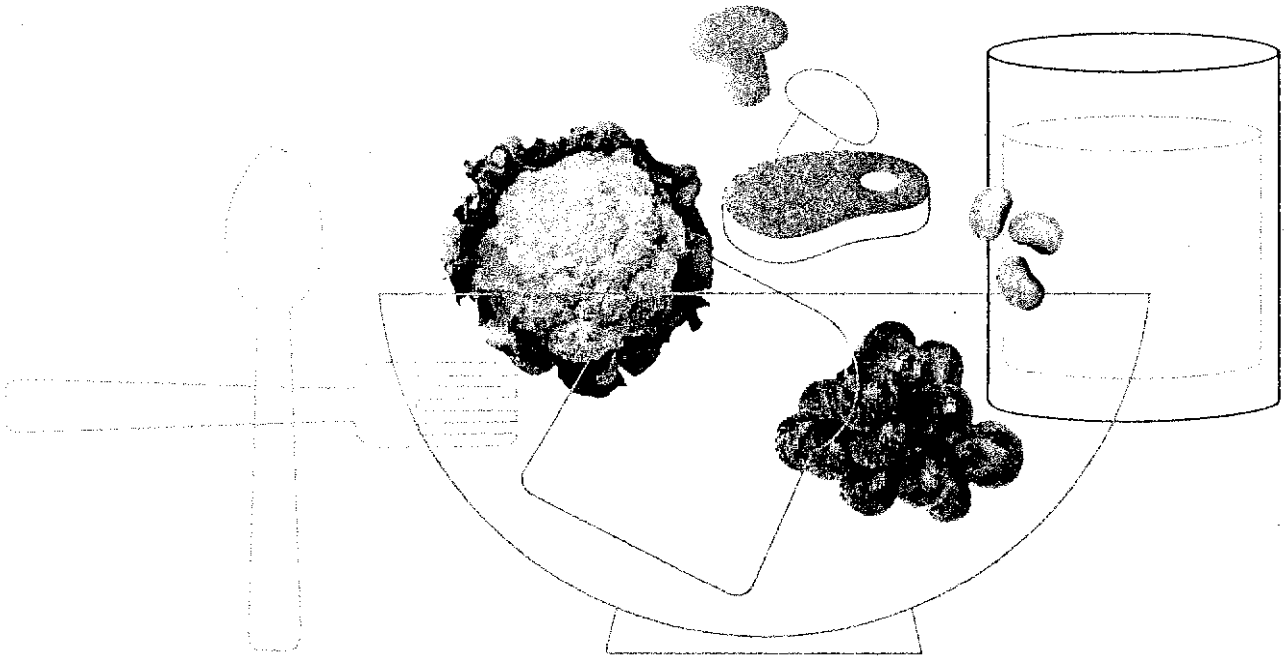


Executive Summary

The *Dietary Guidelines for Americans [Dietary Guidelines]* provides science-based advice to promote health and to reduce risk for major chronic diseases through diet and physical activity. Major causes of morbidity and mortality in the United States are related to poor diet and a sedentary lifestyle. Some specific diseases linked to poor diet and physical inactivity include cardiovascular disease, type 2 diabetes, hypertension, osteoporosis, and certain cancers. Furthermore, poor diet and physical inactivity, resulting in an energy imbalance (more calories consumed than expended), are the most important factors contributing to the increase in overweight and obesity in this country. Combined with physical activity, following a diet that does not provide excess calories according to the recommendations in this document should enhance the health of most individuals.

An important component of each 5-year revision of the *Dietary Guidelines* is the analysis of new scientific information by the Dietary Guidelines Advisory Committee (DGAC) appointed by the Secretaries of the U.S. Department of Health and Human Services (HHS) and the U.S. Department of Agriculture (USDA). This analysis, published in the DGAC Report (http://www.health.gov/dietaryguidelines/dga2005/report/), is the primary resource for development of the report on the Guidelines by the Departments. The *Dietary Guidelines* and the report of the DGAC differ in scope and purpose compared to reports for previous versions of the *Guidelines*. The 2005 DGAC report is a detailed scientific analysis. The scientific report was used to develop the *Dietary Guidelines* jointly between the two Departments and forms the basis of recommendations that will be used by USDA and HHS for program and policy development.

Thus it is a publication oriented toward policymakers, nutrition educators, nutritionists, and healthcare providers rather than to the general public, as with previous versions of the *Dietary Guidelines*, and contains more technical information.

The intent of the *Dietary Guidelines* is to summarize and synthesize knowledge regarding individual nutrients and food components into recommendations for a pattern of eating that can be adopted by the public. In this publication, Key Recommendations are grouped under nine inter-related focus areas. The recommendations are based on the preponderance of scientific evidence for lowering risk of chronic disease and promoting health. It is important to remember that these are integrated messages that should be implemented as a whole. Taken together, they encourage most Americans to eat fewer calories, be more active, and make wiser food choices.

Taken together, [the *Dietary Guidelines*] encourage most Americans to eat fewer calories, be more active, and make wiser food choices.

A basic premise of the *Dietary Guidelines* is that nutrient needs should be met primarily through consuming foods. Foods provide an array of nutrients and other compounds that may have beneficial effects on health. In certain cases, fortified foods and dietary supplements may be useful sources of one or more nutrients that otherwise might be consumed in less than recommended amounts. However, dietary supplements, while recommended in some cases, cannot replace a healthful diet.

Two examples of eating patterns that exemplify the *Dietary Guidelines* are the USDA Food Guide (http://www.usda.gov/cnpp/pyramid.html) and the DASH (Dietary Approaches to Stop Hypertension) Eating Plan.[1] Both of these eating patterns are designed to integrate dietary recommendations into a healthy way to eat for most individuals. These eating patterns are not weight loss diets, but rather illustrative examples of how to eat in accordance with the *Dietary Guidelines*. Both eating patterns are constructed across a range of calorie levels to meet the needs of various age and gender groups. For the USDA Food Guide, nutrient content estimates for each food group and subgroup are based on population-weighted food intakes. Nutrient content estimates for the DASH Eating Plan are based on selected foods chosen for a sample 7-day menu. While originally developed to study the effects of an eating pattern on the prevention and treatment of hypertension, DASH is one example of a balanced eating plan consistent with the 2005 *Dietary Guidelines*.

Throughout most of this publication, examples use a 2,000-calorie level as a reference for consistency with the Nutrition Facts Panel. Although this level is used as a reference, recommended calorie intake will differ for individuals based on age, gender, and activity level. At each calorie level, individuals who eat nutrient-dense foods may be able to meet their recommended nutrient intake without consuming their full calorie allotment. The remaining calories—the *discretionary calorie allowance*—allow individuals flexibility to consume some foods and beverages that may contain added fats, added sugars, and alcohol.

The recommendations in the *Dietary Guidelines* are for Americans over 2 years of age. It is important to incorporate the food preferences of different racial/ethnic groups, vege-

[1] NIH Publication No. 03-4082, Facts about the DASH Eating Plan, United States Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute, Karanja NM et al. *Journal of the American Dietetic Association (JADA)* 8:S19-27, 1999. http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/.

tarians, and other groups when planning diets and developing educational programs and materials. The USDA Food Guide and the DASH Eating Plan are flexible enough to accommodate a range of food preferences and cuisines.

The *Dietary Guidelines* is intended primarily for use by policymakers, healthcare providers, nutritionists, and nutrition educators. The information in the *Dietary Guidelines* is useful for the development of educational materials and aids policymakers in designing and implementing nutrition-related programs, including federal food, nutrition education, and information programs. In addition, this publication has the potential to provide authoritative statements as provided for in the Food and Drug Administration Modernization Act (FDAMA). Because the *Dietary Guidelines* contains discussions where the science is emerging, only statements included in the Executive Summary and the sections titled "Key Recommendations," which reflect the preponderance of scientific evidence, can be used for identification of authoritative statements. The recommendations are interrelated and mutually dependent; thus the statements in this document should be used together in the context of planning an overall healthful diet. However, even following just some of the recommendations can have health benefits.

The following is a listing of the *Dietary Guidelines* by chapter.

ADEQUATE NUTRIENTS WITHIN CALORIE NEEDS

Key Recommendations

- Consume a variety of nutrient-dense foods and beverages within and among the basic food groups while choosing foods that limit the intake of saturated and *trans* fats, cholesterol, added sugars, salt, and alcohol.
- Meet recommended intakes within energy needs by adopting a balanced eating pattern, such as the USDA Food Guide or the DASH Eating Plan.

Key Recommendations for Specific Population Groups

- *People over age 50.* Consume vitamin B_{12} in its crystalline form (i.e., fortified foods or supplements).
- *Women of childbearing age who may become pregnant.* Eat foods high in heme-iron and/or consume iron-rich plant foods or iron-fortified foods with an enhancer of iron absorption, such as vitamin C-rich foods.
- *Women of childbearing age who may become pregnant and those in the first trimester of pregnancy.* Consume adequate synthetic folic acid daily (from fortified foods or supplements) in addition to food forms of folate from a varied diet.
- *Older adults, people with dark skin, and people exposed to insufficient ultraviolet band radiation (i.e., sunlight).* Consume extra vitamin D from vitamin D-fortified foods and/or supplements.

WEIGHT MANAGEMENT

Key Recommendations

- To maintain body weight in a healthy range, balance calories from foods and beverages with calories expended.
- To prevent gradual weight gain over time, make small decreases in food and beverage calories and increase physical activity.

Key Recommendations for Specific Population Groups

- *Those who need to lose weight.* Aim for a slow, steady weight loss by decreasing calorie intake while maintaining an adequate nutrient intake and increasing physical activity.
- *Overweight children.* Reduce the rate of body weight gain while allowing growth and development. Consult a healthcare provider before placing a child on a weight-reduction diet.
- *Pregnant women.* Ensure appropriate weight gain as specified by a healthcare provider.
- *Breastfeeding women.* Moderate weight reduction is safe and does not compromise weight gain of the nursing infant.
- *Overweight adults and overweight children with chronic diseases and/or on medication.* Consult a healthcare provider about weight loss strategies prior to starting a weight-reduction program to ensure appropriate management of other health conditions.

PHYSICAL ACTIVITY

Key Recommendations

- Engage in regular physical activity and reduce sedentary activities to promote health, psychological well-being, and a healthy body weight.
  - To reduce the risk of chronic disease in adulthood: Engage in at least 30 minutes of moderate-intensity physical activity, above usual activity, at work or home on most days of the week.
  - For most people, greater health benefits can be obtained by engaging in physical activity of more vigorous intensity or longer duration.
  - To help manage body weight and prevent gradual, unhealthy body weight gain in adulthood: Engage in approximately 60 minutes of moderate- to vigorous-intensity activity on most days of the week while not exceeding caloric intake requirements.
  - To sustain weight loss in adulthood: Participate in at least 60 to 90 minutes of daily moderate-intensity physical activity while not exceeding caloric intake requirements. Some people may need to consult with a healthcare provider before participating in this level of activity.
- Achieve physical fitness by including cardiovascular conditioning, stretching exercises for flexibility, and resistance exercises or calisthenics for muscle strength and endurance.

Key Recommendations for Specific Population Groups

- *Children and adolescents.* Engage in at least 60 minutes of physical activity on most, preferably all, days of the week.
- *Pregnant women.* In the absence of medical or obstetric complications, incorporate 30 minutes or more of moderate-intensity physical activity on most, if not all, days of the week. Avoid activities with a high risk of falling or abdominal trauma.
- *Breastfeeding women.* Be aware that neither acute nor regular exercise adversely affects the mother's ability to successfully breastfeed.
- *Older adults.* Participate in regular physical activity to reduce functional declines associated with aging and to achieve the other benefits of physical activity identified for all adults.

FOOD GROUPS TO ENCOURAGE

Key Recommendations

- Consume a sufficient amount of fruits and vegetables while staying within energy needs. Two cups of fruit and 2½ cups of vegetables per day are recommended for a reference 2,000-calorie intake, with higher or lower amounts depending on the calorie level.
- Choose a variety of fruits and vegetables each day. In particular, select from all five vegetable subgroups (dark green, orange, legumes, starchy vegetables, and other vegetables) several times a week.
- Consume 3 or more ounce-equivalents of whole-grain products per day, with the rest of the recommended grains coming from enriched or whole-grain products. In general, at least half the grains should come from whole grains.
- Consume 3 cups per day of fat-free or low-fat milk or equivalent milk products.

Key Recommendations for Specific Population Groups

- *Children and adolescents.* Consume whole-grain products often; at least half the grains should be whole grains. Children 2 to 8 years should consume 2 cups per day of fat-free or low-fat milk or equivalent milk products. Children 9 years of age and older should consume 3 cups per day of fat-free or low-fat milk or equivalent milk products.

FATS

Key Recommendations

- Consume less than 10 percent of calories from saturated fatty acids and less than 300 mg/day of cholesterol, and keep *trans* fatty acid consumption as low as possible.
- Keep total fat intake between 20 to 35 percent of calories, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.
- When selecting and preparing meat, poultry, dry beans, and milk or milk products, make choices that are lean, low-fat, or fat-free.
- Limit intake of fats and oils high in saturated and/or *trans* fatty acids, and choose products low in such fats and oils.

Key Recommendations for Specific Population Groups

- *Children and adolescents.* Keep total fat intake between 30 to 35 percent of calories for children 2 to 3 years of age and between 25 to 35 percent of calories for children and adolescents 4 to 18 years of age, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.

CARBOHYDRATES

Key Recommendations

- Choose fiber-rich fruits, vegetables, and whole grains often.
- Choose and prepare foods and beverages with little added sugars or caloric sweeteners, such as amounts suggested by the USDA Food Guide and the DASH Eating Plan.
- Reduce the incidence of dental caries by practicing good oral hygiene and consuming sugar- and starch-containing foods and beverages less frequently.

SODIUM AND POTASSIUM

Key Recommendations

- Consume less than 2,300 mg (approximately 1 tsp of salt) of sodium per day.
- Choose and prepare foods with little salt. At the same time, consume potassium-rich foods, such as fruits and vegetables.

Key Recommendations for Specific Population Groups

- *Individuals with hypertension, blacks, and middle-aged and older adults.* Aim to consume no more than 1,500 mg of sodium per day, and meet the potassium recommendation (4,700 mg/day) with food.

ALCOHOLIC BEVERAGES

Key Recommendations

- Those who choose to drink alcoholic beverages should do so sensibly and in moderation—defined as the consumption of up to one drink per day for women and up to two drinks per day for men.
- Alcoholic beverages should not be consumed by some individuals, including those who cannot restrict their alcohol intake, women of childbearing age who may become pregnant, pregnant and lactating women, children and adolescents, individuals taking medications that can interact with alcohol, and those with specific medical conditions.
- Alcoholic beverages should be avoided by individuals engaging in activities that require attention, skill, or coordination, such as driving or operating machinery.

FOOD SAFETY

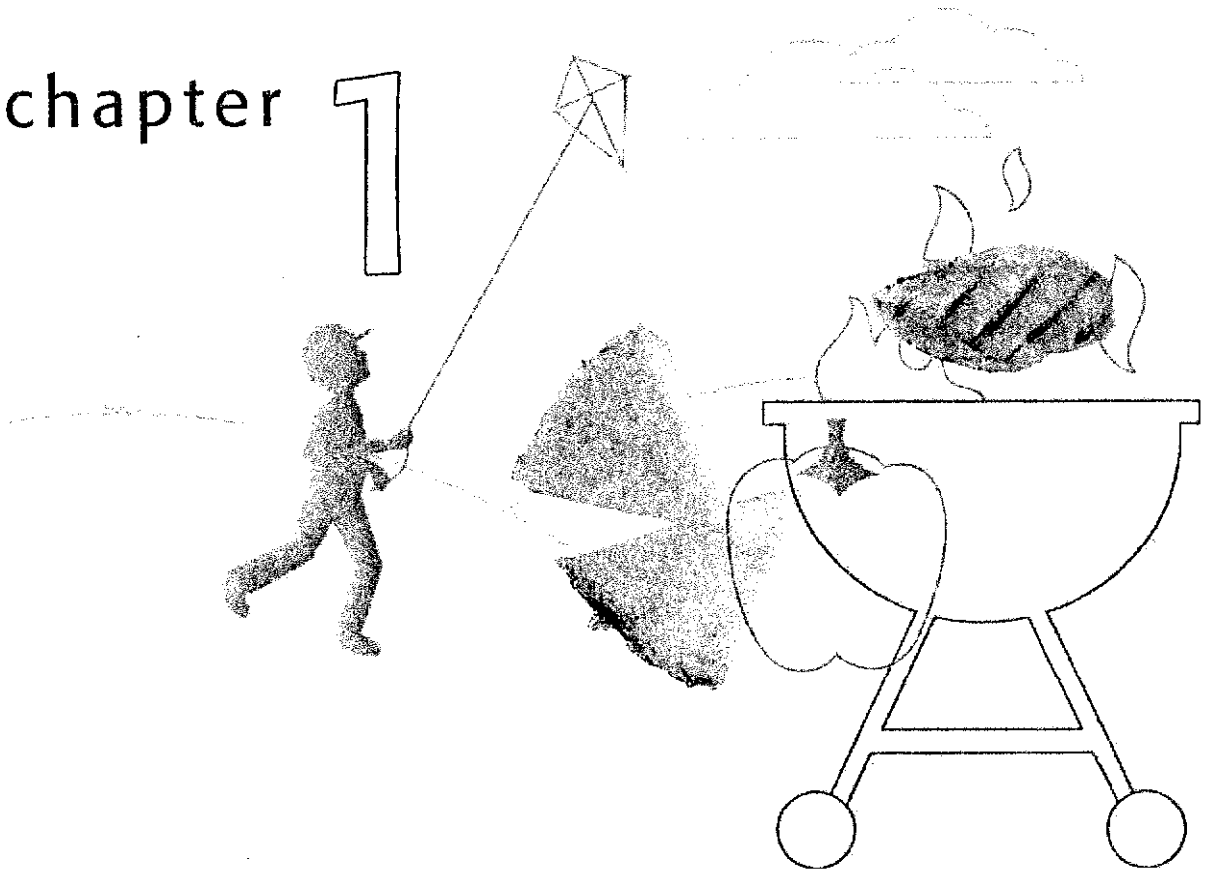
Key Recommendations

- To avoid microbial foodborne illness:
  - Clean hands, food contact surfaces, and fruits and vegetables. Meat and poultry should *not* be washed or rinsed.
  - Separate raw, cooked, and ready-to-eat foods while shopping, preparing, or storing foods.
  - Cook foods to a safe temperature to kill microorganisms.
  - Chill (refrigerate) perishable food promptly and defrost foods properly.
  - Avoid raw (unpasteurized) milk or any products made from unpasteurized milk, raw or partially cooked eggs or foods containing raw eggs, raw or undercooked meat and poultry, unpasteurized juices, and raw sprouts.

Key Recommendations for Specific Population Groups

- *Infants and young children, pregnant women, older adults, and those who are immunocompromised.* Do not eat or drink raw (unpasteurized) milk or any products made from unpasteurized milk, raw or partially cooked eggs or foods containing raw eggs, raw or undercooked meat and poultry, raw or undercooked fish or shellfish, unpasteurized juices, and raw sprouts.
- *Pregnant women, older adults, and those who are immunocompromised:* Only eat certain deli meats and frankfurters that have been reheated to steaming hot.

chapter 1



Background and Purpose of the *Dietary Guidelines for Americans*

The *Dietary Guidelines for Americans [Dietary Guidelines]*, first published in 1980, provides science-based advice to promote health and to reduce risk for chronic diseases through diet and physical activity. The recommendations contained within the *Dietary Guidelines* are targeted to the general public over 2 years of age who are living in the United States. Because of its focus on health promotion and risk reduction, the *Dietary Guidelines* form the basis of federal food, nutrition education, and information programs.

By law (Public Law 101-445, Title III, 7 U.S.C. 5301 et seq.), the *Dietary Guidelines* is reviewed, updated if necessary, and published every 5 years. The process to create the *Dietary Guidelines* is a joint effort of the U.S. Department of Health and Human Services (HHS) and the U.S. Department of Agriculture (USDA) and has evolved to include three stages.

In the first stage, an external scientific Advisory Committee appointed by the two Departments conducted an analysis of new scientific information and prepared a report summarizing its findings.[2] The Advisory Committee's report was made available to the public and Government agencies for comment. The Committee's analysis was the primary resource for development of the *Dietary Guidelines* by the Departments. A significant amount of the new scientific information used by the Dietary Guidelines Advisory Committee (DGAC) was based on the Dietary Reference Intake (DRI) reports published since 2000 by the Institute of Medicine (IOM), in particular the macronutrient report and the fluid and electrolyte report.

During the second stage, the Departments jointly developed Key Recommendations based on the Advisory Committee's report and public and agency comments.

[2] For more information about the process, summary data, and the resources used by the Advisory Committee, see the 2005 Dietary Guidelines Advisory Committee Report (2005 DGAC Report) at http://www.health.gov/dietaryguidelines.

The *Dietary Guidelines* details these science-based policy recommendations. Finally, in the third stage, the two Departments developed messages communicating the *Dietary Guidelines* to the general public.

Because of the three-part process used to develop and communicate the 2005 *Dietary Guidelines*, this publication and the report of the DGAC differ in scope and purpose compared to reports for previous versions of the *Guidelines*. The 2005 DGAC report is a detailed scientific analysis that identifies key issues such as energy balance, the consequences of a sedentary lifestyle, and the need to emphasize certain food choices to address nutrition issues for the American public. The scientific report was used to develop the *Dietary Guidelines* jointly between the two Departments, and this publication forms the basis of recommendations that will be used by USDA and HHS for program and policy development. Thus it is a publication oriented toward policymakers, nutrition educators, nutritionists and healthcare providers rather than to the general public, as with previous versions of the *Dietary Guidelines*, and contains more technical information.

New sections in the *Dietary Guidelines*, consistent with its use for program development, are a glossary of terms and appendixes with detailed information about the USDA Food Guide and the Dietary Approaches to Stop Hypertension (DASH) Eating Plan as well as tables listing sources of some nutrients. Consumer messages have been developed to educate the public about the Key Recommendations in the *Dietary Guidelines* and will be used in materials targeted for consumers separate from this publication. In organizing the *Dietary Guidelines* for the Departments, chapters 2 to 10 were given titles that characterize the topic of each section, and the *Dietary Guidelines* itself is presented as an integrated set of Key Recommendations in each topic area.

These Key Recommendations are based on a preponderance of the scientific evidence of nutritional factors that are important for lowering risk of chronic disease and promoting health. To optimize the beneficial impact of these recommendations on health, the *Guidelines* should be implemented in their entirety.

IMPORTANCE OF THE *DIETARY GUIDELINES* FOR HEALTH PROMOTION AND DISEASE PREVENTION

Good nutrition is vital to good health and is absolutely essential for the healthy growth and development of children and adolescents. Major causes of morbidity and mortality in the United States are related to poor diet and a sedentary lifestyle. Specific diseases and conditions linked to poor diet include cardiovascular disease, hypertension, dyslipidemia, type 2 diabetes, overweight and obesity, osteoporosis, constipation, diverticular disease, iron deficiency anemia, oral disease, malnutrition, and some cancers. Lack of physical activity has been associated with cardiovascular disease, hypertension, overweight and obesity, osteoporosis, diabetes, and certain cancers. Furthermore, muscle strengthening and improving balance can reduce falls and increase functional status among older adults. Together with physical activity, a high-quality diet that does not provide excess calories should enhance the health of most individuals.

Poor diet and physical inactivity, resulting in an energy imbalance (more calories consumed than expended), are the most important factors contributing to the increase in overweight and obesity in this country. Moreover, overweight and obesity are major risk factors for certain chronic diseases such as diabetes. In 1999–2002, 65 percent of U.S. adults were overweight, an increase from 56 percent in 1988–1994. Data from 1999–2002 also showed that 30 percent of adults were obese, an increase from 23 percent in an earlier survey. Dramatic increases in the prevalence of overweight have occurred in children and adolescents of both sexes, with approximately 16 percent of children and adolescents aged 6 to 19 years considered to be overweight (1999–2002).[3] In order to reverse this trend, many Americans need to consume fewer calories, be more active, and make wiser choices within and among food groups. The *Dietary Guidelines* provides a framework to promote healthier lifestyles (see ch. 3).

Given the importance of a balanced diet to health, the intent of the *Dietary Guidelines* is to summarize and synthesize knowledge regarding individual nutrients and

[3] Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtin LR, Flegal KM. Prevalence of overweight and obesity among U.S. children, adolescents, and adults, 1999-2002. *Journal of the American Medical Association (JAMA)* 291(23):2847-2850, 2004.

food components into recommendations for an overall pattern of eating that can be adopted by the general public. These patterns are exemplified by the USDA Food Guide and the DASH Eating Plan (see ch. 2 and app. A). The *Dietary Guidelines* is applicable to the food preferences of different racial/ethnic groups, vegetarians, and other groups. This concept of balanced eating patterns should be utilized in planning diets for various population groups.

There is a growing body of evidence which demonstrates that following a diet that complies with the *Dietary Guidelines* may reduce the risk of chronic disease. Recently, it was reported that dietary patterns consistent with recommended dietary guidance were associated with a lower risk of mortality among individuals age 45 years and older in the United States.[4] The authors of the study estimated that about 16 percent and 9 percent of mortality from any cause in men and women, respectively, could be eliminated by the adoption of desirable dietary behaviors. Currently, adherence to the *Dietary Guidelines* is low among the U.S. population. Data from USDA illustrate the degree of change in the overall dietary pattern of Americans needed to be consistent with a food pattern encouraged by the *Dietary Guidelines* (fig. 1).

A basic premise of the *Dietary Guidelines* is that nutrient needs should be met primarily through consuming foods. Foods provide an array of nutrients (as well as phytochemicals, antioxidants, etc.) and other compounds that may have beneficial effects on health. In some cases, fortified foods may be useful sources of one or more nutrients that otherwise might be consumed in less than recommended amounts. Supplements may be useful when they fill a specific identified nutrient gap that cannot or is not otherwise being met by the individual's intake of food. Nutrient supplements cannot replace a healthful diet. Individuals who are already consuming the recommended amount of a nutrient in food will not achieve any additional health benefit if they also take the nutrient as a supplement. In fact, in some cases, supplements and fortified foods may cause intakes to exceed the safe levels of nutrients. Another important premise of the *Dietary Guidelines* is that foods should be prepared and handled in such a way that reduces risk of foodborne illness.

USES OF THE *DIETARY GUIDELINES*

The *Dietary Guidelines* is intended primarily for use by policymakers, healthcare providers, nutritionists, and nutrition educators. While the *Dietary Guidelines* was developed for healthy Americans 2 years of age and older, where appropriate, the needs of specific population groups have been addressed. In addition, other individuals may find this report helpful in making healthful choices. As noted previously, the recommendations contained within the *Dietary Guidelines* will aid the public in reducing their risk for obesity and chronic disease. Specific uses of the *Dietary Guidelines* include:

Development of Educational Materials and Communications.
The information in the *Dietary Guidelines* is useful for the development of educational materials. For example, the federal dietary guidance-related publications are required by law to be based on the *Dietary Guidelines*. In addition, this publication will guide the development of messages to communicate the *Dietary Guidelines* to the public. Finally, the USDA Food Guide, the food label, and Nutrition Facts Panel provide information that is useful for implementing the key recommendations in the *Dietary Guidelines* and should be integrated into educational and communication messages.

Development of Nutrition-Related Programs.
The *Dietary Guidelines* aids policymakers in designing and implementing nutrition-related programs. The Federal Government bases its nutrition programs, such as the National Child Nutrition Programs or the Elderly Nutrition Program, on the *Dietary Guidelines*.

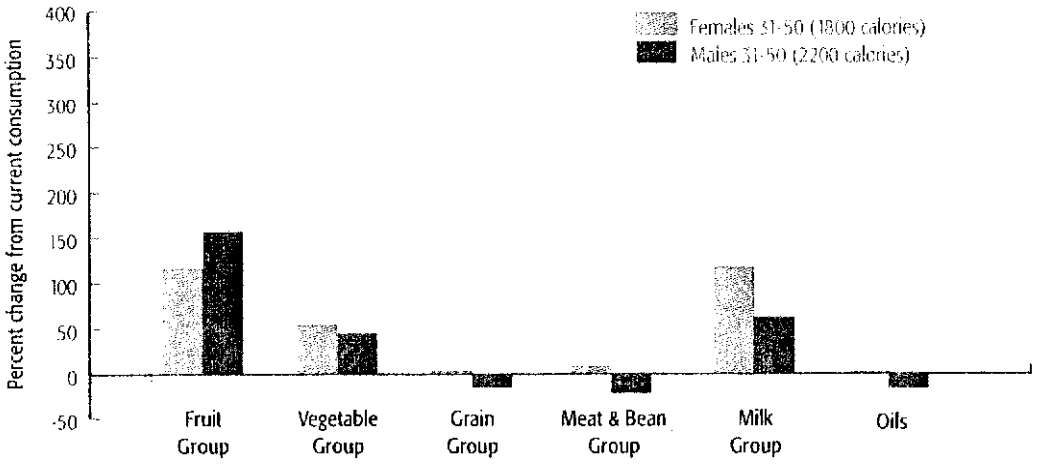
Development of Authoritative Statements.
The *Dietary Guidelines* has the potential to provide authoritative statements as provided for in the Food and Drug Administration Modernization Act (FDAMA). Because the recommendations are interrelated and mutually dependent, the statements in this publication should be used together in the context of an overall healthful diet. Likewise, because the *Dietary Guidelines* contains discussions about emerging science, only statements included in the Executive Summary and the highlighted boxes entitled "Key Recommendations," which reflect the preponderance of scientific evidence, can be used for identification of authoritative statements.

[4] Kant AK, Graubard BI, Schatzkin A. Dietary patterns predict mortality in a national cohort: The national health interview surveys, 1987 and 1992. *Journal of Nutrition (J Nutr)* 134:1793-1799, 2004.

FIGURE 1. Percent Increase or Decrease From Current Consumption (Zero Line) to Recommended Intakes[a,b]

A graphical depiction of the degree of change in average daily food consumption by Americans that would be needed to be consistent with the food patterns encouraged by the *Dietary Guidelines for Americans*. The zero line represents average consumption levels from each food group or subgroup by females 31 to 50 years of age and males 31 to 50 years of age. Bars above the zero line represent recommended increases in food group consumption, while bars below the line represent recommended decreases.

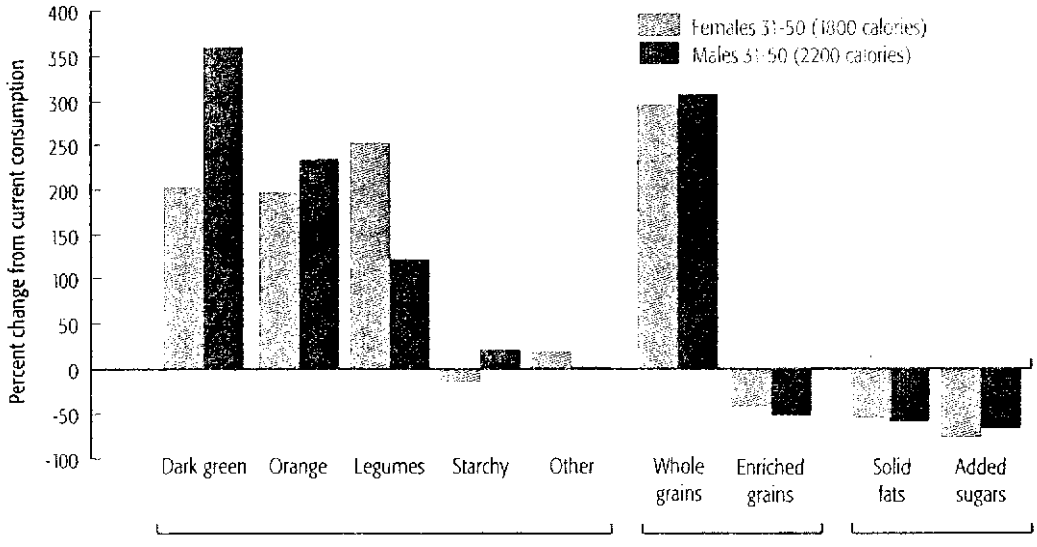
Food Groups and Oils



Actual change from consumption to recommended intakes:

	Fruit Group	Vegetable Group	Grain Group	Meat & Bean Group	Milk Group	Oils
Females	+0.8 cups	+0.9 cups	+0.1 oz	+0.4 oz	+1.6 cups	+0.4 g
Males	+1.2 cups	+0.9 cups	-1.0 oz	-1.4 oz	+1.2 cups	-4.2 g

Subgroups, Solid Fats, and Added Sugars



Actual change from consumption to recommended intakes:

	Dark green	Orange	Legumes	Starchy	Other	Whole grains	Enriched grains	Solid fats	Added sugars
Females	+0.3 cups	+0.2 cups	+0.3 cups	-0.1 cups	+0.1 cups	+2.2 oz	-2.1 oz	-18 g	-14 tsp
Males	+0.3 cups	+0.2 cups	+0.2 cups	+0.2 cups	+0.0 cups	+2.6 oz	-3.6 oz	-27 g	-18 tsp

[a] USDA Food Guide in comparison to National Health and Nutrition Examination Survey 2001-2002 consumption data.

[b] Increases in amounts of some food groups are offset by decreases in amounts of solid fats (i.e., saturated and *trans* fats) and added sugars so that total calorie intake is at the recommended level.

chapter 2

Adequate Nutrients Within Calorie Needs

OVERVIEW

Many Americans consume more calories than they need without meeting recommended intakes for a number of nutrients. This circumstance means that most people need to choose meals and snacks that are high in nutrients but low to moderate in energy content; that is, meeting nutrient recommendations must go hand in hand with keeping calories under control. Doing so offers important benefits—normal growth and development of children, health promotion for people of all ages, and reduction of risk for a number of chronic diseases that are major public health problems.

Based on dietary intake data or evidence of public health problems, intake levels of the following nutrients may be of concern for:

- Adults: calcium, potassium, fiber, magnesium, and vitamins A (as carotenoids), C, and E,
- Children and adolescents: calcium, potassium, fiber, magnesium, and vitamin E,
- Specific population groups (see below): vitamin B_{12}, iron, folic acid, and vitamins E and D.

At the same time, in general, Americans consume too many calories and too much saturated and *trans* fats, cholesterol, added sugars, and salt.

DISCUSSION

Meeting Recommended Intakes Within Energy Needs

A basic premise of the *Dietary Guidelines* is that food guidance should recommend diets that will provide all the nutrients needed for growth and health. To this end, food guidance should encourage individuals to achieve the most recent nutrient intake recommendations of the Institute of Medicine, referred to collectively as the Dietary Reference Intakes (DRIs). Tables of the DRIs are provided at http://www.iom.edu/Object.File/Master/21/372/0.pdf.

An additional premise of the *Dietary Guidelines* is that the nutrients consumed should come primarily from foods. Foods contain not only the vitamins and minerals that are often found in supplements, but also hundreds of naturally occurring substances, including carotenoids, flavonoids and isoflavones, and protease inhibitors that may protect against chronic health conditions. There are instances when fortified foods may be advantageous, as identified in this chapter. These include providing additional sources of certain nutrients that might otherwise be present only in low amounts in some food sources, providing nutrients in highly bioavailable forms, and where the fortification addresses a documented public health need.

KEY RECOMMENDATIONS

- Consume a variety of nutrient-dense foods and beverages within and among the basic food groups while choosing foods that limit the intake of saturated and *trans* fats, cholesterol, added sugars, salt, and alcohol.
- Meet recommended intakes within energy needs by adopting a balanced eating pattern, such as the USDA Food Guide or the DASH Eating Plan.

Key Recommendations for Specific Population Groups

- *People over age 50.* Consume vitamin B_{12} in its crystalline form (i.e., fortified foods or supplements).
- *Women of childbearing age who may become pregnant.* Eat foods high in heme-iron and/or consume iron-rich plant foods or iron-fortified foods with an enhancer of iron absorption, such as vitamin C-rich foods.
- *Women of childbearing age who may become pregnant and those in the first trimester of pregnancy.* Consume adequate synthetic folic acid daily (from fortified foods or supplements) in addition to food forms of folate from a varied diet.
- *Older adults, people with dark skin, and people exposed to insufficient ultraviolet band radiation (i.e., sunlight).* Consume extra vitamin D from vitamin D-fortified foods and/or supplements.

Two examples of eating patterns that exemplify the *Dietary Guidelines* are the DASH Eating Plan and the USDA Food Guide. These two similar eating patterns are designed to integrate dietary recommendations into a healthy way to eat and are used in the *Dietary Guidelines* to provide examples of how nutrient-focused recommendations can be expressed in terms of food choices. Both the USDA Food Guide and the DASH Eating Plan differ in important ways from common food consumption patterns in the United States. In general, they include:

- *More* dark green vegetables, orange vegetables, legumes, fruits, whole grains, and low-fat milk and milk products.
- *Less* refined grains, total fats (especially cholesterol, and saturated and *trans* fats), added sugars, and calories.

Both the USDA Food Guide and the DASH Eating Plan are constructed across a range of calorie levels to meet the nutrient needs of various age and gender groups. Table 1 provides food intake recommendations, and table 2 provides nutrient profiles for both the DASH Eating Plan and the USDA Food Guide at the 2,000-calorie level. These tables illustrate the many similarities between the two eating patterns. Additional calorie levels are shown in appendixes A-1 and A-2 for the USDA Food Guide and the DASH Eating Plan. The exact amounts of foods in these plans do not need to be achieved every day, but on average, over time. Table 3 can aid in identification of an individual's caloric requirement based on gender, age, and physical activity level.

Variety Among and Within Food Groups

Each basic food group[5] is the major contributor of at least one nutrient while making substantial contributions of many other nutrients. Because each food group provides a wide array of nutrients in substantial amounts, it is important to include all food groups in the daily diet.

Both illustrative eating patterns include a variety of nutrient-dense foods within the major food groups. Selecting a variety of foods within the grain, vegetable, fruit, and meat groups may help to ensure that an adequate amount of nutrients and other potentially beneficial substances are consumed. For example, fish contains varying amounts of fatty acids that may be beneficial in reducing cardiovascular disease risk (see ch. 6).

> ...meeting nutrient recommendations must go hand in hand with keeping calories under control.

Nutrient-Dense Foods

Nutrient-dense foods are those foods that provide substantial amounts of vitamins and minerals (micronutrients) and relatively few calories. Foods that are low in nutrient density are foods that supply calories but relatively small amounts of micronutrients, sometimes none at all. The greater the consumption of foods or beverages that are low in nutrient density, the more difficult it is to consume enough nutrients without gaining weight, especially for sedentary individuals. The consumption of added sugars, saturated and *trans* fats, and alcohol provides calories while providing little, if any, of the essential nutrients. (See ch. 7 for additional information on added sugars, ch. 6 for information on fats, and ch. 9 for information on alcohol.)

Selecting low-fat forms of foods in each group and forms free of added sugars—in other words nutrient-dense versions of foods—provides individuals a way to meet their nutrient needs while avoiding the overconsumption of calories and of food components such as saturated fats. However, Americans generally do not eat nutrient-dense forms of foods. Most people will exceed calorie recommendations if they consistently choose higher fat foods within the food groups—even if they do not have dessert, sweetened beverages, or alcoholic beverages.

If only nutrient-dense foods are selected from each food group in the amounts proposed, a small amount of calories can be consumed as added fats or sugars, alcohol, or other foods—the *discretionary calorie allowance*. Appendixes A-2 and A-3 show the maximum discretionary calorie allowance that can be accommodated at each calorie level in the USDA Food Guide. Eating in accordance with the USDA Food Guide or the DASH Eating Plan will also keep intakes of saturated fat, total fat, and cholesterol within the limits recommended in chapter 6.

Nutrients of Concern

The actual prevalence of inadequacy for a nutrient can be determined only if an Estimated Average Requirement (EAR) has been established and the distribution of usual dietary intake can be obtained. If such data are not available for a nutrient but there is evidence for a public health problem associated with low intakes, a nutrient might still be considered to be of concern.

Based on these considerations, dietary intakes of the following nutrients may be low enough to be of concern for:

- Adults: calcium, potassium, fiber, magnesium, and vitamins A (as carotenoids), C, and E,
- Children and adolescents: calcium, potassium, fiber, magnesium, and vitamin E,
- Specific population groups: vitamin B_{12}, iron, folic acid, and vitamins E and D.

[5] The food groups in the USDA Food Guide are grains; vegetables; fruits; milk, yogurt, and cheese; and meat, poultry, fish, dry beans, eggs, and nuts. Food groups in the DASH Eating Plan are grains and grain products; vegetables; fruits; low-fat or fat-free dairy; meat, poultry, and fish; and nuts, seeds, and dry beans.

Efforts may be warranted to promote increased dietary intakes of potassium, fiber, and possibly vitamin E, regardless of age; increased intakes of calcium and possibly vitamins A (as carotenoids) and C and magnesium by adults; efforts are warranted to increase intakes of calcium and possibly magnesium by children age 9 years or older. Efforts may be especially warranted to improve the dietary intakes of adolescent females in general. Food sources of these nutrients are shown in appendix B.

Low intakes of fiber tend to reflect low intakes of whole grains, fruits, and vegetables. Low intakes of calcium tend to reflect low intakes of milk and milk products. Low intakes of vitamins A (as carotenoids) and C and magnesium tend to reflect low intakes of fruits and vegetables. Selecting fruits, vegetables, whole grains, and low-fat and fat-free milk and milk products in the amounts suggested by the USDA Food Guide and the DASH Eating Plan will provide adequate amounts of these nutrients.

Most Americans of all ages also need to increase their potassium intake. To meet the recommended potassium intake levels, potassium-rich foods from the fruit, vegetable, and dairy groups must be selected in both the USDA Food Guide and the DASH Eating Plan. Foods that can help increase potassium intake are listed in table 5 (ch. 5) and appendix B-1.

Most Americans may need to increase their consumption of foods rich in vitamin E (α-tocopherol) while decreasing their intake of foods high in energy but low in nutrients. The vitamin E content in both the USDA Food Guide and the DASH Eating Plan is greater than current consumption, and specific vitamin E-rich foods need to be included in the eating patterns to meet the recommended intake of vitamin E. Foods that can help increase vitamin E intake are listed in appendix B-2, along with their calorie content. Breakfast cereal that is fortified with vitamin E is an option for individuals seeking to increase their vitamin E intake while consuming a low-fat diet.

In addition, most Americans need to decrease sodium intake. The DASH Eating Plan provides guidance on how to keep sodium intakes within recommendations. When using the USDA Food Guide, selecting foods that are lower in sodium than others is especially necessary to meet the recommended intake level at calorie levels of 2,600/day and above. Food choices that are lower in sodium are identified in chapter 8.

Considerations for Specific Population Groups

People Over 50 and Vitamin B_{12}

Although a substantial proportion of individuals over age 50 have reduced ability to absorb naturally occurring vitamin B_{12}, they are able to absorb the crystalline form. Thus, all individuals over the age of 50 should be encouraged to meet their Recommended Dietary Allowance (RDA) (2.4 µg/day) for vitamin B_{12} by eating foods fortified with vitamin B_{12} such as fortified cereals, or by taking the crystalline form of vitamin B_{12} supplements.

Women and Iron

Based on blood values, substantial numbers of adolescent females and women of childbearing age are iron deficient. Thus, these groups should eat foods high in heme-iron (e.g., meats) and/or consume iron-rich plant foods (e.g., spinach) or iron-fortified foods with an enhancer of iron absorption, such as foods rich in vitamin C (e.g., orange juice). Appendix B-3 lists foods that can help increase iron intake and gives their iron and calorie content.

Women and Folic Acid

Since folic acid reduces the risk of the neural tube defects, spina bifida, and anencephaly, a daily intake of 400 µg/day of synthetic folic acid (from fortified foods or supplements in addition to food forms of folate from a varied diet) is recommended for women of childbearing age who may become pregnant. Pregnant women should consume 600 µg/day of synthetic folic acid (from fortified foods or supplements) in addition to food forms of folate from a varied diet. It is not known whether the same level of protection could be achieved by using food that is naturally rich in folate.

Special Groups and Vitamin D

Adequate vitamin D status, which depends on dietary intake and cutaneous synthesis, is important for optimal calcium absorption, and it can reduce the risk for bone

loss. Two functionally relevant measures indicate that optimal serum 25-hydroxyvitamin D may be as high as 80 nmol/L. The elderly and individuals with dark skin (because the ability to synthesize vitamin D from exposure to sunlight varies with degree of skin pigmentation) are at a greater risk of low serum 25-hydroxyvitamin D concentrations. Also at risk are those exposed to insufficient ultraviolet radiation (i.e., sunlight) for the cutaneous production of vitamin D (e.g., housebound individuals). For individuals within the high-risk groups, substantially higher daily intakes of vitamin D (i.e., 25 µg or 1,000 International Units (IU) of vitamin D per day) have been recommended to reach and maintain serum 25-hydroxyvitamin D values at 80 nmol/L. Three cups of vitamin D-fortified milk (7.5 µg or 300 IU), 1 cup of vitamin D-fortified orange juice (2.5 µg or 100 IU), and 15 µg (600 IU) of supplemental vitamin D would provide 25 µg (1,000 IU) of vitamin D daily.

Fluid

The combination of thirst and normal drinking behavior, especially the consumption of fluids with meals, is usually sufficient to maintain normal hydration. Healthy individuals who have routine access to fluids and who are not exposed to heat stress consume adequate water to meet their needs. Purposeful drinking is warranted for individuals who are exposed to heat stress or perform sustained vigorous activity (see ch. 4).

Flexibility of Food Patterns for Varied Food Preferences

The USDA Food Guide and the DASH Eating Plan are flexible to permit food choices based on individual and cultural food preferences, cost, and availability. Both can also accommodate varied types of cuisines and special needs due to common food allergies. Two adaptations of the USDA Food Guide and the DASH Eating Plan are:

Vegetarian Choices

Vegetarians of all types can achieve recommended nutrient intakes through careful selection of foods. These individuals should give special attention to their intakes of protein, iron, and vitamin B12, as well as calcium and vitamin D if avoiding milk products. In addition, vegetarians could select only nuts, seeds, and legumes from the meat and beans group, or they could include eggs if so desired. At the 2,000-calorie level, they could choose about 1.5 ounces of nuts and ⅔ cup legumes instead of 5.5 ounces of meat, poultry, and/or fish. One egg, ½ ounce of nuts, or ¼ cup of legumes is considered equivalent to 1 ounce of meat, poultry, or fish in the USDA Food Guide.

Substitutions for Milk and Milk Products

Since milk and milk products provide more than 70 percent of the calcium consumed by Americans, guidance on other choices of dietary calcium is needed for those who do not consume the recommended amount of milk products. Milk product consumption has been associated with overall diet quality and adequacy of intake of many nutrients, including calcium, potassium, magnesium, zinc, iron, riboflavin, vitamin A, folate, and vitamin D. People may avoid milk products because of allergies, cultural practices, taste, or other reasons. Those who avoid all milk products need to choose rich sources of the nutrients provided by milk, including potassium, vitamin A, and magnesium in addition to calcium and vitamin D (see app. B). Some non-dairy sources of calcium are shown in appendix B-4. The bioavailability of the calcium in these foods varies.

Those who avoid milk because of its lactose content may obtain all the nutrients provided by the milk group by using lactose-reduced or low-lactose milk products, taking small servings of milk several times a day, taking the enzyme lactase before consuming milk products, or eating other calcium-rich foods. For additional information, see appendixes B-4 and B-5 and NIH Publication No. 03-2751.[6]

[6] NIH Publication No. 03-2751, U.S. Department of Health and Human Services, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, March 2003. http://digestive.niddk.nih.gov/ddiseases/pubs/lactoseintolerance/index.htm.

TABLE 1. Sample USDA Food Guide and the DASH Eating Plan at the 2,000-Calorie Level[a]

Amounts of various food groups that are recommended each day or each week in the USDA Food Guide and in the DASH Eating Plan (amounts are daily unless otherwise specified) at the 2,000-calorie level. Also identified are equivalent amounts for different food choices in each group. To follow either eating pattern, food choices over time should provide these amounts of food from each group on average.

Food Groups and Subgroups	USDA Food Guide Amount[b]	DASH Eating Plan Amount	Equivalent Amounts
Fruit Group	2 cups (4 servings)	2 to 2.5 cups (4 to 5 servings)	½ cup equivalent is: • ½ cup fresh, frozen, or canned fruit • 1 med fruit • ¼ cup dried fruit • USDA: ½ cup fruit juice • DASH: ¾ cup fruit juice
Vegetable Group • Dark green vegetables • Orange vegetables • Legumes (dry beans) • Starchy vegetables • Other vegetables	2.5 cups (5 servings) 3 cups/week 2 cups/week 3 cups/week 3 cups/week 6.5 cups/week	2 to 2.5 cups (4 to 5 servings)	½ cup equivalent is: • ½ cup of cut-up raw or cooked vegetable • 1 cup raw leafy vegetable • USDA: ½ cup vegetable juice • DASH: ¾ cup vegetable juice
Grain Group • Whole grains • Other grains	6 ounce-equivalents 3 ounce-equivalents 3 ounce-equivalents	7 to 8 ounce-equivalents (7 to 8 servings)	1 ounce-equivalent is: • 1 slice bread • 1 cup dry cereal • ½ cup cooked rice, pasta, cereal • DASH: 1 oz dry cereal (½–1¼ cup depending on cereal type—check label)
Meat and Beans Group	5.5 ounce-equivalents	6 ounces or less meat, poultry, fish	1 ounce-equivalent is: • 1 ounce of cooked lean meats, poultry, fish • 1 egg • USDA: ¼ cup cooked dry beans or tofu, 1 Tbsp peanut butter, ½ oz nuts or seeds • DASH: 1½ oz nuts, ½ oz seeds, ½ cup cooked dry beans
		4 to 5 servings per week nuts, seeds, and dry beans[c]	
Milk Group	3 cups	2 to 3 cups	1 cup equivalent is: • 1 cup low-fat/fat-free milk, yogurt • 1½ oz of low-fat or fat-free natural cheese • 2 oz of low-fat or fat-free processed cheese
Oils	24 grams (6 tsp)	8 to 12 grams (2 to 3 tsp)	1 tsp equivalent is: • DASH: 1 tsp soft margarine • 1 Tbsp low-fat mayo • 2 Tbsp light salad dressing • 1 tsp vegetable oil
Discretionary Calorie Allowance • Example of distribution: Solid fat[d] Added sugars	267 calories 18 grams 8 tsp	 ~2 tsp (5 Tbsp per week)	1 Tbsp added sugar equivalent is: • DASH: 1 Tbsp jelly or jam • ½ oz jelly beans • 8 oz lemonade

[a] All servings are per day unless otherwise noted. USDA vegetable subgroup amounts and amounts of DASH nuts, seeds, and dry beans are per week.

[b] The 2,000-calorie USDA Food Guide is appropriate for many sedentary males 51 to 70 years of age, sedentary females 19 to 30 years of age, and for some other gender/age groups who are more physically active. See table 3 for information about gender/age/activity levels and appropriate calorie intakes. See appendixes A-2 and A-3 for more information on the food groups, amounts, and food intake patterns at other calorie levels.

[c] In the DASH Eating Plan, nuts, seeds, and dry beans are a separate food group from meat, poultry, and fish.

[d] The oils listed in this table are not considered to be part of discretionary calories because they are a major source of the vitamin E and polyunsaturated fatty acids, including the essential fatty acids, in the food pattern. In contrast, solid fats (i.e., saturated and *trans* fats) are listed separately as a source of discretionary calories.

TABLE 2. Comparison of Selected Nutrients in the Dietary Approaches to Stop Hypertension (DASH) Eating Plan[a], the USDA Food Guide[b], and Nutrient Intakes Recommended Per Day by the Institute of Medicine (IOM)[c]

Estimated nutrient levels in the DASH Eating Plan and the USDA Food Guide at the 2,000-calorie level, as well as the nutrient intake levels recommended by the Institute of Medicine for females 19–30 years of age.

Nutrient	DASH Eating Plan (2,000 kcals)	USDA Food Guide (2,000 kcals)	IOM Recommendations for Females 19 to 30
Protein, g	108	91	RDA: 46
Protein, % kcal	21	18	AMDR: 10–35
Carbohydrate, g	288	271	RDA: 130
Carbohydrate, % kcal	57	55	AMDR: 45–65
Total fat, g	48	65	–
Total fat, % kcal	22	29	AMDR: 20–35
Saturated fat, g	10	17	–
Saturated fat, % kcal	5	7.8	ALAP[d]
Monounsaturated fat, g	21	24	–
Monounsaturated fat, % kcal	10	11	–
Polyunsaturated fat, g	12	20	–
Polyunsaturated fat, % kcal	5.5	9.0	–
Linoleic acid, g	11	18	AI: 12
Alpha-linolenic acid, g	1	1.7	AI: 1.1
Cholesterol, mg	136	230	ALAP[d]
Total dietary fiber, g	30	31	AI: 28[e]
Potassium, mg	4,706	4,044	AI: 4,700
Sodium, mg	2,329[f]	1,779	AI: 1,500, UL: <2,300
Calcium, mg	1,619	1,316	AI: 1,000
Magnesium, mg	500	380	RDA: 310
Copper, mg	2	1.5	RDA: 0.9
Iron, mg	21	18	RDA: 18
Phosphorus, mg	2,066	1,740	RDA: 700
Zinc, mg	14	14	RDA: 8
Thiamin, mg	2.0	2.0	RDA: 1.1
Riboflavin, mg	2.8	2.8	RDA: 1.1
Niacin equivalents, mg	31	22	RDA: 14
Vitamin B_6, mg	3.4	2.4	RDA: 1.3
Vitamin B_{12}, µg	7.1	8.3	RDA: 2.4
Vitamin C, mg	181	155	RDA: 75
Vitamin E (AT)[g]	16.5	9.5	RDA: 15.0
Vitamin A, µg (RAE)[h]	851	1,052	RDA: 700

[a] DASH nutrient values are based on a 1-week menu of the DASH Eating Plan. NIH publication No. 03-4082. www.nhlbi.nih.gov.

[b] USDA nutrient values are based on population-weighted averages of typical food choices within each food group or subgroup.

[c] Recommended intakes for adult females 19–30; RDA = Recommended Dietary Allowance; AI = Adequate Intake; AMDR = Acceptable Macronutrient Distribution Range; UL = Upper Limit.

[d] As Low As Possible while consuming a nutritionally adequate diet.

[e] Amount listed is based on 14 g dietary fiber/1,000 kcal.

[f] The DASH Eating Plan also can be used to follow at 1,500 mg sodium per day.

[g] AT = mg d-α-tocopherol

[h] RAE = Retinol Activity Equivalents

TABLE 3. Estimated Calorie Requirements (in Kilocalories) for Each Gender and Age Group at Three Levels of Physical Activity[a]

Estimated amounts of calories needed to maintain energy balance for various gender and age groups at three different levels of physical activity. The estimates are rounded to the nearest 200 calories and were determined using the Institute of Medicine equation.

		Activity Level[b,c,d]		
Gender	Age (years)	Sedentary[b]	Moderately Active[c]	Active[d]
Child	2–3	1,000	1,000–1,400[e]	1,000–1,400[e]
Female	4–8	1,200	1,400–1,600	1,400–1,800
	9–13	1,600	1,600–2,000	1,800–2,200
	14–18	1,800	2,000	2,400
	19–30	2,000	2,000–2,200	2,400
	31–50	1,800	2,000	2,200
	51+	1,600	1,800	2,000–2,200
Male	4–8	1,400	1,400–1,600	1,600–2,000
	9–13	1,800	1,800–2,200	2,000–2,600
	14–18	2,200	2,400–2,800	2,800–3,200
	19–30	2,400	2,600–2,800	3,000
	31–50	2,200	2,400–2,600	2,800–3,000
	51+	2,000	2,200–2,400	2,400–2,800

[a] These levels are based on Estimated Energy Requirements (EER) from the Institute of Medicine Dietary Reference Intakes macronutrients report, 2002, calculated by gender, age, and activity level for reference-sized individuals. "Reference size," as determined by IOM, is based on median height and weight for ages up to age 18 years of age and median height and weight for that height to give a BMI of 21.5 for adult females and 22.5 for adult males.

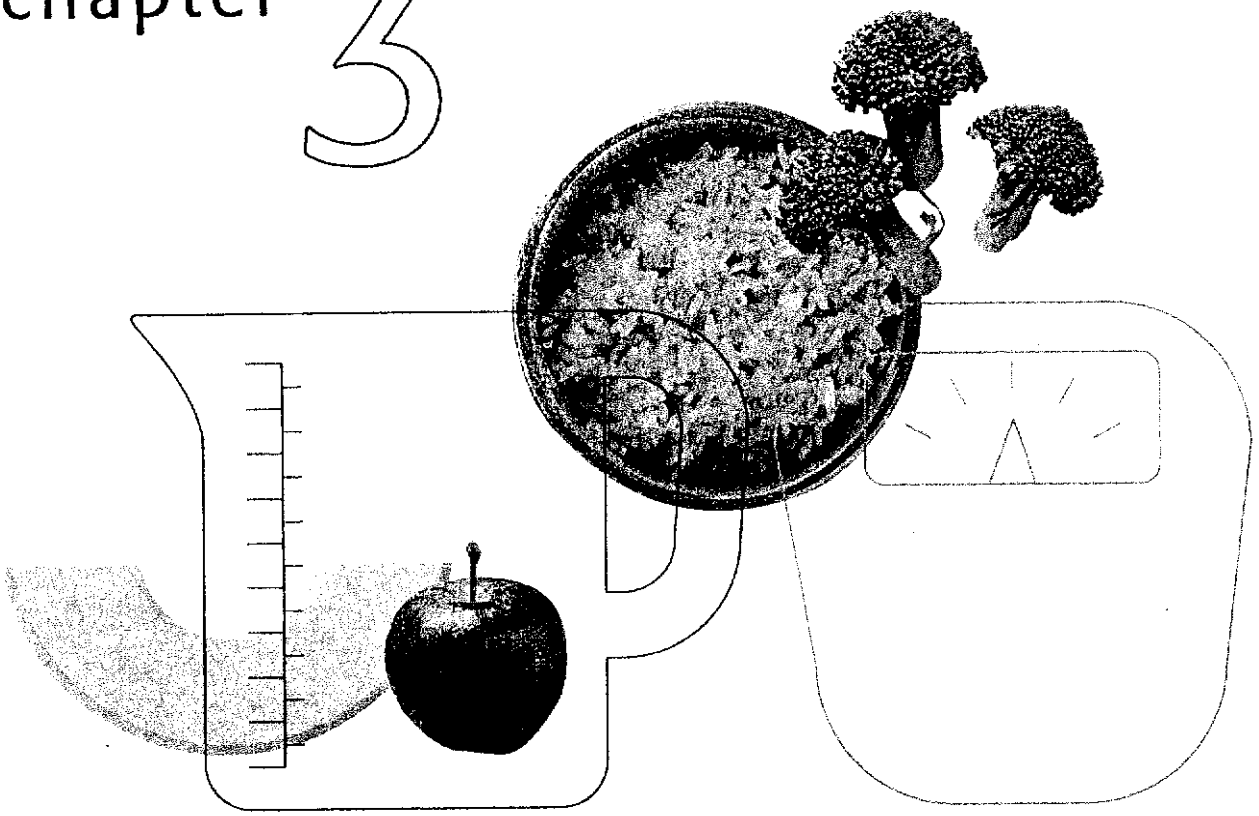
[b] Sedentary means a lifestyle that includes only the light physical activity associated with typical day-to-day life.

[c] Moderately active means a lifestyle that includes physical activity equivalent to walking about 1.5 to 3 miles per day at 3 to 4 miles per hour, in addition to the light physical activity associated with typical day-to-day life.

[d] Active means a lifestyle that includes physical activity equivalent to walking more than 3 miles per day at 3 to 4 miles per hour, in addition to the light physical activity associated with typical day-to-day life.

[e] The calorie ranges shown are to accommodate needs of different ages within the group. For children and adolescents, more calories are needed at older ages. For adults, fewer calories are needed at older ages.

chapter 3



Weight Management

OVERVIEW

The prevalence of obesity in the United States has doubled in the past two decades. Nearly one-third of adults are obese, that is, they have a body mass index (BMI) of 30 or greater. One of the fastest growing segments of the population is that with a BMI≥30 with accompanying comorbidities. Over the last two decades, the prevalence of overweight among children and adolescents has increased substantially; it is estimated that as many as 16 percent of children and adolescents are overweight, representing a doubling of the rate among children and tripling of the rate among adolescents. A high prevalence of overweight and obesity is of great public health concern because excess body fat leads to a higher risk for premature death, type 2 diabetes, hypertension, dyslipidemia, cardiovascular disease, stroke, gall bladder disease, respiratory dysfunction, gout, osteoarthritis, and certain kinds of cancers.

Ideally, the goal for adults is to achieve and maintain a body weight that optimizes their health. However, for obese adults, even modest weight loss (e.g., 10 pounds) has health benefits, and the prevention of further weight gain is very important. For overweight children and adolescents, the goal is to slow the rate of weight gain while achieving normal growth and development. Maintaining a healthy weight throughout childhood may reduce the risk of becoming an overweight or obese adult. Eating fewer calories while increasing physical activity are the keys to controlling body weight.

While overweight and obesity are currently significant public health issues, not all Americans need to lose weight. People at a healthy weight should strive to maintain their weight, and underweight individuals may need to increase their weight.

DISCUSSION

Overweight and obesity in the United States among adults and children has increased significantly over the last two decades. Those following typical American eating and activity patterns are likely to be consuming diets in excess of their energy requirements. However, caloric intake is only one side of the energy balance equation. Caloric expenditure needs to be in balance with caloric intake to maintain body weight and must exceed caloric intake to achieve weight loss (see tables 3 and 4). To reverse the trend toward obesity, most Americans need to eat fewer calories, be more active, and make wiser food choices.

Prevention of weight gain is critical because while the behaviors required are the same, the extent of the behaviors required to lose weight makes weight loss more challenging than prevention of weight gain. Since many adults gain weight slowly over time, even small decreases in calorie intake can help avoid weight gain, especially if accompanied by increased physical activity. For example, for most adults a reduction of 50 to 100 calories per day may prevent gradual weight gain, whereas a reduction of 500 calories or more per day is a common initial goal in weight-loss programs. Similarly, up to 60 minutes of moderate- to vigorous-intensity physical activity per day may be needed to prevent weight gain, but as much as 60 to 90 minutes of moderate-intensity physical activity per day is recommended to sustain weight loss for previously overweight people. It is advisable for men over age 40, women over age 50, and those with a history of chronic diseases such as heart disease or diabetes to consult with a healthcare provider before starting a vigorous exercise program. However, many people can safely increase their physical activity without consulting a healthcare provider.[7]

KEY RECOMMENDATIONS

- To maintain body weight in a healthy range, balance calories from foods and beverages with calories expended.
- To prevent gradual weight gain over time, make small decreases in food and beverage calories and increase physical activity.

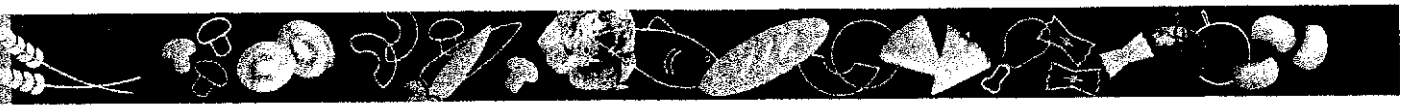
Key Recommendations for Specific Population Groups

- *Those who need to lose weight.* Aim for a slow, steady weight loss by decreasing calorie intake while maintaining an adequate nutrient intake and increasing physical activity.
- *Overweight children.* Reduce the rate of body weight gain while allowing growth and development. Consult a healthcare provider before placing a child on a weight-reduction diet.
- *Pregnant women.* Ensure appropriate weight gain as specified by a healthcare provider.
- *Breastfeeding women.* Moderate weight reduction is safe and does not compromise weight gain of the nursing infant.
- *Overweight adults and overweight children with chronic diseases and/or on medication.* Consult a healthcare provider about weight loss strategies prior to starting a weight-reduction program to ensure appropriate management of other health conditions.

Monitoring body fat regularly can be a useful strategy for assessing the need to adjust caloric intake and energy expenditure. Two surrogate measures used to approximate body fat are BMI (adults and children) and waist circumference (adults).[8] BMI is defined as weight in kilograms divided by height, in meters, squared. For adults, weight status is based on the absolute BMI level (fig. 2). For children and adolescents, weight status is determined by the comparison of the individual's BMI with age- and gender-specific percentile values (see fig. 3 for a sample boys' growth curve). Additional growth curves can be

[7] For more information on recommendations to consult a healthcare provider, see Physical Activity and Public Health—A Recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine, *JAMA* 273:402-407, 1995. http://wonder.cdc.gov/wonder/prevguid/p0000391/P0000391.asp

[8] NIH Publication Number 00-4084, The Practical Guide: Identification, Evaluation and Treatment of Overweight and Obesity in Adults, U.S. Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute, October 2000. http://www.nhlbi.nih.gov/guidelines/obesity/prctgd_c.pdf



found at http://www.cdc.gov/growthcharts. BMI is more accurate at approximating body fat than is measuring body weight alone. However, BMI has some limitations. BMI overestimates body fat in people who are very muscular and underestimates body fat in people who have lost muscle mass. The relationship between BMI and body fat varies somewhat with age, gender, and ethnicity. In addition, for adults, BMI is a better predictor of a population's disease risk than an individual's risk of chronic disease.[8] For children gaining excess weight, small decreases in energy intake reduce the rate at which they gain weight (body fat), thus improving their BMI percentile over time. As another surrogate measure, waist circumference can approximate abdominal fat but should be measured very carefully. Fat located in the abdominal region is associated with a greater health risk than peripheral fat.[8]

Some proposed calorie-lowering strategies include eating foods that are low in calories for a given measure of food (e.g., many kinds of vegetables and fruits and some soups). However, when making changes to improve nutrient intake, one needs to make substitutions to avoid excessive calorie intake. The healthiest way to reduce calorie intake is to reduce one's intake of added sugars, fats, and alcohol, which all provide calories but few or no essential nutrients (for more information, see chs. 6, 7, and 9).

Special attention should be given to portion sizes, which have increased significantly over the past two decades (http://hin.nhlbi.nih.gov/portion/index.htm). Though there are no empirical studies to show a causal relationship between increased portion sizes and obesity, there are studies showing that controlling portion sizes helps limit calorie intake, particularly when eating calorie-dense foods (foods that are high in calories for a given measure of food). Therefore, it is essential that the public understand how portion sizes compare to a recommended amount of food (i.e., serving) from each food group at a specific caloric level. The understanding of serving size and portion size is important in following either the DASH Eating Plan or the USDA Food Guide (see app. A). When using packaged foods with nutrient labels, people should pay attention to the units for serving sizes and how they compare to the serving sizes in the USDA Food Guide and the DASH Eating Plan.

Eating fewer calories while increasing physical activity are the keys to controlling body weight.

Lifestyle change in diet and physical activity is the best first choice for weight loss. A reduction in 500 calories or more per day is commonly needed. When it comes to body weight control, it is calories that count—not the proportions of fat, carbohydrates, and protein in the diet. However, when individuals are losing weight, they should follow a diet that is within the Acceptable Macronutrient Distribution Ranges (AMDR) for fat, carbohydrates, and protein, which are 20 to 35 percent of total calories, 45 to 65 percent of total calories, and 10 to 35 percent of total calories, respectively. Diets that provide very low or very high amounts of protein, carbohydrates, or fat are likely to provide low amounts of some nutrients and are not advisable for long-term use. Although these kinds of weight- loss diets have been shown to result in weight reduction, the maintenance of a reduced weight ultimately will depend on a change in lifestyle. Successful and sustainable weight loss and weight maintenance strategies require attention to both sides of the energy balance equation (i.e., caloric intake and energy expenditure).

[8] NIH Publication Number 00-4084, The Practical Guide: Identification, Evaluation and Treatment of Overweight and Obesity in Adults, U.S. Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute, October 2000. http://www.nhlbi.nih.gov/guidelines/obesity/prctgd_c.pdf

TABLE 4. Calories/Hour Expended in Common Physical Activities

Some examples of physical activities commonly engaged in and the average amount of calories a 154-pound individual will expend by engaging in each activity for 1 hour. The expenditure value encompasses both resting metabolic rate calories and activity expenditure. Some of the activities can constitute either moderate- or vigorous-intensity physical activity depending on the rate at which they are carried out (for walking and bicycling).

Moderate Physical Activity	Approximate Calories/Hr for a 154 lb Person[a]
Hiking	370
Light gardening/yard work	330
Dancing	330
Golf (walking and carrying clubs)	330
Bicycling (<10 mph)	290
Walking (3.5 mph)	280
Weight lifting (general light workout)	220
Stretching	180
Vigorous Physical Activity	**Approximate Calories/Hr for a 154 lb Person[a]**
Running/jogging (5 mph)	590
Bicycling (>10 mph)	590
Swimming (slow freestyle laps)	510
Aerobics	480
Walking (4.5 mph)	460
Heavy yard work (chopping wood)	440
Weight lifting (vigorous effort)	440
Basketball (vigorous)	440

[a] Calories burned per hour will be higher for persons who weigh more than 154 lbs (70 kg) and lower for persons who weigh less.

Source: Adapted from the 2005 DGAC Report.

FIGURE 2. Adult BMI Chart

Locate the height of interest in the left-most column and read across the row for that height to the weight of interest. Follow the column of the weight up to the top row that lists the BMI. BMI of 18.5–24.9 is the healthy weight range, BMI of 25–29.9 is the overweight range, and BMI of 30 and above is in the obese range.

BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Height	Weight in Pounds																
4'10"	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167
4'11"	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173
5'	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179
5'1"	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185
5'2"	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191
5'3"	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197
5'4"	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204
5'5"	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210
5'6"	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216
5'7"	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	225
5'8"	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230
5'9"	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236
5'10"	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243
5'11"	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250
6'	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258
6'1"	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265
6'2"	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272
6'3"	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279
	Healthy Weight						Overweight					Obese					

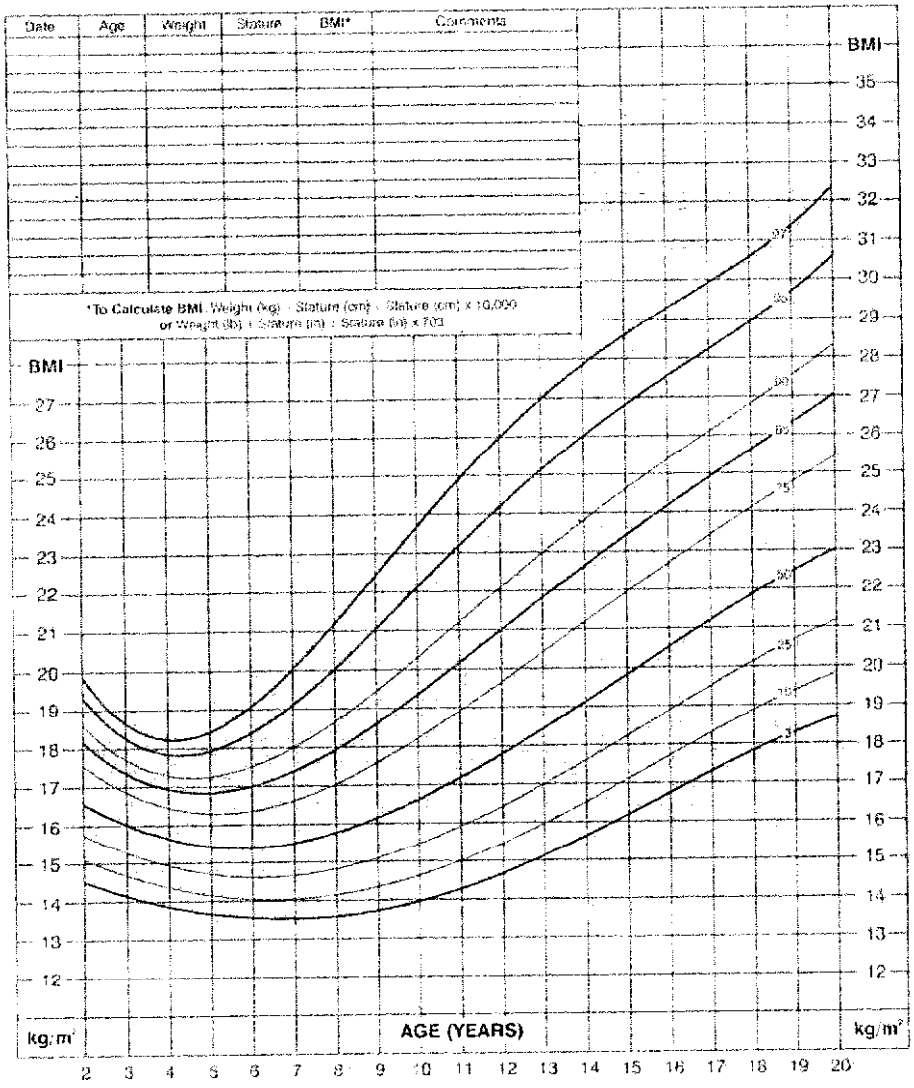
Source: Evidence Report of Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults, 1998. NIH/National Heart, Lung, and Blood Institute (NHLBI).

FIGURE 3. Example of Boys' BMI Growth Curve (2 to 20 years): Boys' Body Mass Index-For-Age Percentiles

Calculate the BMI for an individual child using the following:

BMI = Weight (kg)/(Height [cm])^2 x 10,000 or BMI = Weight (lb)/(Height [in])^2 x 703

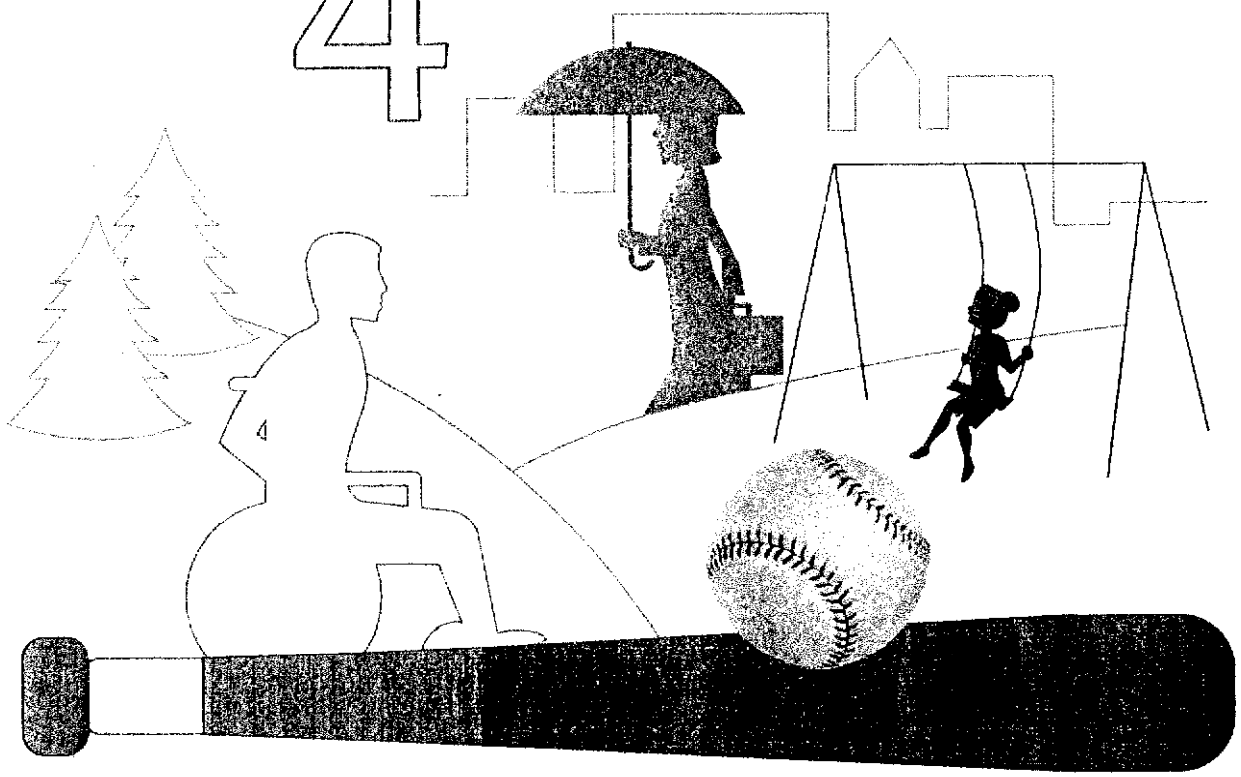
Find the age of the child on the bottom, x-axis, and read up the chart from that age to the calculated BMI on the left and right, y-axis. The curve that is closest to the spot where the age and BMI of the child meet on the graph indicate the BMI percentile for this child relative to the population.



Published May 30, 2000 (modified 10/16/00).

Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion. http://www.cdc.gov/growthcharts (2000). Other growth charts are available at this source.

chapter 4



Physical Activity

OVERVIEW

Americans tend to be relatively inactive. In 2002, 25 percent of adult Americans did not participate in any leisure time physical activities in the past month,[9] and in 2003, 38 percent of students in grades 9 to 12 viewed television 3 or more hours per day.[10] Regular physical activity and physical fitness make important contributions to one's health, sense of well-being, and maintenance of a healthy body weight. Physical activity is defined as any bodily movement produced by skeletal muscles resulting in energy expenditure (http://www.cdc.gov/nccdphp/dnpa/physical/terms/index.htm). In contrast, physical fitness is a multi-component trait related to the ability to perform physical activity. Maintenance of good physical fitness enables one to meet the physical demands of work and leisure comfortably. People with higher levels of physical fitness are also at lower risk of developing chronic disease. Conversely, a sedentary lifestyle increases risk for overweight and obesity and many chronic diseases, including coronary artery disease, hypertension, type 2 diabetes, osteoporosis, and certain types of cancer. Overall, mortality rates from all causes of death are lower in physically active people than in sedentary people. Also, physical activity can aid in managing mild to moderate depression and anxiety.

[9] Behavioral Risk Factor Surveillance System, Surveillance for Certain Health Behaviors Among Selected Local Areas—United States, Behavioral Risk Factor Surveillance System, 2002, *Morbidity and Mortality Weekly Report (MMWR)*, 53, No SS-05. http://www.cdc.gov/brfss/.

[10] Youth Risk Behavior Surveillance System, Youth Risk Behavior Surveillance—United States, 2003 *MMWR* 53(SS-2):1–29, 2004. http://www.cdc.gov/healthyyouth/yrbs/.

DISCUSSION

Regular physical activity has been shown to reduce the risk of certain chronic diseases, including high blood pressure, stroke, coronary artery disease, type 2 diabetes, colon cancer and osteoporosis. Therefore, to reduce the risk of chronic disease, it is recommended that adults engage in at least 30 minutes of moderate-intensity physical activity on most, preferably all, days of the week. For most people, greater health benefits can be obtained by engaging in physical activity of more vigorous intensity or of longer duration. In addition, physical activity appears to promote psychological well-being and reduce feelings of mild to moderate depression and anxiety.

Regular physical activity is also a key factor in achieving and maintaining a healthy body weight for adults and children. To prevent the gradual accumulation of excess weight in adulthood, up to 30 additional minutes per day may be required over the 30 minutes for reduction of chronic disease risk and other health benefits. That is, approximately 60 minutes of moderate- to vigorous-intensity physical activity on most days of the week may be needed to prevent unhealthy weight gain (see table 4 for some examples of moderate- and vigorous-intensity physical activities). While moderate-intensity physical activity can achieve the desired goal, vigorous-intensity physical activity generally provides more benefits than moderate-intensity physical activity. Control of caloric intake is also advisable. However, to sustain weight loss for previously overweight/obese people, about 60 to 90 minutes of moderate-intensity physical activity per day is recommended.

Most adults do not need to see their healthcare provider before starting a moderate-intensity physical activity program. However, men older than 40 years and women older than 50 years who plan a vigorous program or who have either chronic disease or risk factors for chronic disease should consult their physician to design a safe, effective program. It is also important during leisure time to limit sedentary behaviors, such as television watching and video viewing, and replace them with activities requiring more movement. Reducing these sedentary activities appears to be helpful in treating and preventing overweight among children and adolescents.

KEY RECOMMENDATIONS

- Engage in regular physical activity and reduce sedentary activities to promote health, psychological well-being, and a healthy body weight.
  - To reduce the risk of chronic disease in adulthood: Engage in at least 30 minutes of moderate-intensity physical activity, above usual activity, at work or home on most days of the week.
  - For most people, greater health benefits can be obtained by engaging in physical activity of more vigorous intensity or longer duration.
  - To help manage body weight and prevent gradual, unhealthy body weight gain in adulthood: Engage in approximately 60 minutes of moderate- to vigorous-intensity activity on most days of the week while not exceeding caloric intake requirements.
  - To sustain weight loss in adulthood: Participate in at least 60 to 90 minutes of daily moderate-intensity physical activity while not exceeding caloric intake requirements. Some people may need to consult with a healthcare provider before participating in this level of activity.
- Achieve physical fitness by including cardiovascular conditioning, stretching exercises for flexibility, and resistance exercises or calisthenics for muscle strength and endurance.

Key Recommendations for Specific Population Groups

- *Children and adolescents.* Engage in at least 60 minutes of physical activity on most, preferably all, days of the week.
- *Pregnant women.* In the absence of medical or obstetric complications, incorporate 30 minutes or more of moderate-intensity physical activity on most, if not all, days of the week. Avoid activities with a high risk of falling or abdominal trauma.
- *Breastfeeding women.* Be aware that neither acute nor regular exercise adversely affects the mother's ability to successfully breastfeed.
- *Older adults.* Participate in regular physical activity to reduce functional declines associated with aging and to achieve the other benefits of physical activity identified for all adults.

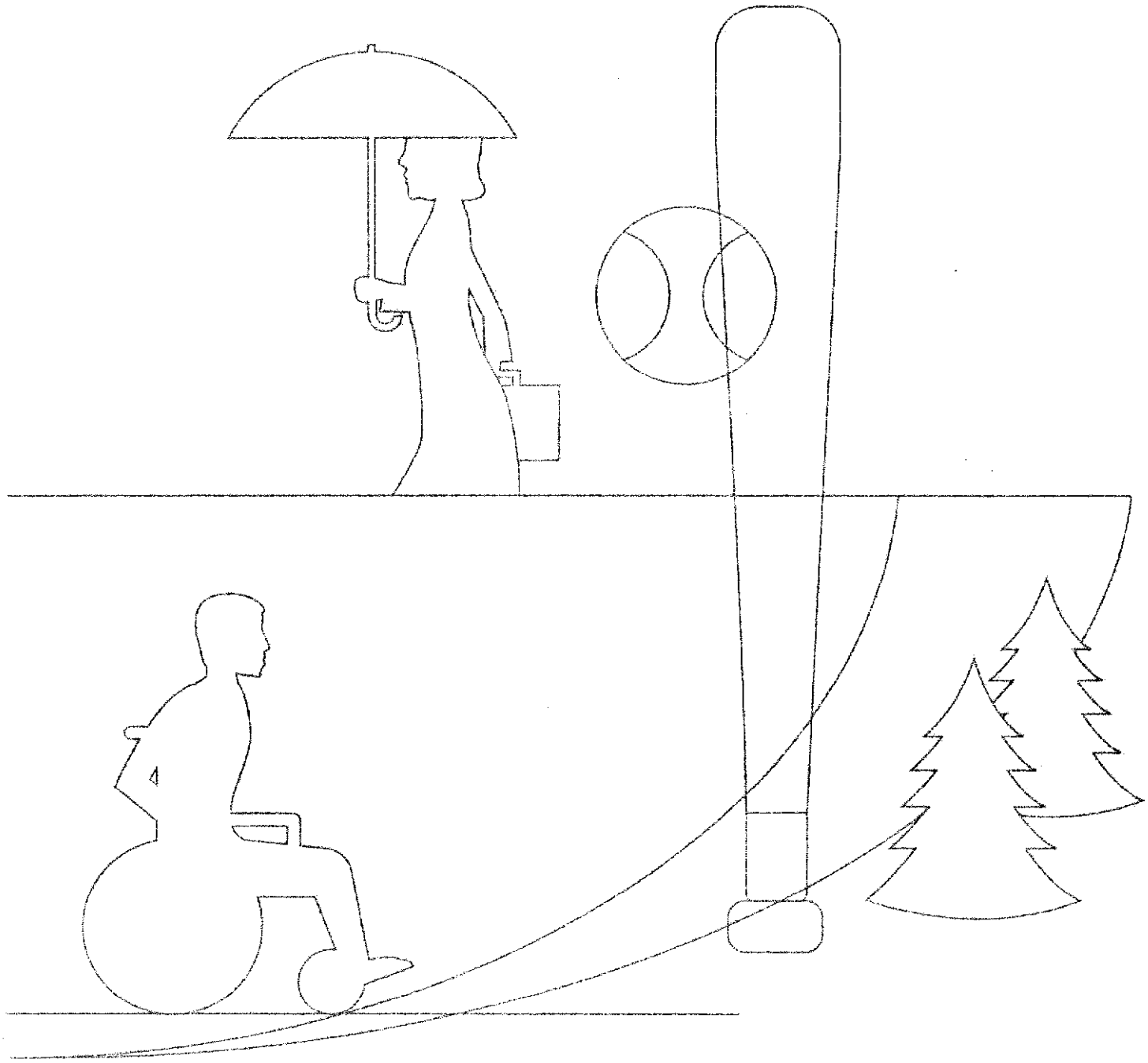
Different intensities and types of exercise confer different benefits. Vigorous physical activity (e.g., jogging or other aerobic exercise) provides greater benefits for physical fitness than does moderate physical activity and burns more calories per unit of time. Resistance exercise (such as weight training, using weight machines, and resistance band workouts) increases muscular strength and endurance and maintains or increases muscle mass. These benefits are seen in adolescents, adults, and older adults who perform resistance exercises on 2 or more days per week. Also, weight-bearing exercise has the potential to reduce the risk of osteoporosis by increasing peak bone mass during growth, maintaining peak bone mass during adulthood, and reducing the rate of bone loss during aging. In addition, regular exercise can help prevent falls, which is of particular importance for older adults.

The barrier often given for a failure to be physically active is lack of time. Setting aside 30 to 60 consecutive minutes each day for planned exercise is one way to obtain physical activity, but it is not the only way. Physical activity may include short bouts (e.g., 10-minute bouts) of moderate-intensity activity. The accumulated total is what is important—both for health and for burning calories. Physical activity can be accumulated through three to six 10-minute bouts over the course of a day.

Elevating the level of daily physical activity may also provide indirect nutritional benefits. A sedentary lifestyle limits the number of calories that can be consumed without gaining weight. The higher a person's physical activity level, the higher his or her energy requirement and the easier it is to plan a daily food intake pattern that meets recommended nutrient requirements.

Proper hydration is important when participating in physical activity. Two steps that help avoid dehydration during prolonged physical activity or when it is hot include: (1) consuming fluid regularly during the activity and (2) drinking several glasses of water or other fluid after the physical activity is completed (see chs. 2 and 8).

Regular physical activity and physical fitness make important contributions to one's health, sense of well-being, and maintenance of a healthy body weight.



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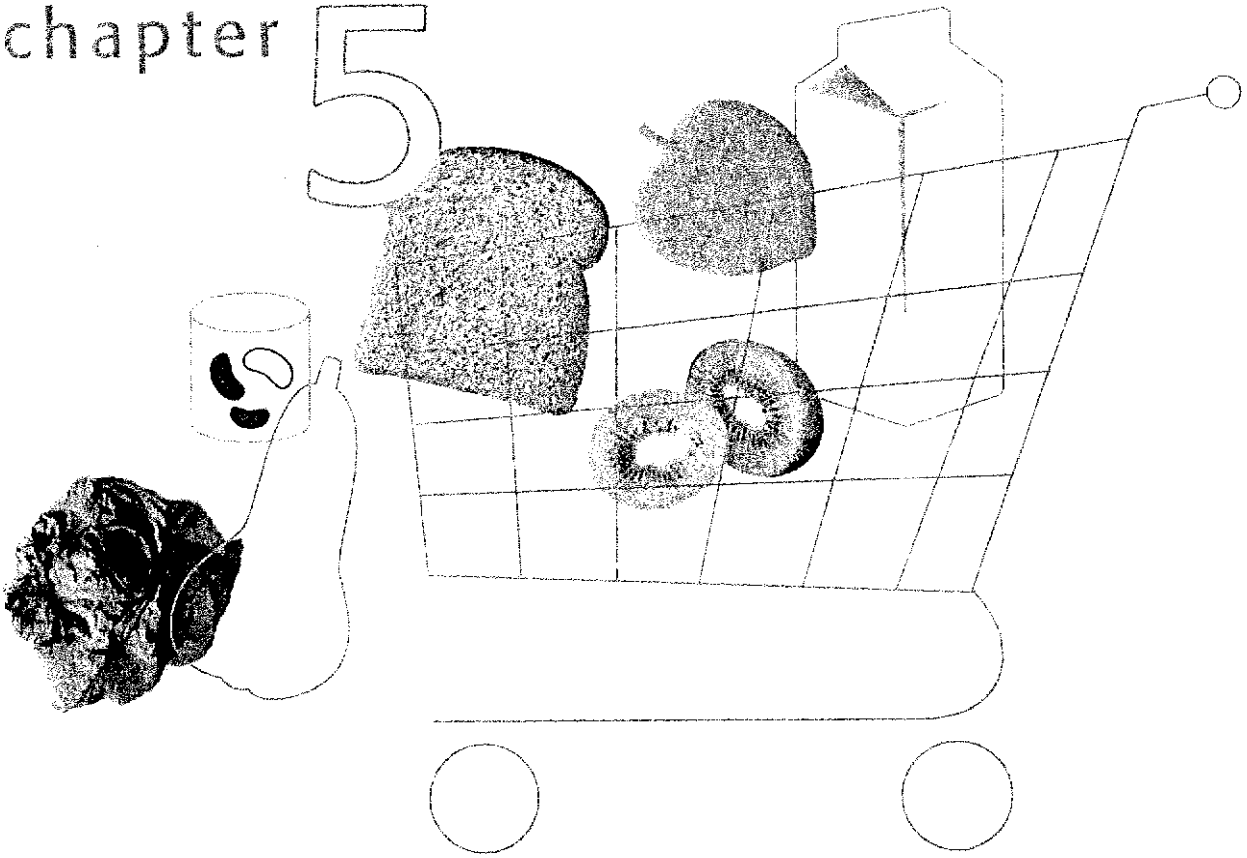


Food Groups To Encourage

OVERVIEW

Increased intakes of fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products are likely to have important health benefits for most Americans. While protein is an important macronutrient in the diet, most Americans are already currently consuming enough (AMDR = 10 to 35 percent of calories) and do not need to increase their intake. As such, protein consumption, while important for nutrient adequacy, is not a focus of this document. Although associations have been identified between specific food groups (e.g., fruits and vegetables) and reduced risk for chronic diseases, the effects are interrelated and the health benefits should be considered in the context of an overall healthy diet that does not exceed calorie needs (such as the USDA Food Guide or the DASH Eating Plan; see ch. 2). The strength of the evidence for the association between increased intake of fruits and vegetables and reduced risk of chronic diseases is variable and depends on the specific disease, but an array of evidence points to beneficial health effects.

Compared with the many people who consume a dietary pattern with only small amounts of fruits and vegetables, those who eat more generous amounts as part of a healthful diet are likely to have reduced risk of chronic diseases, including stroke and perhaps other cardiovas-

cular diseases, type 2 diabetes, and cancers in certain sites (oral cavity and pharynx, larynx, lung, esophagus, stomach, and colon-rectum). Diets rich in foods containing fiber, such as fruits, vegetables, and whole grains, may reduce the risk of coronary heart disease. Diets rich in milk and milk products can reduce the risk of low bone mass throughout the life cycle. The consumption of milk products is especially important for children and adolescents who are building their peak bone mass and developing lifelong habits. Although each of these food groups may have a different relationship with disease outcomes, the adequate consumption of all food groups contributes to overall health.

DISCUSSION

Fruits, vegetables, whole grains, and milk products are all important to a healthful diet and can be good sources of the nutrients of concern (see ch. 2). When increasing intake of fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products, it is important to decrease one's intake of less-nutrient-dense foods to control calorie intake. The 2,000-calorie level used in the discussion is a reference level only; it is not a recommended calorie intake because many Americans should be consuming fewer calories to maintain a healthy weight.

Fruits and Vegetables

Four and one-half cups (nine servings) of fruits and vegetables are recommended daily for the reference 2,000-calorie level, with higher or lower amounts depending on the caloric level. This results in a range of 2½ to 6½ cups (5 to 13 servings) of fruits and vegetables each day for the 1,200- to 3,200-calorie levels[11] (app. A-2). Fruits and vegetables provide a variety of micronutrients and fiber. Table 5 provides a list of fruits and vegetables that are good sources of vitamins A (as carotenoids) and C, folate, and potassium. In the fruit group, consumption of whole fruits (fresh, frozen, canned, dried) rather than fruit juice for the majority of the total daily amount is suggested to ensure adequate fiber intake. Different vegetables are rich in different nutrients. In the vegetable group, weekly intake of specific amounts from each of five vegetable subgroups (dark green, orange, legumes [dry beans], starchy, and other vegetables)[12] is recommended for adequate nutrient intake. Each subgroup provides a somewhat different array of nutrients. In the USDA Food Guide at the reference 2,000-calorie level, the following weekly amounts are recommended:

Dark green vegetables	3 cups/week
Orange vegetables	2 cups/week
Legumes (dry beans)	3 cups/week
Starchy vegetables	3 cups/week
Other vegetables	6½ cups/week

Most current consumption patterns do not achieve the recommended intakes of many of these vegetables. The DASH Eating Plan and the USDA Food Guide suggest increasing intakes of dark green vegetables, orange

KEY RECOMMENDATIONS

- Consume a sufficient amount of fruits and vegetables while staying within energy needs. Two cups of fruit and 2½ cups of vegetables per day are recommended for a reference 2,000-calorie intake, with higher or lower amounts depending on the calorie level.
- Choose a variety of fruits and vegetables each day. In particular, select from all five vegetable subgroups (dark green, orange, legumes, starchy vegetables, and other vegetables) several times a week.
- Consume 3 or more ounce-equivalents of whole-grain products per day, with the rest of the recommended grains coming from enriched or whole-grain products. In general, at least half the grains should come from whole grains.
- Consume 3 cups per day of fat-free or low-fat milk or equivalent milk products.

Key Recommendations for Specific Population Groups

- *Children and adolescents.* Consume whole-grain products often; at least half the grains should be whole grains. Children 2 to 8 years should consume 2 cups per day of fat-free or low-fat milk or equivalent milk products. Children 9 years of age and older should consume 3 cups per day of fat-free or low-fat milk or equivalent milk products.

[11] See appendix A-2 and table D1-16 from the 2005 DGAC Report (or USDA website) for information on children age 2 to 3 years.

[12] Includes all fresh, frozen, canned, cooked, or raw forms of vegetables. Examples of vegetables are dark green (broccoli, spinach, most greens); orange (carrots, sweetpotatoes, winter squash, pumpkin); legumes (dry beans, chickpeas, tofu); starchy (corn, white potatoes, green peas); other (tomatoes, cabbage, celery, cucumber, lettuce, onions, peppers, green beans, cauliflower, mushrooms, summer squash).

vegetables, and legumes (dry beans) as part of the overall recommendation to have an adequate intake of fruits and vegetables (see ch. 2).

Whole Grains

In addition to fruits and vegetables, whole grains are an important source of fiber and other nutrients. Whole grains, as well as foods made from them, consist of the entire grain seed, usually called the kernel. The kernel is made of three components—the bran, the germ, and the endosperm. If the kernel has been cracked, crushed, or flaked, then it must retain nearly the same relative proportions of bran, germ, and endosperm as the original grain to be called whole grain. In the grain-refining process, most of the bran and some of the germ is removed, resulting in the loss of dietary fiber (also known as cereal fiber), vitamins, minerals, lignans, phytoestrogens, phenolic compounds, and phytic acid. Some manufacturers add bran to grain products to increase the dietary fiber content. Refined grains are the resulting product of the grain-refining processing. Most refined grains are enriched before being further processed into foods. Enriched refined grain products that conform to standards of identity are required by law to be fortified with folic acid, as well as thiamin, riboflavin, niacin, and iron. Food manufacturers may fortify whole-grain foods where regulations permit the addition of folic acid. Currently, a number of whole-grain, ready-to-eat breakfast cereals are fortified with folic acid. As illustrated by the comparison of whole-wheat and enriched white flours in table 6, many nutrients occur at higher or similar levels in whole grains when compared to enriched grains, but whole grains have less folate unless they have been fortified with folic acid.

Consuming at least 3 or more ounce-equivalents of whole grains per day can reduce the risk of several chronic diseases and may help with weight maintenance. Thus, daily intake of at least 3 ounce-equivalents of whole grains per day is recommended by substituting whole grains for refined grains. However, because three servings may be difficult for younger children to achieve, it is recommended that they increase whole grains into their diets as they grow. At all calorie levels, all age groups

Increased intakes of fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products are likely to have important health benefits for most Americans.

should consume at least half the grains as whole grains to achieve the fiber recommendation. All grain servings can be whole-grain; however, it is advisable to include some folate-fortified products, such as folate-fortified whole-grain cereals, in these whole-grain choices.

Whole grains cannot be identified by the color of the food; label-reading skills are needed. Table 7 identifies names of whole grains that are available in the United States. For information about the ingredients in whole-grain and enriched-grain products, read the ingredient list on the food label. For many whole-grain products, the words "whole" or "whole grain" will appear before the grain ingredient's name. The whole grain should be the first ingredient listed. Wheat flour, enriched flour, and degerminated cornmeal are not whole grains. The Food and Drug Administration requires foods that bear the whole-grain health claim to (1) contain 51 percent or more whole-grain ingredients by weight per reference amount and (2) be low in fat.

Milk and Milk Products

Another source of nutrients is milk and milk products. Milk product consumption has been associated with overall diet quality and adequacy of intake of many nutrients. The intake of milk products is especially important to bone health during childhood and adolescence. Studies specifically on milk and other milk products, such as yogurt and cheese, showed a positive relationship between the intake of milk and milk products and bone mineral content or bone mineral density in one or more skeletal sites (see table 1 for information on equivalent amounts of milk products).

Adults and children should not avoid milk and milk products because of concerns that these foods lead to weight gain. There are many fat-free and low-fat choices without added sugars that are available and consistent with an overall healthy dietary plan. If a person wants to consider milk alternatives because of lactose intolerance, the most reliable and easiest ways to derive the health benefits associated with milk and milk product consumption is to choose alternatives within the milk food group, such as yogurt or lactose-free milk, or to consume the enzyme lactase prior to the consumption of milk products. For individuals who choose to or must avoid all milk products (e.g., individuals with lactose intolerance, vegans), nondairy calcium-containing alternatives may be selected to help meet calcium needs (app. B-4).

TABLE 5. Fruits, Vegetables, and Legumes (Dry Beans) That Contain Vitamin A (Carotenoids), Vitamin C, Folate, and Potassium

Many of the fruits, vegetables, and legumes (beans) are considered to be important sources of vitamin A (as carotenoids), vitamin C, and potassium in the adult population. Intakes of these nutrients, based on dietary intake data or evidence of public health problems, may be of concern. Also listed are sources of naturally occurring folate, a nutrient considered to be of concern for women of childbearing age and those in the first trimester of pregnancy. Folic acid-fortified grain products, not listed in this table, are also good sources.

Sources of vitamin A (carotenoids) (see app. B-6) • Bright orange vegetables like carrots, sweetpotatoes, and pumpkin • Tomatoes and tomato products, red sweet pepper • Leafy greens such as spinach, collards, turnip greens, kale, beet and mustard greens, green leaf lettuce, and romaine • Orange fruits like mango, cantaloupe, apricots, and red or pink grapefruit
Sources of vitamin C • Citrus fruits and juices, kiwi fruit, strawberries, guava, papaya, and cantaloupe • Broccoli, peppers, tomatoes, cabbage (especially Chinese cabbage), brussels sprouts, and potatoes • Leafy greens such as romaine, turnip greens, and spinach
Sources of folate • Cooked dry beans and peas • Oranges and orange juice • Deep green leaves like spinach and mustard greens
Sources of potassium (see app. B-1) • Baked white or sweetpotatoes, cooked greens (such as spinach), winter (orange) squash • Bananas, plantains, many dried fruits, oranges and orange juice, cantaloupe, and honeydew melons • Cooked dry beans • Soybeans (green and mature) • Tomato products (sauce, paste, puree) • Beet greens

TABLE 6. Comparison of 100 Grams of Whole-Grain Wheat Flour and Enriched, Bleached, White, All-Purpose Flour

Some of the nutrients of concern and the fortification nutrients in 100 percent whole-wheat flour and enriched, bleached, all-purpose white (wheat) flour. Dietary fiber, calcium, magnesium and potassium, nutrients of concern, occur in much higher concentrations in the whole-wheat flour on a 100-gram basis (percent). The fortification nutrients—thiamin, riboflavin, niacin, and iron—are similar in concentration between the two flours, but folate, as Dietary Folate Equivalent (DFE), µg, is higher in the enriched white flour.

	100 Percent Whole-Grain Wheat Flour	Enriched, Bleached, All-Purpose White Flour
Calories, kcal	339.0	364.0
Dietary fiber, g	12.2	2.7
Calcium, mg	34.0	15.0
Magnesium, mg	138.0	22.0
Potassium, mg	405.0	107.0
Folate, DFE, µg	44.0	291.0
Thiamin, mg	0.5	0.8
Riboflavin, mg	0.2	0.5
Niacin, mg	6.4	5.9
Iron, mg	3.9	4.6

Source: Agricultural Research Service Nutrient Database for Standard Reference, Release 17

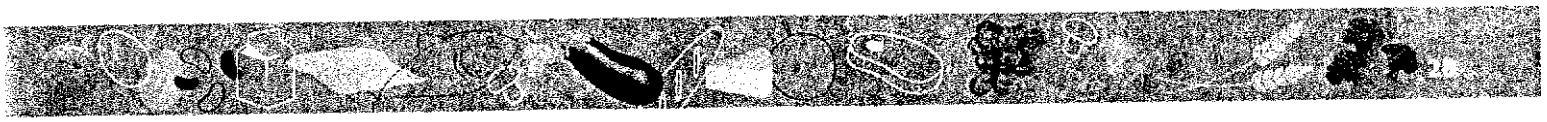


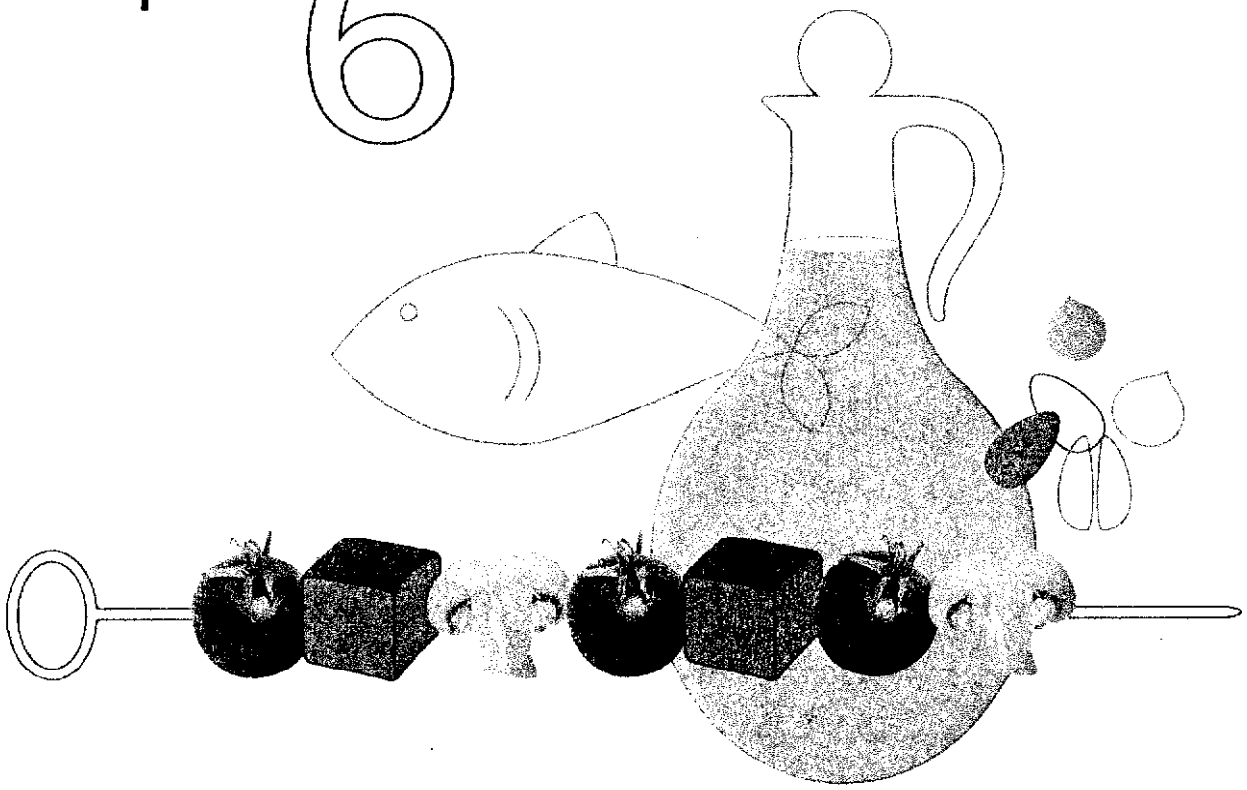
TABLE 7. Whole Grains Available in the United States

Whole grains that are consumed in the United States either as a single food (e.g., wild rice, popcorn) or as an ingredient in a multi-ingredient food (e.g., in multi-grain breads). This listing of whole grains was determined from a breakdown of foods reported consumed in nationwide food consumption surveys, by amount consumed. The foods are listed in approximate order of amount consumed, but the order may change over time. In addition, other whole grains may be consumed that are not yet represented in the surveys.

Whole wheat
Whole oats/oatmeal
Whole-grain corn
Popcorn
Brown rice
Whole rye
Whole-grain barley
Wild rice
Buckwheat
Triticale
Bulgur (cracked wheat)
Millet
Quinoa
Sorghum

Source: Agriculture Research Service Database for CSFII 1994–1996.

chapter 6



Fats

OVERVIEW

Fats and oils are part of a healthful diet, but the type of fat makes a difference to heart health, and the total amount of fat consumed is also important. High intake of saturated fats, *trans* fats, and cholesterol increases the risk of unhealthy blood lipid levels, which, in turn, may increase the risk of coronary heart disease. A high intake of fat (greater than 35 percent of calories) generally increases saturated fat intake and makes it more difficult to avoid consuming excess calories. A low intake of fats and oils (less than 20 percent of calories) increases the risk of inadequate intakes of vitamin E and of essential fatty acids and may contribute to unfavorable changes in high-density lipoprotein (HDL) blood cholesterol and triglycerides.

DISCUSSION

Fats supply energy and essential fatty acids and serve as a carrier for the absorption of the fat-soluble vitamins A, D, E, and K and carotenoids. Fats serve as building blocks of membranes and play a key regulatory role in numerous biological functions. Dietary fat is found in foods derived from both plants and animals. The recommended total fat intake is between 20 and 35 percent of calories for adults. A fat intake of 30 to 35 percent of calories is recommended for children 2 to 3 years of age and 25 to 35 percent of calories for children and adolescents 4 to 18 years of age. Few Americans consume less than 20 percent of calories from fat. Fat intakes that exceed 35 percent of calories are associated with both total increased saturated fat and calorie intakes.

To decrease their risk of elevated low-density lipoprotein (LDL) cholesterol in the blood, most Americans need to decrease their intakes of saturated fat and *trans* fats, and many need to decrease their dietary intake of cholesterol. Because men tend to have higher intakes of dietary cholesterol, it is especially important for them to meet this recommendation. Population-based studies of American diets show that intake of saturated fat is more excessive than intake of *trans* fats and cholesterol. Therefore, it is most important for Americans to decrease their intake of saturated fat. However, intake of all three should be decreased to meet recommendations. Table 8 shows, for selected calorie levels, the maximum gram amounts of saturated fat to consume to keep saturated fat intake below 10 percent of total calorie intake. This table may be useful when combined with label-reading guidance. Table 9 gives a few practical examples of the differences in the saturated fat content of different forms of commonly consumed foods. Table 10 provides the major dietary sources of saturated fats in the U.S. diet listed in decreasing order. Diets can be planned to meet nutrient recommendations for linoleic acid and α-linolenic acid while providing very low amounts of saturated fatty acids.

Based on 1994–1996 data, the estimated average daily intake of *trans* fats in the United States was about 2.6 percent of total energy intake. Processed foods and oils provide approximately 80 percent of *trans* fats in the diet, compared to 20 percent that occur naturally in food from animal sources. Table 11 provides the major dietary sources of *trans* fats listed in decreasing order. *Trans* fat content of certain processed foods has changed and is likely to continue to change as the industry reformulates products. Because the *trans* fatty acids produced in the partial hydrogenation of vegetable oils account for more than 80 percent of total intake, the food industry has an important role in decreasing *trans* fatty acid content of the food supply. Limited consumption of foods made with processed sources of *trans* fats provides the most effective means of reducing intake of *trans* fats. By looking at the food label, consumers can select products that are lowest in saturated fat, *trans* fats,[13] and cholesterol.

To meet the total fat recommendation of 20 to 35 percent of calories, most dietary fats should come from sources of polyunsaturated and monounsaturated fatty acids. Sources of omega-6 polyunsaturated fatty acids are liquid vegetable oils, including soybean oil, corn oil, and safflower oil. Plant sources of omega-3 polyunsaturated fatty acids (α-linolenic acid) include soybean oil, canola oil, walnuts, and flaxseed. Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are omega-3 fatty acids that are contained in fish and shellfish. Fish that naturally contain more oil (e.g., salmon, trout, herring) are higher in EPA and DHA than are lean fish (e.g., cod, haddock, catfish). Limited evidence suggests an association between consumption of fatty acids in fish and reduced risks of mortality from cardiovascular disease for the general population. Other sources of EPA and DHA may provide similar benefits; however, more research is needed. Plant sources that are rich in monounsaturated fatty acids include vegetable oils (e.g., canola, olive, high oleic safflower, and sunflower oils) that are liquid at room temperature and nuts.

KEY RECOMMENDATIONS

- Consume less than 10 percent of calories from saturated fatty acids and less than 300 mg/day of cholesterol, and keep *trans* fatty acid consumption as low as possible.
- Keep total fat intake between 20 to 35 percent of calories, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.
- When selecting and preparing meat, poultry, dry beans, and milk or milk products, make choices that are lean, low-fat, or fat-free.
- Limit intake of fats and oils high in saturated and/or *trans* fatty acids, and choose products low in such fats and oils.

Key Recommendations for Specific Population Groups

- *Children and adolescents.* Keep total fat intake between 30 to 35 percent of calories for children 2 to 3 years of age and between 25 to 35 percent of calories for children and adolescents 4 to 18 years of age, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.

[13] Including the amount of *trans* fats on the Nutrition Facts Panel is voluntary until January 2006.

Considerations for Specific Population Groups

Evidence suggests that consuming approximately two servings of fish per week (approximately 8 ounces total) may reduce the risk of mortality from coronary heart disease and that consuming EPA and DHA may reduce the risk of mortality from cardiovascular disease in people who have already experienced a cardiac event.

Federal and State advisories provide current information about lowering exposure to environmental contaminants in fish. For example, methylmercury is a heavy metal toxin found in varying levels in nearly all fish and shellfish. For most people, the risk from mercury by eating fish and shellfish is not a health concern. However, some fish contain higher levels of mercury that may harm an unborn baby or young child's developing nervous system. The risks from mercury in fish and shellfish depend on the amount of fish eaten and the levels of mercury in the fish. Therefore, the Food and Drug Administration (FDA) and the Environmental Protection Agency are advising women of childbearing age who may become pregnant, pregnant women, nursing mothers, and young children to avoid some types of fish and shellfish and eat fish and shellfish that are lower in mercury. For more information, call FDA's food information line toll-free at 1-888-SAFEFOOD or visit http://www.cfsan.fda.gov/~dms/admehg3.html.

...most Americans need to decrease their intakes of saturated fat and *trans* fats, and many need to decrease their dietary intake of cholesterol.

Lower intakes (less than 7 percent of calories from saturated fat and less than 200 mg/day of cholesterol) are recommended as part of a therapeutic diet for adults with elevated LDL blood cholesterol (i.e., above their LDL blood cholesterol goal [see table 12]). People with an elevated LDL blood cholesterol level should be under the care of a healthcare provider.

TABLE 8. Maximum Daily Amounts of Saturated Fat To Keep Saturated Fat Below 10 Percent of Total Calorie Intake

The maximum gram amounts of saturated fat that can be consumed to keep saturated fat intake below 10 percent of total calorie intake for selected calorie levels. A 2,000-calorie example is included for consistency with the food label. This table may be useful when combined with label-reading guidance.

Total Calorie Intake	Limit on Saturated Fat Intake
1,600	18 g or less
2,000[a]	20 g or less
2,200	24 g or less
2,500[a]	25 g or less
2,800	31 g or less

[a] Percent Daily Values on the Nutrition Facts Panel of food labels are based on a 2,000-calorie diet. Values for 2,000 and 2,500 calories are rounded to the nearest 5 grams to be consistent with the Nutrition Facts Panel.

TABLE 9. Differences in Saturated Fat and Calorie Content of Commonly Consumed Foods

This table shows a few practical examples of the differences in the saturated fat content of different forms of commonly consumed foods. Comparisons are made between foods in the same food group (e.g., regular cheddar cheese and low-fat cheddar cheese), illustrating that lower saturated fat choices can be made within the same food group.

Food Category	Portion	Saturated Fat Content (grams)	Calories
Cheese			
• Regular cheddar cheese	1 oz	6.0	114
• Low-fat cheddar cheese	1 oz	1.2	49
Ground beef			
• Regular ground beef (25% fat)	3 oz (cooked)	6.1	236
• Extra lean ground beef (5% fat)	3 oz (cooked)	2.6	148
Milk			
• Whole milk (3.24%)	1 cup	4.6	146
• Low-fat (1%) milk	1 cup	1.5	102
Breads			
• Croissant (med)	1 medium	6.6	231
• Bagel, oat bran (4")	1 medium	0.2	227
Frozen desserts			
• Regular ice cream	½ cup	4.9	145
• Frozen yogurt, low-fat	½ cup	2.0	110
Table spreads			
• Butter	1 tsp	2.4	34
• Soft margarine with zero *trans*	1 tsp	0.7	25
Chicken			
• Fried chicken (leg with skin)	3 oz (cooked)	3.3	212
• Roasted chicken (breast no skin)	3 oz (cooked)	0.9	140
Fish			
• Fried fish	3 oz	2.8	195
• Baked fish	3 oz	1.5	129

Source: ARS Nutrient Database for Standard Reference, Release 17

TABLE 10. Contribution of Various Foods to Saturated Fat Intake in the American Diet (Mean Intake = 25.5 g)

The major dietary sources of saturated fats in the U.S. diet listed in decreasing order.

Food Group	Contribution (percent of total sat fat consumed)
Cheese	13.1
Beef	11.7
Milk[a]	7.8
Oils	4.9
Ice cream/sherbet/frozen yogurt	4.7
Cakes/cookies/quick breads/doughnuts	4.7
Butter	4.6
Other fats[b]	4.4
Salad dressings/mayonnaise	3.7
Poultry	3.6
Margarine	3.2
Sausage	3.1
Potato chips/corn chips/popcorn	2.9
Yeast bread	2.6
Eggs	2.3

[a] The milk category includes all milk, including whole milk, low-fat milk, and fat-free milk.

[b] Shortening and animal fats

Source: Adapted from Cotton PA, Subar AF, Friday JE, Cook A, Dietary Sources of Nutrients among U.S. Adults, 1994–1996. *JADA* 104:921-931, 2004.

TABLE 11. Contribution of Various Foods to *Trans* Fat Intake in the American Diet (Mean Intake = 5.84 g)

The major dietary sources of *trans* fats listed in decreasing order. Processed foods and oils provide approximately 80 percent of *trans* fats in the diet, compared to 20 percent that occur naturally in food from animal sources. *Trans* fats content of certain processed foods has changed and is likely to continue to change as the industry reformulates products.

Food Group	Contribution (percent of total *trans* fats consumed)
Cakes, cookies, crackers, pies, bread, etc.	40
Animal products	21
Margarine	17
Fried potatoes	8
Potato chips, corn chips, popcorn	5
Household shortening	4
Other[a]	5

[a] Includes breakfast cereal and candy. USDA analysis reported 0 grams of *trans* fats in salad dressing.

Source: Adapted from *Federal Register* notice. *Food Labeling; Trans Fatty Acids in Nutrition Labeling; Consumer Research To Consider Nutrient Content and Health Claims and Possible Footnote or Disclosure Statements; Final Rule and Proposed Rule*. Vol. 68, No. 133, p. 41433-41506, July 11, 2003. Data collected 1994-1996.

TABLE 12. Relationship Between LDL Blood Cholesterol Goal and the Level of Coronary Heart Disease Risk

Information for adults with elevated LDL blood cholesterol. LDL blood cholesterol goals for these individuals are related to the level of coronary heart disease risk. People with an elevated LDL blood cholesterol value should make therapeutic lifestyle changes (diet, physical activity, weight control) under the care of a healthcare provider to lower LDL blood cholesterol.

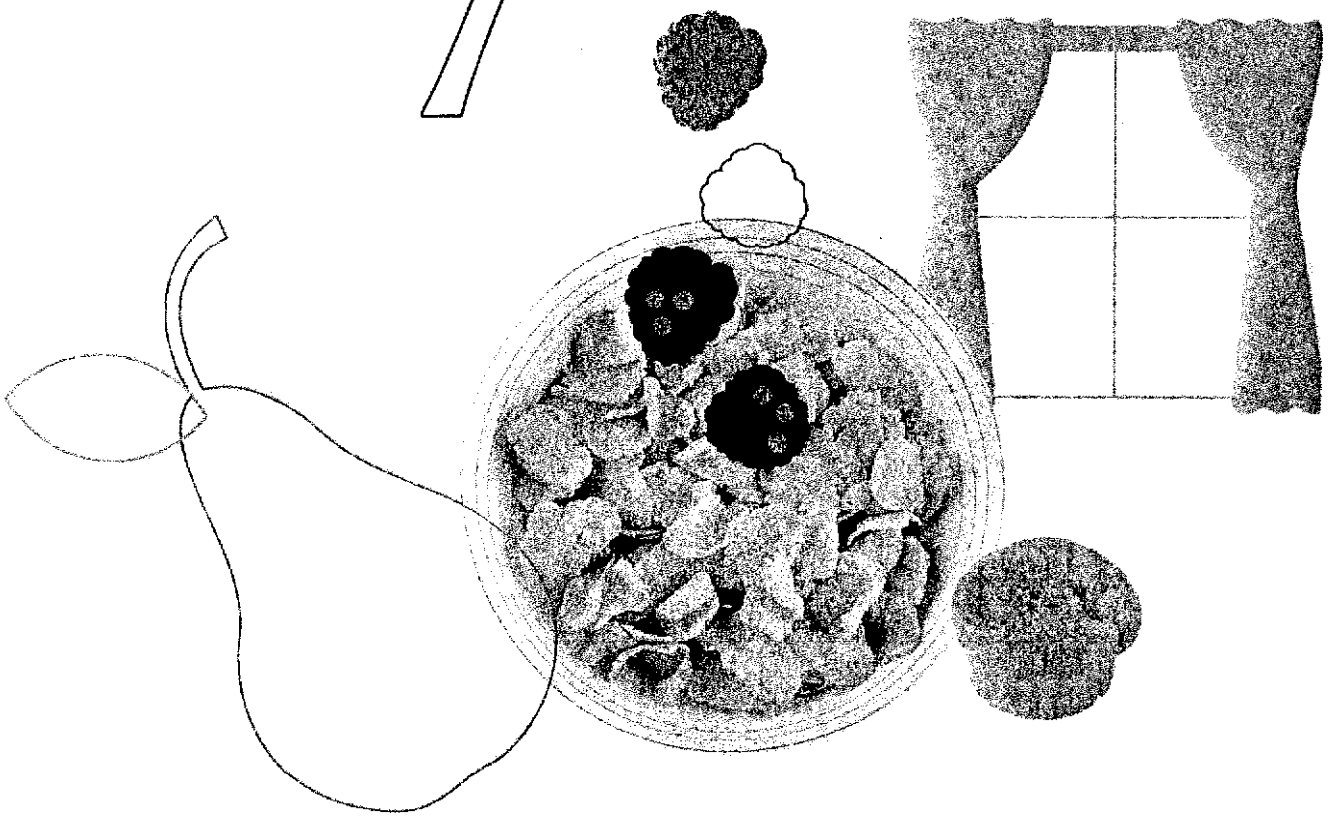
If Someone Has:	LDL Blood Cholesterol Goal Is:
CHD or CHD risk equivalent[a]	Less than 100 mg/dL
Two or more risk factors other than elevated LDL blood cholesterol[b]	Less than 130 mg/dL
Zero or one risk factor other than elevated LDL blood cholesterol[b]	Less than 160 mg/dL

[a] CHD (coronary heart disease) risk equivalent = presence of clinical atherosclerotic disease that confers high risk for CHD events:
- Clinical CHD
- Symptomatic carotid artery disease
- Peripheral arterial disease
- Abdominal aortic aneurysm
- Diabetes
- Two or more risk factors with >20% risk for CHD (or myocardial infarction or CHD death) within 10 years

[b] Major risk factors that affect your LDL goal:
- Cigarette smoking
- High blood pressure (140/90 mmHg or higher or on blood pressure medication)
- Low HDL blood cholesterol (less than 40 mg/dL)
- Family history of early heart disease (heart disease in father or brother before age 55; heart disease in mother or sister before age 65)
- Age (men 45 years or older; women 55 years or older)

Source: NIH Publication No. 01-3290, U.S. Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute, National Cholesterol Education Program Brochure, High Blood Cholesterol What You Need to Know, May 2001. http://www.nhlbi.nih.gov/health/public/heart/chol/hbc_what.htm.

chapter 7



Carbohydrates

OVERVIEW

Carbohydrates are part of a healthful diet. The AMDR for carbohydrates is 45 to 65 percent of total calories. Dietary fiber is composed of nondigestible carbohydrates and lignin intrinsic and intact in plants. Diets rich in dietary fiber have been shown to have a number of beneficial effects, including decreased risk of coronary heart disease and improvement in laxation. There is also interest in the potential relationship between diets containing fiber-rich foods and lower risk of type 2 diabetes. Sugars and starches supply energy to the body in the form of glucose, which is the only energy source for red blood cells and is the preferred energy source for the brain, central nervous system, placenta, and fetus. Sugars can be naturally present in foods (such as the fructose in fruit or the lactose in milk) or added to the food. Added sugars, also known as caloric sweeteners, are sugars and syrups that are added to foods at the table or during processing or preparation (such as high fructose corn syrup in sweetened beverages and baked products). Although the body's response to sugars does not depend on whether they are naturally present in a food or added to the food, added sugars supply calories but few or no nutrients.

Consequently, it is important to choose carbohydrates wisely. Foods in the basic food groups that provide carbohydrates—fruits, vegetables, grains, and milk—are important sources of many nutrients. Choosing plenty of these foods, within the context of a calorie-controlled diet, can promote health and reduce chronic disease risk. However, the greater the consumption of foods containing large amounts of added sugars, the more difficult it is to

consume enough nutrients without gaining weight. Consumption of added sugars provides calories while providing little, if any, of the essential nutrients.

DISCUSSION

The recommended dietary fiber intake is 14 grams per 1,000 calories consumed. Initially, some Americans will find it challenging to achieve this level of intake. However, making fiber-rich food choices more often will move people toward this goal and is likely to confer significant health benefits.

The majority of servings from the fruit group should come from whole fruit (fresh, frozen, canned, dried) rather than juice. Increasing the proportion of fruit that is eaten in the form of whole fruit rather than juice is desirable to increase fiber intake. However, inclusion of some juice, such as orange juice, can help meet recommended levels of potassium intake. Appendixes B-1 and B-8 list some of the best sources of potassium and dietary fiber, respectively.

Legumes—such as dry beans and peas—are especially rich in fiber and should be consumed several times per week. They are considered part of both the vegetable group and the meat and beans group as they contain nutrients found in each of these food groups.

Consuming at least half the recommended grain servings as whole grains is important, for all ages, at each calorie level, to meet the fiber recommendation. Consuming at least 3 ounce-equivalents of whole grains per day can reduce the risk of coronary heart disease, may help with weight maintenance, and may lower risk for other chronic diseases. Thus, at lower calorie levels, adults should consume more than half (specifically, at least 3 ounce-equivalents) of whole grains per day, by substituting whole grains for refined grains. (See table 7 for a list of whole grains available in the United States.)

Diets rich in dietary fiber have been shown to have a number of beneficial effects.

KEY RECOMMENDATIONS

- Choose fiber-rich fruits, vegetables, and whole grains often.
- Choose and prepare foods and beverages with little added sugars or caloric sweeteners, such as amounts suggested by the USDA Food Guide and the DASH Eating Plan.
- Reduce the incidence of dental caries by practicing good oral hygiene and consuming sugar- and starch-containing foods and beverages less frequently.

Individuals who consume food or beverages high in added sugars tend to consume more calories than those who consume food or beverages low in added sugars; they also tend to consume lower amounts of micronutrients. Although more research is needed, available prospective studies show a positive association between the consumption of calorically sweetened beverages and weight gain. For this reason, decreased intake of such foods, especially beverages with caloric sweeteners, is recommended to reduce calorie intake and help achieve recommended nutrient intakes and weight control.

Total discretionary calories should not exceed the allowance for any given calorie level, as shown in the USDA Food Guide (see ch. 2). The discretionary calorie allowance covers all calories from added sugars, alcohol, and the additional fat found in even moderate fat choices from the milk and meat group. For example, the 2,000-calorie pattern includes only about 267 discretionary calories. At 29 percent of calories from total fat (including 18 g of solid fat), if no alcohol is consumed, then only 8 teaspoons (32 g) of added sugars can be afforded. This is less than the amount in a typical 12-ounce calorically sweetened soft drink. If fat is decreased to 22 percent of calories, then 18 teaspoons (72 g) of added sugars is allowed. If fat is increased to 35 percent of calories, then no allowance remains for added sugars, even if alcohol is not consumed.

In some cases, small amounts of sugars added to nutrient-dense foods, such as breakfast cereals and reduced-fat milk products, may increase a person's intake of such

> ...the greater the consumption of foods containing large amounts of added sugars, the more difficult it is to consume enough nutrients without gaining weight.

foods by enhancing the palatability of these products, thus improving nutrient intake without contributing excessive calories. The major sources of added sugars are listed in table 13 (app. A-3 provides examples of how added sugars can fit into the discretionary calorie allowance).

The Nutrition Facts Panel on the food label provides the amount of total sugars but does not list added sugars separately. People should examine the ingredient list to find out whether a food contains added sugars. The ingredient list is usually located under the Nutrition Facts Panel or on the side of a food label. Ingredients are listed in order of predominance, by weight; that is, the ingredient with the greatest contribution to the product weight is listed first and the ingredient contributing the least amount is listed last. Table 14 lists ingredients that are included in the term "added sugars."[14]

Sugars and starches contribute to dental caries by providing substrate for bacterial fermentation in the mouth. Thus, the frequency and duration of consumption of starches and sugars can be important factors because they increase exposure to cariogenic substrates. Drinking fluoridated water and/or using fluoride-containing dental hygiene products help reduce the risk of dental caries. Most bottled water is not fluoridated. With the increase in consumption of bottled water, there is concern that Americans may not be getting enough fluoride for maintenance of oral health. A combined approach of reducing the frequency and duration of exposure to fermentable carbohydrate intake and optimizing oral hygiene practices, such as drinking fluoridated water and brushing and flossing teeth, is the most effective way to reduce incidence of dental caries.

Considerations for Specific Population Groups

Older Adults

Dietary fiber is important for laxation. Since constipation may affect up to 20 percent of people over 65 years of age, older adults should choose to consume foods rich in dietary fiber. Other causes of constipation among this age group may include drug interactions with laxation and lack of appropriate hydration (see ch. 2).

Children

Carbohydrate intakes of children need special considerations with regard to obtaining sufficient amounts of fiber, avoiding excessive amounts of calories from added sugars, and preventing dental caries. Several cross-sectional surveys on U.S. children and adolescents have found inadequate dietary fiber intakes, which could be improved by increasing consumption of whole fruits, vegetables, and whole-grain products. Sugars can improve the palatability of foods and beverages that otherwise might not be consumed. This may explain why the consumption of sweetened dairy foods and beverages and presweetened cereals is positively associated with childrens' and adolescents' nutrient intake. However, beverages with caloric sweeteners, sugars and sweets, and other sweetened foods that provide little or no nutrients are negatively associated with diet quality and can contribute to excessive energy intakes, affirming the importance of reducing added sugar intake substantially from current levels. Most of the studies of preschool children suggest a positive association between sucrose consumption and dental caries, though other factors (particularly infrequent brushing or not using fluoridated toothpaste) are more predictive of caries outcome than is sugar consumption.

[14] For information on amounts of added sugars in some common foods, see Krebs-Smith, SM. Choose beverages and foods to moderate your intake of sugars: measurement requires quantification. *The Journal of Nutrition (J Nutr)* 131(2S-1): 527S-535S, 2001.

TABLE 13. Major Sources of Added Sugars (Caloric Sweeteners) in the American Diet

Food groups that contribute more than 5 percent of the added sugars to the American diet in decreasing order.

Food Categories	Contribution to Added Sugars Intake (percent of total added sugars consumed)
Regular soft drinks	33.0
Sugars and candy	16.1
Cakes, cookies, pies	12.9
Fruit drinks (fruitades and fruit punch)	9.7
Dairy desserts and milk products (ice cream, sweetened yogurt, and sweetened milk)	8.6
Other grains (cinnamon toast and honey-nut waffles)	5.8

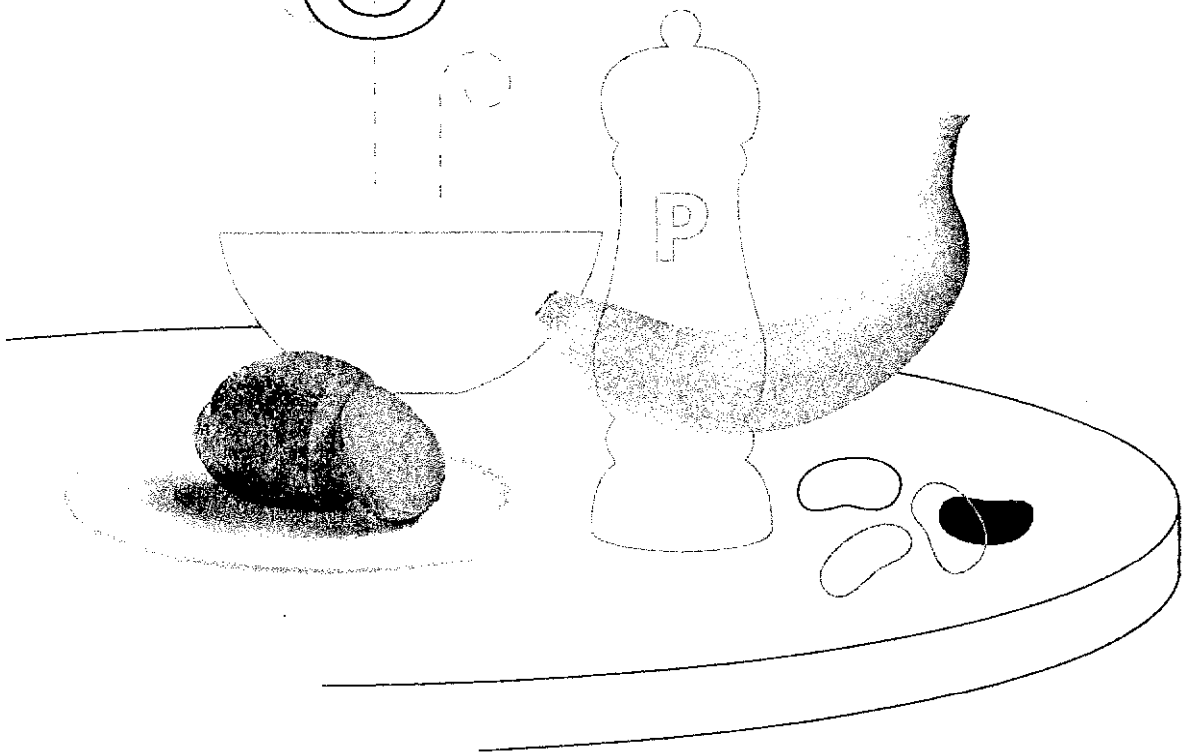
Source: Guthrie and Morton, *Journal of the American Dietetic Association*, 2000.

TABLE 14. Names for Added Sugars That Appear on Food Labels

Some of the names for added sugars that may be in processed foods and listed on the label ingredients list.

Brown sugar	Invert sugar
Corn sweetener	Lactose
Corn syrup	Maltose
Dextrose	Malt syrup
Fructose	Molasses
Fruit juice concentrates	Raw sugar
Glucose	Sucrose
High-fructose corn syrup	Sugar
Honey	Syrup

chapter 8



Sodium and Potassium

OVERVIEW

On average, the higher an individual's salt (sodium chloride) intake, the higher an individual's blood pressure. Nearly all Americans consume substantially more salt than they need. Decreasing salt intake is advisable to reduce the risk of elevated blood pressure. Keeping blood pressure in the normal range reduces an individual's risk of coronary heart disease, stroke, congestive heart failure, and kidney disease. Many American adults will develop hypertension (high blood pressure) during their lifetime. Lifestyle changes can prevent or delay the onset of high blood pressure and can lower elevated blood pressure. These changes include reducing salt intake, increasing potassium intake, losing excess body weight, increasing physical activity, and eating an overall healthful diet.

DISCUSSION

Salt is sodium chloride. Food labels list sodium rather than salt content. When reading a Nutrition Facts Panel on a food product, look for the sodium content. Foods that are low in sodium (less than 140 mg or 5 percent of the Daily Value [DV]) are low in salt.

Common sources of sodium found in the food supply are provided in figure 4. On average, the natural salt content of food accounts for only about 10 percent of total intake,

while discretionary salt use (i.e., salt added at the table or while cooking) provides another 5 to 10 percent of total intake. Approximately 75 percent is derived from salt added by manufacturers. In addition, foods served by food establishments may be high in sodium. It is important to read the food label and determine the sodium content of food, which can vary by several hundreds of milligrams in similar foods. For example, the sodium content in regular tomato soup may be 700 mg per cup in one brand and 1,100 mg per cup in another brand. Reading labels, comparing sodium contents of foods, and purchasing the lower sodium brand may be one strategy to lower total sodium intake (see table 15 for examples of these foods).

An individual's preference for salt is not fixed. After consuming foods lower in salt for a period of time, taste for salt tends to decrease. Use of other flavorings may satisfy an individual's taste. While salt substitutes containing potassium chloride may be useful for some individuals, they can be harmful to people with certain medical conditions. These individuals should consult a healthcare provider before trying salt substitutes.

Discretionary salt use is fairly stable, even when foods offered are lower in sodium than typical foods consumed. When consumers are offered a lower sodium product, they typically do not add table salt to compensate for the lower sodium content, even when available. Therefore, any program for reducing the salt consumption of a population should concentrate primarily on reducing the salt used during food processing and on changes in food selection (e.g., more fresh, less-processed items, less sodium-dense foods) and preparation.

Lifestyle changes can prevent or delay the onset of high blood pressure and can lower elevated blood pressure.

KEY RECOMMENDATIONS

- Consume less than 2,300 mg (approximately 1 tsp of salt) of sodium per day.
- Choose and prepare foods with little salt. At the same time, consume potassium-rich foods, such as fruits and vegetables.

Key Recommendations for Specific Population Groups

- *Individuals with hypertension, blacks, and middle-aged and older adults.* Aim to consume no more than 1,500 mg of sodium per day, and meet the potassium recommendation (4,700 mg/day) with food.

Reducing salt intake is one of several ways that people may lower their blood pressure. The relationship between salt intake and blood pressure is direct and progressive without an apparent threshold. On average, the higher a person's salt intake, the higher the blood pressure. Reducing blood pressure, ideally to the normal range, reduces the risk of stroke, heart disease, heart failure, and kidney disease.

Another dietary measure to lower blood pressure is to consume a diet rich in potassium. A potassium-rich diet also blunts the effects of salt on blood pressure, may reduce the risk of developing kidney stones, and possibly decrease bone loss with age. The recommended intake of potassium for adolescents and adults is 4,700 mg/day. Recommended intakes for potassium for children 1 to 3 years of age is 3,000 mg/day, 4 to 8 years of age is 3,800 mg/day, and 9 to 13 years of age is 4,500 mg/day. Potassium should come from food sources. Fruits and vegetables, which are rich in potassium with its bicarbonate precursors, favorably affect acid-base metabolism, which may reduce risk of kidney stones and bone loss. Potassium-rich fruits and vegetables include leafy green vegetables, fruit from vines, and root vegetables. Meat, milk, and cereal products also contain potassium, but may not have the same effect on acid-base metabolism. Dietary sources of potassium are listed in table 5 and appendix B-1.

Considerations for Specific Population Groups

Individuals With Hypertension, Blacks, and Middle-Aged and Older Adults. Some individuals tend to be more salt sensitive than others, including people with hypertension, blacks, and middle-aged and older adults. Because blacks commonly have a relatively low intake of potassium and a high prevalence of elevated blood pressure and salt sensitivity, this population subgroup may especially benefit from an increased dietary intake of potassium. Dietary potassium can lower blood pressure and blunt the effects of salt on blood pressure in some individuals. While salt substitutes containing potassium chloride may be useful for some individuals, they can be harmful to people with certain medical conditions. These individuals should consult a healthcare provider before using salt substitutes.

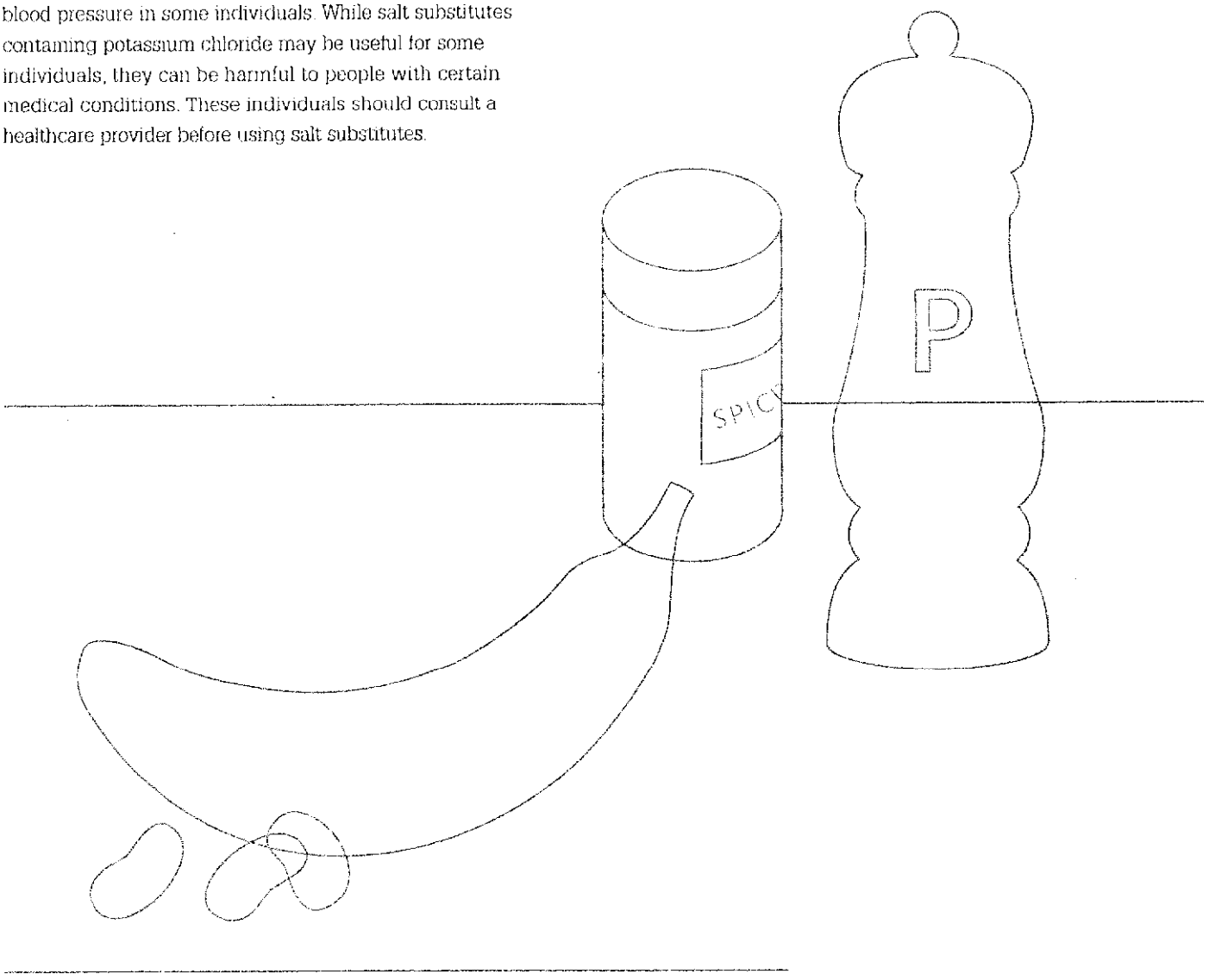
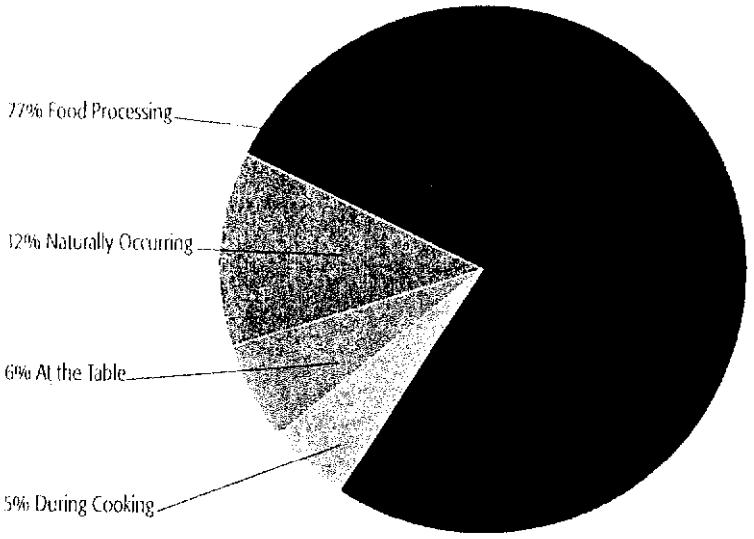


FIGURE 4. Sources of Dietary Sodium

The relative amounts of dietary sodium in the American diet



Source: Mattes RD, Donnelly D. Relative contributions of dietary sodium sources. *J Am Coll Nutr*. 1991 Aug;10(4):383-93.

TABLE 15. Range of Sodium Content for Selected Foods

The ranges of sodium content for selected foods available in the retail market. This table is provided to exemplify the importance of reading the food label to determine the sodium content of food, which can vary by several hundreds of milligrams in similar foods.

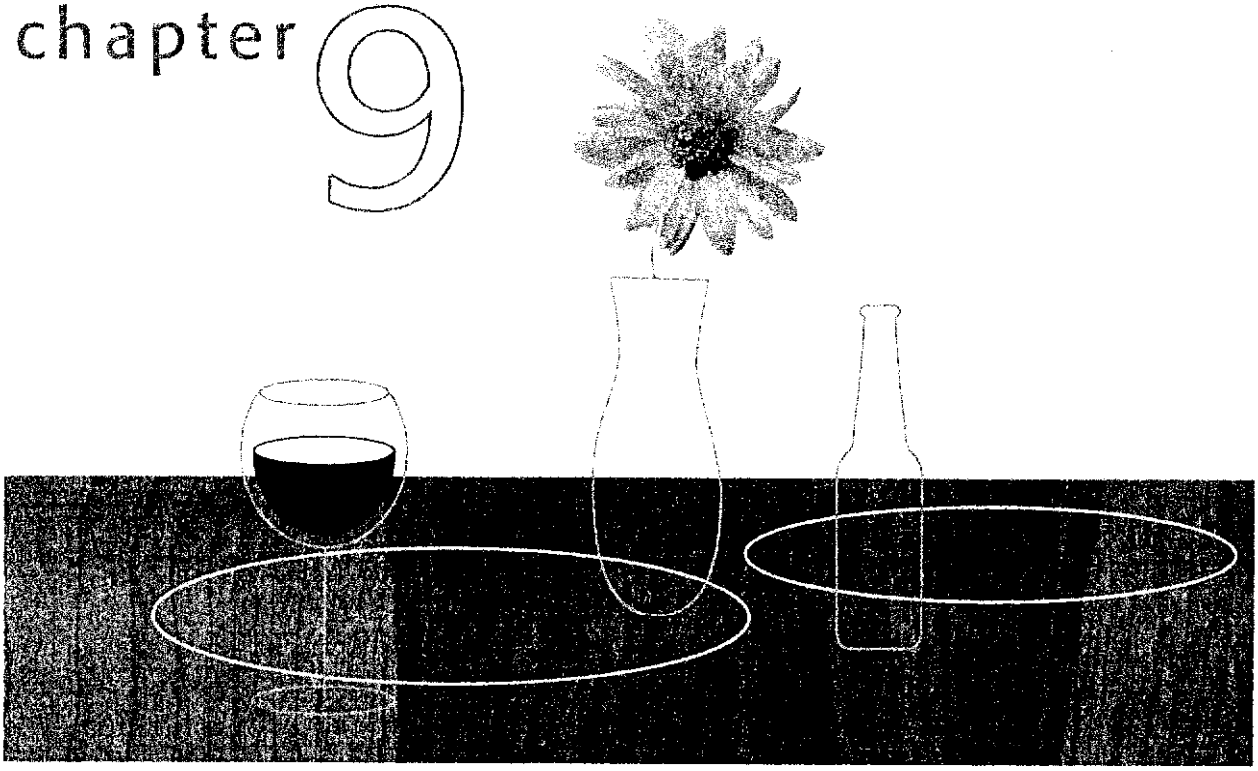
Food Group	Serving Size	Range (mg)
Breads, all types	1 oz	95–210
Frozen pizza, plain, cheese	4 oz	450–1200
Frozen vegetables, all types	½ c	2–160
Salad dressing, regular fat, all types	2 Tbsp	110–505
Salsa	2 Tbsp	150–240
Soup (tomato), reconstituted	8 oz	700–1260
Tomato juice	8 oz (~1 c)	340–1040
Potato chips[a]	1 oz (28.4 g)	120–180
Tortilla chips[a]	1 oz (28.4 g)	105–160
Pretzels[a]	1 oz (28.4 g)	290–560

[a] All snack foods are regular flavor, salted.

Source: Agricultural Research Service Nutrient Database for Standard Reference, Release 17 and recent manufacturers label data from retail market surveys. Serving sizes were standardized to be comparable among brands within a food. Pizza and bread slices vary in size and weight across brands.

Note: None of the examples provided were labeled low-sodium products.

chapter 9



Alcoholic Beverages

OVERVIEW

The consumption of alcohol can have beneficial or harmful effects depending on the amount consumed, age and other characteristics of the person consuming the alcohol, and specifics of the situation. In 2002, 55 percent of U.S. adults were current drinkers. Forty-five percent of U.S. adults do not drink any alcohol at all.[15] Abstention is an important option. Fewer Americans consume alcohol today as compared to 50 to 100 years ago.

The hazards of heavy alcohol consumption are well known and include increased risk of liver cirrhosis, hypertension, cancers of the upper gastrointestinal tract, injury, violence, and death. Moreover, certain individuals who are more susceptible to the harmful effects of alcohol should not drink at all. In addition, alcohol should be avoided by those participating in activities that require attention, skill, and/or coordination.

Alcohol may have beneficial effects when consumed in moderation. The lowest all-cause mortality occurs at an intake of one to two drinks per day. The lowest coronary heart disease mortality also occurs at an intake of one to two drinks per day. Morbidity and mortality are highest among those drinking large amounts of alcohol.

[15] Behavioral Risk Factor Surveillance System, Surveillance for Certain Health Behaviors Among Selected Local Areas—United States, Behavioral Risk Factor Surveillance System, 2002, *MMWR*, 53, No SS-05. http://www.cdc.gov/brfss/.

DISCUSSION

Alcoholic beverages supply calories but few essential nutrients (see table 16). As a result, excessive alcohol consumption makes it difficult to ingest sufficient nutrients within an individual's daily calorie allotment and to maintain a healthy weight. Although the consumption of one to two alcoholic beverages per day is not associated with macronutrient or micronutrient deficiencies or with overall dietary quality, heavy drinkers may be at risk of malnutrition if the calories derived from alcohol are substituted for those in nutritious foods.

The majority of American adults consume alcohol. Those who do so should drink alcoholic beverages in moderation. Moderation is defined as the consumption of up to one drink per day for women and up to two drinks per day for men. Twelve fluid ounces of regular beer, 5 fluid ounces of wine, or 1.5 fluid ounces of 80-proof distilled spirits count as one drink for purposes of explaining moderation. This definition of moderation is not intended as an average over several days but rather as the amount consumed on any single day.

The effect of alcohol consumption varies depending on the amount consumed and an individual's characteristics and circumstances. Alcoholic beverages are harmful when consumed in excess. Excess alcohol consumption alters judgment and can lead to dependency or addiction and other serious health problems such as cirrhosis of the liver, inflammation of the pancreas, and damage to the heart and brain. Even less than heavy consumption of alcohol is associated with significant risks. Consuming more than one drink per day for women and two drinks per day for men increases the risk for motor vehicle accidents, other injuries, high blood pressure, stroke, violence, some types of cancer, and suicide. Compared with women who do not drink, women who consume one drink per day appear to have a slightly higher risk of breast cancer.

Studies suggest adverse effects even at moderate alcohol consumption levels in specific situations and individuals. Individuals in some situations should avoid alcohol—those who plan to drive, operate machinery, or take part in other activities that require attention, skill, or coordination. Some people, including children and adolescents, women of childbearing age who may become pregnant, pregnant and lactating women, individuals who cannot restrict alcohol intake, individuals taking medications that can interact with alcohol, and individuals with specific medical conditions should not drink at all. Even moderate drinking during pregnancy may have behavioral or developmental consequences for the baby. Heavy drinking during pregnancy can produce a range of behavioral and psychosocial problems, malformation, and mental retardation in the baby.

KEY RECOMMENDATIONS

- Those who choose to drink alcoholic beverages should do so sensibly and in moderation—defined as the consumption of up to one drink per day for women and up to two drinks per day for men.
- Alcoholic beverages should not be consumed by some individuals, including those who cannot restrict their alcohol intake, women of childbearing age who may become pregnant, pregnant and lactating women, children and adolescents, individuals taking medications that can interact with alcohol, and those with specific medical conditions.
- Alcoholic beverages should be avoided by individuals engaging in activities that require attention, skill, or coordination, such as driving or operating machinery.

Alcoholic beverages supply calories but few essential nutrients.

Moderate alcohol consumption may have beneficial health effects in some individuals. In middle-aged and older adults, a daily intake of one to two alcoholic beverages per day is associated with the lowest all-cause mortality. More specifically, compared to non-drinkers, adults who consume one to two alcoholic beverages a day appear to have a lower risk of coronary heart disease. In contrast, among younger adults alcohol consumption appears to provide little, if any, health benefit, and alcohol use among young adults is associated with a higher risk of traumatic injury and death. As noted previously, a number of strategies reduce the risk of chronic disease, including a healthful diet, physical activity, avoidance of smoking, and maintenance of a healthy weight. Furthermore, it is not recommended that anyone begin drinking or drink more frequently on the basis of health considerations.

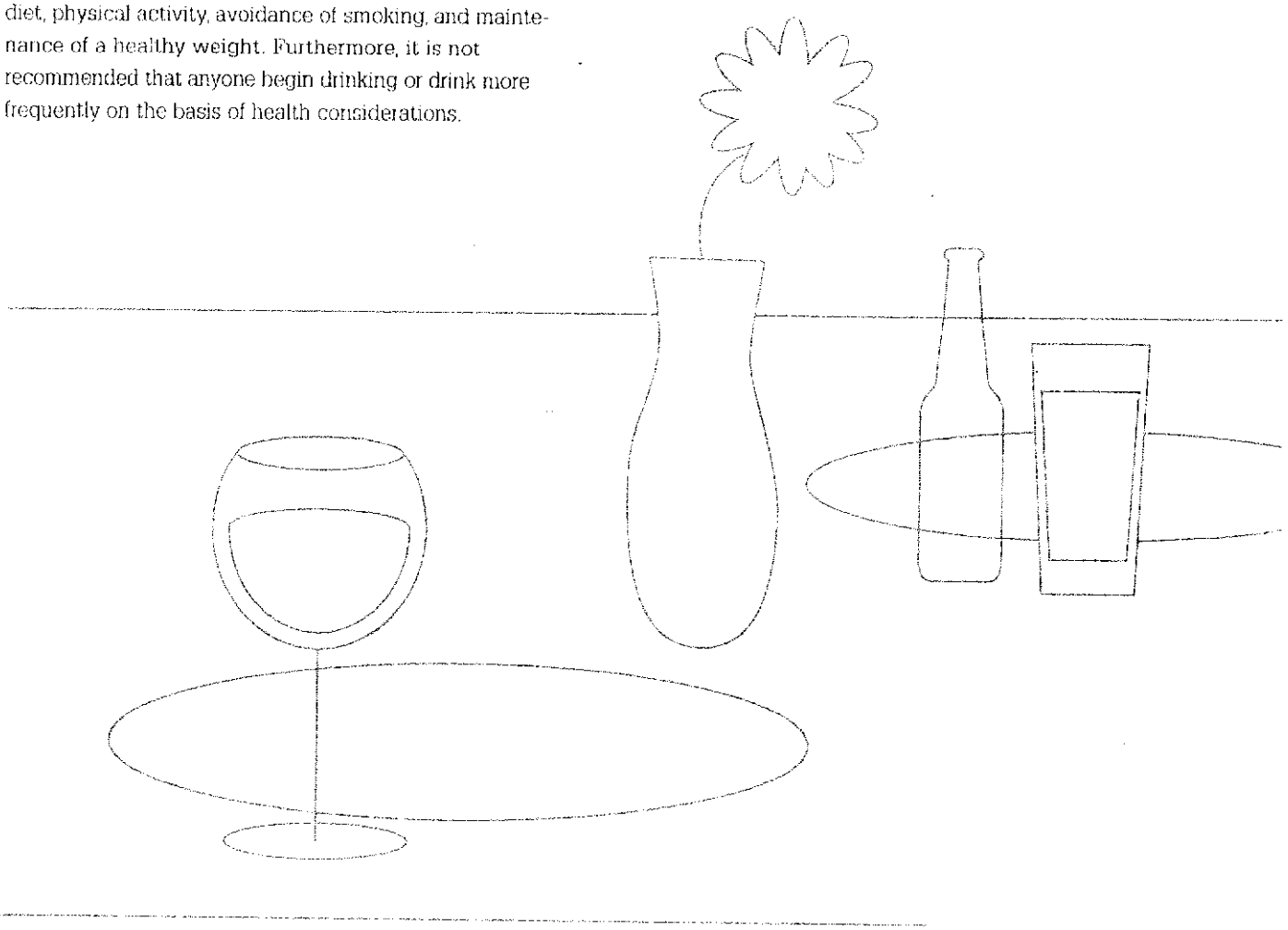


TABLE 16. Calories in Selected Alcoholic Beverages

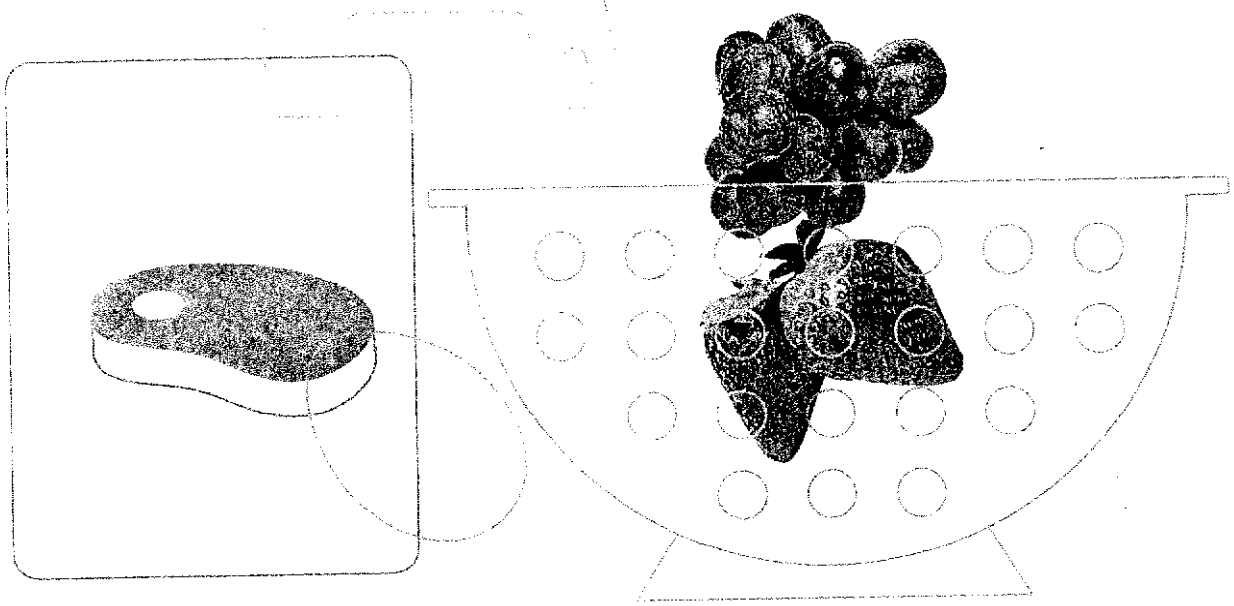
This table is a guide to estimate the caloric intake from various alcoholic beverages. An example serving volume and the calories in that drink are shown for beer, wine, and distilled spirits. Higher alcohol content (higher percent alcohol or higher proof) and mixing alcohol with other beverages, such as calorically sweetened soft drinks, tonic water, fruit juice, or cream, increases the amount of calories in the beverage. Alcoholic beverages supply calories but provide few essential nutrients.

Beverage	Approximate Calories Per 1 Fluid Oz[a]	Example Serving Volume	Approximate Total Calories[b]
Beer (regular)	12	12 oz	144
Beer (light)	9	12 oz	108
White wine	20	5 oz	100
Red wine	21	5 oz	105
Sweet dessert wine	47	3 oz	141
80 proof distilled spirits (gin, rum, vodka, whiskey)	64	1.5 oz	96

[a] Source: Agricultural Research Service (ARS) Nutrient Database for Standard Reference (SR), Release 17 (http://www.nal.usda.gov/fnic/foodcomp/index.html) Calories are calculated to the nearest whole number per 1 fluid oz.

[b] The total calories and alcohol content vary depending on the brand. Moreover, adding mixers to an alcoholic beverage can contribute calories in addition to the calories from the alcohol itself.

chapter 10



Food Safety

OVERVIEW

Avoiding foods that are contaminated with harmful bacteria, viruses, parasites, toxins, and chemical and physical contaminants are vital for healthful eating. The signs and symptoms of foodborne illness range from gastrointestinal symptoms, such as upset stomach, diarrhea, fever, vomiting, abdominal cramps, and dehydration, to more severe systemic illness, such as paralysis and meningitis. It is estimated that every year about 76 million people in the United States become ill from pathogens in food; of these, about 5,000 die. Consumers can take simple measures to reduce their risk of foodborne illness, especially in the home.

DISCUSSION

The most important food safety problem is microbial foodborne illness. All those who handle food, including farmers, food producers, individuals who work in markets and food service establishments, and other food preparers, have a responsibility to keep food as safe as possible. To keep food safe, people who prepare food should clean hands, food contact surfaces, and fruits and vegetables; separate raw, cooked, and ready-to-eat foods; cook foods to a safe internal temperature; chill perishable food promptly; and defrost food properly. For more important information on cooking, cleaning, separating, and chilling, see www.fightbac.org.

Consumers can take simple measures to reduce their risk of foodborne illness, especially in the home.

When preparing and consuming food, it is essential to wash hands often, particularly before and after preparing food, especially after handling raw meat, poultry, eggs, or seafood. A good hand washing protocol includes wetting hands; applying soap; rubbing hands vigorously together for 20 seconds; rinsing hands thoroughly under clean, running warm water; and drying hands completely using a clean disposable or cloth towel.

Washing may be the only method that consumers have to reduce pathogen load on fresh produce that will not be either peeled or subsequently cooked. A good protocol for washing fresh fruits and vegetables includes removing and discarding outer leaves, washing produce just before cooking or eating, washing under running potable water, scrubbing with a clean brush or with hands, and drying the fruits or vegetables using a clean disposable or cloth towel. Free moisture on produce may promote survival and growth of microbial populations. Therefore, drying the food is critical if the item will not be eaten or cooked right away.

People should read the labels of bagged produce to determine if it is ready-to-eat. Ready-to-eat, prewashed bagged produce can be used without further washing if kept refrigerated and used by the "use-by" date. If desired, prewashed, ready-to-eat produce can be washed again.

Raw meat and poultry should not be washed because this creates the danger of cross-contamination and is not necessary. Washing these foods can allow most bacteria that are present on the surface of the meat or poultry to spread to ready-to-eat foods, kitchen utensils, and counter surfaces.

KEY RECOMMENDATIONS

- To avoid microbial foodborne illness:
  - Clean hands, food contact surfaces, and fruits and vegetables. Meat and poultry should *not* be washed or rinsed.
  - Separate raw, cooked, and ready-to-eat foods while shopping, preparing, or storing foods.
  - Cook foods to a safe temperature to kill microorganisms.
  - Chill (refrigerate) perishable food promptly and defrost foods properly.
  - Avoid raw (unpasteurized) milk or any products made from unpasteurized milk, raw or partially cooked eggs or foods containing raw eggs, raw or undercooked meat and poultry, unpasteurized juices, and raw sprouts.

Key Recommendations for Specific Population Groups

- *Infants and young children, pregnant women, older adults, and those who are immunocompromised.* Do not eat or drink raw (unpasteurized) milk or any products made from unpasteurized milk, raw or partially cooked eggs or foods containing raw eggs, raw or undercooked meat and poultry, raw or undercooked fish or shellfish, unpasteurized juices, and raw sprouts.
- *Pregnant women, older adults, and those who are immunocompromised:* Only eat certain deli meats and frankfurters that have been reheated to steaming hot.

It is important to separate raw, cooked, and ready-to-eat foods while shopping, preparing, or storing. This prevents cross-contamination from one food to another. In addition, refrigerator surfaces can become contaminated from high-risk foods such as raw meats, poultry, fish, uncooked hot dogs, certain deli meats, or raw vegetables. If not cleaned, contaminated refrigerator surfaces can, in turn, serve as a vehicle for contaminating other foods.

Uncooked and undercooked meat, poultry and eggs and egg products are potentially unsafe. Raw meat, poultry and eggs should always be cooked to a safe internal temperature (see fig. 5). The best way to tell if meat, poultry and egg dishes are cooked safely is to use a food thermometer. Leftover refrigerator foods should also be reheated to the proper internal temperature. Bacteria grow

most rapidly in the range of 40°F and 140°F. To keep food out of this danger zone, keep cold food cold (below 40°F) and hot food hot (above 140°F). Figure 5 provides information for temperature rules for proper cooking and food handling. Proper cooking makes most uncooked foods safe.

The refrigerator should be set at no higher than 40°F and the freezer at 0°F, and these temperatures should be checked with an appliance thermometer. Refrigerated leftovers may become unsafe within 3 to 4 days. Despite the appearance of a food, it may not be safe to eat. Not all bacterial growth causes a food's surface to discolor or smell bad. It may be unsafe to taste fresh or leftover food items when there is any doubt about their safety. Safe disposal of the food is indicated if there is a question about whether or not a food is safe to eat. "If in doubt—throw it out."

Considerations for Specific Population Groups

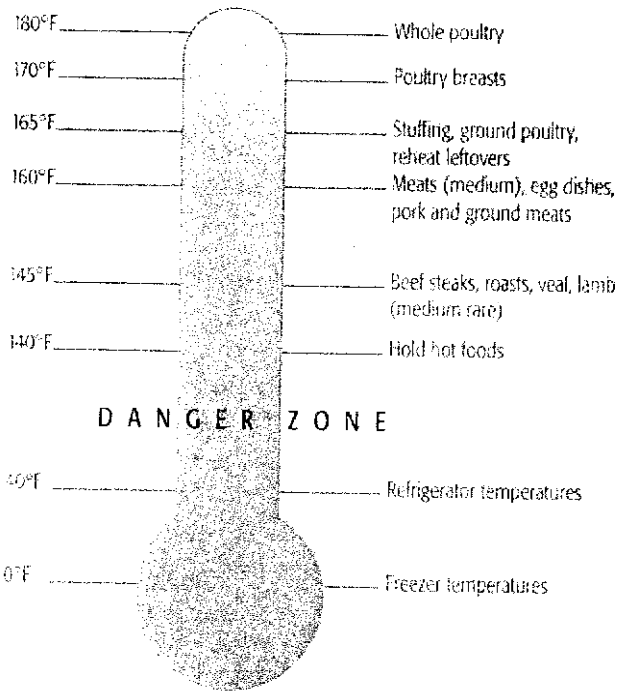
Some people may be at high risk for developing foodborne illness. These include pregnant women and their fetuses, young children, older adults, people with weakened immune systems, and individuals with certain chronic illnesses. These people should pay extra attention to food safety advice.

For example, pregnant women, older adults, and those who are immunocompromised are at risk of developing listeriosis, a potentially life-threatening illness caused by the bacterium *Listeria monocytogenes*. Some deli meats and frankfurters that have not been reheated to steaming hot and some ready-to-eat foods are associated with listeriosis and pose a high-risk to certain individuals. All these foods should be heated to a safe internal temperature. In addition, these individuals should take special care not to eat or drink raw (unpasteurized) milk or any products made from unpasteurized milk (such as some soft cheeses), raw or partially cooked eggs or foods containing raw eggs, raw or undercooked meat and poultry, unpasteurized juices, and raw sprouts. They should also avoid raw or undercooked fish or shellfish.

New information on food safety is constantly emerging. Recommendations and precautions for people at high risk are updated as scientists learn more about preventing foodborne illness. Individuals in high-risk categories should seek guidance from a healthcare provider. In addition, up-to-date information is available at the Government's food safety website at www.foodsafety.gov.

FIGURE 5.
Temperature Rules for Safe Cooking and Handling of Foods

Safe cooking and holding temperatures for foods. Bacteria multiply rapidly between 40°F and 140°F, doubling in number in as little as 20 minutes. To keep food out of this danger zone, keep cold food cold and hot food hot. Keep food cold in the refrigerator, in coolers, or on the service line on ice. Set your refrigerator no higher than 40°F and the freezer at 0°F. Keep hot food in the oven, in heated chafing dishes, or in preheated steam tables, warming trays, and/or slow cookers. Use a clean thermometer that measures the internal temperature of cooked food to make sure meat, poultry, and casseroles are cooked to the temperatures as indicated in the figure.



Appendixes

APPENDIX A. EATING PATTERNS

Appendix A-1: The DASH Eating Plan at 1,600-, 2,000-, 2600-, and 3,100-Calorie Levels[a]

The DASH eating plan is based on 1,600, 2,000, 2,600 and 3,100 calories. The number of daily servings in a food group vary depending on caloric needs (see table 3 on page 12 to determine caloric needs). This chart can aid in planning menus and food selection in restaurants and grocery stores.

Food Groups	1,600 Calories	2,000 Calories	2,600 Calories	3,100 Calories	Serving Sizes	Examples and Notes	Significance of Each Food Group to the DASH Eating Plan
Grains[b]	6 servings	7–8 servings	10–11 servings	12–13 servings	1 slice bread, 1 oz dry cereal, ½ cup cooked rice, pasta, or cereal[c]	Whole wheat bread, English muffin, pita bread, bagel, cereals, grits, oatmeal, crackers, unsalted pretzels, and popcorn	Major sources of energy and fiber
Vegetables	3–4 servings	4–5 servings	5–6 servings	6 servings	1 cup raw leafy vegetable ½ cup cooked vegetable 6 oz vegetable juice	Tomatoes, potatoes, carrots, green peas, squash, broccoli, turnip greens, collards, kale, spinach, artichokes, green beans, lima beans, sweetpotatoes	Rich sources of potassium, magnesium, and fiber
Fruits	4 servings	4–5 servings	5–6 servings	6 servings	6 oz fruit juice 1 medium fruit ¼ cup dried fruit ½ cup fresh, frozen, or canned fruit	Apricots, bananas, dates, grapes, oranges, orange juice, grapefruit, grapefruit juice, mangoes, melons, peaches, pineapples, prunes, raisins, strawberries, tangerines	Important sources of potassium, magnesium, and fiber
Low-fat or fat-free dairy foods	2–3 servings	2–3 servings	3 servings	3–4 servings	8 oz milk 1 cup yogurt 1½ oz cheese	Fat-free or low-fat milk, fat-free or low-fat buttermilk, fat-free or low-fat regular or frozen yogurt, low-fat and fat-free cheese	Major sources of calcium and protein

Appendix A-1: Continued

Food Groups	1,600 Calories	2,000 Calories	2,600 Calories	3,100 Calories	Serving Sizes	Examples and Notes	Significance of Each Food Group to the DASH Eating Plan
Meat, poultry, fish	1–2 servings	2 or less servings	2 servings	2–3 servings	3 oz cooked meats, poultry, or fish	Select only lean; trim away visible fats; broil, roast, or boil instead of frying; remove skin from poultry	Rich sources of protein and magnesium
Nuts, seeds, legumes	3–4 servings/ week	4–5 servings/ week	1 serving	1 serving	⅓ cup or 1½ oz nuts 2 Tbsp or ½ oz seeds ½ cup cooked dry beans or peas	Almonds, filberts, mixed nuts, peanuts, walnuts, sunflower seeds, kidney beans, lentils	Rich sources of energy, magnesium, potassium, protein, and fiber
Fat and oils[d]	2 servings	2–3 servings	3 servings	4 servings	1 tsp soft margarine 1 Tbsp low-fat mayonnaise 2 Tbsp light salad dressing 1 tsp vegetable oil	Soft margarine, low-fat mayonnaise, light salad dressing, vegetable oil (such as olive, corn, canola, or safflower)	DASH has 27 percent of calories as fat (low in saturated fat), including fat in or added to foods
Sweets	0 servings	5 servings/ week	2 servings	2 servings	1 Tbsp sugar 1 Tbsp jelly or jam ½ oz jelly beans 8 oz lemonade	Maple syrup, sugar, jelly, jam, fruit-flavored gelatin, jelly beans, hard candy, fruit punch sorbet, ices	Sweets should be low in fat

[a] NIH publication No. 03-4082; Karanja NM et al. *JADA* 8:S19–27, 1999.

[b] Whole grains are recommended for most servings to meet fiber recommendations.

[c] Equals ½–1¼ cups, depending on cereal type. Check the product's Nutrition Facts Label.

[d] Fat content changes serving counts for fats and oils: For example, 1 Tbsp of regular salad dressing equals 1 serving; 1 Tbsp of a low-fat dressing equals ½ serving; 1 Tbsp of a fat-free dressing equals 0 servings.

Appendix A-2. USDA Food Guide

The suggested amounts of food to consume from the basic food groups, subgroups, and oils to meet recommended nutrient intakes at 12 different calorie levels. Nutrient and energy contributions from each group are calculated according to the nutrient-dense forms of foods in each group (e.g., lean meats and fat-free milk). The table also shows the discretionary calorie allowance that can be accommodated within each calorie level, in addition to the suggested amounts of nutrient-dense forms of foods in each group.

Daily Amount of Food From Each Group (vegetable subgroup amounts are per week)												
Calorie Level	**1,000**	**1,200**	**1,400**	**1,600**	**1,800**	**2,000**	**2,200**	**2,400**	**2,600**	**2,800**	**3,000**	**3,200**
Food Group[1]	Food group amounts shown in cup (c) or ounce-equivalents (oz-eq), with number of servings (srv) in parentheses when it differs from the other units. See note for quantity equivalents for foods in each group.[2] Oils are shown in grams (g).											
Fruits	1 c (2 srv)	1 c (2 srv)	1.5 c (3 srv)	1.5 c (3 srv)	1.5 c (3 srv)	2 c (4 srv)	2 c (4 srv)	2 c (4 srv)	2 c (4 srv)	2.5 c (5 srv)	2.5 c (5 srv)	2.5 c (5 srv)
Vegetables[3]	1 c (2 srv)	1.5 c (3 srv)	1.5 c (3 srv)	2 c (4 srv)	2.5 c (5 srv)	2.5 c (5 srv)	3 c (6 srv)	3 c (6 srv)	3.5 c (7 srv)	3.5 c (7 srv)	4 c (8 srv)	4 c (8 srv)
Dark green veg.	1 c/wk	1.5 c/wk	1.5 c/wk	2 c/wk	3 c/wk	3 c/wk	3 c/wk	3 c/wk	3 c/wk	3 c/wk	3 c/wk	3 c/wk
Orange veg.	.5 c/wk	1 c/wk	1 c/wk	1.5 c/wk	2 c/wk	2 c/wk	2 c/wk	2 c/wk	2.5 c/wk	2.5 c/wk	2.5 c/wk	2.5 c/wk
Legumes	.5 c/wk	1 c/wk	1 c/wk	2.5 c/wk	3 c/wk	3 c/wk	3 c/wk	3 c/wk	3.5 c/wk	3.5 c/wk	3.5 c/wk	3.5 c/wk
Starchy veg.	1.5 c/wk	2.5 c/wk	2.5 c/wk	2.5 c/wk	3 c/wk	3 c/wk	6 c/wk	6 c/wk	7 c/wk	7 c/wk	9 c/wk	9 c/wk
Other veg.	3.5 c/wk	4.5 c/wk	4.5 c/wk	5.5 c/wk	6.5 c/wk	6.5 c/wk	7 c/wk	7 c/wk	8.5 c/wk	8.5 c/wk	10 c/wk	10 c/wk
Grains[4]	3 oz-eq	4 oz-eq	5 oz-eq	5 oz-eq	6 oz-eq	6 oz-eq	7 oz-eq	8 oz-eq	9 oz-eq	10 oz-eq	10 oz-eq	10 oz-eq
Whole grains	1.5	2	2.5	3	3	3	3.5	4	4.5	5	5	5
Other grains	1.5	2	2.5	2	3	3	3.5	4	4.5	5	5	5
Lean meat and beans	2 oz-eq	3 oz-eq	4 oz-eq	5 oz-eq	5 oz-eq	5.5 oz-eq	6 oz-eq	6.5 oz-eq	6.5 oz-eq	7 oz-eq	7 oz-eq	7 oz-eq
Milk	2 c	2 c	2 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c
Oils[5]	15 g	17 g	17 g	22 g	24 g	27 g	29 g	31 g	34 g	36 g	44 g	51g
Discretionary calorie allowance[6]	165	171	171	132	195	267	290	362	410	426	512	648

Notes for Appendix A-2:

[1] Food items included in each group and subgroup:

Fruits	All fresh, frozen, canned, and dried fruits and fruit juices: for example, oranges and orange juice, apples and apple juice, bananas, grapes, melons, berries, raisins. In developing the food patterns, only fruits and juices with no added sugars or fats were used. *See note 6 on discretionary calories if products with added sugars or fats are consumed.*
Vegetables	In developing the food patterns, only vegetables with no added fats or sugars were used. *See note 6 on discretionary calories if products with added fats or sugars are consumed.*
• Dark green vegetables	All fresh, frozen, and canned dark green vegetables, cooked or raw: for example, broccoli; spinach; romaine; collard, turnip,and mustard greens.
• Orange vegetables	All fresh, frozen, and canned orange and deep yellow vegetables, cooked or raw: for example, carrots, sweetpotatoes, winter squash, and pumpkin.
• Legumes (dry beans and peas)	All cooked dry beans and peas and soybean products: for example, pinto beans, kidney beans, lentils, chickpeas, tofu. (See comment under meat and beans group about counting legumes in the vegetable or the meat and beans group.)
• Starchy vegetables	All fresh, frozen, and canned starchy vegetables: for example, white potatoes, corn, green peas.
• Other vegetables	All fresh, frozen, and canned other vegetables, cooked or raw: for example, tomatoes, tomato juice, lettuce, green beans, onions.
Grains	In developing the food patterns, only grains in low-fat and low-sugar forms were used. *See note 6 on discretionary calories if products that are higher in fat and/or added sugars are consumed.*
• Whole grains	All whole-grain products and whole grains used as ingredients: for example, whole-wheat and rye breads, whole-grain cereals and crackers, oatmeal, and brown rice.
• Other grains	All refined grain products and refined grains used as ingredients: for example, white breads, enriched grain cereals and crackers, enriched pasta, white rice.
Meat, poultry, fish, dry beans, eggs, and nuts (meat & beans)	All meat, poultry, fish, dry beans and peas, eggs, nuts, seeds. Most choices should be lean or low-fat. *See note 6 on discretionary calories if higher fat products are consumed.* Dry beans and peas and soybean products are considered part of this group as well as the vegetable group, but should be counted in one group only.
Milk, yogurt, and cheese (milk)	All milks, yogurts, frozen yogurts, dairy desserts, cheeses (except cream cheese), including lactose-free and lactose-reduced products. Most choices should be fat-free or low-fat. In developing the food patterns, only fat-free milk was used. *See note 6 on discretionary calories if low-fat, reduced-fat, or whole milk or milk products—or milk products that contain added sugars are consumed.* Calcium-fortified soy beverages are an option for those who want a non-dairy calcium source.

[2] Quantity equivalents for each food group:

Grains	The following each count as 1 ounce equivalent (1 serving) of grains: ½ cup cooked rice, pasta, or cooked cereal; 1 ounce dry pasta or rice; 1 slice bread; 1 small muffin (1 oz), 1 cup ready-to-eat cereal flakes
Fruits and vegetables	The following each count as 1 cup (2 servings) of fruits or vegetables: 1 cup cut-up raw or cooked fruit or vegetable, 1 cup fruit or vegetable juice, 2 cups leafy salad greens.
Meat and beans	The following each count as 1 ounce-equivalent: 1 ounce lean meat, poultry, or fish; 1 egg; ½ cup cooked dry beans or tofu; 1 Tbsp peanut butter; ½ ounce nuts or seeds.
Milk	The following each count as 1 cup (1 serving) of milk: 1 cup milk or yogurt, 1½ ounces natural cheese such as Cheddar cheese or 2 ounces processed cheese. Discretionary calories must be counted for all choices, except fat-free milk.

[3] Explanation of vegetable subgroup amounts: Vegetable subgroup amounts are shown in this table as weekly amounts, because it would be difficult for consumers to select foods from each subgroup daily. A daily amount that is one-seventh of the weekly amount listed is used in calculations of nutrient and energy levels in each pattern.

[4] Explanation of grain subgroup amounts: The whole grain subgroup amounts shown in this table represent at least three 1-ounce servings and one-half of the total amount as whole grains for all calorie levels of 1,600 and above. This is the minimum suggested amount of whole grains to consume as part of the food patterns. More whole grains up to all of the grains recommended may be selected, with offsetting decreases in the amounts of other (enriched) grains. In patterns designed for younger children (1,000, 1,200, and 1,400 calories), one-half of the total amount of grains is shown as whole grains.

[5] Explanation of oils: Oils (including soft margarine with zero *trans* fat) shown in this table represent the amounts that are added to foods during processing, cooking, or at the table. Oils and soft margarines include vegetable oils and soft vegetable oil table spreads that have no *trans* fats. The amounts of oils listed in this table are not considered to be part of discretionary calories because they are a major source of the vitamin E and polyunsaturated fatty acids, including the essential fatty acids, in the food pattern. In contrast, solid fats are listed separately in the discretionary calorie table (appendix A-3) because, compared with oils, they are higher in saturated fatty acids and lower in vitamin E and polyunsaturated and monounsaturated fatty acids, including essential fatty acids. The amounts of each type of fat in the food intake pattern were based on 60% oils and/or soft margarines with no *trans* fats and 40% solid fat. The amounts in typical American diets are about 42% oils or soft margarines and about 58% solid fats.

[6] Explanation of discretionary calorie allowance: The discretionary calorie allowance is the remaining amount of calories in each food pattern after selecting the specified number of nutrient-dense forms of foods in each food group. The number of discretionary calories assumes that food items in each food group are selected in nutrient-dense forms (that is, forms that are fat-free or low-fat and that contain no added sugars). Solid fat and sugar calories always need to be counted as discretionary calories, as in the following examples:

- The fat in low-fat, reduced fat, or whole milk or milk products or cheese and the sugar and fat in chocolate milk, ice cream, pudding, etc.
- The fat in higher fat meats (e.g., ground beef with more than 5% fat by weight, poultry with skin, higher fat luncheon meats, sausages)
- The sugars added to fruits and fruit juices with added sugars or fruits canned in syrup
- The added fat and/or sugars in vegetables prepared with added fat or sugars
- The added fats and/or sugars in grain products containing higher levels of fats and/or sugars (e.g., sweetened cereals, higher fat crackers, pies and other pastries, cakes, cookies)

Total discretionary calories should be limited to the amounts shown in the table at each calorie level. The number of discretionary calories is lower in the 1,600-calorie pattern than in the 1,000-, 1,200-, and 1,400-calorie patterns. These lower calorie patterns are designed to meet the nutrient needs of children 2 to 8 years old. The nutrient goals for the 1,600-calorie pattern are set to meet the needs of adult women, which are higher and require that more calories be used in selections from the basic food groups. Additional information about discretionary calories, including an example of the division of these calories between solid fats and added sugars, is provided in appendix A-3.

Appendix A-3. Discretionary Calorie Allowance in the USDA Food Guide

The discretionary calorie allowance is the remaining amount of calories in each calorie level after nutrient-dense forms of foods in each food group are selected. This table shows the number of discretionary calories remaining in each calorie level if nutrient-dense foods are selected. Those trying to lose weight may choose not to use discretionary calories. For those wanting to maintain their weight, discretionary calories may be used to increase the amount of food selected from each food group; to consume foods that are not in the lowest fat form (such as 2% milk or medium-fat meat) or that contain added sugars; to add oil, fat, or sugars to foods; or to consume alcohol. The table shows an example of how these calories may be divided between solid fats and added sugars.

Discretionary calories that remain at each calorie level												
Food Guide calorie level	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
Discretionary calories[1]	165	171	171	132	195	267	290	362	410	426	512	648
Example of division of discretionary calories: Solid fats are shown in grams (g); added sugars in grams (g) and teaspoons (tsp).												
Solid fats[2]	11 g	14 g	14 g	11 g	15 g	18 g	19 g	22 g	24 g	24 g	29 g	34 g
Added sugars[3]	20 g (5 tsp)	16 g (4 tsp)	16 g (4 tsp)	12 g (3 tsp)	20 g (5 tsp)	32 g (8 tsp)	36 g (9 tsp)	48 g (12 tsp)	56 g (14 tsp)	60 g (15 tsp)	72g (18 tsp)	96 g (24 tsp)

[1] Discretionary calories: In developing the Food Guide, food items in nutrient-dense forms (that is, forms that are fat-free or low-fat and that contain no added sugars) were used. The number of discretionary calories assumes that food items in each food group are selected in nutrient-dense forms. Solid fat and sugar calories always need to be counted as discretionary calories, as in the following examples:

The fat in low-fat, reduced fat, or whole milk or milk products or cheese and the sugar and fat in chocolate milk, ice cream, pudding, etc.

The fat in higher fat meats (e.g., ground beef with more than 5% fat by weight, poultry with skin, higher fat luncheon meats, sausages)

The sugars added to fruits and fruit juices with added sugars or fruits canned in syrup

The added fat and/or sugars in vegetables prepared with added fat or sugars

The added fats and/or sugars in grain products containing higher levels of fats and/or sugars (e.g., sweetened cereals, higher fat crackers, pies and other pastries, cakes, cookies)

Total discretionary calories should be limited to the amounts shown in the table at each calorie level. The number of discretionary calories is lower in the 1,600 calorie pattern than in the 1,000, 1,200, and 1,400-calorie patterns. These lower calorie patterns are designed to meet the nutrient needs of children 2 to 8 years old. The nutrient goals for the 1,600 calorie pattern are set to meet the needs of adult women, which are higher and require that more calories be used in selections from the basic food groups. The calories assigned to discretionary calories may be used to increase intake from the basic food groups; to select foods from these groups that are higher in fat or with added sugars; to add oils, solid fats, or sugars to foods or beverages; or to consume alcohol. See note 2 on limits for solid fats.

[2] Solid fats: Amounts of solid fats listed in the table represent about 7 to 8% of calories from saturated fat. Foods in each food group are represented in their lowest fat forms, such as fat-free milk and skinless chicken. Solid fats shown in this table represent the amounts of fats that may be added in cooking or at the table, and fats consumed when higher fat items are selected from the food groups (e.g., whole milk instead of fat-free milk, chicken with skin, or cookies instead of bread), without exceeding the recommended limits on saturated fat intake. Solid fats include meat and poultry fats eaten either as part of the meat or poultry product or separately; milk fat such as that in whole milk, cheese, and butter; shortenings used in baked products; and hard margarines.

Solid fats and oils are separated because their fatty acid compositions differ. Solid fats are higher in saturated fatty acids, and commonly consumed oils and soft margarines with no *trans* fats are higher in vitamin E and polyunsaturated and monounsaturated fatty acids, including essential fatty acids. Oils listed in appendix A-2 are not considered to be part of the discretionary calorie allowance because they are a major source of the essential fatty acids and vitamin E in the food pattern.

The gram weights for solid fats are the amounts of these products that can be included in the pattern and are not identical to the amount of lipids in these items, because some products (margarines, butter) contain water or other ingredients, in addition to lipids.

[3] Added sugars: Added sugars are the sugars and syrups added to foods and beverages in processing or preparation, not the naturally occurring sugars in fruits or milk. The amounts of added sugars suggested in the example are NOT specific recommendations for amounts of added sugars to consume, but rather represent the amounts that can be included at each calorie level without over-consuming calories. The suggested amounts of added sugars may be helpful as part of the Food Guide to allow for some sweetened foods or beverages, without exceeding energy needs. This use of added sugars as a calorie balance requires two assumptions: (1) that selections are made from all food groups in accordance with the suggested amounts and (2) that additional fats are used in the amounts shown, which, together with the fats in the core food groups, represent about 27-30% of calories from fat.

APPENDIX B. FOOD SOURCES OF SELECTED NUTRIENTS

Appendix B-1. Food Sources of Potassium

Food Sources of Potassium ranked by milligrams of potassium per standard amount, also showing calories in the standard amount.

(The AI for adults is 4,700 mg/day potassium.)

Food, Standard Amount	Potassium (mg)	Calories
Sweetpotato, baked, 1 potato (146 g)	694	131
Tomato paste, ¼ cup	664	54
Beet greens, cooked, ½ cup	655	19
Potato, baked, flesh, 1 potato (156 g)	610	145
White beans, canned, ½ cup	595	153
Yogurt, plain, non-fat, 8-oz container	579	127
Tomato puree, ½ cup	549	48
Clams, canned, 3 oz	534	126
Yogurt, plain, low-fat, 8-oz container	531	143
Prune juice, ¾ cup	530	136
Carrot juice, ¾ cup	517	71
Blackstrap molasses, 1 Tbsp	498	47
Halibut, cooked, 3 oz	490	119
Soybeans, green, cooked, ½ cup	485	127
Tuna, yellowfin, cooked, 3 oz	484	118
Lima beans, cooked, ½ cup	484	104
Winter squash, cooked, ½ cup	448	40
Soybeans, mature, cooked, ½ cup	443	149
Rockfish, Pacific, cooked, 3 oz	442	103
Cod, Pacific, cooked, 3 oz	439	89
Bananas, 1 medium	422	105
Spinach, cooked, ½ cup	419	21
Tomato juice, ¾ cup	417	31
Tomato sauce, ½ cup	405	39
Peaches, dried, uncooked, ¼ cup	398	96
Prunes, stewed, ½ cup	398	133
Milk, non-fat, 1 cup	382	83
Pork chop, center loin, cooked, 3 oz	382	197
Apricots, dried, uncooked, ¼ cup	378	78
Rainbow trout, farmed, cooked, 3 oz	375	144
Pork loin, center rib (roasts), lean, roasted, 3 oz	371	190
Buttermilk, cultured, low-fat, 1 cup	370	98
Cantaloupe, ¼ medium	368	47
1%–2% milk, 1 cup	366	102–122
Honeydew melon, ⅛ medium	365	58
Lentils, cooked, ½ cup	365	115
Plantains, cooked, ½ cup slices	358	90
Kidney beans, cooked, ½ cup	358	112
Orange juice, ⅞ cup	355	85
Split peas, cooked, ½ cup	355	116
Yogurt, plain, whole milk, 8 oz container	352	138

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-2. Food Sources of Vitamin E

Food Sources of Vitamin E ranked by milligrams of vitamin E per standard amount; also calories in the standard amount.

(All provide ≥ 10% of RDA for vitamin E for adults, which is 15 mg α-tocopherol [AT]/day.)

Food, Standard Amount	AT (mg)	Calories
Fortified ready-to-eat cereals, ~ 1 oz	1.6–12.8	90–107
Sunflower seeds, dry roasted, 1 oz	7.4	165
Almonds, 1 oz	7.3	164
Sunflower oil, high linoleic, 1 Tbsp	5.6	120
Cottonseed oil, 1 Tbsp	4.8	120
Safflower oil, high oleic, 1 Tbsp	4.6	120
Hazelnuts (filberts), 1 oz	4.3	178
Mixed nuts, dry roasted, 1 oz	3.1	168
Turnip greens, frozen, cooked, ½ cup	2.9	24
Tomato paste, ¼ cup	2.8	54
Pine nuts, 1 oz	2.6	191
Peanut butter, 2 Tbsp	2.5	192
Tomato puree, ½ cup	2.5	48
Tomato sauce, ½ cup	2.5	39
Canola oil, 1 Tbsp	2.4	124
Wheat germ, toasted, plain, 2 Tbsp	2.3	54
Peanuts, 1 oz	2.2	166
Avocado, raw, ½ avocado	2.1	161
Carrot juice, canned, ¾ cup	2.1	71
Peanut oil, 1 Tbsp	2.1	119
Corn oil, 1 Tbsp	1.9	120
Olive oil, 1 Tbsp	1.9	119
Spinach, cooked, ½ cup	1.9	21
Dandelion greens, cooked, ½ cup	1.8	18
Sardine, Atlantic, in oil, drained, 3 oz	1.7	177
Blue crab, cooked/canned, 3 oz	1.6	84
Brazil nuts, 1 oz	1.6	186
Herring, Atlantic, pickled, 3 oz	1.5	222

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-3. Food Sources of Iron

Food Sources of Iron ranked by milligrams of iron per standard amount; also calories in the standard amount.

(All are ≥ 10% of RDA for teen and adult females, which is 18 mg/day.)

Food, Standard Amount	Iron (mg)	Calories
Clams, canned, drained, 3 oz	23.8	126
Fortified ready-to-eat cereals (various), ~ 1 oz	1.8 –21.1	54–127
Oysters, eastern, wild, cooked, moist heat, 3 oz	10.2	116
Organ meats (liver, giblets), various, cooked, 3 oz [d]	5.2–9.9	134–235
Fortified instant cooked cereals (various), 1 packet	4.9–8.1	Varies
Soybeans, mature, cooked, ½ cup	4.4	149
Pumpkin and squash seed kernels, roasted, 1 oz	4.2	148
White beans, canned, ½ cup	3.9	153
Blackstrap molasses, 1 Tbsp	3.5	47
Lentils, cooked, ½ cup	3.3	115
Spinach, cooked from fresh, ½ cup	3.2	21
Beef, chuck, blade roast, lean, cooked, 3 oz	3.1	215
Beef, bottom round, lean, 0" fat, all grades, cooked, 3 oz	2.8	182
Kidney beans, cooked, ½ cup	2.6	112
Sardines, canned in oil, drained, 3 oz	2.5	177
Beef, rib, lean, ¼" fat, all grades, 3 oz	2.4	195
Chickpeas, cooked, ½ cup	2.4	134
Duck, meat only, roasted, 3 oz	2.3	171
Lamb, shoulder, arm, lean, ¼" fat, choice, cooked, 3 oz	2.3	237
Prune juice, ¾ cup	2.3	136
Shrimp, canned, 3 oz	2.3	102
Cowpeas, cooked, ½ cup	2.2	100
Ground beef, 15% fat, cooked, 3 oz	2.2	212
Tomato puree, ½ cup	2.2	48
Lima beans, cooked, ½ cup	2.2	108
Soybeans, green, cooked, ½ cup	2.2	127
Navy beans, cooked, ½ cup	2.1	127
Refried beans, ½ cup	2.1	118
Beef, top sirloin, lean, 0" fat, all grades, cooked, 3 oz	2.0	156
Tomato paste, ¼ cup	2.0	54

[d] High in cholesterol.

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-4. Non-Dairy Food Sources of Calcium

Non-Dairy Food Sources of Calcium ranked by milligrams of calcium per standard amount; also calories in the standard amount. The bioavailability may vary. (The AI for adults is 1,000 mg/day.)[a]

Food, Standard Amount	Calcium (mg)	Calories
Fortified ready-to-eat cereals (various), 1 oz	236–1043	88–106
Soy beverage, calcium fortified, 1 cup	368	98
Sardines, Atlantic, in oil, drained, 3 oz	325	177
Tofu, firm, prepared with nigari[b], ½ cup	253	88
Pink salmon, canned, with bone, 3 oz	181	118
Collards, cooked from frozen, ½ cup	178	31
Molasses, blackstrap, 1 Tbsp	172	47
Spinach, cooked from frozen, ½ cup	146	30
Soybeans, green, cooked, ½ cup	130	127
Turnip greens, cooked from frozen, ½ cup	124	24
Ocean perch, Atlantic, cooked, 3 oz	116	103
Oatmeal, plain and flavored, instant, fortified, 1 packet prepared	99–110	97–157
Cowpeas, cooked, ½ cup	106	80
White beans, canned, ½ cup	96	153
Kale, cooked from frozen, ½ cup	90	20
Okra, cooked from frozen, ½ cup	88	26
Soybeans, mature, cooked, ½ cup	88	149
Blue crab, canned, 3 oz	86	84
Beet greens, cooked from fresh, ½ cup	82	19
Pak-choi, Chinese cabbage, cooked from fresh, ½ cup	79	10
Clams, canned, 3 oz	78	126
Dandelion greens, cooked from fresh, ½ cup	74	17
Rainbow trout, farmed, cooked, 3 oz	73	144

[a] Both calcium content and bioavailability should be considered when selecting dietary sources of calcium. Some plant foods have calcium that is well absorbed, but the large quantity of plant foods that would be needed to provide as much calcium as in a glass of milk may be unachievable for many. Many other calcium-fortified foods are available, but the percentage of calcium that can be absorbed is unavailable for many of them.

[b] Calcium sulfate and magnesium chloride.

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-5. Food Sources of Calcium

Food Sources of Calcium ranked by milligrams of calcium per standard amount; also calories in the standard amount.

(All are ≥20% of AI for adults 19-50, which is 1,000 mg/day.)

Food, Standard Amount	Calcium (mg)	Calories
Plain yogurt, non-fat (13 g protein/8 oz), 8-oz container	452	127
Romano cheese, 1.5 oz	452	165
Pasteurized process Swiss cheese, 2 oz	438	190
Plain yogurt, low-fat (12 g protein/8 oz), 8-oz container	415	143
Fruit yogurt, low-fat (10 g protein/8 oz), 8-oz container	345	232
Swiss cheese, 1.5 oz	336	162
Ricotta cheese, part skim, ½ cup	335	170
Pasteurized process American cheese food, 2 oz	323	188
Provolone cheese, 1.5 oz	321	150
Mozzarella cheese, part-skim, 1.5 oz	311	129
Cheddar cheese, 1.5 oz	307	171
Fat-free (skim) milk, 1 cup	306	83
Muenster cheese, 1.5 oz	305	156
1% low-fat milk, 1 cup	290	102
Low-fat chocolate milk (1%), 1 cup	288	158
2% reduced fat milk, 1 cup	285	122
Reduced fat chocolate milk (2%), 1 cup	285	180
Buttermilk, low-fat, 1 cup	284	98
Chocolate milk, 1 cup	280	208
Whole milk, 1 cup	276	146
Yogurt, plain, whole milk (8 g protein/8 oz), 8-oz container	275	138
Ricotta cheese, whole milk, ½ cup	255	214
Blue cheese, 1.5 oz	225	150
Mozzarella cheese, whole milk, 1.5 oz	215	128
Feta cheese, 1.5 oz	210	113

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-6. Food Sources of Vitamin A

Food Sources of Vitamin A ranked by micrograms Retinol Activity Equivalents (RAE) of vitamin A per standard amount; also calories in the standard amount. (All are ≥ 20% of RDA for adult men, which is 900 mg/day RAE.)

Food, Standard Amount	Vitamin A (µg RAE)	Calories
Organ meats (liver, giblets), various, cooked, 3 oz[a]	1490–9126	134–235
Carrot juice, ¾ cup	1692	71
Sweetpotato with peel, baked, 1 medium	1096	103
Pumpkin, canned, ½ cup	953	42
Carrots, cooked from fresh, ½ cup	671	27
Spinach, cooked from frozen, ½ cup	573	30
Collards, cooked from frozen, ½ cup	489	31
Kale, cooked from frozen, ½ cup	478	20
Mixed vegetables, canned, ½ cup	474	40
Turnip greens, cooked from frozen, ½ cup	441	24
Instant cooked cereals, fortified, prepared, 1 packet	285–376	75–97
Various ready-to-eat cereals, with added vit. A, ~ 1 oz	180–376	100–117
Carrot, raw, 1 small	301	20
Beet greens, cooked, ½ cup	276	19
Winter squash, cooked, ½ cup	268	38
Dandelion greens, cooked, ½ cup	260	18
Cantaloupe, raw, ¼ medium melon	233	46
Mustard greens, cooked, ½ cup	221	11
Pickled herring, 3 oz	219	222
Red sweet pepper, cooked, ½ cup	186	19
Chinese cabbage, cooked, ½ cup	180	10

[a] High in cholesterol.

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-7. Food Sources of Magnesium

Food Sources of Magnesium ranked by milligrams of magnesium per standard amount; also calories in the standard amount.
(All are ≥ 10% of RDA for adult men, which is 420 mg/day.)

Food, Standard Amount	Magnesium (mg)	Calories
Pumpkin and squash seed kernels, roasted, 1 oz	151	148
Brazil nuts, 1 oz	107	186
Bran ready-to-eat cereal (100%), ~1 oz	103	74
Halibut, cooked, 3 oz	91	119
Quinoa, dry, ¼ cup	89	159
Spinach, canned, ½ cup	81	25
Almonds, 1 oz	78	164
Spinach, cooked from fresh, ½ cup	78	20
Buckwheat flour, ¼ cup	75	101
Cashews, dry roasted, 1 oz	74	163
Soybeans, mature, cooked, ½ cup	74	149
Pine nuts, dried, 1 oz	71	191
Mixed nuts, oil roasted, with peanuts, 1 oz	67	175
White beans, canned, ½ cup	67	154
Pollock, walleye, cooked, 3 oz	62	96
Black beans, cooked, ½ cup	60	114
Bulgur, dry, ¼ cup	57	120
Oat bran, raw, ¼ cup	55	58
Soybeans, green, cooked, ½ cup	54	127
Tuna, yellowfin, cooked, 3 oz	54	118
Artichokes (hearts), cooked, ½ cup	50	42
Peanuts, dry roasted, 1 oz	50	166
Lima beans, baby, cooked from frozen, ½ cup	50	95
Beet greens, cooked, ½ cup	49	19
Navy beans, cooked, ½ cup	48	127
Tofu, firm, prepared with nigari[a], ½ cup	47	88
Okra, cooked from frozen, ½ cup	47	26
Soy beverage, 1 cup	47	127
Cowpeas, cooked, ½ cup	46	100
Hazelnuts, 1 oz	46	178
Oat bran muffin, 1 oz	45	77
Great northern beans, cooked, ½ cup	44	104
Oat bran, cooked, ½ cup	44	44
Buckwheat groats, roasted, cooked, ½ cup	43	78
Brown rice, cooked, ½ cup	42	108
Haddock, cooked, 3 oz	42	95

[a] Calcium sulfate and magnesium chloride.

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

Appendix B-8. Food Sources of Dietary Fiber

Food Sources of Dietary Fiber ranked by grams of dietary fiber per standard amount; also calories in the standard amount.
(All are ≥10% of AI for adult women, which is 25 grams/day.)

Food, Standard Amount	Dietary Fiber (g)	Calories
Navy beans, cooked, ½ cup	9.5	128
Bran ready-to-eat cereal (100%), ½ cup	8.8	78
Kidney beans, canned, ½ cup	8.2	109
Split peas, cooked, ½ cup	8.1	116
Lentils, cooked, ½ cup	7.8	115
Black beans, cooked, ½ cup	7.5	114
Pinto beans, cooked, ½ cup	7.7	122
Lima beans, cooked, ½ cup	6.6	108
Artichoke, globe, cooked, 1 each	6.5	60
White beans, canned, ½ cup	6.3	154
Chickpeas, cooked, ½ cup	6.2	135
Great northern beans, cooked, ½ cup	6.2	105
Cowpeas, cooked, ½ cup	5.6	100
Soybeans, mature, cooked, ½ cup	5.2	149
Bran ready-to-eat cereals, various, ~1 oz	2.6–5.0	90–108
Crackers, rye wafers, plain, 2 wafers	5.0	74
Sweetpotato, baked, with peel, 1 medium (146 g)	4.8	131
Asian pear, raw, 1 small	4.4	51
Green peas, cooked, ½ cup	4.4	67
Whole-wheat English muffin, 1 each	4.4	134
Pear, raw, 1 small	4.3	81
Bulgur, cooked, ½ cup	4.1	76
Mixed vegetables, cooked, ½ cup	4.0	59
Raspberries, raw, ½ cup	4.0	32
Sweetpotato, boiled, no peel, 1 medium (156 g)	3.9	119
Blackberries, raw, ½ cup	3.8	31
Potato, baked, with skin, 1 medium	3.8	161
Soybeans, green, cooked, ½ cup	3.8	127
Stewed prunes, ½ cup	3.8	133
Figs, dried, ¼ cup	3.7	93
Dates, ¼ cup	3.6	126
Oat bran, raw, ¼ cup	3.6	58
Pumpkin, canned, ½ cup	3.6	42
Spinach, frozen, cooked, ½ cup	3.5	30
Shredded wheat ready-to-eat cereals, various, ~1 oz	2.8–3.4	96
Almonds, 1 oz	3.3	164
Apple with skin, raw, 1 medium	3.3	72
Brussels sprouts, frozen, cooked, ½ cup	3.2	33
Whole-wheat spaghetti, cooked, ½ cup	3.1	87

Appendix B-8: Continued

Food, Standard Amount	Dietary Fiber (g)	Calories
Banana, 1 medium	3.1	105
Orange, raw, 1 medium	3.1	62
Oat bran muffin, 1 small	3.0	178
Guava, 1 medium	3.0	37
Pearled barley, cooked, ½ cup	3.0	97
Sauerkraut, canned, solids, and liquids, ½ cup	3.0	23
Tomato paste, ¼ cup	2.9	54
Winter squash, cooked, ½ cup	2.9	38
Broccoli, cooked, ½ cup	2.8	26
Parsnips, cooked, chopped, ½ cup	2.8	55
Turnip greens, cooked, ½ cup	2.5	15
Collards, cooked, ½ cup	2.7	25
Okra, frozen, cooked, ½ cup	2.6	26
Peas, edible-podded, cooked, ½ cup	2.5	42

Source: ARS Nutrient Database for Standard Reference, Release 17. Foods are from single nutrient reports, which are sorted either by food description or in descending order by nutrient content in terms of common household measures. The food items and weights in these reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted.

Appendix B-9. Food Sources of Vitamin C

Food Sources of Vitamin C ranked by milligrams of vitamin C per standard amount; also calories in the standard amount.
(All provide ≥20% of RDA for adult men, which is 90 mg/day.)

Food, Standard Amount	Vitamin C (mg)	Calories
Guava, raw, ½ cup	188	56
Red sweet pepper, raw, ½ cup	142	20
Red sweet pepper, cooked, ½ cup	116	19
Kiwi fruit, 1 medium	70	46
Orange, raw, 1 medium	70	62
Orange juice, ¾ cup	61–93	79–84
Green pepper, sweet, raw, ½ cup	60	15
Green pepper, sweet, cooked, ½ cup	51	19
Grapefruit juice, ¾ cup	50–70	71–86
Vegetable juice cocktail, ¾ cup	50	34
Strawberries, raw, ½ cup	49	27
Brussels sprouts, cooked, ½ cup	48	28
Cantaloupe, ¼ medium	47	51
Papaya, raw, ¼ medium	47	30
Kohlrabi, cooked, ½ cup	45	24
Broccoli, raw, ½ cup	39	15
Edible pod peas, cooked, ½ cup	38	34
Broccoli, cooked, ½ cup	37	26
Sweetpotato, canned, ½ cup	34	116
Tomato juice, ¾ cup	33	31
Cauliflower, cooked, ½ cup	28	17
Pineapple, raw, ½ cup	28	37
Kale, cooked, ½ cup	27	18
Mango, ½ cup	23	54

Source: Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 17. Foods are from ARS single nutrient reports, sorted in descending order by nutrient content in terms of common household measures. Food items and weights in the single nutrient reports are adapted from those in 2002 revision of USDA Home and Garden Bulletin No. 72, Nutritive Value of Foods. Mixed dishes and multiple preparations of the same food item have been omitted from this table.

APPENDIX C. GLOSSARY OF TERMS

Acceptable Macronutrient Distribution Ranges (AMDR)—Range of intake for a particular energy source that is associated with reduced risk of chronic disease while providing intakes of essential nutrients. If an individual consumes in excess of the AMDR, there is a potential of increasing the risk of chronic diseases and/or insufficient intakes of essential nutrients.

Added Sugars—Sugars and syrups that are added to foods during processing or preparation. Added sugars do not include naturally occurring sugars such as those that occur in milk and fruits.

Adequate Intakes (AI)—A recommended average daily nutrient intake level based on observed or experimentally determined approximations or estimates of mean nutrient intake by a group (or groups) of apparently healthy people. The AI is used when the Estimated Average Requirement cannot be determined.

Basic Food Groups—In the USDA food intake patterns, the basic food groups are grains; fruits; vegetables; milk, yogurt, and cheese; and meat, poultry, fish, dried peas and beans, eggs, and nuts. In the DASH Eating Plan, nuts, seeds, and dry beans are a separate food group from meat, poultry, fish, and eggs.

Body Mass Index (BMI)—BMI is a practical measure for approximating total body fat and is a measure of weight in relation to height. It is calculated as weight in kilograms divided by the square of the height in meters.

Cardiovascular Disease—Refers to diseases of the heart and diseases of the blood vessel system (arteries, capillaries, veins) within a person's entire body, such as the brain, legs, and lungs.

Cholesterol—A sterol present in all animal tissues. Free cholesterol is a component of cell membranes and serves as a precursor for steroid hormones, including estrogen, testosterone, aldosterone, and bile acids. Humans are able to synthesize sufficient cholesterol to meet biologic requirements, and there is no evidence for a dietary requirement for cholesterol.

- **Dietary cholesterol**—Consumed from foods of animal origin, including meat, fish, poultry, eggs, and dairy products. Plant foods, such as grains, fruits and vegetables, and oils from these sources contain no dietary cholesterol.
- **Serum cholesterol**—Travels in the blood in distinct particles containing both lipids and proteins. Three major classes of lipoproteins are found in the serum of a fasting individual: low-density lipoprotein (LDL), high-density lipoprotein (HDL), and very-low-density lipoprotein (VLDL). Another lipoprotein class, intermediate-density lipoprotein (IDL), resides between VLDL and LDL; in clinical practice, IDL is included in the LDL measurement.

Chronic Diseases—such as heart disease, cancer, and diabetes—are the leading causes of death and disability in the United States. These diseases account for 7 of every 10 deaths and affect the quality of life of 90 million Americans. Although chronic diseases are among the most common and costly health problems, they are also among the most preventable. Adopting healthy behaviors such as eating nutritious foods, being physically active, and avoiding tobacco use can prevent or control the devastating effects of these diseases.

Coronary Heart Disease—A narrowing of the small blood vessels that supply blood and oxygen to the heart (coronary arteries).

Daily Food Intake Pattern—Identifies the types and amounts of foods that are recommended to be eaten each day and that meet specific nutritional goals. (*Federal Register Notice*, vol. 68, no. 176, p. 53536, Thursday, September 11, 2003)

Danger Zone—The temperature that allows bacteria to multiply rapidly and produce toxins, between 40°F and 140°F. To keep food out of this danger zone, keep cold food cold and hot food hot. Keep food cold in the refrigerator, in coolers, or on ice in the service line. Keep hot food in the oven, in heated chafing dishes, or in preheated steam tables, warming trays, and/or slow cookers. Never leave perishable foods, such as meat, poultry, eggs, and casseroles, in the danger zone longer than 2 hours or longer than 1 hour in temperatures above 90°F.

Dietary Fiber—Nonstarch polysaccharides and lignin that are not digested by enzymes in the small intestine. Dietary fiber typically refers to nondigestable carbohydrates from plant foods.

Dietary Reference Intakes (DRIs)—A set of nutrient-based reference values that expand upon and replace the former Recommended Dietary Allowances (RDAs) in the United States and the Recommended Nutrient Intakes (RNIs) in Canada. They are actually a set of four reference values: Estimated Average Requirements (EARs), RDAs, AIs, and Tolerable Upper Intake Levels (ULs).

Discretionary Calorie Allowance—The balance of calories remaining in a person's energy allowance after accounting for the number of calories needed to meet recommended nutrient intakes through consumption of foods in low-fat or no added sugar forms. The discretionary calorie allowance may be used in selecting forms of foods that are not the most nutrient-dense (e.g., whole milk rather than fat-free milk) or may be additions to foods (e.g., salad dressing, sugar, butter).

Energy Allowance–A person's energy allowance is the calorie intake at which weight maintenance occurs.

Estimated Average Requirements–EAR is the average daily nutrient intake level estimated to meet the requirement of half the healthy individuals in a particular life stage and gender group.

Estimated Energy Requirement–The EER represents the average dietary energy intake that will maintain energy balance in a healthy person of a given gender, age, weight, height, and physical activity level.

FDAMA–The Food and Drug Administration Modernization Act, enacted Nov. 21, 1997, amended the Federal Food, Drug, and Cosmetic Act relating to the regulation of food, drugs, devices, and biological products. With the passage of FDAMA, Congress enhanced FDA's mission in ways that recognized the Agency would be operating in a 21st century characterized by increasing technological, trade, and public health complexities.

FightBAC!–A national public education campaign to promote food safety to consumers and educate them on how to handle and prepare food safely. In this campaign, pathogens are represented by a cartoon-like bacteria character named "BAC."

Foodborne Disease–Caused by consuming contaminated foods or beverages. Many different disease-causing microbes, or pathogens, can contaminate foods, so there are many different foodborne infections. In addition, poisonous chemicals, or other harmful substances, can cause foodborne diseases if they are present in food. The most commonly recognized foodborne infections are those caused by the bacteria *Campylobacter, Salmonella,* and *E. coli* O157:H7, and by a group of viruses called calicivirus, also known as the Norwalk and Norwalk-like viruses.

Heme Iron–One of two forms of iron occurring in foods. Heme iron is bound within the iron-carrying proteins (hemoglobin and myoglobin) found in meat, poultry, and fish. While it contributes a smaller portion of iron to typical American diets than non-heme iron, a larger proportion of heme iron is absorbed.

High Fructose Corn Syrup (HFCS)–A corn sweetener derived from the wet milling of corn. Cornstarch is converted to a syrup that is nearly all dextrose. HFCS is found in numerous foods and beverages on the grocery store shelves.

Hydrogenation–A chemical reaction that adds hydrogen atoms to an unsaturated fat, thus saturating it and making it solid at room temperature.

Leisure-Time Physical Activity–Physical activity that is performed during exercise, recreation, or any additional time other than that associated with one's regular job duties, occupation, or transportation.

Listeriosis–A serious infection caused by eating food contaminated with the bacterium *Listeria monocytogenes*, which has recently been recognized as an important public health problem in the United States. The disease affects primarily pregnant women, their fetuses, newborns, and adults with weakened immune systems. Listeria is killed by pasteurization and cooking; however, in certain ready-to-eat foods, such as hot dogs and deli meats, contamination may occur after cooking/manufacture but before packaging. *Listeria monocytogenes* can survive at refrigerated temperatures.

Macronutrient–The dietary macronutrient groups are carbohydrates, proteins, and fats.

Micronutrient–Vitamins and minerals that are required in the human diet in very small amounts.

Moderate Physical Activity–Any activity that burns 3.5 to 7 kcal/min or the equivalent of 3 to 6 metabolic equivalents (METs) and results in achieving 60 to 73 percent of peak heart rate. An estimate of a person's peak heart rate can be obtained by subtracting the person's age from 220. Examples of moderate physical activity include walking briskly, mowing the lawn, dancing, swimming, or bicycling on level terrain. A person should feel some exertion but should be able to carry on a conversation comfortably during the activity.

Monounsaturated Fatty Acids–Monounsaturated fatty acids (MUFAs) have one double bond. Plant sources that are rich in MUFAs include vegetable oils (e.g., canola oil, olive oil, high oleic safflower and sunflower oils) that are liquid at room temperature and nuts.

Nutrient-Dense Foods–Nutrient-dense foods are those that provide substantial amounts of vitamins and minerals and relatively fewer calories.

Ounce-Equivalent–In the grains food group, the amount of a food counted as equal to a one-ounce slice of bread; in the meat, poultry, fish, dry beans, eggs, and nuts food group, the amount of food counted as equal to one ounce of cooked meat, poultry, or fish. Examples are listed in table 1 and appendix A-1.

n-6 PUFAs–Linoleic acid, one of the n-6 fatty acids, is required but cannot be synthesized by humans and, therefore, is considered essential in the diet. Primary sources are liquid vegetable oils, including soybean oil, corn oil, and safflower oil.

n-3 PUFAs–α-linolenic acid is an n-3 fatty acid that is required because it is not synthesized by humans and, therefore, is considered essential in the diet. It is obtained from plant sources, including soybean oil, canola oil, walnuts, and flaxseed. Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are long chain n-3 fatty acids that are contained in fish and shellfish.

Pathogen–Any microorganism that can cause or is capable of causing disease.

Polyunsaturated Fatty Acids–Polyunsaturated fatty acids (PUFAs) have two or more double bonds and may be of two types, based on the position of the first double bond.

Portion Size–The amount of a food consumed in one eating occasion.

Recommended Dietary Allowance (RDA)–The dietary intake level that is sufficient to meet the nutrient requirement of nearly all (97 to 98 percent) healthy individuals in a particular life stage and gender group.

Resistance Exercise–Anaerobic training, including weight training, weight machine use, and resistance band workouts. Resistance training will increase strength, muscular endurance, and muscle size, while running and jogging will not.

Saturated Fatty Acids–Saturated fatty acids have no double bonds. They primarily come from animal products such as meat and dairy products. In general, animal fats are solid at room temperature.

Sedentary Behaviors–In scientific literature, sedentary is often defined in terms of little or no physical activity during leisure time. A sedentary lifestyle is a lifestyle characterized by little or no physical activity.

Serving Size–A standardized amount of a food, such as a cup or an ounce, used in providing dietary guidance or in making comparisons among similar foods.

Tolerable Upper Intake Level (UL)–The highest average daily nutrient intake level likely to pose no risk of adverse health affects for nearly all individuals in a particular life stage and gender group. As intake increases above the UL, the potential risk of adverse health affects increases.

***Trans* fatty acids**–*Trans* fatty acids, or *trans* fats, are unsaturated fatty acids that contain at least one non-conjugated double bond in the *trans* configuration. Sources of *trans* fatty acids include hydrogenated/partially hydrogenated vegetable oils that are used to make shortening and commercially prepared baked goods, snack foods, fried foods, and margarine. *Trans* fatty acids also are present in foods that come from ruminant animals (e.g., cattle and sheep). Such foods include dairy products, beef, and lamb.

Vegetarian–There are several categories of vegetarians, all of whom avoid meat and/or animal products. The vegan or total vegetarian diet includes only foods from plants: fruits, vegetables, legumes (dried beans and peas), grains, seeds, and nuts. The lactovegetarian diet includes plant foods plus cheese and other dairy products. The ovo-lactovegetarian (or lacto-ovovegetarian) diet also includes eggs. Semi-vegetarians do not eat red meat but include chicken and fish with plant foods, dairy products, and eggs.

Vigorous Physical Activity–Any activity that burns more than 7 kcal/min or the equivalent of 6 or more metabolic equivalents (METs) and results in achieving 74 to 88 percent of peak heart rate. An estimate of a person's peak heart rate can be obtained by subtracting the person's age from 220. Examples of vigorous physical activity include jogging, mowing the lawn with a nonmotorized push mower, chopping wood, participating in high-impact aerobic dancing, swimming continuous laps, or bicycling uphill. Vigorous-intensity physical activity may be intense enough to represent a substantial challenge to an individual and results in a significant increase in heart and breathing rate.

Weight-Bearing Exercise–Any activity one performs that works bones and muscles against gravity, including walking, running, hiking, dancing, gymnastics, and soccer.

Whole Grains–Foods made from the entire grain seed, usually called the kernel, which consists of the bran, germ, and endosperm. If the kernel has been cracked, crushed, or flaked, it must retain nearly the same relative proportions of bran, germ, and endosperm as the original grain in order to be called whole grain.[16]

[16] AACC Press Release, AACC To Create Consumer-Friendly Whole Grain Definition, March 5, 2004. http://www.aaccnet.org/news/CFWholeGrain.asp.

APPENDIX D. ACRONYMS

AI–Adequate Intakes
AMDR–Acceptable Macronutrient Distribution Range
ARS–Agricultural Research Service
BMI–Body Mass Index
CSFII–Continuing Survey of Food Intakes by Individuals
DASH–Dietary Approaches to Stop Hypertension
DFE–Dietary Folate Equivalent
DHA–Docosahexaenoic acid
DRI–Dietary Reference Intake
DV–Daily Value
EAR–Estimated Average Requirement
EER–Estimated Energy Requirement
EPA–Eicosapentaenoic acid
FDA–Food and Drug Administration
FDAMA–Food and Drug Administration Modernization Act
HDL–High-density lipoprotein
HHS–U.S. Department of Health and Human Services
IU–International unit
LDL–Low-density lipoprotein
RAE–Retinol Activity Equivalent
RDA–Recommended Dietary Allowance
USDA–U.S. Department of Agriculture

NOTES

This publication, as well as the booklet, *Finding Your Way to a Healthier You*, may be viewed and downloaded from the Internet at www.healthierus.gov/dietaryguidelines.

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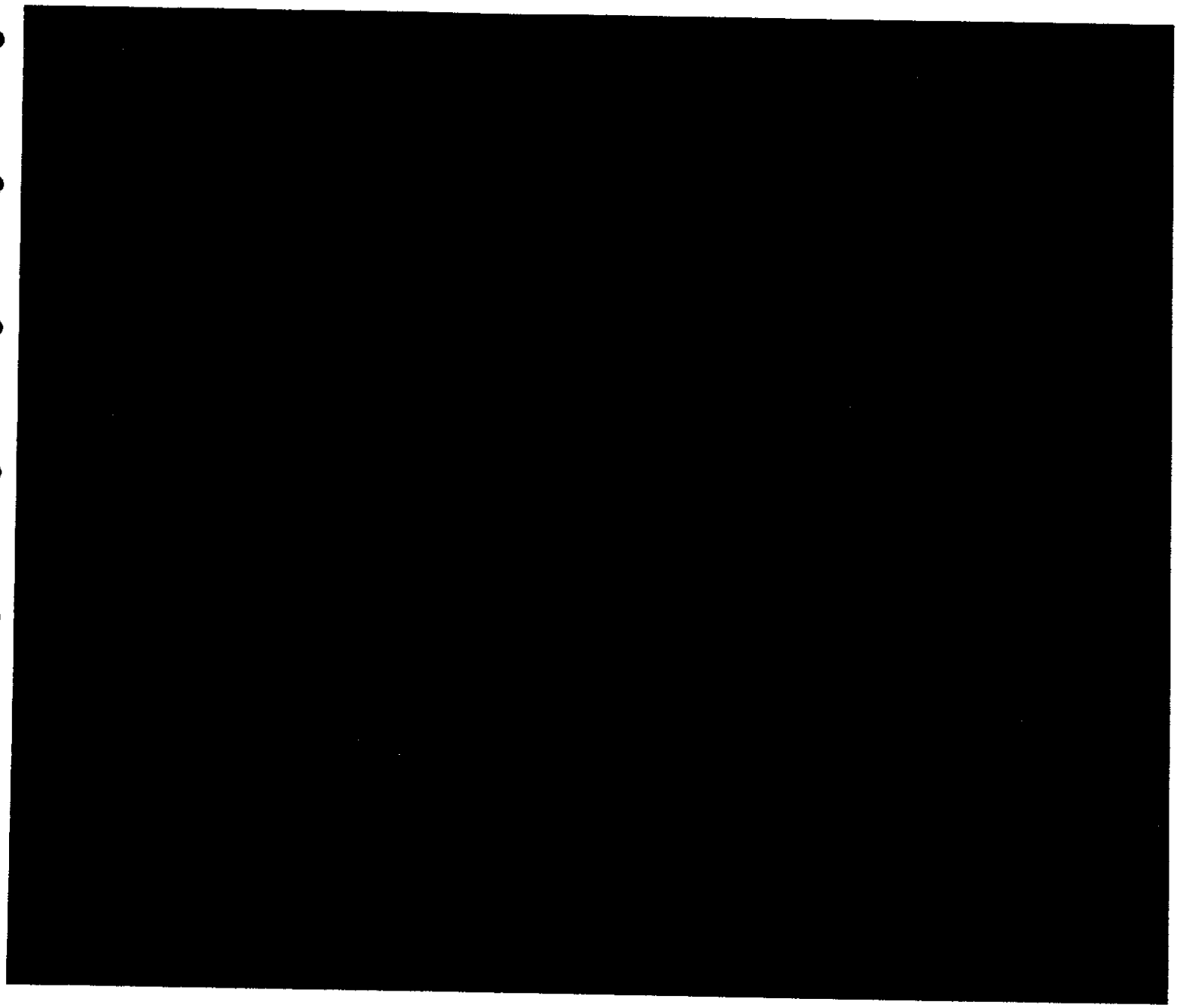

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C · H · O · R · I
Children's Hospital Oakland Research Institute

August 19, 2004

The Honorable Tommy G. Thompson
Secretary of Health and Human Services
200 Independence Avenue, S.W.
Washington, D.C. 20201

The Honorable Ann M. Veneman
Secretary of Agriculture
1400 Independence Avenue, S.W.
Whitten Bldg., Room 200A
Washington, D.C. 20250

Dear Secretaries Thompson and Veneman,

On behalf of the entire 2005 Dietary Guidelines Advisory Committee, I am very pleased to submit the "Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2005."

In your charge to our Committee you asked that we take a different approach from that of previous Dietary Guidelines Advisory Committees. Rather than just considering how the 2000 Dietary Guidelines should be changed, you asked that we conduct an evidence-based review of diet and health. Thus, we initially posed over 40 specific questions related to dietary guidance. We then thoroughly reviewed the scientific literature pertaining to those questions, analyzed national data sets, sought additional information from invited experts, and deliberated on the results. After dropping some questions because of incomplete or inconclusive data, we wrote conclusive statements and a comprehensive rationale for 34 of the original questions. This evidence-based analysis of the science formed the basis for the 9 major messages that the Committee believes should be conveyed in the 2005 Dietary Guidelines of Americans. Although this approach was challenging and demanding for the Committee and Staff, we believe that the scientific documentation for our major messages is done more systematically and meticulously than that of previous Advisory Committees. Our process did not eliminate the need for scientific judgment in resolving issues characterized by conflicting information. However, the Committee considered such issues with care, and came to sound consensus on all questions.

During the Committee's deliberations an overall theme for our report emerged. Collectively, available scientific data show that Americans need to select a quality diet *while* staying within their calorie requirements to achieve optimum health. Because of sedentary lifestyles and poor food choices, many Americans exceed their caloric needs without meeting their nutrient requirements. This not only causes obesity and related diseases, but it also leads to malnutrition. Specific recommendations are provided within the report to improve diet quality without exceeding caloric needs. Major changes in the food habits and lifestyles of Americans are required to achieve this goal. The Committee recommends that your respective Departments, charged with the responsibility for the health and

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nutrition of the nation, initiate a national effort to reverse our escalating trend towards poor nourishment and health in a land of plenty. This requires many changes throughout our Society. Most specifically, we must explicitly address the extraordinary health disparities documented among our most economically disadvantaged in comparison to our most economically advantaged. Improved access to nutrient-rich foods at home, schools, work-places, and restaurants, opportunities for physical activity in all neighborhoods, schools, and work-places, and widespread education regarding the impact of individual choices are examples of changes we must effectuate .

On behalf of the entire Committee, I wish to thank you for the opportunity to serve our fellow citizens in this way. Although the charge to our Committee seemed daunting at times, we learned a tremendous amount from serving and benefited personally from the process. We appreciate your trust in us to accomplish this important task of making a contribution to the health of all Americans. I especially wish to thank you for assembling such an outstanding Committee with which to work on this endeavor. Every member made a unique contribution, and all committed themselves to the process. We truly enjoyed the camaraderie of working together on such an important mission.

I want to emphasize that this report could not have been completed without the excellent, diligent work of the Staff you provided. They were extremely dedicated and put in many long days and week-ends assisting the Committee. The hard work and extensive contributions of Carol Suitor need special recognition. Her guidance and assistance on how to present our information in a useful, readable manner were invaluable.

The Committee looks forward to the subsequent documents and discussion this report will generate. We believe that we have provided a strong foundation for that dialogue and work. We are very interested in the future dissemination of this information. Please do not hesitate to contact me or any of my colleagues should you wish to discuss this report with us.

Sincerely,

Janet C. King

Janet C. King, Ph.D.
Chair, 2005 Dietary Guidelines Advisory Committee

Senior Scientist and
Professor, University of California, Berkeley and Davis

Nutrition and Your Health: Dietary Guidelines for Americans

2005 Dietary Guidelines Advisory Committee Report

The 13-member 2005 Dietary Guidelines Advisory Committee was appointed by the Departments of Health and Human Services and Agriculture to assist the departments in providing sound and current dietary guidance to consumers. The National Nutrition Monitoring and Related Research Act of 1990, Pub. L. 101-445, Title III, 7 U.S.C. 5301 et seq., requires the Secretaries of HHS and USDA to publish the *Dietary Guidelines for Americans* at least every five years. During its first meeting on September 23-24, 2003, the Committee decided that the science has changed since the 2000 edition of *Nutrition and Your Health: Dietary Guidelines for Americans* and further evaluation of the science was necessary. The Committee has finalized its recommendations and submitted its Report to the Secretaries of Departments of Health and Human Services and Agriculture. This Report will serve as the basis for the sixth edition of *Nutrition and Your Health: Dietary Guidelines for Americans* which HHS and USDA expect to publish in January 2005.

Note: To view the PDF file, you may download the latest Adobe® Acrobat® Reader®.

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Updated Thursday, June 15, 2006 by ODPHP Web Support

PART A: EXECUTIVE SUMMARY

Dietary Guidelines for Americans provide science-based advice to promote health and to reduce risk for major chronic diseases through diet and physical activity. By law (Public Law 101-445, Section 301), the Secretaries of the Department of Health and Human Services (HHS) and the Department of Agriculture (USDA) issue a report at least every 5 years that "shall contain nutritional and dietary information and guidelines for the general public." Every 5 years, an expert Dietary Guidelines Advisory Committee is appointed to make recommendations to the Secretaries concerning revision of *Dietary Guidelines for Americans*. The recommendations are to be targeted to the general public age 2 years and older and based on the preponderance of scientific and medical knowledge that is current at the time of publication of the Committee's report.

Because of its focus on health promotion and risk reduction, *Dietary Guidelines* form the basis of Federal food, nutrition education, and information programs. By law, the *Dietary Guidelines* is to be "promoted by each Federal agency in carrying out any Federal food, nutrition, or health program." This means that the *Dietary Guidelines* must be applied in menu planning in programs such as the National School Lunch Program; in educational materials used by the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and by many other Federal programs; and in setting the Healthy People objectives for the Nation. Using *Dietary Guidelines* helps policymakers, educators, clinicians, and others to speak with one voice on nutrition and health.

This report presents the recommendations of the 2005 Dietary Guidelines Advisory Committee to the Secretaries of HHS and USDA. It represents a milestone in documenting the scientific base used to develop the recommendations. The Committee used a fresh approach rather than simply considering how the year 2000 *Dietary Guidelines* should be changed. Committee members posed a large number of questions. Questions were prioritized, and an extensive search of the scientific literature was done. Available time, expertise, and resources precluded an examination of all issues relating diet and physical activity to health promotion and chronic disease prevention.

Working through subcommittees, the Committee critically reviewed relevant scientific evidence, requested special analyses relating to nutrients and dietary patterns, obtained useful information and insights from invited experts and from public oral and written testimony, and deliberated its findings. Since the general public now comprises large numbers of individuals with chronic health problems such as obesity, high blood pressure, and abnormal blood lipid values, as well as a large elderly population, the Committee addressed a few topics that may go beyond the dietary concerns of persons who meet strict definitions for good health. This report presents findings, conclusions, and recommendations from the entire Committee. Appendices and other materials posted at www.health.gov/dietaryguidelines provide additional details about the evidence used by the Committee.

The topics that the Committee addressed in depth included meeting recommended nutrient intakes; physical activity; energy balance; relationships of fats, carbohydrates, selected food groups, and alcohol with health; and consumer aspects of food safety. The Committee was especially interested in finding strong scientific support for dietary and physical activity measures that could reduce the Nation's major diet-related health problems—overweight and obesity, hypertension, abnormal blood lipids, diabetes, coronary heart disease (CHD), certain types of cancer, and osteoporosis. They developed the concept of discretionary calories in connection with calorie and weight control; discretionary calories are those calories remaining within a person's caloric allowance after all nutrient recommendations are met. The Committee also focused on the potential health benefits and serious health risks of alcohol intake. Because food can promote health only if it is safe to eat and because foodborne illness affects more than 76 million Americans each year, food safety must undergird all dietary guidance.

KEY MESSAGES—TRANSLATING SCIENTIFIC FINDINGS INTO DIETARY AND PHYSICAL ACTIVITY GUIDANCE

The Committee's extensive review of the evidence and deliberations led to the development of a set of nine key messages. These messages should be useful to nutrition-related program providers, healthcare providers, and educators, as well as to those charged with the responsibility to produce the publication *Dietary Guidelines for Americans, 2005 Edition*. Part D of the report provides the scientific basis for the nine key messages. Part E provides specific recommendations for the content of the main messages and supporting details without specifying wording that would be suitable for consumers.

The Committee's findings support the development of *Dietary Guidelines* that convey the following nine major messages:

- Consume a variety of foods within and among the basic food groups while staying within energy needs.
- Control calorie intake to manage body weight.
- Be physically active every day.
- Increase daily intake of fruits and vegetables, whole grains, and nonfat or low-fat milk and milk products.
- Choose fats wisely for good health.
- Choose carbohydrates wisely for good health.
- Choose and prepare foods with little salt.
- If you drink alcoholic beverages, do so in moderation.
- Keep food safe to eat.

This list makes a major departure from previous editions of *Dietary Guidelines for Americans* in that it does not include a message specifically directed toward sugars. This does not mean that the current Committee views the topic of sugars to be unimportant. On the contrary, the Committee provides a strong rationale for limiting one's intake of added sugars (that is, sugars and syrups that are added to foods during processing or preparation or at the table). The Committee's intent is to make this point clearly under

the new topic "Choose Carbohydrates Wisely for Good Health" and also under the first and second topics, which address energy needs and controlling calorie intake, respectively.

A synopsis of the Committee's recommendations regarding content to be included under each of the nine main messages follows.

Consume a Variety of Foods Within and Among the Basic Food Groups, While Staying Within Energy Needs

Because the recommendations for nutrient intakes from the Institute of Medicine now consider the prevention of chronic disease as well as basic nutrient needs, meeting those recommendations provides a firm foundation for current health and for reducing chronic disease risk. Thus, meeting recommended nutrient intakes while staying within energy needs is a basic premise of dietary guidance. For most nutrients, intakes by Americans appear adequate. However, efforts are warranted to promote increased dietary intakes of vitamin E, calcium, magnesium, potassium, and fiber by children and adults and to promote increased dietary intakes of vitamins A and C by adults.

Choosing a variety of foods from within each of the basic food groups helps achieve recommended nutrient intakes, but attention to maintaining appropriate energy balance also is important. This means limiting calorie intake, especially from added sugars, solid fats, and alcoholic beverages—sources of calories that are very poor sources of essential nutrients.

Use of the revised USDA food intake pattern included in the report is one method to plan diets that meet recommended nutrient intakes considering age, gender, and physical activity level. This food pattern specifies recommended numbers of servings from the five food groups and from food subgroups. The foods in these groups are good sources of nutrients relative to the calories that they provide. The pattern allows a wide choice of foods within each food group and subgroup, and this report suggests ways to make substitutions across some of the food groups as well. Also included in this report are food lists of the best sources of nutrients that tend to be in short supply in the diets of Americans. These lists provide a useful way for consumers to choose foods they like to boost their intake of the nutrient; and they may be especially helpful for meeting recommended intakes of vitamin E, potassium, and fiber. Rather than simply adding nutrient-rich foods to one's diet, substituting nutrient rich foods for nutrient poor foods helps control calorie intake.

Special nutrient recommendations are warranted for a few large subgroups of the population as follows:

- Adolescent female and women of childbearing age need extra iron and folic acid.
- Persons over age 50 benefit from taking vitamin B_{12} in its crystalline form from foods fortified with this vitamin or from supplements that contain vitamin B_{12}.
- The elderly, persons with dark skin, and persons exposed to little UVB radiation may need extra vitamin D from vitamin D-fortified foods and/or supplements that contain vitamin D.

Control Calorie Intake To Manage Body Weight

Calorie intake and physical activity go hand in hand in controlling a person's weight. Caloric intake is emphasized under this message, physical activity under the next one.

To stem the obesity epidemic, most Americans need to reduce the amount of calories they consume. When it comes to weight control, calories *do* count—not the proportions of carbohydrate, fat, and protein in the diet. Energy expended must equal energy consumed to stay at the same weight. A deficit could be achieved by eating less, being more active physically, or combining the two. Since many adults gain weight slowly over time, even a small calorie deficit can help avoid weight gain. For example, a calorie deficit of 50 to 100 calories per day would enable many adults to maintain their weight rather than continuing to gain weight each year. For children who are gaining excess fat, a similar small decrease in energy intake can reduce the rate at which they gain weight so as they age they will grow into a healthy weight. Small changes maintained over time can make a big difference in body weight.

Monitoring weight regularly helps people know if they need to adjust their food intake or amount of physical activity to maintain their weight. Limiting the portion sizes that a person takes or serves to others often helps reduce calorie intake, especially if the food is high in energy density. On the other hand, consuming large portions of raw vegetables or low-fat soups may help limit one's intake of other foods that are more energy dense. The healthiest way to reduce calorie intake is to reduce one's intake of added sugars, solid fats, and alcohol—they all provide calories, but they do not provide essential nutrients.

Be Physically Active Every Day

Making moderate physical activity a part of an adult's daily routine for at least 30 minutes per day promotes fitness and reduces the risk of chronic health conditions such as obesity, hypertension, diabetes, and coronary artery disease. (Walking at a brisk pace [3 to 4 miles per hour] is an example of a moderate physical activity.) Moderate physical activity for an hour each day can increase energy expenditure by about 150 to 200 calories, depending on body size. If not offset by increased calorie intake, this increase in physical activity could be helpful in preventing weight gain. Many adults need to participate in up to 60 minutes of moderate to vigorous physical activity on most days to prevent unhealthy weight gain, while adults who have previously lost weight may need 60 to 90 minutes of moderate physical activity daily to help avoid regain of weight. Children and adolescents need at least 60 minutes of moderate to vigorous physical activity on most days for the maintenance of good health and fitness and for healthy weight gain during growth. Compared with moderate physical activity, vigorous physical activity provides greater benefits for physical fitness and burns more calories per unit time. Part D, Section 2, "Energy," addresses health benefits of additional types of physical activity.

Choose Fats Wisely For Good Health

Keeping intake of saturated fat, *trans* fat and cholesterol very low can help keep low-density lipoprotein (LDL) cholesterol low and reduce the risk of CHD. The main goals are to keep saturated fat intake below 10 percent of calories, *trans* fat intake below about 1 percent of calories, and cholesterol intake below 300 mg per day. Keeping saturated fat below 10 percent of calories should be the main focus, because this is the predominant fat that adversely affects blood lipid values. However, the lower the combined intake of saturated and *trans* fat and the lower the dietary cholesterol intake, the greater the cardiovascular benefit will be.

The major way to keep saturated fat low is to limit one's intake of animal fats (such as those in cheese, milk, butter, ice cream, and other full-fat dairy products; fatty meat; bacon and sausage; and poultry skin and fat). The major way to limit *trans* fat intake is to limit the intake of foods made with partially hydrogenated vegetable oils. To limit dietary intake of cholesterol, one needs to limit the intake of eggs and organ meats especially, as well as limit the intake of meat, shellfish, and poultry and dairy products that contain fat.

A reduced risk of both sudden death and CHD death in adults is associated with the consumption of two servings (approximately eight ounces) per week of fish high in the n-3 fatty acids called eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). To benefit from the potential cardioprotective effects of EPA and DHA, the weekly consumption of two servings of fish, particularly fish rich in EPA and DHA, is suggested. However, it is advisable for pregnant women, lactating women, and children to avoid eating fish with a high mercury content and to limit their consumption of fish with a moderate mercury content. Consulting current consumer advisories helps one know which species of fish to limit or avoid in order to reduce exposure to environmental contaminants.

Total fat intake of 20 to 35 percent of calories is recommended for all Americans age 18 years or older. Intakes of fat outside of this range are not recommended for most Americans because of potential adverse effects on achieving recommended nutrient intakes and on risk factors for chronic diseases. The *lower* limit of fat intake is higher for children: 30 percent of calories from fat for children age 2 and 3 years, and 25 percent of calories from fat for those age 4 to 18 years. Part D, Section 4, includes conclusions relating to n-6 and n-3 polyunsaturated fatty acids and monounsaturated fatty acids in addition to the fats listed here.

Choose Carbohydrates Wisely For Good Health

Carbohydrates—the sugars, starches, and fibers found in fruits, vegetables, grains, and milk products—are an important part of a healthful diet and the major energy source in most diets. Sugars and starches supply energy to the body in the form of glucose, which is the only energy source for the red blood cell and the preferred energy source for the brain, central nervous system, placenta, and fetus, and for muscle cells when they are operating anaerobically (without oxygen). Diets rich in dietary fiber help promote healthy laxation and help reduce the risk of type 2 diabetes and coronary heart disease.

When selecting foods from the fruit, vegetable, and grains groups, it is beneficial to make fiber-rich choices often. This means, for example, choosing whole fruits rather than juices and whole grains rather than refined grains. Current evidence suggests that there is no relationship between total carbohydrate intake (minus fiber) and the incidence of either type 1 or type 2 diabetes.

Following guidance to increase one's intake of fruits, vegetables, whole grains, and nonfat or low-fat milk or milk products is a healthful way to obtain the recommended amounts of carbohydrate. Compared with individuals who consume small amounts of foods and beverages that are high in added sugars, those who consume large amounts tend to consume more calories but smaller amounts of vitamins and minerals. Although more research is needed, prospective studies suggest a positive association between the consumption of sugar-sweetened beverages and weight gain. A reduced intake of added sugars (especially sugar-sweetened beverages) may be helpful in achieving the recommended intakes of nutrients and in weight control.

Sugars and starches supply substrate for bacterial fermentation in the mouth, and acids produced can cause tooth demineralization resulting in dental caries. However, drinking fluoridated water and/or using fluoride-containing dental hygiene products helps reduce the risk of dental caries. A combined approach is helpful for reducing caries incidence: reducing the frequency of consuming sugars and starches (e.g., limiting snacking on foods that contain these carbohydrates), limiting the length of time the teeth are exposed to fermentable carbohydrates, and optimizing oral hygiene practices.

Increase Daily Intakes of Fruits and Vegetables, Whole Grains, and Reduced-Fat Milk and Milk Products

Fruits and Vegetables

Fruits contain glucose, fructose, sucrose, and fiber, and most fruits are relatively low in calories. In addition, fruits are important sources of at least eight additional nutrients, including vitamin C, folate, and potassium (which may help control blood pressure). Many vegetables provide only small amounts of sugars and/or starch, some are high in starch, and all provide fiber. Vegetables are important sources of 19 or more nutrients, including potassium, folate, and vitamins A and E.

Adults who increase their fruit and vegetable consumption to meet recommended nutrient intakes will also be consuming amounts of fruits and vegetables that are associated with a decreased risk of such chronic diseases as stroke, perhaps other cardiovascular diseases, type 2 diabetes, and cancer in certain sites. Moreover, increased consumption of fruits and vegetables may be a useful component of programs designed to achieve and sustain weight loss.

The suggested range of intake is 2½ to 6½ cups[1] of fruits and vegetables daily, depending on calorie needs. For persons needing 2,000 calories per day to maintain their weight, the

[1] See Tables D1-13 and D1-16 for information on 2 to 3 year olds.

goal is 4½ cups (or the equivalent) of fruits and vegetables per day. Consuming a variety of fruits and vegetables daily is recommended—choosing among citrus fruits, melons, and berries; other fruits; dark green leafy vegetables; bright orange vegetables; legumes; starchy vegetables; and other vegetables.

Whole Grains

Whole grains are high in starch, and they are important sources of 14 nutrients including fiber. Diets rich in whole grains can reduce the risk of CHD and type 2 diabetes and help with weight control. Important sources of whole grains include whole wheat, oatmeal, popcorn, bulgur, and brown rice. Whole wheat bread is an example of a whole-grain food. The goal is to eat at least three 1-ounce equivalents per day of whole-grain foods, preferably in place of refined grains.

Nonfat and Low-Fat Milk and Milk Products

Milk and milk products are important sources of at least 12 nutrients including calcium, magnesium, potassium, and vitamin D. Diets that provide 3 cups or the equivalent of milk and/or milk products per day can improve bone mass. This amount of milk product consumption may have additional health benefits and is not associated with increased body weight.

The goal for persons with energy requirements greater than 1,600 calories per day is 3 cups or the equivalent of milk products per day, preferably nonfat or low-fat products such as skim milk and yogurt. Milk products that are consumed in their nonfat or low-fat forms provide no or little solid fat and are very nutrient dense. When considering alternatives to milk, the most reliable way to derive the health benefits associated with milk products is to choose alternatives within the dairy food group such as lactose-free milk or yogurt.

Choose and Prepare Foods With Little Salt

Reducing salt (sodium chloride) intake is one of several ways that people can lower their blood pressure. Reducing blood pressure, ideally to the normal range, reduces the chance of developing a stroke, heart disease, heart failure, and kidney disease. The relationship between salt intake and blood pressure is direct and progressive without an apparent threshold. On average, the higher a person's salt intake, the higher is his or her blood pressure. Thus, reducing salt intake as much as possible is one way to lower blood pressure. Another dietary measure to lower blood pressure is to consume a diet rich in potassium. A potassium-rich diet also blunts the effects of salt on blood pressure, may reduce the risk of developing kidney stones, and possibly decrease bone loss with age.

The vast majority of the U.S. population consumes too much salt, much of it from processed foods. The goal is to consume less than 2,300 mg of sodium per day. The goal is expressed in terms of sodium rather than salt because the Nutrition Facts Labels on food products list sodium content. Many people—especially persons with hypertension, blacks, and older adults—will benefit from working toward a goal of an even lower sodium intake.

Reducing salt intake requires careful attention to food selection when shopping or when eating outside the home, and also during food preparation at home. The Nutrition Facts Label on food packages can help consumers compare and identify prepared foods that are lower in sodium.

Fruits, vegetables, and most milk products are widely available in forms that contain no added salt, and most of them are important sources of potassium. Increasing one's intake of foods rich in potassium helps lower blood pressure. In addition, many of these potassium-rich foods enhance the taste of other foods that contain no added salt.

If You Drink Alcoholic Beverages, Do So in Moderation

Among middle-aged and older adults, the lowest all-cause mortality occurs at the level of one to two drinks per day. The mortality reduction is likely due to the protective effects of moderate alcohol consumption on coronary heart disease, primarily among males older than age 45 years and women older than age 55 years. Among younger people, alcohol consumption appears to provide little, if any, health benefit. Alcohol use among young adults is associated with an increased risk of traumatic injury and death. Heavy drinking is very hazardous, contributing to automobile injuries and deaths, assault, liver disease, and other health problems. Abstention is an important option.

The goal for adults who choose to drink is to do so in moderation. Moderation is defined as the consumption of up to one drink per day for women and two drinks per day for men. One drink is defined as 12 ounces of regular beer, 5 ounces of wine (12 percent alcohol), or 1.5 ounces of 80-proof distilled spirits.

Among the people who should not consume alcoholic beverages are those who cannot restrict their drinking to moderate levels, children and adolescents, and individuals taking medications that can interact with alcohol or who have specific medical conditions. Drinking alcoholic beverages should be avoided by women who may become pregnant or who are pregnant, by breastfeeding women, and by persons who plan to drive or take part in other activities that require attention, skill, or coordination.

Keep Food Safe To Eat

Foodborne diseases cause approximately 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths in the United States each year. Three pathogens (*Salmonella*, *Listeria*, and *Toxoplasma*) are responsible for more than 75 percent of these deaths. Actions by consumers can reduce the occurrence of foodborne illness substantially. The behaviors in the home that are most likely to prevent a problem with foodborne illnesses are

- Cleaning hands, contact surfaces, and fruits and vegetables (This does not apply to meat and poultry, which should not be washed.)
- Separating raw, cooked, and ready-to-eat foods while shopping, preparing, or storing
- Cooking foods to a safe temperature
- Chilling (refrigerating) perishable foods promptly
- Avoiding higher-risk foods (e.g., deli meats and frankfurters that have not been reheated to a safe temperature [may contain *Listeria*]). This is especially

important for high-risk groups (the very young, pregnant women, the elderly, and those who are immunocompromised).

HEEDING ALL THE MESSAGES

Making any one of the recommended changes in diet, decreasing calorie intake, or increasing physical activity may improve health and reduce one or more health risks. However, the greatest benefits can be anticipated if one tries to heed all nine of the major recommendations. It is well recognized that multiple dietary factors and physical activity influence the risk of chronic diseases and that no one factor accounts for any of the chronic diseases.

The food pattern developed by the USDA and included in this report integrates most of the recommendations made by the Committee. This food pattern

- Is high in fruits and vegetables, whole grains, and nonfat or low-fat milk products
- Provides amounts of nutrients (including potassium and fiber) that are consistent with recommended nutrient intakes and with reducing the risk of chronic disease
- Is low in saturated fat, cholesterol, and added sugars and can be low in *trans* fat[2] and sodium[3]

A diet that is consistent with the diet-related recommendations in this report—the Dietary Approaches to Stop Hypertension (DASH diet)—has been demonstrated to have health benefits, including reducing blood pressure and LDL cholesterol. The DASH diet provides nutrients in recommended amounts and is very close to the revised USDA food intake pattern in the nutrients it provides. Thus, the finding that the DASH diet provides health benefits lends support to the combination of diet-related recommendations in this report.

Adding at least 30 minutes of moderate physical activity into one's daily routine would increase the calorie requirement by a small amount, allowing somewhat more leeway in the amount of food that could be consumed without gaining weight. Increasing physical activity would contribute to a lowering of chronic disease risk as well. Moderation in alcohol consumption, if used, also would reduce health risks. And taking measures to keep food safe to eat would reduce the risk of foodborne illness.

DEALING WITH HEALTH DISPARITIES AND CONTRIBUTIONS OF THE ENVIRONMENT

Health disparities are substantial among racial and ethnic minorities and among the economically disadvantaged. Available evidence suggests that certain dietary changes

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[2] Currently, *trans* fat intake is not evaluated in the USDA food modeling method. However, limiting intake of solid fats as specified in the food intake pattern would be expected to help keep the intake of *trans* fats low.

[3] Special care is needed in the selection of processed foods and of foods consumed outside the home to keep sodium intake at or below the recommended level of 2,300 mg.

are a means to reduce these disparities. Social changes and educational efforts are required to facilitate healthy diets and lifestyles among these high-risk individuals.

In conducting the research on which this report is based, the Committee was struck by the critical and likely predominant role of the environment in determining whether or not individuals consume excess calories, eat a healthful diet, and are physically active. By environment we mean the constellation of cultural forces, societal norms, family influences (e.g., mealtime structure and parental feeding styles), changes in meal patterns, and commercial advertising that potentially influence individual behavior. Environmental influences tend to be beyond the control of individuals. Examples include the large size of portions served by many food establishments, lack of information on calorie content at point of purchase, the high amount of sodium in the food supply, the *trans* fatty acid content of many ready-to-eat foods, the cost and availability of fruits and vegetables, and opportunities for safe and enjoyable physical activity. Thus, changes to the environment could make a substantial difference in consumers' ability and willingness to follow the guidance provided in this report.

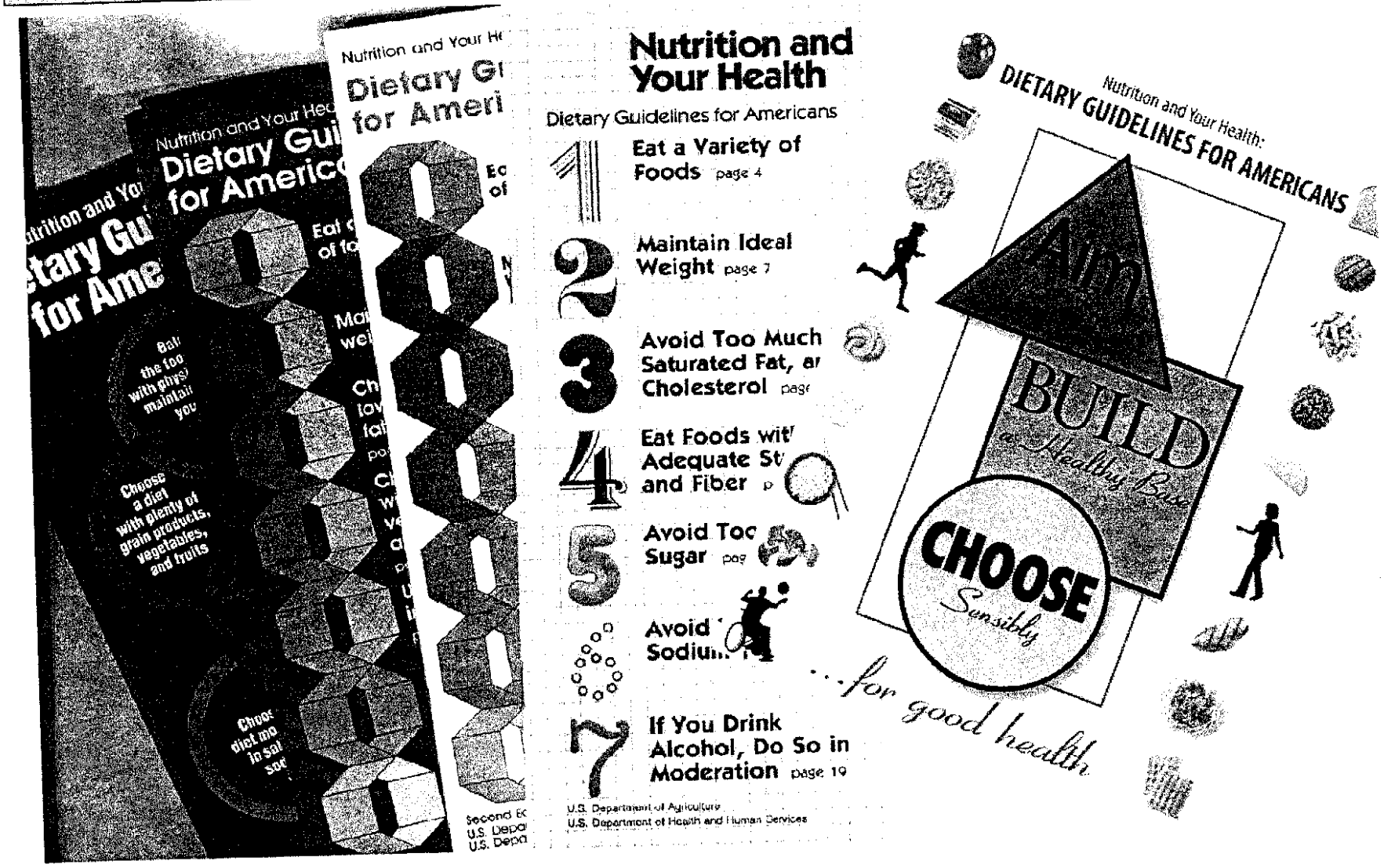
2005 Dietary Guidelines for Americans

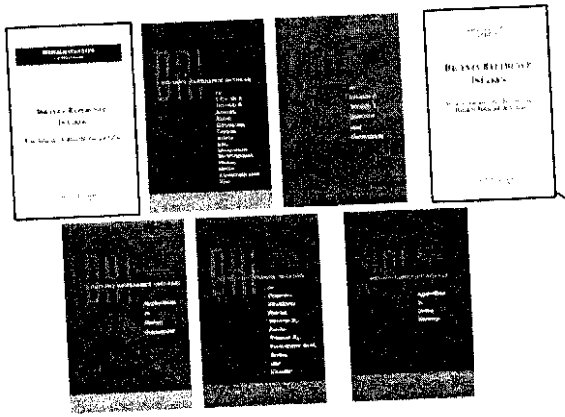
Barbara Schneeman, Ph.D.
Director, Office of Nutrition Products, Labeling
and Dietary Supplements
CFSAN-FDA

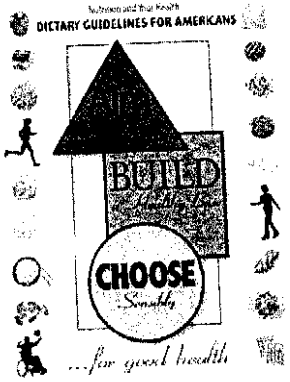
What are the *Dietary Guidelines*?

- Science-based advice for ages 2+
  Promote health, prevent chronic disease
- Basis of Federal nutrition policy/programs
- HHS/USDA – Review is legislated for every 5 yrs.

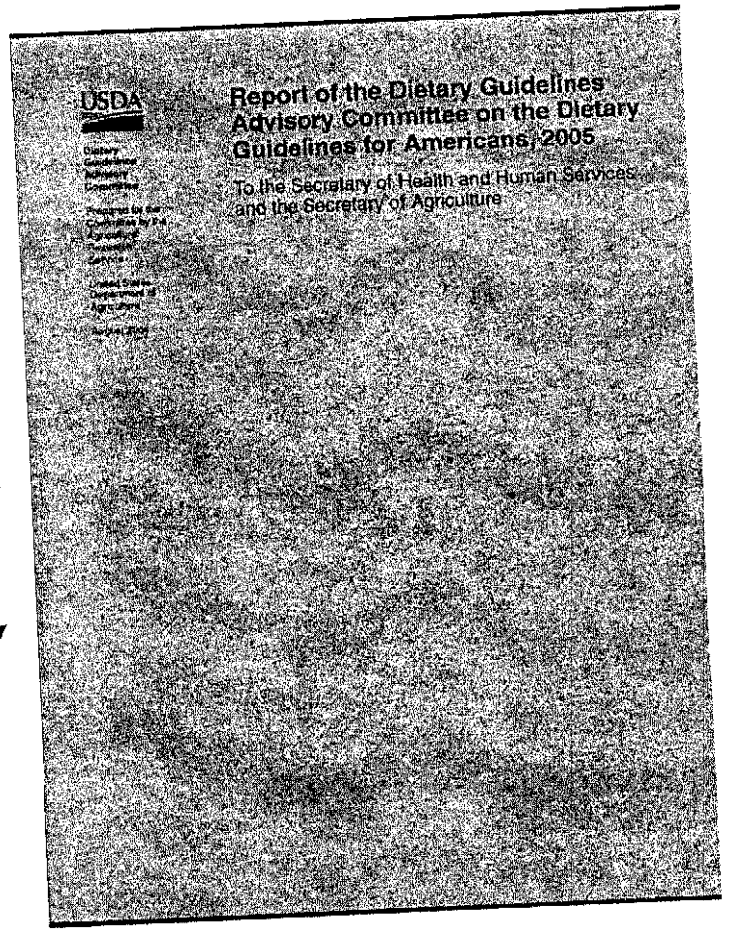
USA Guidelines: 1980-2000



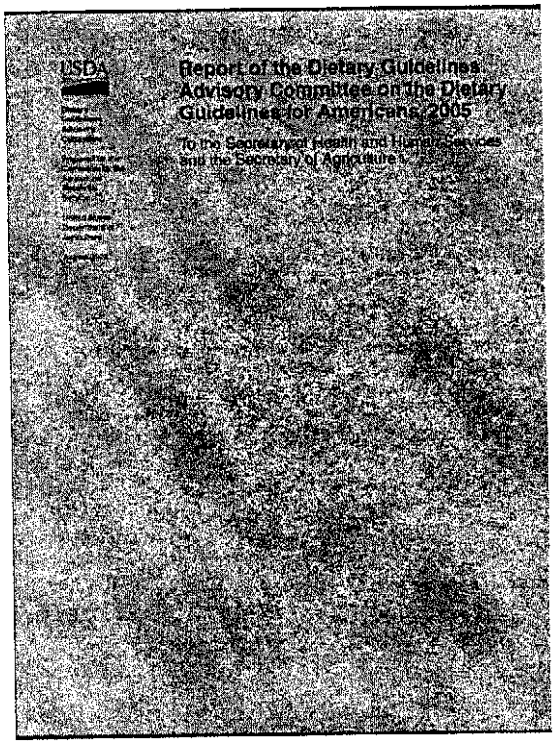


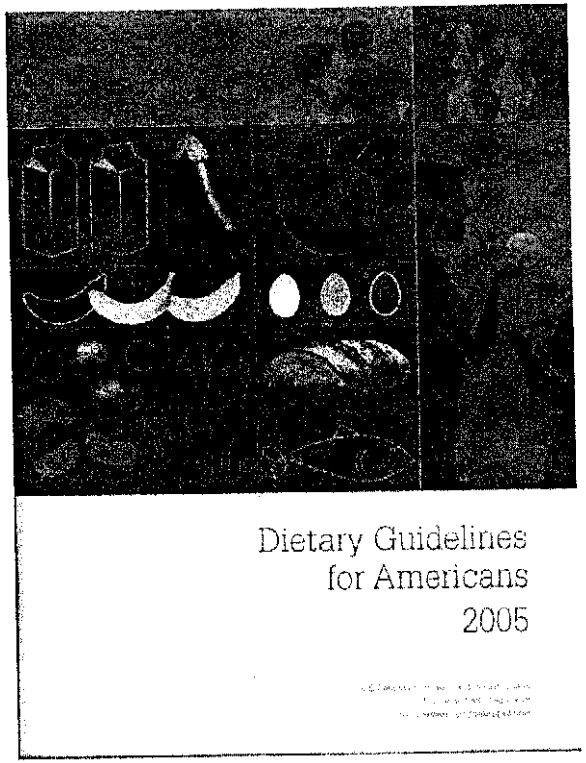


Scientific Literature

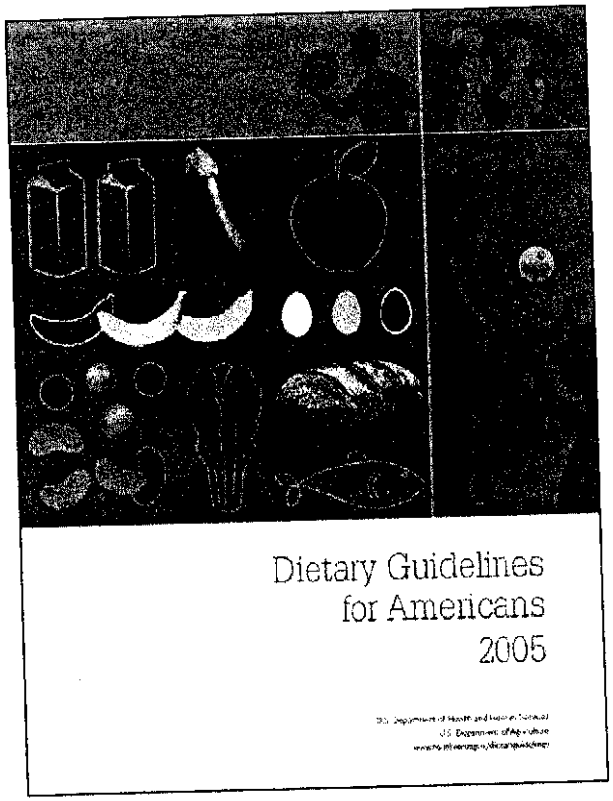


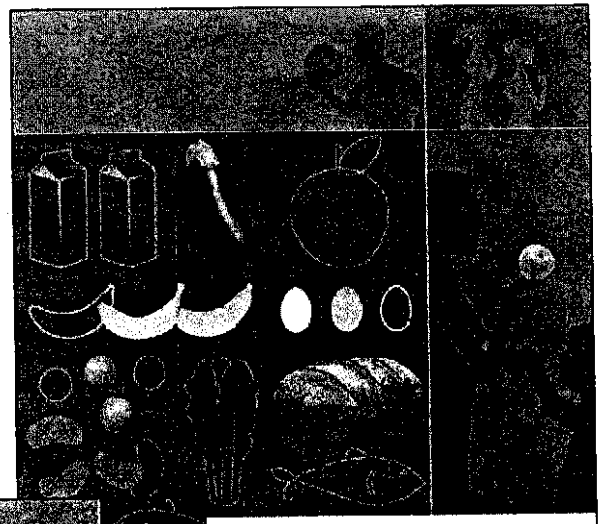
Stakeholder review and comment



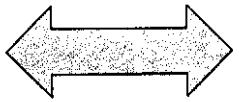


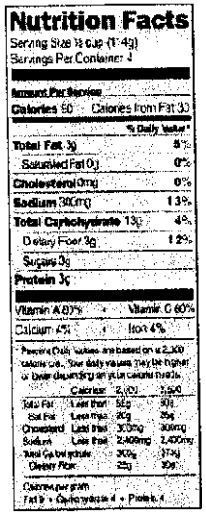
Consumer testing

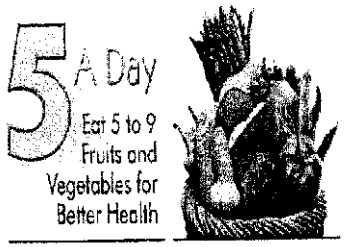


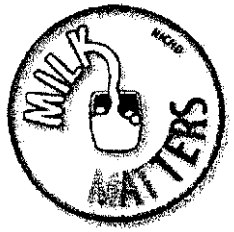

Dietary Guidelines
for Americans
2005

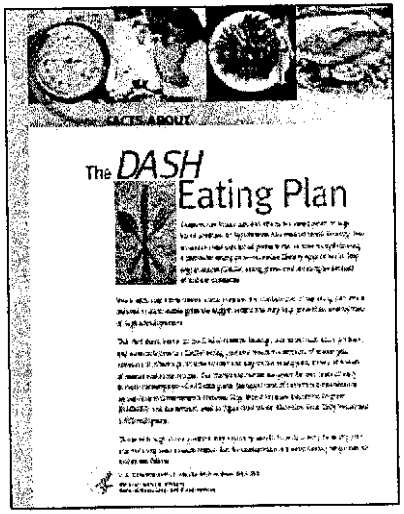
Finding Your Way
to a Healthier You:

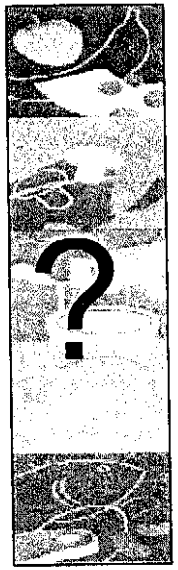



Nutrition Facts
Serving Size ½ cup (114g)
Servings Per Container 4
Amount Per Serving
Calories 90 Calories from Fat 30
% Daily Value*
Total Fat 3g 5%
Saturated Fat 0g 0%
Cholesterol 0mg 0%
Sodium 300mg 13%
Total Carbohydrate 13g 4%
Dietary Fiber 3g 12%
Sugars 3g
Protein 3g
Vitamin A 80% • Vitamin C 60%
Calcium 4% • Iron 4%
Calories per gram
Fat 9 • Carbohydrate 4 • Protein 4


5 A Day
Eat 5 to 9
Fruits and
Vegetables for
Better Health


MILK
MATTERS


FACTS ABOUT
The DASH
Eating Plan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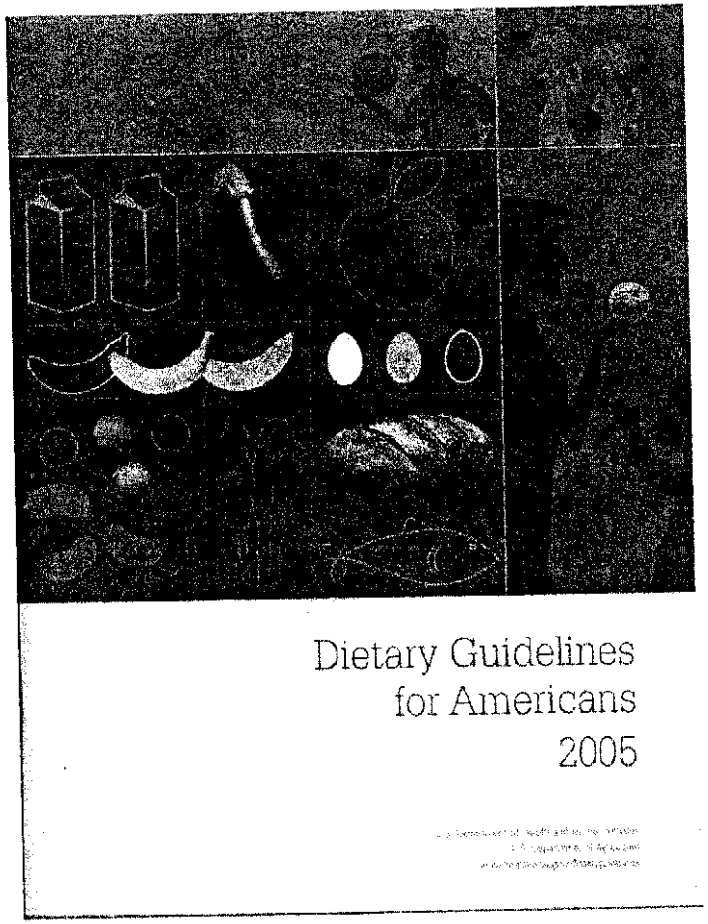
Components of the ***2005 Dietary Guidelines*** Process

- Three publications illustrate 3 phases of the process
  - Advisory committee: Evidence-based review of science
  - Policy document drafted and peer-reviewed by Federal agencies
  - Consumer brochure
- ***2005 Dietary Guidelines*** is targeted toward policy makers, educators and health care providers

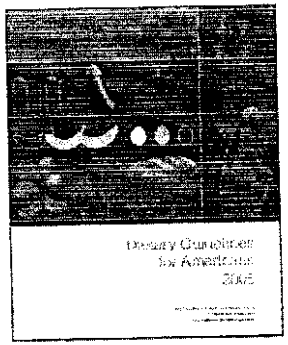
Format for 2005 Dietary Guidelines

- Executive summary
- Ten chapters (9 areas of recommendations)
- Key recommendations in each chapter
  - 23 for the General population
  - 41 including specific populations
- Appendixes with tables
- Glossary



Nine Focus Areas

- Adequate Nutrients Within Calorie Needs
- Weight Management
- Physical Activity
- Food Groups To Encourage
- Fats
- Carbohydrates
- Sodium and Potassium
- Alcoholic Beverages
- Food Safety



Highlights in each chapter

Chapter	Highlights
1. Background	Introduction and purpose.
2. Adequate nutrients within calorie needs	Nutrients of concern; Examples of healthful eating are USDA Food Guidance and DASH.
3. Weight Management	Calorie Balance Small changes make a difference
4. Physical activity	Time needed for different health benefits (30, 60, 60-90 min).
5. Food groups to encourage	Emphasis on fruits, vegetables, whole grains and milk (low fat or fat free); use of cups rather than servings

Highlights continued . . .

6. Fats	Limit saturated fats, trans fat, and cholesterol; sources of poly-and mono-unsaturated fats-fish, nuts, vegetable oils; 20-35% energy from fat.
7. Carbohydrates	Encourage foods with fiber; limit amounts of added sugars
8. Sodium and potassium	2300 mg of sodium; 1500 mg for individuals at risk of hypertension; more emphasis on potassium;
9. Alcoholic beverages	Similar to previous years
10. Food safety	Principles of FIGHTBAC

Some of the specific populations identified in the Key Recommendations

- People over 50 year old
- Women who may become pregnant
- Pregnant or lactating women
- Children
- Dark-skinned individuals; individuals with insufficient UVB radiation
- Those who need to lose weight; overweight children; those who are overweight and with chronic disease
- Individuals with hypertension and risk of hypertension (blacks, middle-aged and older adults).

Food Groups

- 1980-1995: Eat a variety of foods
- 2000: Let the Pyramid guide your food choices
- 2005
  - Adequate nutrients within calorie needs
    - 2 Key Recommendations that focus on nutrient dense choices and food guides (USDA patterns and DASH)
    - Specific population groups: Over 50 y (B12); Women of child-bearing age (Iron, folic acid); Older adults, dark skin (vitamin D)
  - Food groups to encourage
    - 4 Key recommendations on fruits, vegetables, whole grains, and milk
    - Children as a specific population group

Body Weight

- 1980-1995 Maintain ideal (healthy) body weight
- 2000 Aim for a healthy weight/Be physically active each day.
- 2005
  - Weight Management
    - 2 Key recommendations on balancing calories with physical activity and importance of small changes in calories and physical activity.
    - 5 Key recommendations: Losing weight, overweight children, women (pregnant, breastfeeding), overweight with chronic disease or taking medications.
  - Physical Activity
    - 2 Key recommendations that cover amount of physical activity needed and achieving physical fitness
    - 4 Key recommendations for specific populations: children and adolescents, women (pregnant and breastfeeding), older adults

Sugars and Fiber

- 1980-2000: Messages on avoiding or moderating sugar intake; focus on fiber or foods with fiber (fruits, vegetables, whole grains).
- 2005: Carbohydrates and Food Groups to Encourage
  - 3 Key Recommendations
    - Fiber-rich foods
    - Little added sugars
    - Oral hygiene for prevention of dental caries
  - 3 Key recommendations
    - Fruits, vegetables and whole grains

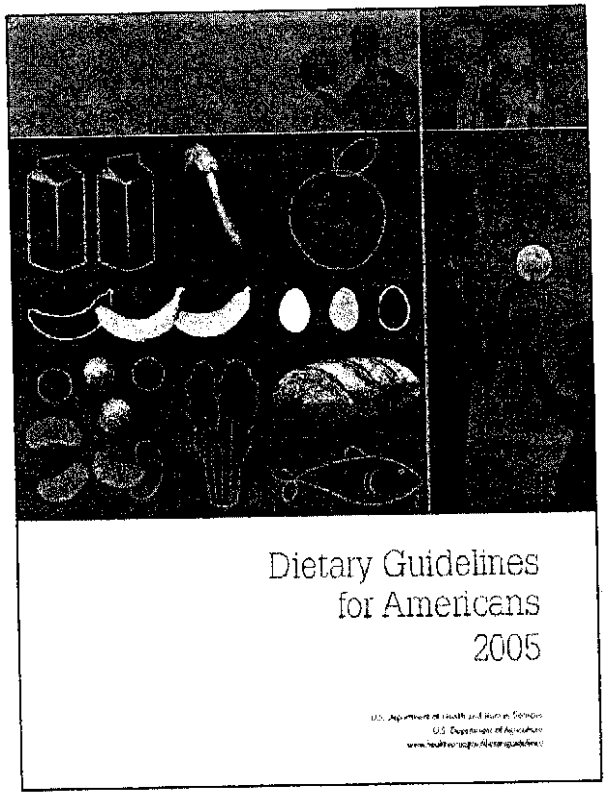
Fat, saturated fat and cholesterol

- 1980-2000 Messages on avoiding or moderating fat, saturated fat and cholesterol.
- 2005: Four Key Recommendations in the section of fats
  - Focus on reducing *trans*, saturated fatty acids and cholesterol
  - Increase emphasis on MUFAs and PUFAs
    - Foods such as fish, nuts, and vegetable oils
  - Use of a range for total fat 20-35% (consistent with AMDR)
  - Specific recommendations for children and adolescents
    - Total fat between 30-35 % calories (2 to 3 yo)
    - Total fat between 25-35% calories (4 to 18 yo) with most fats coming from PUFAs and MUFAs such as fish, nuts and vegetable oils

Sodium and Potassium

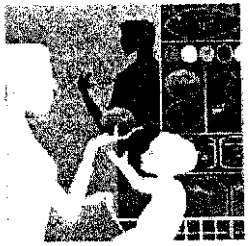
- 1980-2000 Reducing sodium and salt/ Choose and prepare foods with less salt.
- 2005: Two Key recommendations for the general population
  - Consume less than 2,300 mg (approximately 1 tsp of salt) of sodium per day.
  - Choose and prepare foods with little salt. At the same time, consume potassium-rich foods, such as fruits and vegetables.
  - Key Recommendations for Specific Population Groups
    - *Individuals with hypertension, blacks, and middle-aged and older adults.* Aim to consume no more than 1,500 mg of sodium per day, and meet the potassium recommendation (4,700 mg/day) with food

Consumer testing

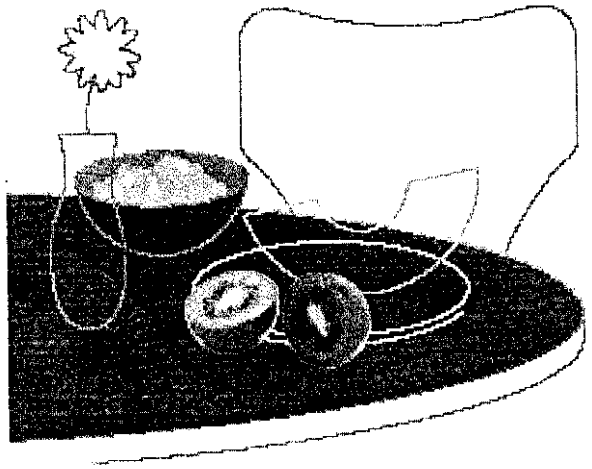


Finding Your Way to a Healthier You

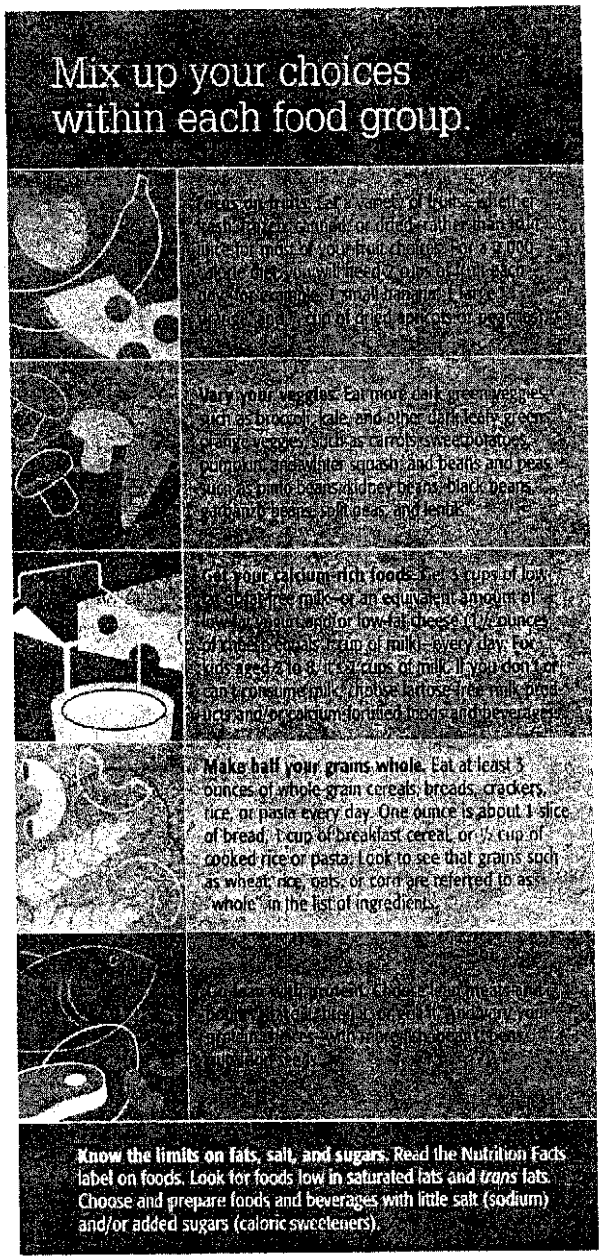
- Feel better today.
- Stay healthy for tomorrow
  - Make smart choices from every food group.
    - Links to Food Guidance system
  - Find your balance between food and physical activity
  - Get the most nutrition out of your calories
    - Focuses on using the food label and Nutrition Facts Panel.



Finding Your Way to a Healthier You



Feel better today.
Stay healthy for tomorrow.



Focus on fruits.

Vary your veggies.

Get your calcium-rich foods.

Make half your grains whole.

Go lean with protein.

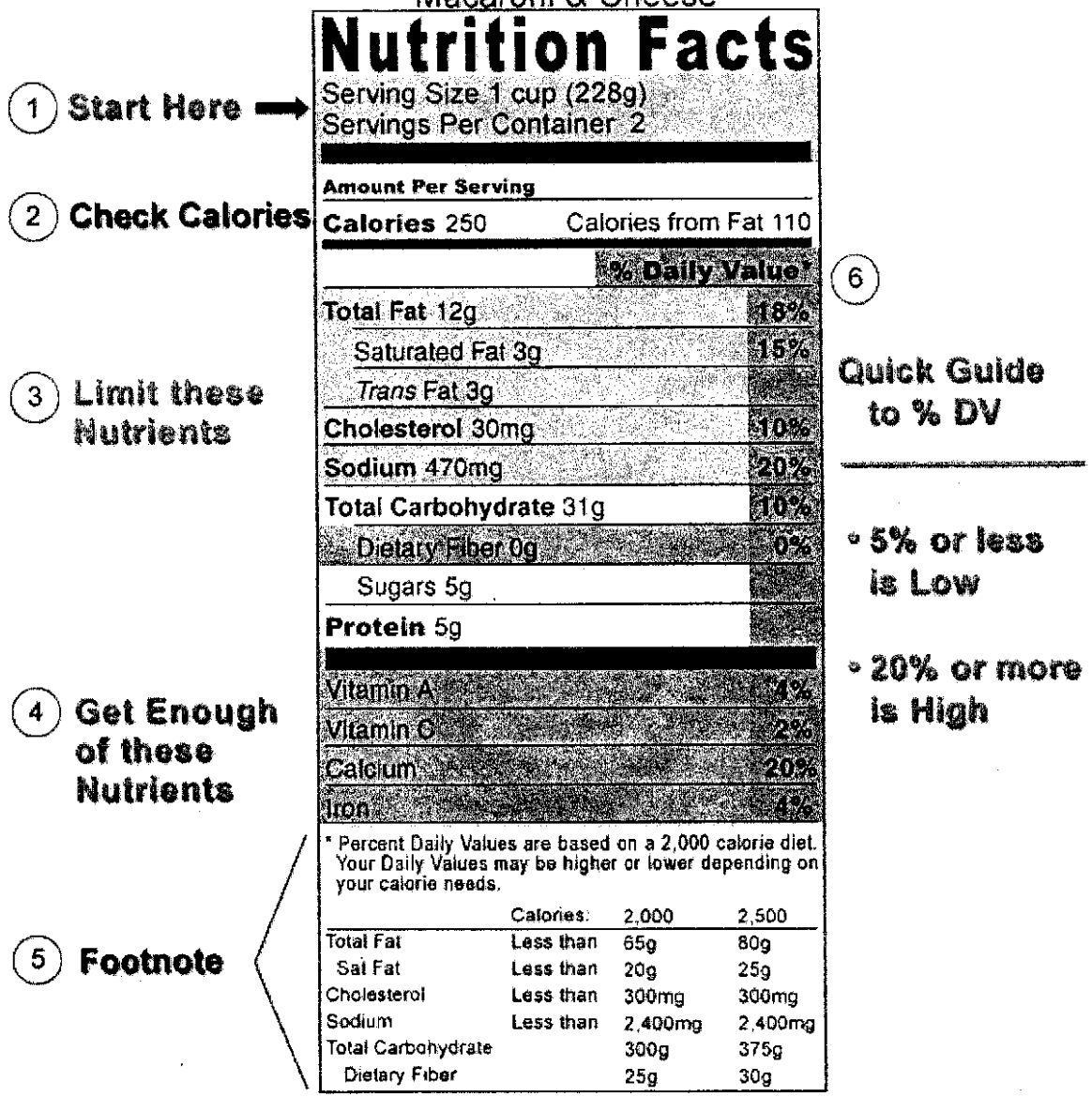
Know the limits on fats, salt, and sugars.

NUTRITION:

To know the facts . . .

. . . Use the food label

Sample label for
Macaroni & Cheese

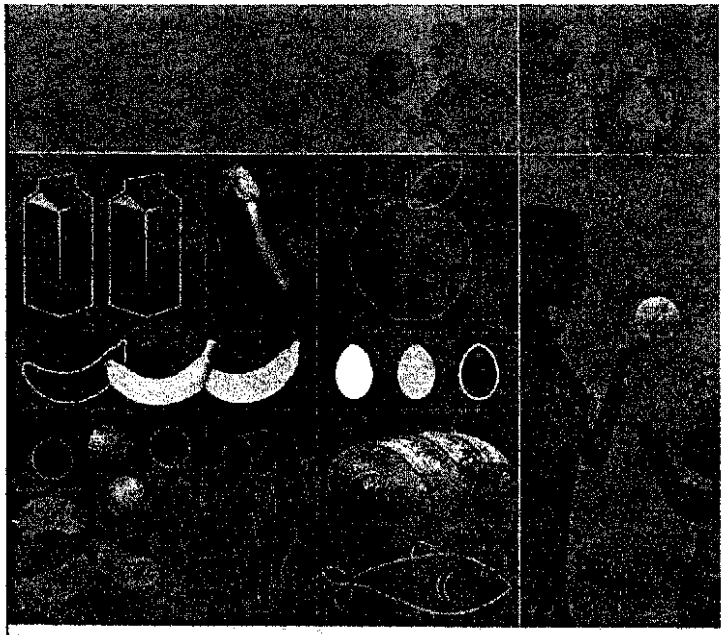


Applying the Messages in the ***Dietary Guidelines for Americans***

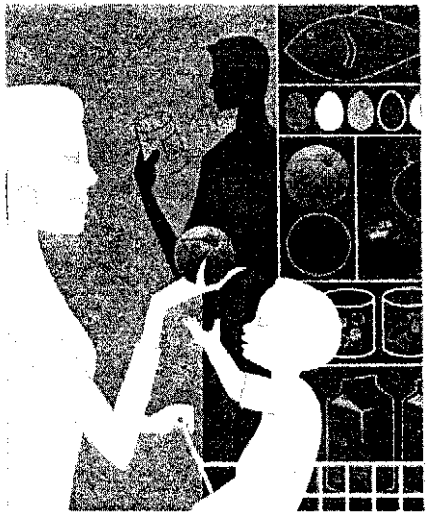
- Consumer research
  - Motivation is essential.
  - Trust is important.
  - The more and individual knows, the more choices they have.
  - Keep it simple, but true to the science.

- Implementation Tools
  - DASH eating plan
  - Food Label
  - USDA Food Guidance System (Spring 2005)
  - Toolkit for nutrition professionals

www.healthierus.gov/dietaryguidelines



Dietary Guidelines
for Americans
2005



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U.S. Department of Health and Human Services
U.S. Department of Agriculture
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The Growth of Obesity and Technological Change:
A Theoretical and Empirical Examination
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ABSTRACT

This paper provides a theoretical and empirical examination of the long-run growth in weight over time. We argue that technological change has induced weight growth by making home- and market-production more sedentary and by lowering food prices through agricultural innovation. We analyze how such technological change leads to unexpected relationships among income, food prices, and weight. Using individual-level data from 1976 to 1994, we then find that such technology-based reductions in food prices and job-related exercise have had significant impacts on weight across time and populations. In particular, we find that about forty percent of the recent growth in weight seems to be due to agricultural innovation that has lowered food prices, while sixty percent may be due to demand factors such as declining physical activity from technological changes in home and market production.

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1 Introduction

Policymakers and the public have been concerned about the dramatic growth in obesity seen in many developed countries over the last several decades. Close to half the US population is estimated to be over-weight and more Americans are obese than smoke, use illegal drugs, or suffer from ailments unrelated to obesity. A substantial risk factor for most of the high-prevalence, high-mortality diseases, including heart disease, cancer, and diabetes (Wolf and Colditz 1998, Tuomilehto et al. 2001), obesity affects major public transfer programs such as Medicare, Medicaid, and Social Security. Obesity also affects wages and the overall demand for and supply of health care, a sector that itself accounts for a sixth of the US economy.

Obesity is typically treated as a problem of public health or personal attractiveness. While it is those things, it is even more an economic phenomenon. More than many other physical conditions, obesity can be avoided through behavioral changes, which economists expect to be undertaken if the benefits exceed the costs.[1] Naturally, people may rationally prefer to be under- or over-weight in a medical sense, because weight results from personal tradeoffs and choices along such dimensions as occupation, leisure-time activity or inactivity, residence, and, of course, food intake. Given the variation in their choices about weight, being either heavy or light may be as desirable from the individual's standpoint as adhering to the norms of weight set by doctors and the public health community.

In particular, this paper argues that the long-run growth in weight may be due to the technological progress that drives economic growth, but that has also strengthened incentives to be overweight. Although the recent rise in obesity has attracted attention, growth in weight is not a recent or short-lived phenomenon. Figure 1, from Costa and Steckel (1995), documents large secular gains in average height-adjusted weight for men in different birth cohorts over the last century.[2] Indeed, the growth in weight is more pronounced in the early part of the century, although the extreme weights in the tails of the distribution may be a more recent phenomenon. Height-adjusted weight for people in their 40's, the age group with the highest labor force

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[1] There exist a small previous literature related to the economic analyses of obesity. The addictive aspects of weight control was considered by Cawley (1999). Obesity's economic costs to society are presented by Keeler et al (1989). Related analyses of the impact of physical appearance or weight on wages are presented by Hamermesh and Biddle (1994), Loh (1993) , Register and Williams (1990) and Behrman and Rosenzweig (2001). Chou, Grossman, and Saffer (2001) consider the relationship between regional growth in obesity and the growth in fast food-and other types of restaurants. Philipson (2001) provides a qualitative discussion of the forces contributing to world-wide growth in obesity population wide in rich countries and among rich sub-populations in poor countries.

[2] The figure is based on various sources, documented in Costa and Steckel (1995). The data for 1864 are based on measurements of Union Army recruits aged 18-49. 1894 data are based on measurements of native white army recruits aged 20-39, taken from 1892 to 1897. 1900 data are for Union Army veterans aged 50-64. 1944 data are based on World War II Selective Service registrants. 1961 data are based on all men in the National Health Examination Survey, while 1991 data are based on men in the National Health Interview Survey.

attachment, has increased by nearly 4 units over this period. To put this into perspective, an increase of this magnitude in the height-adjusted weight of a 6-foot tall man would require a weight gain of approximately 30 pounds.

FIGURES 1, 2, AND 3 INSERTED HERE

As Figure 2 illustrates, this secular growth in weight has been accompanied by only modest gains in calorie consumption.[3] Indeed, the immediate postwar period witnessed substantial growth in weight and *declining* consumption of calories. The lack of time-series correlation between calorie intake and weight suggests that an analysis of weight must account not only for food consumption, but also for changes in the strenuousness of work, both at home and in the market, caused by economic development. This idea is made even more compelling by apparent declines in the relative price of food. Figure 3 plots the relative price of food in the postwar United States.[4] With the exception of one sharp upward movement at the time of the early 1970s oil shock, the relative price of food has been declining consistently, by an average of 0.2 percentage points annually. The negative price trend over time suggests that expansion in the supply of food through agricultural innovation has outpaced any increases in demand, if indeed demand increased at all.

This paper considers the quantitative implications of the hypothesis that technological change has simultaneously raised the cost of physical activity and lowered the cost of calories.[5] It has raised the cost of physical activity by making household and market work more sedentary and has lowered the cost of calories by making agricultural production more efficient. In an agricultural or industrial society, work is strenuous and food is expensive; in effect, the worker is *paid* to exercise. He often must also forego a larger share of his income in order to replace the calories spent on the job. In addition, with the low levels of public welfare characteristic of these societies, the cost of not exercising could even include starvation. Technological change has freed up resources previously used for food production and has enabled a reallocation of time to the production of other goods and, in particular, more services. In a post-industrial and redistributive society, such as the United States, most work entails little exercise and not working may not cause a large reduction in weight, because food stamps and other welfare benefits are available to people who do not work. As a result, people must *pay* for undertaking, rather than be paid to undertake, physical activity. Payment is mostly in terms of forgone leisure, because leisure-based exercise, such as jogging or gym activities, must be substituted for exercise on the

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[3] The Figure is based on US Department of Agriculture estimates of "Calories Available for Human Consumption." For each agricultural commodity, the USDA estimates total output and subtracts exports, industrial uses, and farm inputs (e.g., feed and seed), to arrive at calories available from the given commodity. Total calories are computed by aggregating across all commodities. See Putnam and Allshouse (1999) for further details.

[4] The Figure takes the price index for food items calculated by the Bureau of Labor Statistics (BLS) and deflates it by the overall price index, also calculated by BLS. The data series were obtained from the BLS web site, www.bls.gov.

[5] The paper is related to the qualitative and theoretical discussion in Philipson and Posner (1999).

job. In addition, a smaller share of one's income is needed to replace the calories one spends. Historically, it was not feasible to be poor and overweight, and it is still not feasible in today's poorest countries.

The paper may be outlined as follows. Section 2 considers a dynamic theory of weight-management. The theory predicts that technological change on *both* the supply side, through agricultural innovation, and the demand side, through more sedentary home- and market production, are needed to generate the joint aggregate time-series behavior of Figures 1-3. Long-run growth in weight, falling relative food prices, and ambiguous changes in food consumption cannot jointly be predicted by technological change on the demand- or supply-side *alone*.

Our theory has some additional predictions for income and price that we explore. Since labor imposes physical demands, the effects of unearned and earned income on weight may differ. We argue that the difference between unearned and earned income effects can help us understand why income varies positively with weight across countries, where levels of technology and job strenuousness often vary considerably, but negatively within countries, where technology levels are more uniform.

The theory also predicts a negative relationship between price and weight. Weight growth is generated by expanding food supply and reduced physical activity that lowers the demand for food. This negative relationship helps distinguish our theory from other potential explanations of weight growth. Alternative explanations, such as a change in the "culture" of food consumption, growth in the demand for fast food,[6] or changing social norms, all stress the importance of a rise in the demand for food and thus growth in its price. On face, these explanations seem inconsistent with the steady price declines of Figure 3 that seem to indicate that demand growth is not as significant as supply growth.

Section 3 provides our empirical analysis using individual-level data from the National Health Interview Survey (NHIS), the National Health and Nutrition Examination Survey (NHANES), and the National Longitudinal Survey of Youth (NLSY). We are able to merge these data with measures of job strenuousness. We use these data to quantify the effects of income and physical activity at work on weight. We find that a worker who spends her career in a sedentary job may end up with as much as 3.3 units of BMI more than someone in a highly active job. To put this into perspective, this is about as large as the total weight gain that has occurred over the last century, according to Figure 1. Next, we identify the wegith growth that has resulted from technological change, and decompose it into its supply and demand components. Expansions in the supply of food, raised BMI by about 0.7 units over this period, while changes on the demand side raised BMI by about one full unit. Thus, about forty percent of the growth in weight seems due

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[6] Taking a somewhat different approach, a recent paper by Chou, Grossman, and Saffer (2001) argue that growth in the price of women's time has made it more costly to monitor the intake of calories at home and has led to growth in the demand for unhealthy fast food. This does not necessarily imply rising food prices, but it does imply rising prices for food preparation, which we do not rule out. In fact, growth in the price of food preparation is also consistent with the kind of technological change we stress.

to the expansion in the supply of food, and sixty percent to demand forces. The paper concludes with a discussion of future avenues of research suggested by our analysis.

2 Theoretical Analysis

2.1 The Dynamics of Weight Management

Suppose that an individual's current period utility depends on food consumption, F, other consumption, C, and her current weight, W. We can write this as $U(F,C,W)$, where U rises in food consumption and other consumption, but is non-monotonic in weight. In particular, suppose that for a given level of food and other consumption, the individual has an "ideal weight", W_0, in the sense that, all else equal, she prefers to gain weight when her weight is below W_0, but she prefers to lose weight when above it. In addition, suppose that food consumption and alternative consumption are not substitutes, in the sense that $U_{FC} \geq 0$. This rules out any perverse incentives for richer people at higher levels of material consumption to eat less than poorer people.

We consider an individual who manages weight according to a dynamic problem where her weight, W, is the state variable. Weight is a capital stock that depreciates over time,[7] and can be accumulated by eating or decumulated by exercising. Denoting food consumption by F, and the strenuousness of home or market production activities as S, the transition equation for weight can be written as:

$$W' = (1-\delta)W + g(F,S)$$

where $\delta < 1$, and g is continuous, concave, increasing in food consumption, and decreasing in physical strenuousness. The associated value function v for an individual is given by:

$$\begin{aligned} &v(W) = \max_{F,C,W'} \{U(F,C,W) + \beta v(W')\} \\ &s.t. \quad pF + C \leq Y \\ &W' = (1-\delta)W + g(F,S) \end{aligned} \tag{1}$$

where Y is the income of the individual and p is the price of food. We interpret agricultural innovation on the supply side as a reduction in p, and sedentary technological change on the demand side as a reduction in S.

Provided that the utility function U is continuous, strictly concave, differentiable, and bounded, and that the transition function g is continuous and concave, we can differentiate the value

[7] Depreciation in this context can be thought of as basal metabolism: holding exercise and food intake constant, there is some metabolic cost of living to the next period.

function, which is continuous and strictly concave. This leads to the first order and envelope conditions:

$$\begin{aligned} U_F(F, Y - pF, W) + \beta v'(W') * g_F &= pU_C(F, Y - pF, W) \\ v'(W) &= U_W(F, Y - pF, W) + \beta v'(W')(1 - \delta) \end{aligned} \tag{2}$$

The first order condition implies that the marginal utility of consumption must be equal to the overall marginal utility of food, which equals the marginal utility of eating *plus* the marginal value of the weight change induced by eating. The envelope condition implies that the long-run marginal value of additional weight is equal to the marginal utility of weight in the current period plus the discounted future marginal utility of weight.

This model of weight yields a unique and stable steady-state in food and weight, as long as the marginal utility of food $(U_F - pU_C)$ is falling in weight.[8] Rewriting the optimality condition for food,

$$v'(W + g(F, S)) = \frac{pU_C - U_F}{g_F} \tag{3}$$

This equation implicitly defines food as a function of W, Y, S, and p. The left-hand side is the marginal benefit of weight tomorrow, and the right-hand side is the marginal cost of spending resources on weight gain. The equation illustrates that the optimal food policy falls in current weight W. When W rises, v' falls as a result of concavity, and $pU_C - U_F$ rises, because increases in weight lower the marginal utility of food. As a result, the marginal utility of weight tomorrow falls below its cost, or $v' < \frac{pU_C - U_F}{g_F}$. To restore equilibrium, the individual will eat less. This demonstrates that $\Phi_W(W; S, p, Y) < 0$, where Φ is the optimal food policy.

The fact that food consumption decreases in weight yields a unique and stable steady-state, as Figure 4 demonstrates. In the figure, steady-state food consumption, $F(S, W)$, is defined implicitly according to: $g(F(S, W), S) = \delta W$. F increases in W and S. A steady-state equilibrium (W^*, F^*) exists when the steady-state curve intersects the optimal food policy Φ. This steady-state is unique, because $F_W > 0$, and $\Phi_W < 0$. It is also stable, because when weight lies below this steady-state, food intake exceeds the steady-state food intake. Conversely, when weight lies above it, food intake is less than the steady-state food intake.

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[8] One could incorporate addictive preferences, under which increases in weight raise the marginal utility of eating. This would result in multiple, unstable equilibria in food and weight. To focus attention on the core relationships among food, exercise, and weight, we do not consider the case of addiction here.

2.2 The Steady-State Determinants of Weight

The steady-state choice of weight is a function of physical activity, food prices, and income, as in $W^*(S,p,Y)$. The same is true for the steady-state choice of food, $F^*(S,p,Y)$. Equation 3 illustrates that an increase in the price of food raises the marginal cost of gaining weight, while leaving the marginal benefit unaffected. This results in the relationship $\Phi_p(W;S,p,Y)<0$. An increase in the price of food shifts inward the policy function of Figure 4 and lowers steady-state weight, so that $W_p^*(S,p,Y)<0$. Steady-state food consumption also falls, since we move down the F curve. This suggests that $F_p^*(S,p,Y)<0$.

2.2.1 Physical Activity

Reduction in physical activity shifts down the steady-state food curve, $F(S,W)$. This induces a movement down the policy function Φ and causes growth in weight and reduction in food intake. The policy function itself also shifts. According to equation 3, the fall in S raises $g(F,S)$ and thus lowers the marginal benefit of weight, v'. The individual will respond to the lower marginal benefit of eating by reducing food intake, so that $\Phi_S(W;S,p,Y)>0$.[9] The downward shift in the policy function reinforces the downward shift in F, so that steady-state food intake falls with physical activity ($F_S^*>0$). However, the shift in the policy function also has an offsetting, negative impact on weight. Nonetheless, this cannot be entirely offsetting. Suppose that it is, and that the food policy shifts inward by so much that W' is actually lower than it was before. But if this were true, then the marginal benefit of weight (v') is higher than it was before, and the individual should be eating *more*, not less. This contradiction illustrates that the reduction in physical activity will raise steady-state weight W^* overall, in spite of the offsetting effect. As a result, $W_S^*(S,p,Y)<0$.

2.2.2 Unearned Income Effects

Consider the partial effect of income on weight, W_Y^*. It is important to stress that this represents the effect of *unearned* income. Since labor may involve a level of physical activity that differs from leisure, working will tend to affect physical activity S, as well as income Y. The effect of earned income will thus be the combined effect of changes in Y and changes in S that accompany working.

W_Y^* can have an inverted U-shape, so that increases in unearned income will initially raise weight, but at high levels of income, further increases could actually lower weight. Suppose that consumption and "closeness to ideal weight" are complements in the utility function. This

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[9] This effect could be offset if $g_{FS}<0$ and the reduction in strenuousness substantially raised the marginal weight product of food, but we will focus on the case where this complementarity does not dominate. Since increased exercise can build muscle, and increases in muscle mass raise metabolism, it could be true that $g_{FS}<0$ (Van Etten et al. 1997).

implies that $U_{WC} > 0$ for the underweight, but that $U_{WC} < 0$ for the overweight. This has important implications for the food policy function. In equation 3, an increase in income lowers the marginal cost of gaining weight, $pU_C - U_F$, and it can also affect the marginal benefit of weight, $v'(W')$. While it has no first-order effects on future weight, $W' = (1-\delta)W + g(F,S)$, it does affect the marginal value of weight, v', depending on whether an individual is underweight or overweight. For the underweight, an increase in income raises U_W, because it raises the marginal utility of being close to ideal weight. Therefore, according to the envelope condition in equation 2, this raises the marginal utility of weight, v'. Since an increase in income raises the marginal utility of gaining weight and lowers the marginal cost for the underweight, $\Phi_Y > 0$. Conversely, for the overweight, an increase in income lowers U_W, because it raises the marginal disutility of being overweight. This lowers the marginal benefit of gaining weight. As a result, it is possible that $\Phi_Y < 0$ for the overweight.

This could lead to an inverted U-shaped relationship between income and weight. For underweight individuals, growth in income shifts out the food policy function in Figure 4, resulting in an increase in steady-state weight. In contrast, for overweight individuals, growth in income shifts inward the food policy function and reduces steady-state weight. For the underweight, $W_Y^* > 0$, while $W_Y^* < 0$ for the overweight.[10] The effects on food intake are identical. For the underweight, income shifts out the optimal food policy, and $F_Y^* > 0$. For the overweight, it shifts in the optimal policy, and $F_Y^* < 0$.

Consider the example of a utility function of the form $U(F,C,W) = fF + \{Q - (\frac{h}{2})[W - W_0]^2\}C$, where Q is some large and positive constant. This utility function embeds the assumption of complementarity between consumption and closeness to ideal weight. To keep things simple, suppose that $W' = W + F - S$; people gain weight when their food intake exceeds the strenuousness of their activity. Suppose we can differentiate the envelope condition in 2 with respect to income.[11] This yields the following expression:

$$\frac{\partial F}{\partial Y} = [p + \frac{\beta(1-\delta)v''}{h(W - W_0)}]^{-1} \qquad (4)$$

Since the value function is concave, this expression demonstrates that income raises food consumption (and weight) when an individual is underweight, $W < W_0$, but lowers it when an individual is overweight, $W > W_0$.

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[10] As income rises, weight may fall, but this is bounded below by ideal weight. If weight drops so far as to touch the ideal level, the individual will no longer place any value on weight loss.

[11] Conditions for the twice differentiability of the value function, and differentiability of the policy function, are given in Araujo (1991).

2.2.3 Earned Income Effects

The total effect of earned income has to account for the fact that earning income can affect one's physical activity. In other words, S is a function of income earned in the labor market. The total effect of earned income on steady-state weight is given by:

$$\frac{dW^*}{dY} = W_Y^* + W_S^* S_Y(Y) \tag{5}$$

The total effect includes the unearned income effect, W_Y^*, along with the effect of earned income on physical activity.

The distinction between the earned and unearned income effects helps us understand how weight varies with income within and between countries. Within a country, income has different effects depending on whether it was earned in the labor market or not. Unearned income may come, for example, from asset markets or from the income of a spouse. If work is sedentary, an increase in earned income will have a larger effect on weight than an increase in unearned income, because earned income also reduces physical activity. If $S_Y < (>)0$, the effect of earned income is larger (smaller) than for unearned income. When work is sedentary, getting rich through the labor market will raise your weight more than getting rich through the asset market.

Second, within-country income effects may differ from between-country income effects. Empirically, within developed countries, there can be a non-monotonic relationship between income and weight, as we will show later on. However, across countries, income tends to be correlated with higher weight; less developed countries tend to be lighter than more developed countries. A natural way to interpret this is to argue that differences in technology are much larger between countries than within them.[12] S_Y may thus be large and positive between countries, but fairly small within countries. Within countries, therefore, the unearned income effect dominates, and this can imply an inverted U-shaped relationship between income and weight. Between countries, however, the earned income effect dominates, which implies a monotone positive relationship between income and weight.

Finally, the difference between earned and unearned income effects provides insight into the effects of income redistribution on average weight. In assessing the effects of redistribution, one needs to identify the nature of the income that is being transferred. If redistribution is in terms of unearned income—through programs like food stamps or cash transfers, and through taxes on capital gains or estates—it may raise the weight of both the rich (who become poorer) and the poor (who become richer). In contrast, if it is in terms of earned income—through programs like job training, and through taxes on earnings—the rich may become thinner by working less, while

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[12] An alternative interpretation is that the average resident of all countries finds himself on the upward sloping portion of the income-weight curve. However, this is not consistent with the evidence. The subsequent empirical analysis suggests that the US income-weight curve begins to slope downward just past the second or third income decile.

the poor may become heavier by working more. In a post-industrial society, redistributing unearned income can have larger positive effects on weight than redistributing earned income.

2.3 The Time Series Behavior of Weight

Changes in weight over time are due to simultaneous changes in all the factors discussed above. Denote by $F(t) \equiv F^*(S(Y(t)), p(t), Y(t))$ the time path of steady-state food consumption, and denote by $W(t) \equiv W^*(S(Y(t)), p(t), Y(t))$ the time path of steady-state weight. We have analyzed the partial derivatives of F^* and W^*. We can summarize our results as: $F_S^* > 0$, and $F_p^*, W_p^*, W_S^* < 0$. For the underweight, $F_Y^*, W_Y^* > 0$, while $F_Y^*, W_Y^* < 0$ for the overweight. While these are the partial effects, the total change over time in food and weight is influenced by simultaneous changes in income, physical activity, and prices. Technological change raises income and lowers physical activity; it also lowers the supply price of food. Both these forces tend to raise weight, and lower the equilibrium price of food. However, the time path of food consumption is ambiguous.

2.3.1 The Time Path of Food Prices

Denote the supply of food by $Z(p; A)$, where A represents technological change in agriculture, in the sense that $Z_A > 0$. The equilibrium steady-state price $p^*(t)$ is determined by:

$$F^*(S(Y(t)), p(t), Y(t)) = Z(p(t); A(t)) \tag{6}$$

Using the implicit function theorem, we obtain that the change over time in the price is determined by:

$$p'(t) = p_A A'(t) + [p_S S_Y + p_Y] Y'(t) = \frac{Z_A A'(t) + (F_S^* S_Y + F_Y^*) Y'(t)}{Z_p - F_p^*} \tag{7}$$

Since the denominator of this expression is positive, the direction of the price change is governed by the numerator. The first term of the numerator is negative, because technological progress in agriculture will lower the price of food. The second term will also be negative, if the effect of sedentary technological change dominates the income effect, or $F_S^* S_Y + F_Y^* < 0$. Over periods of significant technological change, therefore, we expect the price of food to fall, because sedentary technological change lowers the demand for food, while agricultural technology expands its supply.

This simple price implication differs from those of alternative explanations of the rise in weight. Many of these explanations may be interpreted in our framework as growth in the demand for food, growth in the demand for fast food, a change in attitude towards obesity, or reduced parental oversight of children. However, if demand were to grow in this fashion, weight would still grow, but price would *increase* rather than decrease, while food consumption would *unambiguously* rise. Figures 1, 2, and 3 exhibit certain periods of time marked by declining

calorie intake, declining prices, and growth in weight. These seem difficult to interpret as the result of demand growth alone.

2.3.2 The Time Path of Weight

Movements in steady-state weight are governed by:

$$\frac{\partial W^*}{\partial t} = W_p^* p'(t) + [W_Y^* + W_S^* S_Y] Y'(t) \tag{8}$$

The first term is the effect of expansions in the supply of food, which always raise weight and food consumption. The second reflects changes in the demand for food that accompany changes in earned income. The second term may also be positive if the effect of earned income on weight is positive. In this case, it would reinforce the price effect and raise weight. The continued growth in weight, however, depends on whether the earned income effect remains positive. Income growth can encourage weight control and lower weight, because $W_Y^* < 0$. If this effect offsets the effect of sedentary technological change ($W_S^* S_Y$), weight growth could slow. Weight could even begin to decline if the earned income effect becomes so negative that it offsets the effect of declining food prices. Historically, income and weight have grown together, indicating that the price effect has dominated or been reinforced by the income effect. While this has been true in the past, it need not remain true. The future course of obesity will depend on which of the two effects dominate the time-series behavior of weight. Our empirical analysis attempts to decompose the growth in weight into the two components of equation 8, the change in the supply of weight and the change in the demand for weight.

2.3.3 The Time Path of Food

The change in steady-state food consumption is governed by:

$$F'(t) = F_p p'(t) + [F_Y + F_S S_Y] Y'(t) \tag{9}$$

The first term represents the effect of supply expansions, and it is always positive. The second represents the effect of earned income growth on the demand for food. If the effect of sedentary technological change, $F_S S_Y$ dominates the income effect, this can be negative. That is, if physical activity declines considerably, this can offset the effect of income growth and lower the demand for food. An important point to make is that a decline in food consumption, if it occurs, will coincide with an *increase* in weight. Food consumption falls when the reduction in physical activity lowers the demand for food. However, such a reduction will always raise weight, as discussed in Section 2.2.

3 Empirical Analysis

The theory made predictions about the partial effects of strenuousness, price, and income on weight. It also predicted that the total change in weight over time is driven by growth in the supply of weight and growth in the demand for weight. Section 3.1 investigates the partial

effects on weight, while Section 3.2 estimates the effect of technological change on weight and decomposes this effect into supply and demand components.

3.1 The Empirical Determinants of Weight

The theory admits several possible relationships between income and weight—positive, negative, or inverted U-shaped—but it made the specific predictions that $W_S^* < 0$, $W_p^* < 0$. Because our data do not contain an instrument for the demand price of weight, we are unable to estimate the partial effect of price. We focus instead on estimating the partial effect of income on weight and of job-related exercise.

To isolate the effect of job-related exercise on weight, there are four important problems to solve. First, we have to explore whether occupational choice is endogenous with respect to weight. That is, we have to investigate whether heavier, more sedentary people choose more sedentary types of work. Second, we have to account for the fact that weight accumulation is a dynamic process, and that the effects of occupation on weight accumulate over time. Third, we have to construct a reliable measure of job-related exercise. Finally, most survey data on weight are self-reported, and self-reported weight data seem to be consistently mismeasured.

3.1.1 Data

To solve the first two problems, it is useful to have panel data on weight and occupation. As a result, we will use data from the National Longitudinal Survey of Youth (NLSY). The NLSY started in 1978 with a cohort of 12,686 people aged 14 to 22. It followed this cohort over time, with the most recent survey being in 1998. The NLSY asked respondents about their weight in 1982, 1985, 1986, 1988, 1989, 1990, 1992, 1993, 1994, and 1996. It also asked respondents about their height in 1982 and 1985. Since all respondents were over age 21 in 1985, we take the 1985 height to be the respondent's height for the remaining survey years. In addition to questions about height and weight, the NLSY asked respondents about their race, sex, marital status, age, and the individual's occupation in terms of the 1970 Census classification. It is advantageous that the NLSY maintains a consistent occupational coding scheme throughout the panel. The NLSY also asks detailed income questions. We use data on wages earned, the primary source of earned income.[13]

The NLSY data are summarized in Table 1, for working men and women over the age of 18.

INSERT TABLE 1 HERE

The table presents the change over time in the NLSY cohort's characteristics, from 1982 (the first year during which every member of the cohort is over 18) to the end of the sample frame in 1998. As the cohort ages, its BMI rises by about 3 or 4 units, while its prevalence of obesity

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[13] In separate work, we have also used data for married people on wages earned by a spouse; this latter variable represents the primary source of unearned income for young people. This allows us to look separately at the effects of earned and unearned income.

increases at least fourfold. From these data alone, however, we cannot separate the effect of aging from the effect of population-wide changes in the determination of weight. Aging also seems to affect the distribution of occupations. People seem to be moving into the second level of strenuousness and strength, out of the most strenuous occupations and into the least strenuous occupations. Later analysis of nationally representative data reveals that these trends are not present in the overall population, and are probably aging effects rather than period effects.

To solve the third problem, measurement of job-related exercise, we rate 1970 US Census occupations using *consistent* measures of strenuousness with the help of two additional data sets. The *Dictionary of Occupational Titles, Fourth Edition*, by the Department of Labor's Bureau of Labor Statistics, contains various ratings of the strenuousness of each 3-digit occupational code from the 1970 Census. In the past, this data set has been used primarily to study Workers' Compensation issues rather than the occupational effects stressed here.[14] We will use these publicly available data to rate the physical demands of each 3-digit occupational category in the 1970 US Census. We focus on two ratings in particular: a rating of strength, and a rating of other physical demands, including climbing, reaching, stooping, and kneeling. It is important to separate strength requirements from other physical requirements, because stronger workers with greater muscle mass may weigh more than other workers, even though they are not more "over-weight" in any medically relevant sense.

To address the last problem—measurement of weight—we use data from Wave III of the NHANES, which was collected from 1988 to 1994. The NHANES is an individual-level data set containing both self-reported weight and height, *and* measured weight and height, for each individual in the sample.[15] Following the method of Cawley (2000), we use the NHANES to correct for reporting error in the NLSY, by estimating the relationship between self-reported weight and actual weight. We regress self-reported weight and its square on actual weight. This regression is run separately for white males, white females, non-white males, and non-white females, where all individuals are between ages 18 and 40, the same age range as the NLSY cohort. The R-Squared for all these regressions is over 90 percent, indicating that the quadratic function fits the data quite well. The results are presented in Figure 5, which plots the predicted reporting bias against self-reported weight for the four sex-race cells used. Nearly all women tend to under-report their weight; the under-reporting is somewhat greater for non-white women than for white women. The reporting patterns of men, on the other hand, differ more by weight. Lighter men, who report weight under 100 Kg, tend to say they are heavier than they really are, while heavier men tend to understate their weight. Using the estimated relationship from the NHANES data, we predict actual weight in the NLSY from the self-reported weight data.[16] All

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[14] These data are published most conveniently as a supplement to the April 1971 CPS, which reports 1970 Census occupation and various occupational characteristics for each CPS individual.

[15] Unfortunately, the NHANES cannot be used to test the predictions of our model directly, because it, like the 1995 and later NHIS, uses a very coarse system of occupational classification.

[16] This general strategy for correcting reporting error is presented in Lee and Sepanski (1995), and Bound et al. (1999). Cawley (2000) applies this strategy to predicting young women's weight.

our analysis is performed using this constructed series. Correcting for reporting error improves the fit of our regressions slightly, but it does not appreciably change the quantitative results.[17]

3.1.2 Results

The Partial Effect of Exercise

A worker in a sedentary job may not gain weight immediately, but may do so over a number of years. Therefore, we would like to know how long it takes for a worker's weight to respond to his occupational choice.[18] Table 2 sheds some light on these questions, for working women in the NLSY.

INSERT TABLE 2 HERE

The first column of the table shows the results of a regression, pooled across years from 1981 through 1996, of BMI on various characteristics for working women over the age of 18. Since individuals enter this regression more than once, standard errors are clustered by individual.[19]

Since strenuousness (S) is measured on a scale of zero to three, a woman who spends one year in the least strenuous job has 0.9 units of BMI more than one who spends a year in the most strenuous job. This is the *short-run* effect of job-related exercise. The regression also reveals the importance of separating strenuousness from strength requirements. Since strength is rated on a scale of one to five, a woman in the least demanding job weighs about 1.3 BMI units less than a woman in the most demanding job. We interpret this as a difference in muscle mass, rather than fat. The table also reveals that an additional year of schooling lowers BMI by 0.16 units. Interestingly, the effect of education is rather small compared to the effect of job-related exercise. An individual with four more years of schooling weighs only 0.64 BMI units less. The effects of ethnicity are extraordinarily large: black women tend to be 2.63 BMI units heavier than whites, while Hispanic women tend to be 1.1 BMI units heavier. Finally, among working women, earned income has a consistently negative effect on weight, suggesting the importance of the relationship between income and the demand for weight control.

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[17] The improved fit seems expected but the unchanged coefficient estimates seem unexpected, especially for males. Classic measurement error (mean zero and independent of covariates) should affect only the standard errors. However, when the light over-report their weight and the heavy under-report it, these *systematic* errors in the dependent variable might also bias the coefficients toward zero. They do not, perhaps because the error is very small relative to the meaningful variation in weight.

[18] Throughout this analysis, we correct the self-reported weight measures in the manner described earlier.

[19] Values for 1998 are not available, because we measure earnings for the *current* calendar year, rather than the previous calendar year. For example, to construct 1986 earnings, we take the value from the 1987 survey, in which the respondent is asked to report his 1986 earnings. Moreover, since respondents are never explicitly asked about 1994 or 1996 earnings (only 1993, 1995, and 1997 earnings), we exponentially interpolate to obtain values for these two years. Therefore, values for these two years are defined only if the person reports nonzero earnings in both adjacent years.

Since our weight data span 14 years, from 1982 to 1996, we can estimate the effect on weight of spending 14 years in a particular type of occupation.[20] For each woman in 1996, we construct the average level of strenuousness and strength required across every year for which she reports an occupation. The average is not weighted, although experimenting with different weighting schemes suggested that the weights are not crucial. We then use 1996 data for working women (i.e., working in 1996) to run a single year regression of current BMI on average strenuousness measures, along with current demographic and income characteristics. The results are given in the second column of the table. The long-run effects of occupation seem to be almost four times as large as the one-year effects. After 14 years of working, those in the least sedentary occupations have about 3.5 units of BMI less than those in the most sedentary ones.

These results, along with the panel structure of the NLSY data, also allow us to address the important issue of possible endogeneity in occupational choice. Suppose that occupation were entirely endogenous: at youth, heavier people sorted themselves into sedentary occupations, but occupation had no further effect on weight. If this were true, the contemporaneous correlation between work and weight would be equal to the long-run effect, because staying an additional year in a particular job would have no further effect on weight. This is not the case: the long-run effect is almost four times as large. Endogeneity of occupation seems even less likely when we consider the last column of Table 2, which depicts the results of a pooled regression with individual level fixed-effects. The coefficients on the job-related exercise variables reflect how a year-to-year change in average strenuousness affects an individual's weight. A one-year, one unit increase in average strenuousness lowers women's BMI by about 0.19 units, while a one-year increase in average strength requirements raises women's BMI by about 0.16 units. Since the 14-year effects are only about six times as large as the one-year effects, it appears that job-related exercise has a concave effect on weight. This is consistent with the assumptions of our model.

There are four other reasons to believe that occupation is exogenous with respect to weight, and that occupational switching is driven by changes in *human capital*, rather than changes in weight. First, switches into less strenuous jobs are not preceded by increases in BMI. People switching into less strenuous jobs between years t and $t+1$ actually gained 0.02 to 0.04 fewer units of BMI between $t-1$ and t than the average NLSY respondent. Second, people switching into less strenuous occupations do not already weigh more than the average NLSY worker. Men switching into less strenuous occupations actually weigh 0.3 units of BMI less than other men, and this difference is statistically significant. The BMI of women switching into less strenuous occupations does not differ significantly from the BMI of other women. Third, people switching into less strenuous occupations have gained more education than the average worker. Switching females gain an average of 0.14 years of schooling; this is statistically distinguishable (using a t-test at the 5% level) from the average gain of 0.12 years of schooling for non-switching females. Switching males gain an average of 0.15 years of schooling, also statistically distinguishable from the overall average gain of 0.12 years. Finally, the average worker in the NLSY is likely to reduce her hours worked per week, from one year to the next, but those switching into less

[20] Some women do not report a 14-year occupation history, so the average effect is actually slightly smaller than this.

strenuous jobs reduce their hours worked by significantly less. This is true for both men and women, and passes a formal t-test at the 5% level. The last two observations suggest that occupational switching is driven by changes in human capital.

It seems that the young NLSY sample is not subject to serious endogeneity of occupation. The estimates we have presented for young workers thus serve as useful benchmarks both because they are not subject to the problem of endogeneity, and because they are likely to serve as a lower bound on the true occupational effect. As we have seen, the longer one spends in an occupation, the larger is its effect on weight. Therefore, the effects for young people are smaller than the effects for older people. This is consistent with the reports of Costa and Steckel (1995), who argue that historical differences in BMI across occupations are greater at older ages. It is also consistent with analysis of the NHIS, which reveals that the cross-sectional relationship between occupational characteristics and BMI is about half the size for workers under 30 as it is for workers over 50.

We have restricted ourselves to presenting the results for female workers. This is because the results for young men are particularly noisy. The coefficients on job-related exercise flip sign in different subsamples of the data. In the much larger samples of the National Health Interview Survey analyzed below, however, they stabilize and come to resemble the results for women. It appears that job-related exercise is measured more accurately for young women than young men.

The Partial Effect of Income

As stressed in Section 2.2, income growth affects weight both directly and by changing the strenuousness of work:

$$W_Y^* = W_S^* S_Y + W_Y^* |_S \qquad (10)$$

The regressions give us values for W_S^* and $W_Y^* |_S$. In principle, we could assess how weight changes over time if we knew S_Y, the change in strenuousness that occurs with income growth. Unfortunately, however, we do not observe changes in strenuousness over time. Moreover, over the short period of time we observe, there is comparatively little variation in job-related exercise, especially from a historical perspective. For example, about forty percent of people hold a job with a strenuousness rating between zero and one, while another 45 to 50 percent of people hold one with a rating between one and two. It is nonetheless useful to present a simple illustration of how change in strenuousness over time might affect weight. Suppose that the income deciles in our analysis can be interpreted as income rankings across time, and suppose that average strenuousness changes linearly over time with these income rankings. Therefore, the bottom income decile has the maximum strenuousness rating of 3, the second has a rating of 2.67, the third has a rating of 2.33, and so on up to the top decile with a rating of zero. Given this sort of change over time, and given the estimated effect of strenuousness and the pure income effect, the time path of weight would look like the one in Figure 6. The reduction in strenuousness raises weight in a linear fashion, while the growth in income lowers weight. The combined effect is to raise weight over time. This demonstrates how a negative pure income effect on weight can still be consistent with weight growth over time.

3.2 Decomposing the Impact of Technological Change

To quantify the total effect of technological change on weight growth, we calculate the weight growth that resulted from changes in the characteristics of the population. The residual secular trend in weight is treated as the effect of technological change. Next, we exploit variation in the relative taxation of food across states to identify supply and demand elasticities for weight. This allows us to decompose this total effect of technology into the demand and supply components identified in equation 8.

3.2.1 The Importance of Secular Trends

To identify secular trends in weight, we employ nationally representative data from the National Health Interview Survey (NHIS). By estimating the empirical relationship between weight and various demographic characteristics, we can identify the growth in weight that resulted from demographic changes. The residual change is attributed to technological change, in the tradition of economic growth-accounting.

Observe that this residual change does *not* include changes over time in our strenuousness and strength requirements variables. This is because these variables are based on a single ranking of occupations, performed during the 1970s. They do not include changes in strenuousness over time. Changes in exercise within particular occupations will not be captured by these variables.

The NHIS contains individual-level data on height, weight, income, education, demographic variables, and occupation. It is a repeated cross-section done every year for several decades. Our analysis uses every survey year from 1976 through 1994. Prior to 1976, the NHIS did not ask respondents about their weight. After 1994, the survey switched to a much coarser occupational classification system that we found to be too coarse for our purposes.

Use of the NHIS requires us to solve two measurement issues. First, the data on height and weight suffer from self-reporting bias. We address this problem just as we did for the NLSY, by using the NHANES data to adjust the self-reported weight data. Second, before 1983, the NHIS uses an occupational classification scheme based on the 1970 Census, but from 1983 onwards its scheme is based on the 1980 Census. The differences between these two schemes are substantial, but our measures of job-related exercise apply only to the 1970 Census classification scheme. However, the 1980 Census occupations can be rated on the same scale, using the work of England and Kilbourne (1988). England and Kilbourne use a sample of individuals from the 1970 US Census who were assigned occupational codes both from the 1970 US Census and from the 1980 US Census. They then assign strenuousness scores to each individual in the sample, based on her 1970 US Census occupational code. These strenuousness scores are averaged within each 1980 US Census code to obtain an average strenuousness score for each 1980 code. This method allows us to measure job-related exercise under both systems of occupational classification. Even though these ratings span two types of occupational classification, they are

both based on a single, consistent measure of job-related exercise, taken from the *Dictionary of Occupational Titles*.[21]

The major trends in weight and occupation, for adult men and women in the labor force, are summarized in Table 3. From 1976 until 1994, there has been substantial growth in BMI, amounting to about five percent of its 1976 level.

TABLE 3 INSERTED HERE

More strikingly, the rate of obesity has roughly doubled for both men and women in the labor force. There has been a shift out of more strenuous jobs to less strenuous ones, and this shift has been even more pronounced for female workers than for male workers.

After calculating each individual's BMI, we estimate the following specification[22]:

$$W_{it} = \beta_0 + \beta_1 Year_t + \beta_2 Muscle_{it} + \beta_3 S_{it} + \beta_4 Y_{it} + \beta_5 (Ed_{it}) + \beta_6 (Age_{it}) + \beta_7 (Age_{it})^2 + \varepsilon_{it} \qquad (11)$$

$Year_t$ represents a vector of year dummies. *Muscle* reflects the strength requirement of a worker's job, taken from the *Dictionary of Occupational Titles*. The variables W and S are the same as in the theoretical section: they are BMI (equal to weight in kilograms, divided by the square of height in meters) and job strenuousness (other than strength). Job strenuousness is separated from strength, because they are predicted to have different effects. Stronger workers will have greater muscle mass and thus greater BMI. We predict that $\beta_2 > 0$ and $\beta_3 < 0$. Y represents income, just as in the theory section, but in this regression Y will be included as a set of dummies indicating the quartile of the income distribution to which a worker belongs. There are two reasons for this. First, this specification allows for the inverted U-shaped relationship we predict. Second, the NHIS reports a person's income category, not his actual income. It is not possible to include a continuous measure of income. The inverted U-shaped relationship is true *conditional* on a level of job-related exercise, but it may not be unconditionally true. Unconditionally, at higher incomes, job-related exercise could be lower and weight may be rising unconditionally. In addition, it will not be true if we condition on food intake: income initially raises weight precisely because it raises food intake. Finally, note that for biological reasons, we also allow for weight to have an inverted U-shape in age: people gain weight as they approach middle age, but they begin to lose weight as they enter old age. This means that β_6

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[21] The only relevant difference is that the scores based on the original 1970 Census codes are integer-valued, while the scores translated into the 1980 Census codes can take decimal values, because they are averages of integers.

[22] Although obesity concerns the upper tail of the weight distribution, the specification is in terms of the mean weight. The same type of specification was estimated using quantile regressions for the 0.25, 0.5, and 0.75 quantiles, but this did not change the qualitative findings.

should be positive, while β_7 should be negative.[23] In addition to the listed variables, we also include race and marital status.

The results of estimating equation 11 for male and female workers are presented in the first few columns of Table 4.[24] This table makes clear that nearly all weight growth is occurring over time, rather than as a result of shifts in the composition of the population. This is consistent with our interpretation of weight growth as technologically induced.

INSERT TABLE 4 HERE

For example, by looking at the coefficients on the year dummies, we can see that, among male workers, there remains a residual 1.34 unit increase in BMI from 1976 to 1994, even after we control for a variety of demographic and economic characteristics. This actually *exceeds* the 1.26 unit overall increase in average BMI. In other words, composition effects lowered weight over this time period for men. Among female workers, there is a residual increase of 1.5 BMI units, while average BMI rose by 1.53. This residual increase includes changes over time in job-related strenuousness, along with changes in the supply of food. As discussed earlier, even though our regressions contain a measure of job-related exercise, this measure is a ranking of different jobs, not an absolute measure of strenuousness. Therefore, a reduction in the strenuousness of all jobs will not affect this ranking, but will show up in the year-specific fixed-effect. The year dummies include the effects of changes in the overall strenuousness of work, along with expansions in the supply price of food. It turns out that they do not include economy-wide income growth that shifts the entire income distribution. Even if we replace the income quartile dummies with categories for real income, the year dummies are completely unaffected.

It is also important to see that job-related exercise and income have the predicted effects on weight. The coefficient on S is negative and highly significant. Since S is measured on a scale of zero to three, this implies a difference of nearly 0.9 units of BMI between the most sedentary and least sedentary male workers. This effect of job strenuousness is large relative to the effects of other economic factors that are often stressed as key determinants of weight, such as income

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[23] We should mention here the possible impact of omitted variables on this regression. The most relevant are those relating to recreational exercise, transportation choices, and housing location choices. Controlling for income, however, all workers face the same incentives for choice among these variables, except that more sedentary workers have a greater incentive to make choices that increase their exercise level. As a result, these omitted variables may bias the results against our predicted effect of job-related exercise: β_2 will be biased toward zero and will actually understate the total effect of job strenuousness on obesity.

[24] We also estimated equation 11 using an indicator variable for obesity (defined as having a BMI of at least 30). The results were unchanged, with one exception: the effect of income on male obesity is negative everywhere. Indeed, while those in the bottom income quartile have unconditionally lower BMI than those in the second, they have higher obesity; this indicates that variance of BMI is particularly high among the poor. All the non-income effects, however, are quite similar throughout the income distribution: we ran the BMI regression separately by income quartile and obtained fairly uniform results throughout the distribution.

and education. To put this number in context, observe that one grade level lowers BMI by 0.1 units. A one-unit increase in strength requirements, on the other hand, raises BMI by 0.3. Income has the inverted U-shaped effect on the BMI of male workers that the theory suggested was possible. BMI rises by about 0.2 units between the first and second income quartiles and remains flat through the second and third quartiles. It then drops by 0.1 units for the fourth quartile. Age also has an inverted U-shaped effect on weight. We also find that black men, on average, have slightly higher BMI than white men, by about 0.2 units. Married men weigh more than unmarried men; their BMI is higher by about 0.7 units.

The results for female workers, also shown in Table 4, display the same inverted U-shaped effect in age, and the negative effect of education. However, they reveal two important differences. First, the coefficient on S is about one-half the size for women than for men, although it is still significant. Below, we explain that this may be an artifact of the way strenuousness scores were translated into the 1980 Census occupational classification scheme. Second, income seems to exert a consistently negative effect on the BMI of women. This effect is observed consistently, both in the NLSY and the NHIS, and could be due to differences in the effect of earned income for men and for women. For example, increases in earned income for women may be raising total labor supply (including household labor supply) by much more than for men.

We ran two important tests to ensure the stability of this model over time. First, we ran these regressions year by year, and found that there was little variation in the coefficients. The coefficient on S for females presents the single exception to this finding. This coefficient is not very stable over time. It tends to be larger in absolute value before 1983, and considerably smaller after 1983. This probably owes itself to a change in the occupational classification scheme in 1983. To see how this works, we should explain how strenuousness ratings are constructed for the 1980 Census occupations. Fundamentally, they are constructed from a 1970 sample of workers whose occupations were coded according to both classification schemes. The DOT strenuousness scores for the 1970 occupations were then averaged within each 1980 occupation, in order to yield a strenuousness score for each 1980 occupation. This procedure may break down if there is a set of heterogeneous occupations within each 1980 occupation code, where some are strenuous, and some are not so strenuous. If workers are uniformly distributed between these two sets of occupations, the average strenuousness score is still valid. However, as an example, suppose that women are located primarily in the less strenuous half of the occupational distribution. If so, then the average strenuousness scores would be invalid for women. The 1980 strenuousness scores would then be measured with error, and the coefficient on S would be biased toward zero for women. This explanation is consistent with the NLSY results we presented earlier. The NLSY consistently codes individuals according to the 1970 Census classification. Using this single scheme, the estimated effect of strenuousness for women more than doubled.

Second, we interacted S with the year dummies, to see if the effect of strenuousness varied over time. These interaction terms were not significant at the one percent level for men. They *were* significant for women, but only because the strenuousness coefficients were considerably higher before 1983; they tended to be in the neighborhood of -0.2. The strenuousness coefficient of -0.10 should thus be regarded as a lower bound, since the post-1983 strenuousness scores heavily influence it.

3.2.2 Supply and Demand Factors in Weight Growth

Controlling for compositional changes in the population, BMI grew by 1.64 units for men and 1.84 units for women, from 1981 to 1994 (i.e., from trough to peak). Assuming an even sex ratio, BMI grew by 1.74 units overall. Equation 8 illustrated that growth in weight over time has two components: the growth in weight due to the lower supply price of food, $W_P^* p'(t)$, and the growth due to the increased demand for weight, $[W_Y^* + W_S^* S_Y]Y'(t)$. How much of the 1.74 unit change was due to food supply growth, and how much due to growth in the demand for weight?

Identification Strategy

Decomposing weight growth into its two components requires that we identify the supply of weight and the demand for weight. In the notation of Section 2.3.1, the supply of food is given by $Z(p(t), A(t))$, where p is the price of food and A is the level of agricultural technology. The demand for food is a function of physical activity, the price of food, and income, according to $F^*(S(Y(t)), p(t), Y(t))$. Since weight is a function of food intake, physical activity, and other individual characteristics J, we can define the "supply of weight" as some function $W^S(Z(p, A), S, J)$, and the demand for weight as $W^D(F(S, p, Y), S, J)$. To keep things simple, suppose that these functions are linear in price, strenuousness, income, and other characteristics, and suppose that technological change occurs over time, but at the same rate for every locality. This implies a linear inverse supply function for each individual i at time t,

$$P_{it}^S = \phi_0 + e^S W_{it} + \phi_t Year_t + \phi_S S_{it} + \phi_Y Y_{it} + \phi_J J_{it} + \eta_{it}, \tag{12}$$

and a linear inverse demand function,

$$P_{it}^D = \alpha_0 + e^D W_{it} + \alpha_t Year_t + \alpha_S S_{it} + \alpha_Y Y_{it} + \alpha_X X_{it} + \varepsilon_{it} \tag{13}$$

As they stand, these equations are not jointly identified, because they have identical sets of explanatory variables.

Our strategy for identifying these equations exploits variation in sales taxes across states. About half of US states exempt food from sales taxes, while the other half do not. These tax policies create exogenous variation in the *relative* price of food. We use this variation to identify the supply equation 12. The estimated supply slope (e^S) and the incidence of the sales tax then allow us to recover the demand slope (e^D).

To lay out our strategy, it is helpful to define some notation and review the theory of sales tax incidence. Figure 7 illustrates the incidence of a sales tax on the relative price of food. P^0 represents the untaxed relative price of food. P^S is the relative price received by suppliers, and P^D represents the relative price paid by consumers. The (relative) sales tax on food is defined by:

$$1 + \tau \equiv \frac{P^D}{P^S} \tag{14}$$

The tax is the percent increase in the relative price of food that results from sales taxation. If τ^{food} represents the sales tax rate for food in percentage terms, and τ^{other} represents the rate for all other goods, the relative tax can be expressed as:

$$\tau = \tau^{food} - \tau^{other} \tag{15}$$

For example, if there is a four percent tax on food and a three percent tax on other goods, the relative price paid by consumers is one percent higher than what suppliers receive. If sales taxes are uniform on all goods, they do not affect relative prices.

In Figure 7, the incidence of the sales tax on suppliers, κ, is defined as:

$$\kappa\tau = \frac{P^0 - P^S}{P^S} \tag{16}$$

If supply is perfectly elastic, $P^0 = P^S$, and this incidence is zero. In this case, the sales tax does not affect the price collected by suppliers, and one hundred percent of the tax is borne by consumers.

To recover κ and to identify the supply curve, we estimate the following equation jointly with the supply curve in equation 12:

$$P_{it}^S = \gamma_0 + \kappa\tau_{it} + \gamma_S S_{it} + \gamma_J J_{it} + \gamma_Y Y_{it} + \gamma_t Year_t + \delta_{it}, \tag{17}$$

While the supply and demand equations are not identified, equation 17 can be estimated jointly with the supply curve in equation 12 via three-stage least squares, because taxation appears in equation 17, but not in 12. Moreover, the coefficient on taxation is approximately equal to the incidence of tax on the supplier, κ. Equation 16 implies that the incidence equals the percent reduction in supply price generated by a one percentage point increase in the tax, or $\kappa = \frac{d\ln P^S}{d\tau}$.[25] Since the relative supply price tends to be reasonably close to one (the yearly means range between 0.99 and 1.01), we can employ the approximation that $d\ln P^S \approx dP^S$. This justifies our claim that the coefficient on relative taxation is approximately equal to κ.

Knowing κ and e^S then implies the demand slope e^D. We will take advantage of this fact to identify the slope of the demand function, even without any instruments for the demand price. In particular, the geometry of Figure 7 implies that:

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[25] To estimate the proper incidence, we need to control for other factors that may be shifting demand—besides the sales tax—but we ought *not* to control for weight, since the change in price is accompanied by a change in equilibrium weight. Therefore, equation 17 includes demand shifters as regressors, but not weight.

$$e^D = -\frac{1-\kappa}{\kappa} e^S \tag{18}$$

This approach yields an estimated supply slope (e^S), shifts over time in the supply curve (ϕ_t), sales tax incidence (κ), and demand slope (e^D). These parameters can be used to decompose technological change into its supply and demand components.

Using the estimated shift over time in supply, we can estimate the portion of BMI growth generated by shifts in the supply of food. In particular, $\phi_{1994} - \phi_{1981}$ represents the vertical shift in the inverse supply curve from 1981 to 1994. A simple geometric argument reveals that the resulting shift in BMI must be:

$$\Delta BMI = \frac{\phi_{1994} - \phi_{1981}}{e^S - e^D}, \tag{19}$$

where the coefficients ϕ_t are taken from the inverse supply curve in equation 12. Similarly, the shift in equilibrium price that results is:

$$\Delta P = -e^D \Delta BMI \tag{20}$$

We will be able to calculate both these quantities directly by estimating e^S, e^D, and $\phi_{1994} - \phi_{1981}$.

Data

We construct a data set with individual weight and other characteristics, along with geographic identifiers that allow us to link individuals to data on relative prices and taxes for different localities. We use the NLSY Geocode data set, which provides geographic identifiers for each NLSY individual. Data are reported on the individual's state of residence, and Standard Metropolitan Statistical Area (SMSA) of residence. We then compile data on relative food prices across SMSA's, and data on taxation across states; these data are linked to the NLSY via the SMSA and state identifiers.

The first challenge is to construct price indices for food and other items that are comparable across states and across years. We employ data from the American Chamber of Commerce Researchers Association (ACCRA) on inter-city prices, as well as data from the Bureau of Labor Statistics (BLS) on price variation over time, within particular cities. We will use the 1989 ACCRA data, which provides price indices for about 200 metropolitan areas in the US. For the price of food, we will use their basket of "grocery goods," but we exclude three non-food items: laundry detergent, facial tissue, and cigarettes, which together comprise about 15% of the ACCRA grocery bundle. This basket represents all food items purchased for consumption in the home. To construct price indices for non-food goods, we employ two different strategies. First, we construct a price index over all other goods in the ACCRA survey.[26] However, since this

[26] A small fraction—about 6%—of this bundle consists of food eaten at restaurants. We choose to keep these goods in the "non-food" bundle in order to focus on the price of food, rather than the demand for

includes some goods that are not subject to sales tax, we also construct an index for the price of non-food retail goods, all of which are subject to sales taxes. Relative prices will be constructed as the price of food relative to the price of all non-food goods, and alternatively as the price of food relative to non-food *retail* goods.

While the ACCRA data are comparable across cities in 1989, they are not comparable across years. Therefore, we extrapolate the cross-sectional data backwards and forwards by using data from the BLS on price variation within each city over time. The BLS collects price indices for 26 major metropolitan areas, for food at home and all items. These data are available for every year from 1979 to 1998. In addition to these 26 major areas, the BLS also constructs price indices by region (i.e., South, Northeast, Midwest, and West) and three city size classes. In the absence of BLS data for the specific city in question, we use the indices for the appropriate region and city size class. These indices are not comparable across cities, but they are comparable within cities and across years. Therefore, we use growth in the price of food at home to extrapolate our ACCRA food price series backwards to 1979 and forward to 1998. Similarly, we use growth in the BLS price index for "All Items" to do the same for the ACCRA non-food price indices. This yields a complete set of prices for all years of the NLSY, and across all metropolitan areas contained in the ACCRA data. The constructed series is comparable across cities and across time.

The ACCRA list of cities is similar, but not identical, to the NLSY's list of SMSA's. To link the ACCRA cities with the NLSY's SMSA's, we use the following rule. If an NLSY SMSA is not directly present in the ACCRA data, we link it to an ACCRA city within 100 miles driving distance of it (if several ACCRA cities meet that criterion, we use the closest one). If no ACCRA city is present within 100 miles, we leave the price data as missing.[27]

We obtain state sales tax data from a biennial[28] publication by the Tax Foundation, entitled *Facts and Figures on Government Finance*. This publication reports state sales taxes, along with whether or not the state exempts food from taxation.[29] We construct the relative taxation of food as $\tau = \tau^{food} - \tau^{other}$, where τ^{food} is the sales tax rate on food, and τ^{other} is the rate on other goods. In different contexts, other researchers have found that sales tax variation does explain price variation in the ACCRA data (Besley and Rosen 1999).

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food preparation, and also because restaurant food is usually subject to the general rate of sales taxation, not the special rate for food (when it exists).

[27] Driving distances are calculated using the MapQuest service, at www.mapquest.com.

[28] More correctly, this publication is "slightly more than biennial". Over our time period, it is available in: 1979, 1981, 1983, 1986, 1988/89, 1990-5 annually, 1997, and 1998. We linearly interpolate missing years.

[29] In 1994, 1995, 1997, and 1998, the Tax Foundation did not report whether or not the state exempted food. For these years, we assume that state policies did not change, if it maintained the same policy for 1992 and 1993. In practice, all states had maintained consistent policies for at least these two preceding years.

The data on food prices and taxes are summarized in Table 5. From 1981 to 1994, all the price indices grew between fifty and sixty percentage points, although prices grew more rapidly for non-food items. The relative price of food (before sales taxes) fell by nearly eight percentage points over the same period of time. Concurrent with this decline, the relative tax imposed on food fell by about 0.5 percentage points.

Results

The estimates of equations 17 and 12 are presented in Table 6, for three different specifications. The first two specifications use the price of food relative to all non-food items as the dependent variables. The first is the most parsimonious specification. The supply function is identified by relative taxation. Income decile dummies are not included in the supply equation results, because they turn out to be uniformly insignificant for the supply of weight. This initial specification implies that the slope of the inverse supply function is 0.56. A one-unit increase in BMI raises the supply price by about half a percentage point. Conversely, a one percent increase in the relative price raises BMI by about 2 units. Since average BMI is around 25 in the population, this corresponds to a supply elasticity of around eight, which is quite an elastic supply response. In contrast, demand is relatively inelastic. A one percent change in the relative price lowers BMI by only 0.168 units, or 0.6 percent. In fact, this elasticity of 0.6 is the highest of any we estimate. The elasticity of the supply curve is reflected in the estimated tax incidence: only ten percent of the tax is borne by producers. Finally, this initial specification suggests that, holding BMI constant, the supply curve shifted down by 6.18 percentage points from 1981 to 1994. This would have translated into a 0.95 unit increase in BMI and would have accounted for about 55% of the secular growth in BMI from 1981 to 1994. This is the largest estimate we get for the effect of supply growth on weight. Significantly, this percentage estimate, like all the other percentage estimates to follow, does not change if we examine other periods besides 1981-1994.

The second specification allows for the fact that changes in educational or racial composition can affect weight, holding the price of food constant. This generalization does not affect the slope of the supply curve, but it does lower the estimated slope of the demand curve by about 25 percent, to 0.12. The estimated demand elasticity falls even further, to a value of less than 0.5. This specification implies that supply growth raised BMI by 0.72 units from 1981 to 1994, or about 41% of the total 1.2 unit growth.

One drawback of our approach is that the coefficients on the variables besides prices and taxes have no obvious interpretation. The coefficients in the first-stage regression do not represent the effect of each variable on demand: the first-stage regression is not a demand equation, because BMI is not included in it. The coefficients in the supply regression can be interpreted either as shifters of food supply, or as reflecting preferences for weight. For example, the fact that Hispanics face lower relative food prices can be interpreted in one of two ways. First, it could be that the proportion of Hispanic workers is correlated with a larger agricultural labor force and a greater supply of food. Alternatively, it could be that Hispanics weigh more at constant food prices, because they have greater preferences for weight. We cannot disentangle these two interpretations.

The final specification repeats this last analysis using a different measure of relative prices: we compute the price of food relative to the price of non-food retail items. This is likely to be a more precise strategy for estimating tax incidence, since sales taxes are only applied to retail items. It is encouraging that the change in the measurement of prices, while it does affect some coefficients, leaves the supply-induced growth in BMI virtually unchanged, at around 0.74 units, or around 43% of the total growth. The estimated incidence of sales tax on the producer falls with the change in measurement, to around three percent, but the estimated slope of the supply curve falls by roughly the same percentage. This leaves the total estimated BMI growth unchanged. This analysis demonstrates that mismeasurement of taxation—we do not observe effective tax rates on non-retail items like housing and utilities—does not affect our conclusion that about forty percent of the growth in BMI arose from expansions in the supply of food.

4 Conclusion

This paper provided a theoretical and empirical examination of the forces that have been contributing to the long-run growth in weight over time. We considered the hypothesis that technological change has led to weight growth by making home- and market-production more sedentary and by lowering food prices through agricultural innovation. We also derived the peculiar relationships among income, weight, and food prices that obtain in the presence of such technological change. We used microdata from a variety of sources to quantify the importance of job-related exercise in weight determination, and found it to be significant. We also decomposed the growth in weight over the last few decades and find that about forty percent of it may be due to expansion in the supply of food, potentially through agricultural innovation, and about sixty percent due to demand factors such as a fall in physical activity in market-and home production.

The paper suggests several avenues of future research. First, the sources of growth in weight need to be better understood to improve policy responses to the rising epidemic of obesity. Currently, the major public interventions against obesity involve education programs emphasizing the benefits of good diet and exercise. However, if technological change in production is the major factor driving the trend, information may be less of an issue than incentives. Indeed, we may have become more informed over time as weight has increased.

Second, an aspect of technological change we began to explore in the empirical work concerns changes in the price of food. It remains to show exactly why the relative supply price of food seemed to decline, particularly during the early 1980s. More detailed analysis of technological change in agricultural production seems to be the logical next step in a research agenda that aims to understand the economics of weight gain.

Third, although the analysis here stresses the impact of technological change on the *quantity* of food and calorie consumption, it may have affected the *quality* of food intake as well. In particular, technological advances may have affected the relative prices of the different sources of calories such as proteins and fats. It is interesting to note that the food diary data from the National Health and Nutrition Examination Surveys suggests that the proportion of calories from fat actually fell slightly during the 1980s. Nonetheless, a substantial increase in total calories consumed pushed up total fat intake. Therefore, it seems important to understand the interaction

between quantity and quality, particularly to better understand the negative relationship between income and weight induced by high-calorie foods being less expensive.

Fourth, a better understanding is needed of the relative importance of labor- versus leisure activities in the impact technological change has had in reducing activity levels. Leisure issues are particularly important for understanding the growth in child obesity that may be due to technological change, such as computers and television, which have raised the utility of consuming leisure but lowered the calories spent in doing so. Although few data sets will likely be available to do so on a population bases, one may potentially pursue the empirical strategy of identifying a control profession for which the calories spent per hour worked has not changed over time, and using its weight growth as a measure of the impact of technological change in leisure on weight.

Finally, although existing data do not allow for a clean, systematic, and convincing decomposition of weight growth into a food component and an exercise component, future data production aimed at collecting micro-data on occupation, demographics, and food consumption could make such analysis feasible. This would further advance our understanding of the relationship between weight and technological change.

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Table 1: Summary Statistics for NLSY, 1982-1998.

	Working Men		Working Women	
	1982	1998	1982	1998
BMI	23.5	26.9	22.1	26.2
Obesity	0.05	0.22	0.05	0.27
Age	20.7	37.0	20.7	37.0
Black	0.14	0.14	0.14	0.14
Hispanic	0.06	0.07	0.06	0.06
Married	0.17	0.63	0.30	0.66
Highest Grade Attained	12.0	13.4	12.2	13.4
Distribution of Strength Requirements:				
Strength=1	0.307	0.256	0.419	0.357
Strength=2	0.589	0.672	0.479	0.574
Strength=3	0.058	0.041	0.087	0.051
Strength=4	0.044	0.029	0.015	0.017
Strength=5	0.003	0.002	0.000	0.001
Distribution of Job-Related Exercise:				
Strenuousness=0	0.435	0.373	0.436	0.398
Strenuousness=1	0.482	0.570	0.545	0.593
Strenuousness=2	0.019	0.030	0.004	0.004
Strenuousness=3	0.064	0.027	0.015	0.006

Source: NLSY, 1982-1998.

Table 2: Effects of Occupation on Weight for Working Women in the NLSY.

	Pooled[a]	1996[b]	Fixed-Effects[c]
S	-0.35 *		
	3.64		
Muscle	0.33 *		
	4.23		
S Stock		-1.22 *	-0.19 *
		2.49	1.99
Muscle Stock		0.94 *	0.16 *
		2.51	2.06
Highest Grade Completed	-0.16 *	-0.12 *	-0.03
	5.02	2.01	1.11
Black	2.63 *	3.73 *	
	13.71	11.32	
Hispanic	1.10 *	1.48 *	
	5.24	4.01	
Married	-0.09	-0.18	0.59 *
	0.73	0.64	12.95
Age	0.45 *	3.08	.
	4.47	1.68	.
Age Squared	-0.005 *	-0.04	.
	-2.34	-1.57	.
Wage Decile 1[d]	0.00	0.00	0.00
	.	.	.
Wage Decile 2	-0.12	-0.33	-0.20 *
	0.47	0.65	1.99
Wage Decile 3	-0.11	-0.02	-0.21 *
	0.65	0.03	2.81
Wage Decile 4	0.07	-0.13	-0.29 *
	0.37	0.24	3.96
Wage Decile 5	-0.26	-0.34	-0.26 *
	1.45	0.63	3.36
Wage Decile 6	-0.19	-0.23	-0.36 *
	1.03	0.42	4.61
Wage Decile 7	-0.35 **	-0.59	-0.43 *
	1.83	1.08	5.33
Wage Decile 8	-0.49 *	-0.77	-0.44 *
	2.43	1.28	5.21
Wage Decile 9	-0.86 *	-1.64 *	-0.50 *
	4.18	2.65	5.51
Wage Decile 10	-1.05 *	-1.56 *	-0.52 *
	4.39	2.40	4.72
Constant	16.61 *	-29.81	23.09 *
	12.93	0.93	70.18
Year Effects	Yes	No	Yes
Observations	33655	2358	31344
R-squared	0.12	0.09	0.22

Robust t-statistics in parentheses

*Significant at the 95% level.

**Significant at the 90% level.

[a]Standard errors are clustered by individual.

[b]Includes only 1996 observations.

[c]Includes person-level fixed-effects.

[d]Indicates excluded group.

Table 3: Trends in Weight and Occupation in the NHIS, 1976-1994.

	Working Men		Working Women	
	1976	1994	1976	1994
BMI	24.93	26.19	23.12	24.65
Obesity	0.090	0.168	0.090	0.171
Age	38.568	38.469	37.109	38.625
Black	0.083	0.100	0.113	0.123
Married, Spouse Present	0.739	0.682	0.585	0.619
Highest Grade Attained	12.231	13.233	12.334	13.369
Distribution of Strength Requirements:*				
Strength=1	0.137 **	0.175	0.315 **	0.341
Strength=2	0.446 **	0.412	0.478 **	0.445
Strength=3	0.289 **	0.290	0.178 **	0.179
Strength=4	0.123 **	0.118	0.029 **	0.036
Strength=5	0.005 **	0.005	0.000 **	0.000
Distribution of Job-Related Exercise:†				
Strenuousness=0	0.300 **	0.271	0.255 **	0.308
Strenuousness=1	0.480 **	0.436	0.616 **	0.577
Strenuousness=2	0.226 **	0.242	0.090 **	0.078
Strenuousness=3	0.129 **	0.119	0.038 **	0.037

Source: NHIS, 1976-1994.

*From 1983 to 1994, Strength is rated on a continuous, non-integer scale, from 1 to 5. To derive these statistics, the interval from 1 to 5 is split into five equal intervals of 0.8 units each. For example, the Strength=1 category corresponds to a score between 1 and 1.8.

**Indicates 1983 value.

†From 1983 to 1994, Strenuousness is rated on a continuous, non-integer scale, from 0 to 3. To derive these statistics, the interval from 0 to 3 is split into four equal intervals of 0.75 units each. For example, the Strenuousness=0 category corresponds to a score between 0 and 0.75.

Table 4: Regression Results for NHIS, 1976-1994.

Dependent Variable: Adjusted BMI	Males		Females	
	Coefficient	T-Statistic[a]	Coefficient	T-Statistic[a]
S	-0.209 *	16.71	-0.102 *	5.17
Muscle	0.225 *	17.06	0.432 *	28.52
Income Quartile 1	-0.218 *	10.83	0.322 *	12.65
Income Quartile 2[b]	0	.	0	.
Income Quartile 3	0.025	1.52	-0.488 *	22.22
Income Quartile 4	-0.078 *	4.27	-0.908 *	37.61
Age	0.283 *	102.13	0.321 *	87.26
Age Squared	-0.003 *	89.91	-0.003 *	65.95
Highest Grade Completed	-0.107 *	43.19	-0.221 *	60
Year=1976	-1.036 *	29.21	-1.201 *	25
Year=1977	-0.92 *	17.35	-1.087 *	15.31
Year=1978	-0.875 *	24.2	-1.221 *	25.57
Year=1979	-0.913 *	25.16	-1.136 *	23.57
Year=1980	-0.841 *	22.69	-1.12 *	22.78
Year=1981	-1.338 *	33.93	-2.142 *	40.62
Year=1982	-0.743 *	20.24	-0.817 *	16.84
Year=1983	-0.702 *	19.06	-0.912 *	18.84
Year=1984	-0.948 *	22.13	-2.344 *	41.92
Year=1985	-0.528 *	13.62	-0.679 *	13.29
Year=1986	-0.423 *	9.75	-0.546 *	9.69
Year=1987	-0.374 *	10.1	-0.44 *	9.11
Year=1988	-0.306 *	8.31	-0.368 *	7.71
Year=1989	-0.153 *	4.03	-0.253 *	5.15
Year=1990	-0.106 *	2.79	-0.191 *	3.93
Year=1991[b]	0	.	0	.
Year=1992	0.162 *	4.04	0.177 *	3.47
Year=1993	0.219 *	5.19	0.197 *	3.69
Year=1994	0.306 *	7.63	0.3 *	5.7
Northeast	-0.008	0.44	0.017	0.73
North-Central	0.109 *	6.51	0.293 *	13.03
South				
West	-0.358 *	20.65	-0.179 *	7.78
Black	0.109 *	4.44	1.997 *	66.78
Married, Spouse Present	0.655 *	41.05	-0.055 *	2.82
Constant	20.306 *	277.97	19.404 *	207.26
Observations	439628		361332	
R-Squared	0.08		0.12	

*Significant at 99% Level.

**Significant at 95% Level.

[a]Based on robust standard errors.

[b]Indicates omitted category.

Table 5: Summary of Data on Prices and Taxes.

	1981	1989	1994
Price Index:	76.9	100.2	126.1167
Food Items in Grocery Basket	4.3	5.6	6.871135
Price Index:	74.4	101.1	139.8255
All Non-Food Items	7.8	11.7	20.53401
Price Index:	74.1	100.6	130.9597
Retail Non-Food Items	4.4	5.7	8.133273
Price Index:	74.5	101.3	138.4168
All Items	7.1	10.6	18.14214
Relative Price of Food:	1.042	1.00	0.966
Grocery Food Items/All Non-Food	0.10	0.09	0.08
State Sales Tax on Food	2.2	3.4	2.8
	2.4	2.5	2.8
State Sales Tax on non-Food	3.6	4.7	4.7
	1.6	1.1	1.8
Relative Tax:	-1.4	-1.7	-1.9
Food Tax Minus non-Food Tax	1.8	2.2	2.5

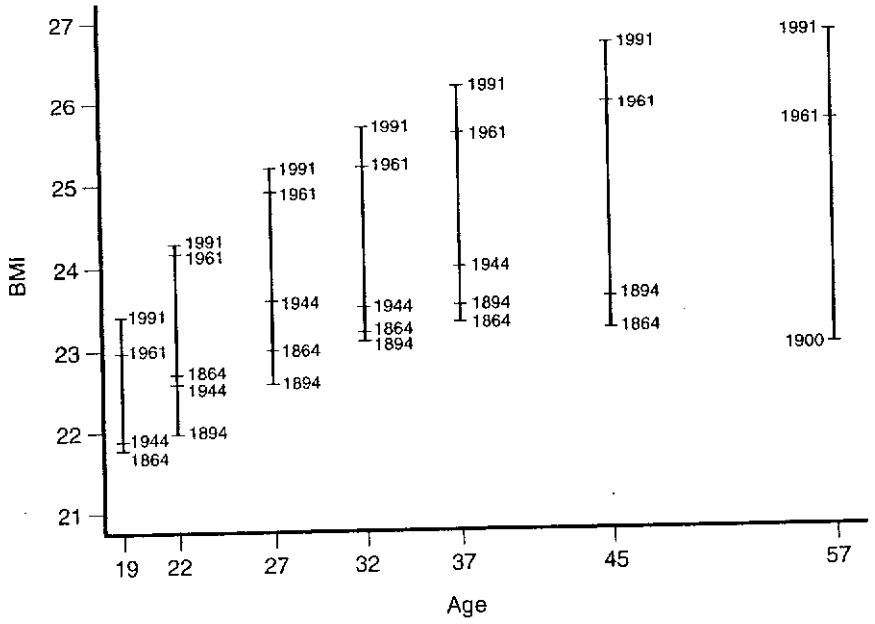
Notes: Standard deviations appear below means. Means are computed across SMSA's for price data, and across states for tax data.

Table 6: Estimated Supply and Demand Functions for BMI.

Dependent Variable:	Food Price Relative to All Non-Food				Relative to Retail Non-Food	
	Inverse Supply	First-Stage	Inverse Supply	First-Stage	Inverse Supply	First-Stage
Adjusted BMI: $1/e^S$	0.56 * 0.10		0.57 * 0.15		0.29 * 0.08	
Shift in Inverse Supply Curve: ϕ_{1994}-ϕ_{1981}	-6.18 * 0.48		-6.32 * 0.67		-6.51 * 0.36	
Relative Tax: κ		-0.10 * 0.010		-0.07 * 0.010		-0.03 * 0.005
Highest Grade Attained			0.07 ** 0.04	0.00 0.02	0.08 * 0.02	0.04 * 0.01
Black			1.23 * 0.22	1.18 * 0.21	-0.15 0.12	-0.16 0.11
Female		0.41 * 0.11	0.59 ** 0.24	0.51 ** 0.24	0.13 0.13	0.11 0.13
Black*Female			-0.32 0.47	0.91 * 0.28	0.13 0.26	0.73 * 0.16
Hispanic			-6.25 * 0.22	-5.81 * 0.19	-4.63 * 0.12	-4.41 * 0.11
Hispanic*Female			1.35 * 0.29	1.58 * 0.26	0.73 * 0.16	0.84 * 0.14
Income Decile	no	yes	no	yes	no	yes
Income Decile*Female	no	yes	no	yes	no	yes
Year	yes	yes	yes	yes	yes	yes
Pseudo R-Squared	0.00	0.03	0.03	0.07	0.12	0.15
Slope of Demand: e^D		0.168 * 0.035		0.121 * 0.036		0.117 * 0.039
Supply-Induced BMI Growth, 1982-94		0.95		0.72		0.74
Observations	49628		46994		46994	

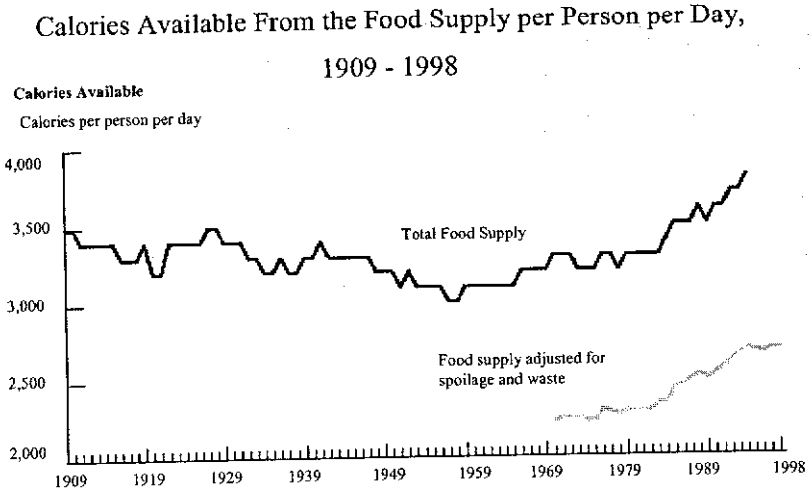
*Significant at 1% level.
**Significant at 5% level.
Note: Generalized Least Squares standard errors appear below coefficients. These are robust to correlation within individuals in the panel.

Figure 1: Historical Change in US Body Mass Index: 1863-1991.



SOURCE: Costa D. and R. Steckel (1995), NBER Historical WP #76.

Figure 2: Long-Run Changes in Calorie Consumption.



Source: USDA's Economic Research Service

Figure 3: Changes in the Relative Price of Food in the US, 1951-2000.

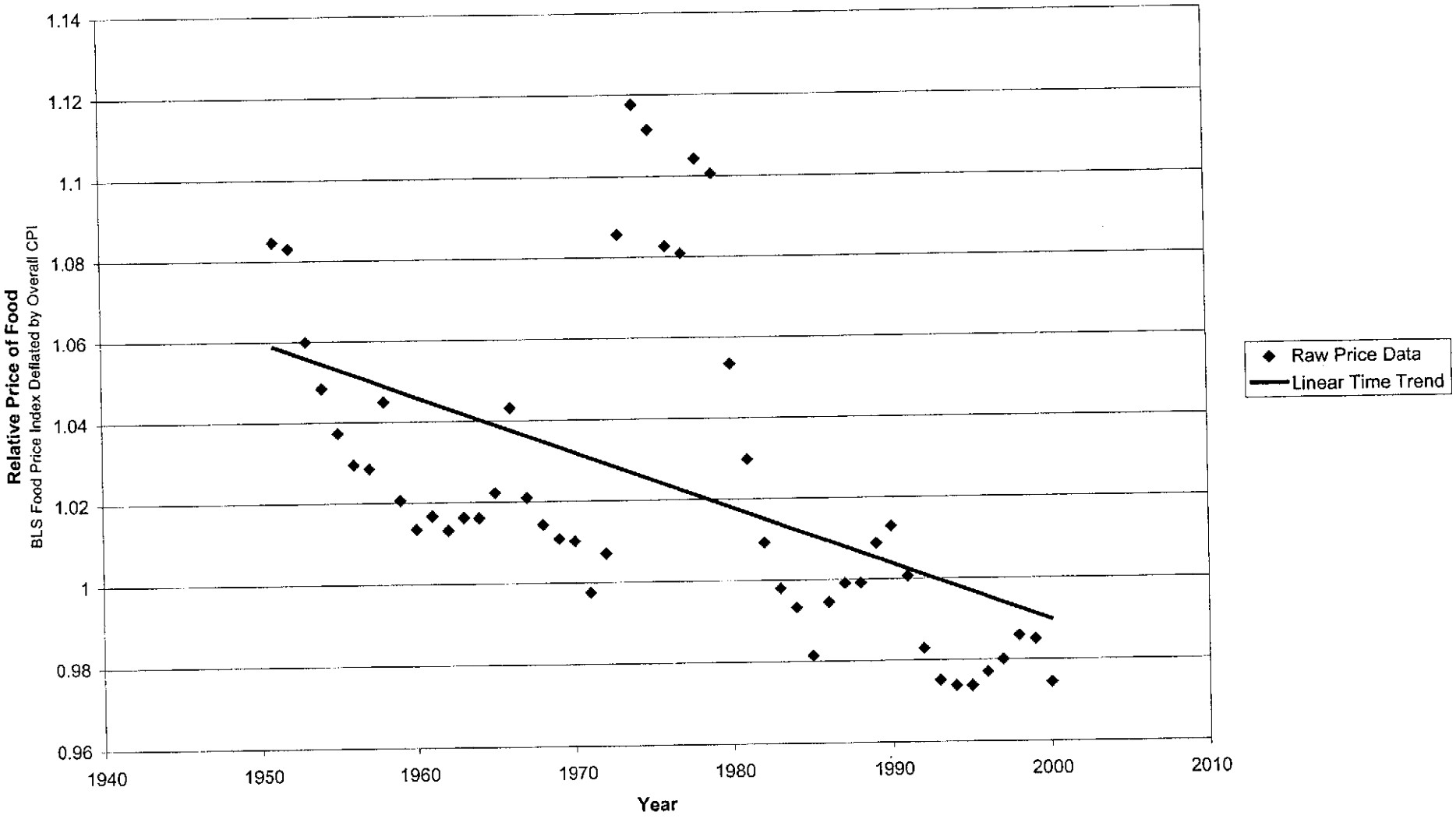


Figure 4: Steady-State Weight and Food Consumption.

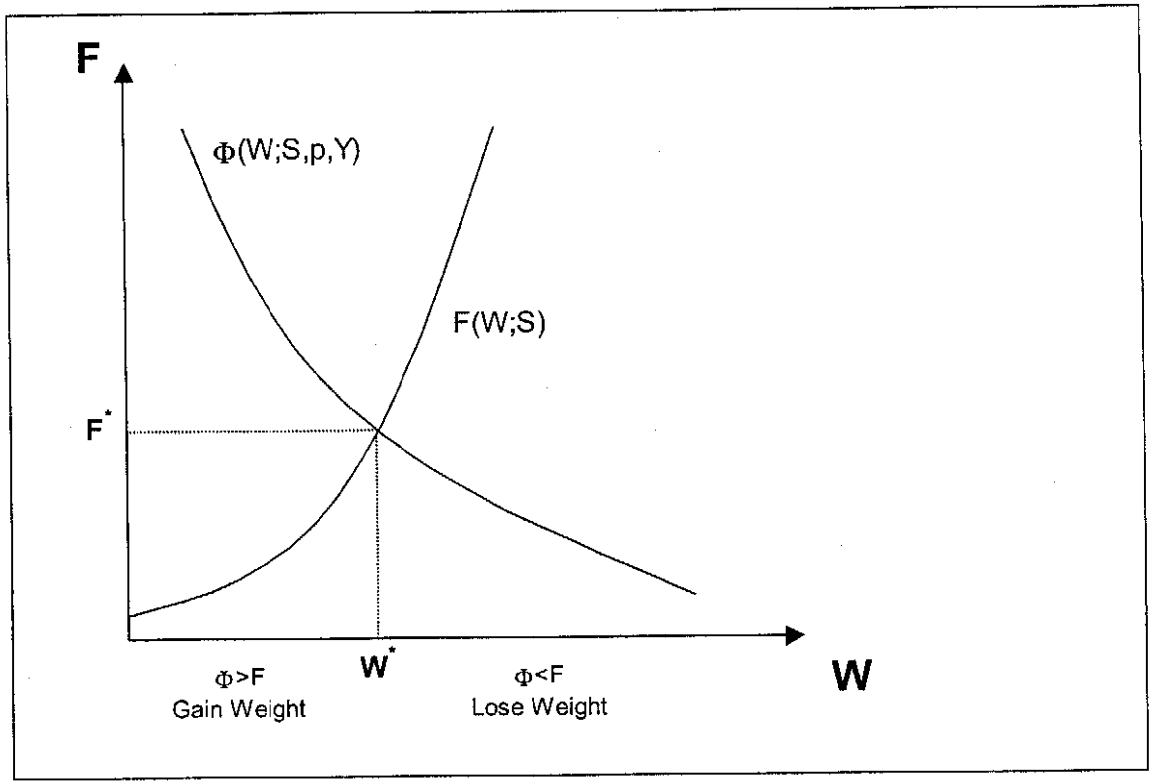


Figure 5: Reporting Bias in Weight Data, by Sex and Race.

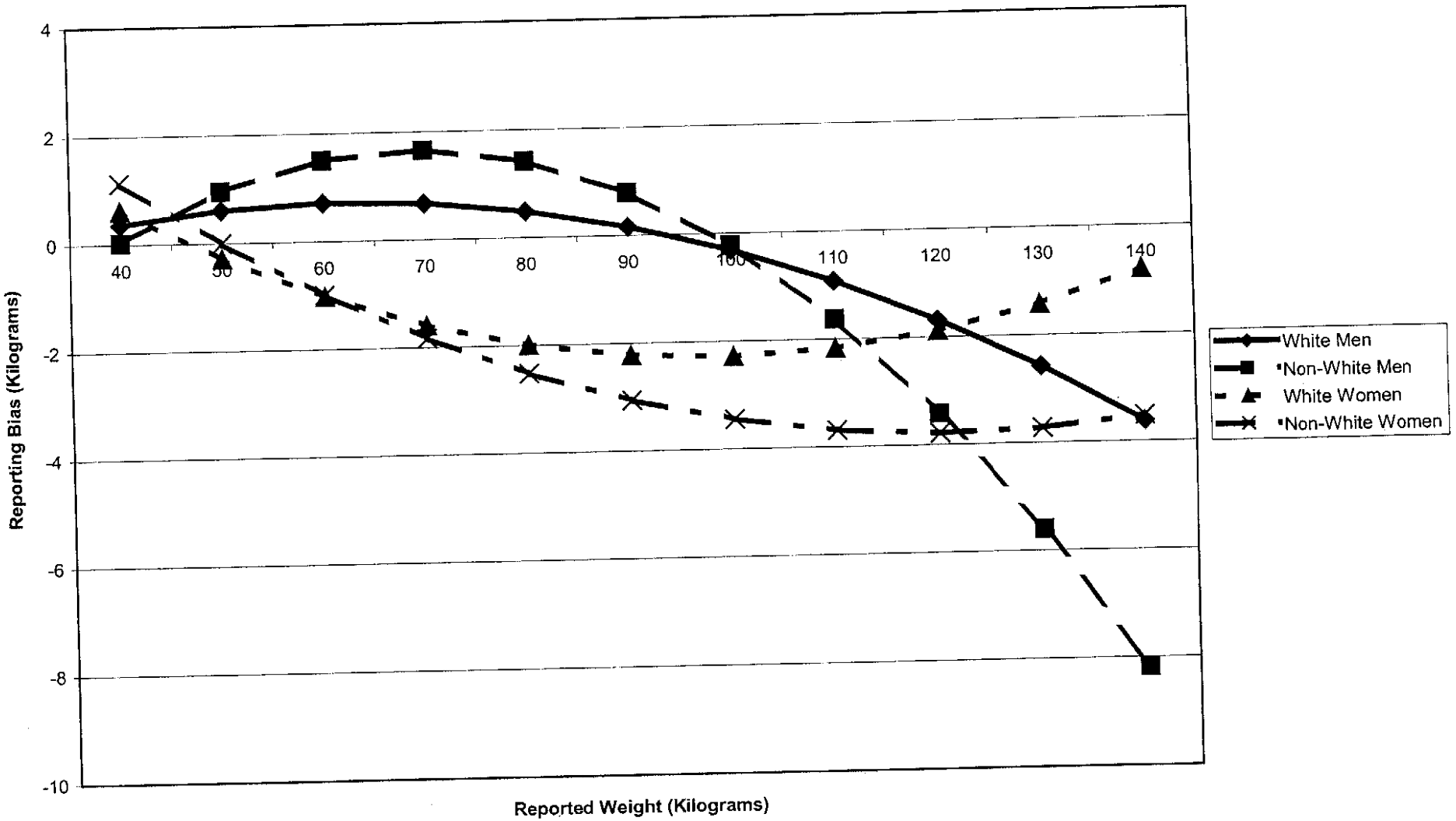


Figure 6: Time Path of Weight with Linear Reduction in Strenuousness.

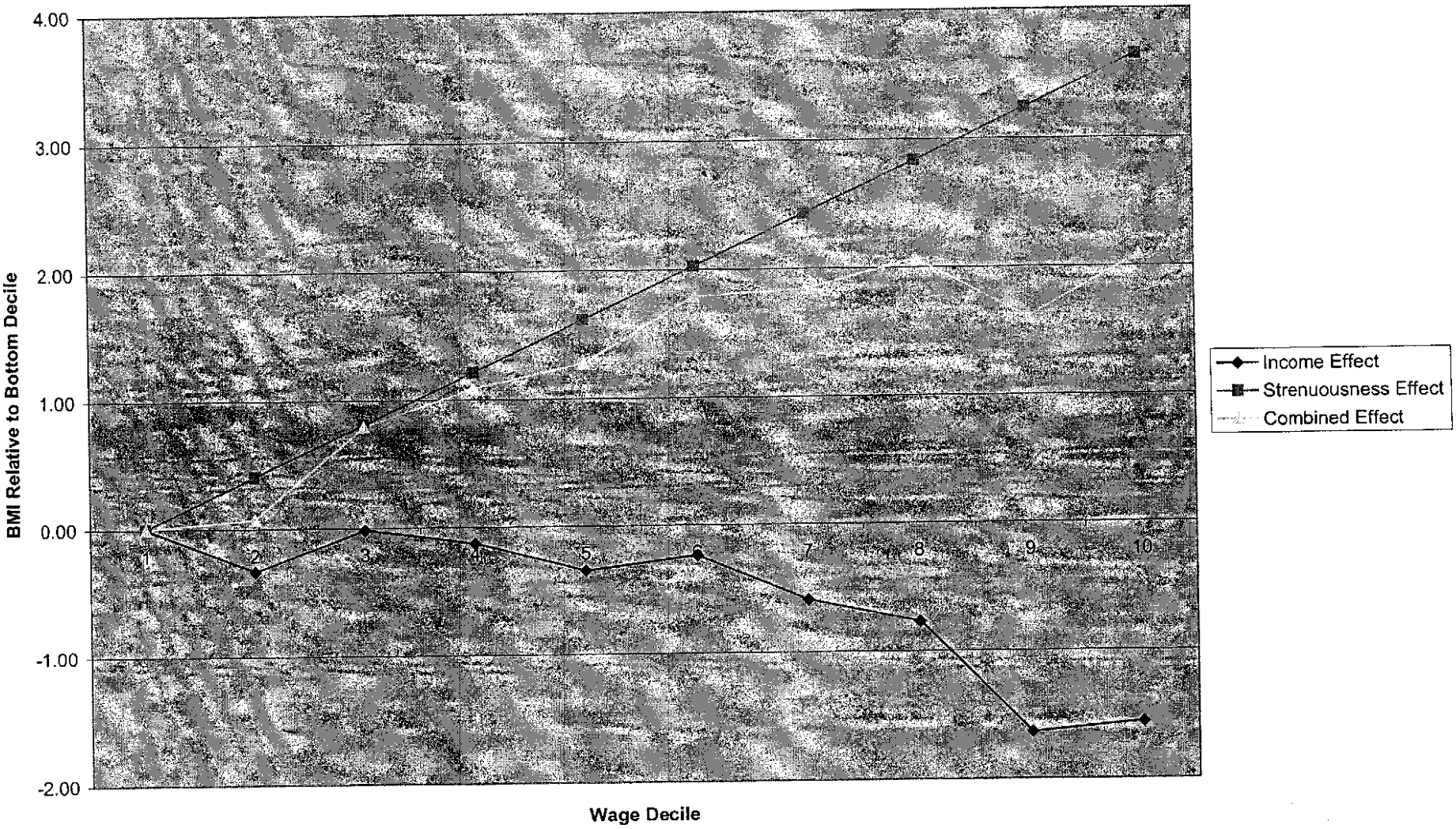
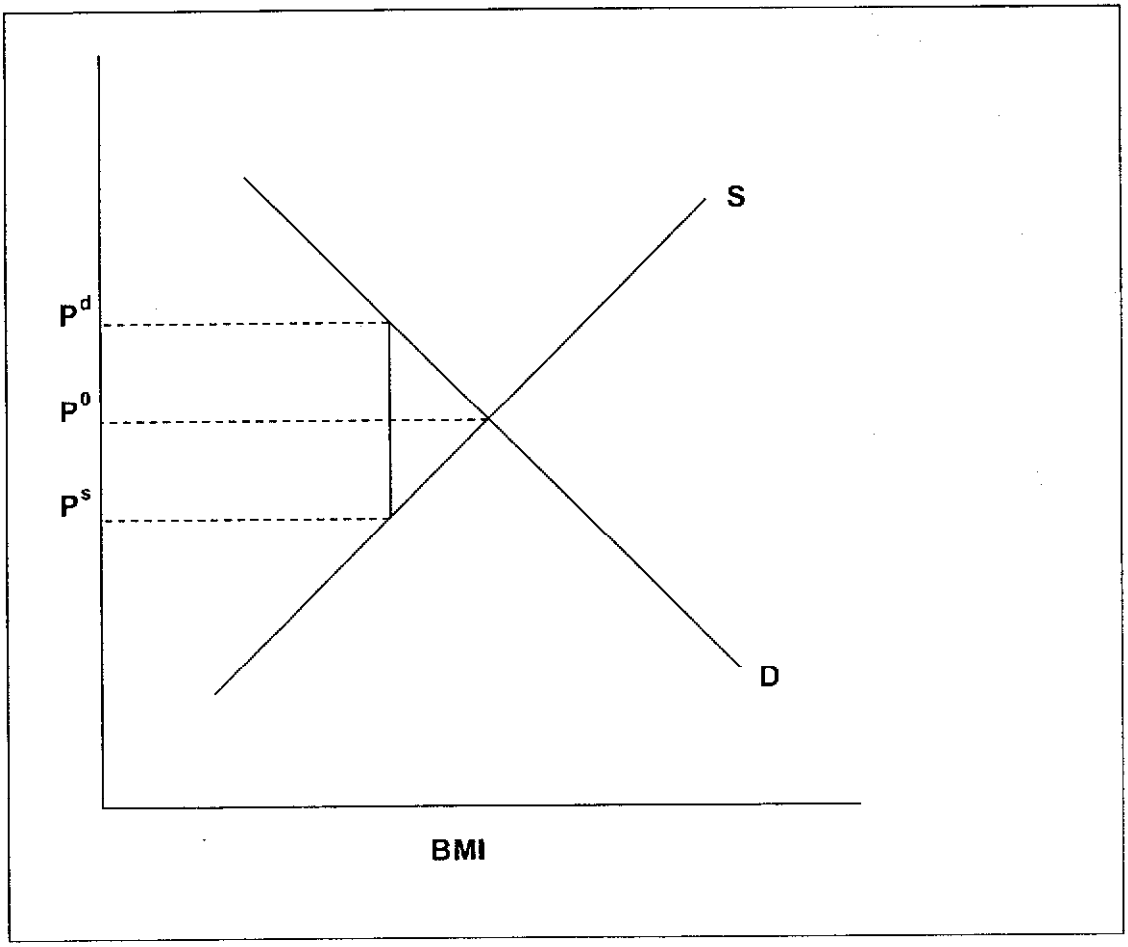


Figure 7: Incidence of a Sales Tax on Food.



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THE LONG-RUN GROWTH IN OBESITY AS A FUNCTION OF TECHNOLOGICAL CHANGE

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The Long-Run Growth in Obesity as a Function of Technological Change

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ABSTRACT

This paper analyzes the factors contributing to the worldwide long-run rise in obesity and the effects of public interventions on its continued growth. The growth of obesity in a population results from an increase in calorie consumption relative to physical activity. Yet in developed countries, obesity has grown with modest rises in calorie consumption and with a substantial increase in both dieting and recreational exercise. We consider the economic incentives that give rise to a growth in obesity by stimulating intake of calories while discouraging the expending of calories on physical activity. We argue that technological change provides a natural interpretation of the long-run growth in obesity despite a rise in dieting and exercise, that it predicts that the effect of income on obesity falls with economic development, and that it implies that the growth in obesity may be self-limiting.

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SECTION 1: INTRODUCTION

Obesity is typically treated as a problem of public health or personal attractiveness. It is those things but it is even more an economic phenomenon. More than many physical conditions, obesity is avoidable by behavioral changes, which economists expect to be undertaken if the benefits exceed the costs. Investigating whether the economic benefits and costs of obesity can fruitfully be used to explain its variations across time and populations is the principal task of this paper.

In ordinary language, "obesity" is a pejorative term, as the related term "overweight" makes even clearer. In a rational-choice model, however, there is no such thing as being "overweight." Weight is the result of personal choices along such dimensions as occupation, leisure-time activity or inactivity, residence, and, of course, food intake. Being either fat or thin may therefore be as desirable from the individual's standpoint as adhering to the norms of weight set by doctors and the public health community. It has been known by the medical profession and widely disseminated to the public since at least the 1960s (see Ippolito and Mathios, 1995) that obesity impairs health and longevity. It is currently estimated that mortality due to non-optimal levels of exercise and food intake is second only to tobacco consumption in the number of deaths that could be prevented by behavioral change (McGinnis and Foege, 1993). Yet the percentage of obese people, commonly if rather arbitrarily defined as those who are more than 20 percent above their medically determined "ideal" weight, has been growing worldwide.[1] In the 1980s, the percentage of Americans more than twenty percent above their "ideal" weight increased from about 25 percent to about 33

[1] The most comprehensive estimates of worldwide obesity are found in the so-called MONICA study (see *Obesity: Preventing and Managing The Global Epidemic*, World Health Organization, Geneva, 1997, p. 19).

percent.[2] Almost 60 percent of Americans do not exercise enough from the standpoint of controlling their weight (NIH, 1995). The increase in obesity has given rise to demands for public intervention, mainly in the form of education programs, to reduce obesity through better diet and more exercise.

We argue that there are important financial reasons for this long-run growth in obesity. Technological change has both lowered the cost of consuming calories and raised the cost of expending calories, thereby contributing to the rise in obesity in two ways: it has lowered both the real price of food and the physical expenditure of calories per hour worked both in market and household production. The technologically induced rise in obesity enables a natural interpretation of such puzzling phenomena as the growth of obesity during a period in which there has been little or no increase in calorie consumption and, indeed, a rise in recreational exercising and in dieting.

Technological change caused the price of calories to fall because food prices have declined while at the same time the amount of physical exertion required when supplying labor has also fallen. In an agricultural or industrial society, work is strenuous; in effect, the worker is *paid* to exercise. What is more, in such a society, in which public welfare is ungenerous, the cost of not exercising through work could be dire—it could include starvation. Technological change has freed up time from producing food, enabling a reallocation of time to producing other goods and eventually to producing services. In a postindustrial and redistributive society, such as that of the United States today, most work entails little exercise and not working does not cause a reduction in weight, because food stamps and other welfare benefits are available to people who do not work. As a result, people must *pay* for undertaking,

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[2] VanItallie (1996), p. 891 (tab. 2) documents an age-adjusted increase in the prevalence of overweight among persons 20 to 74 years of age from 25.4 percent to 33.3 percent between 1976–1980 and 1988–1991. See also Kuczmarski et al. 1994.

rather than be paid to undertake, physical activity. Payment is mostly in terms of foregone leisure because leisure weight control must be substituted for job weight control.

The jogging and gym revolution and the limiting of calorie consumption as a result in part of deliberate dieting can thus be interpreted as substitutions brought about by technological changes in market and household work. But despite these off-the-job substitutions which operate to limit the rise of obesity, overall obesity can rise as a result of a shift to sedentary nature work. Indeed, the technological change explanation of increased obesity is almost inevitable; since calorie consumption has not risen substantially, physical activity must have fallen for obesity to rise.

The income gains associated with technological progress may make obesity growth *self-limiting* when the sedentary effects of such progress are outpaced by the effect of rising income in increasing the demand for thinness. The peculiar impact of income gains on weight is due to the non-monotonic effect of weight on utility which drives many of our results. When being healthier means gaining weight, richer individuals will weigh more, so there will be a positive relation between income and weight. On the other hand, when being healthier means losing weight, richer individuals will weigh less, so there will be a negative relation between income and weight. A positive relation between income and health (see, e.g., Grossman, 1973) therefore implies a non-monotonic inverted U-shaped relation between income and weight. Consistent with this there is considerable evidence that obesity today falls with income and education in rich countries (see, e.g., Jeffery et al., 1991) and rises with income in poor countries. Being close to one's ideal weight is what is valued, and demand for this good rises with income. If income increases the demand for thinness in the conditions of a technologically advanced society, economic development will dampen the weight-

increasing effect of income within countries, and economic growth will cause an initial period of weight gains followed by weight reductions.

We conclude by considering public interventions to reduce obesity.[3] There have been dramatic warnings about an international obesity "epidemic," but a rational-choice perspective casts doubt on the case for public interventions designed to reduce obesity. If health is not everything in life, rational people will of course eat more and exercise less than medical science advises them. In particular, people may prefer their high-paying sedentary jobs to more physically demanding ones with less pay. When preferences and technology determine obesity as in our analysis, public education campaigns about what are already well known ways to limit weight gains are likely to have little effect. The issue is not information but incentives; everyone *knows* how to loose weight, either you eat less or exercise more, but few want to pay the price, in effort, expense, or forgone pleasure, of doing it.

There is a difference between an individual's being overweight in a medical sense, which from a rational-choice perspective does not demand public intervention, and the population's being overweight in a social Pareto-inferior way, implying that people would be willing to pay others to lose weight. But, some public interventions may actually cause both measures of excess weight to increase. Interventions in the cigarette and food markets are examples. Anti-smoking measures may increase obesity and by doing so reduce the health benefits of these measures, because smoking is a method of weight control and so the heavy taxes and regulations aimed at smokers may induce people to be overweight in a Pareto sense. The food-stamp program may raise the incidence of obesity among lower-income persons compared to when a low income

[3] For a comprehensive call for international intervention, see *Obesity: Preventing and Managing The Global Epidemic*, World Health Organization, Geneva, 1997. For the United States, see publications by e.g., the initiative *Healthy People 2000* (www.health.gov/healthypeople), or The President's Council on Physical Fitness, the agency in charge of efforts to combat obesity in the United States.

reduced food consumption. Although it appears that it is unlikely that obesity generates negative externalities large enough to justify government intervention to reduce its prevalence,[4] in any event such measures should be analyzed in light of a sound understanding of how private behavior has induced the observed growth in obesity.

There has been little economic analysis of the forces contributing to obesity, although the question is related to, yet distinct from, other human capital issues in health.[5] This is unfortunate because obesity is a major health and public finance issue. More Americans are obese than smoke, use illegal drugs, or suffer from obesity-unrelated ailments; and obesity is a substantial risk factor in most highly prevalent serious diseases, including heart disease, cancer, and diabetes, and therefore affects major public programs such as Medicare and Social Security. Obesity affects wages as well as the overall demand for and supply of health care; and Americans spend in the aggregate many billions of dollars each year trying to lose weight through dieting or exercise.

SECTION 2: OBESITY AND TECHNOLOGICAL CHANGE

The Determination of Weight with Exogenous Physical Activity

We first consider the individual's choice of weight holding physical activity constant. This case captures that part of one's physical activity that cannot be reduced or avoided if one wants to undertake certain daily tasks. Weight is affected by the intake and expenditure of calories, according to the function W(F,S), where F is the intake of calories ('food') and S denotes the calories used in physical activity, so that $W_F \geq$

[4] However, Keeler et al. (1989) find that sedentary life-styles impose external costs because insurers are forbidden to differentiate in their premiums fully among the insured of different health risks.

[5] See, e.g., Grossman (1972), Arthur (1982), Ehrlich and Chuma (1992), Rosen (1988, 1994), Philipson and Becker (1997), and Cawley (1999). Wolf and Colditz (1988) provide estimates on the direct and indirect costs of obesity in the US.

0 and $W_S \leq 0$. The cause of a growth in obesity in a population must be that calorie consumption exceeds calorie expenditure. The growth rates of obesity and calorie expenditure may thus both be negative if the reduction in physical activity exceeds the fall in calorie consumption. We assume that changes in weight diminish with the levels, $W_{FF} \leq 0$ and $W_{SS} \geq 0$, and that calorie intake and expenditure are complementary; the more calories are spent, the more valued is calorie intake; $W_{FS} \geq 0$. Utility U(W(F,S),F,C) is defined over weight, food consumption and alternative consumption, C. An important property of the utility function is that it is *non-monotonic* in weight. Specifically, it has an inverted U-shape. There is an ideal weight W_0 that the individual does not prefer to be above or below, holding other consumption constant. W_0 is the weight that would be chosen if achieving one's preferred weight was without cost. We assume that this ideal weight does not depend on the level of consumption of other goods and that there is diminishing marginal utility of consumption of both food and alternative goods, $U_{FF}, U_{CC} \leq 0$. We also assume that gaining weight is more valued the more underweight a person is while losing weight is more valued the more overweight a person is. That is, the inverted U-shaped function over weight is concave as well; $U_{WW} \leq 0$.

A person's ideal weight W_0 may or may not correspond to the weight that maximizes health or longevity, although it is likely to be influenced by concern with these factors. Being "overweight" is a subjective, as opposed to objective, property; very thin girls may prefer to lose weight. Even people who would, ceteris paribus, prefer to be at the weight that minimizes the adverse health consequences of being overweight that are emphasized by the public health community might choose not to be.

Neither the subjective nor any objective weight W_o is the most preferred weight in the economic sense. With physical activity held fixed

at S, the most preferred weight depends on opportunities and preferences, as in

$$\text{Max } U(W(F,S),F,C) \qquad \text{s. t.} \qquad C + pF \leq I$$

where p is the price of food or the intake of calories and I is income. Substituting in the budget constraint, the necessary condition for an interior choice of calories balances the weight effect and joy of eating against the foregone consumption of alternative goods:

$$U_W W_F + U_F = pU_C$$

The conditions for being rationally over- or underweight are rather weak; whether with respect to one's own subjective ideal weight or an objective ideal weight set by a third party such as the public health community. In other words, for many prices and incomes the preferred weight is different from the ideal weight W_o. This helps explain the number of underweight and overweight individuals and the divergence between subjective and objective obesity. The National Center for Health Statistics reports that about 44 percent of women and 25 percent of men who are classified as underweight by the medical profession considers themselves overweight (Statistical Abstract of the U.S., 1998, tab. 243).

Figure 1 below illustrates the tradeoffs involved when utility is separable in weight, food, and alternative consumption. In this case, when physical activity is exogenous, the price of calories has a negative effect on weight and income a positive effect; $dW/dp \leq 0$ and $dW/dI \geq 0$. This can easily be seen in Figure 1, as the utility loss from the foregone consumption of non-food related consumption shifts in opposite directions.

[INSERT FIGURE 1 HERE]

A more interesting feature of the model is that there are limits to how such reductions in prices or gains in income affect weight. At high incomes or low prices, weight becomes inelastic to income and price respectively. For notice that the marginal benefit (LHS) of the first-order condition will be declining and become *negative* at the caloric intake level, denoted F_M in Figure 1, that would maximize the utility from eating if food were free, yielding the upper bound on weight $W_M = W(F_M)$. Beyond this caloric level, there is a marginal cost of consuming more calories even if they are free because the utility loss from gaining weight dominates the joy of eating. More precisely, under fairly weak regularity conditions

$$\lim_{p\to 0} W = \lim_{I\to\infty} W = W_M$$

Thus, as technological change lowers the price of food, and thereby frees up time to raise income by other forms of production, weight will not continue to grow indefinitely. Obesity growth induced by income gains or price reductions is limited from above by the non-monotonic impact of weight on utility.

Non-Monotonic Income Effects on Weight

The inverted U-shaped effect of weight on utility implies that income may have an inverted U-shaped effect on weight as well when richer individuals care more about their health and hence their weight. The basic force behind an inverted U-shaped income profile of weight is some form of complementarity between consumption and weight. More precisely, the implicit function theorem applied to the first-order condition of optimal food consumption implies

$$dF/dI = [U_{WC} - pU_{CC}]/SOC$$

where the term SOC is positive when the second order condition holds. Consequently, without any complementarity, income must raise food consumption and weight because of diminishing marginal utility of consumption; $U_{WC} = 0$ implies $dF/dI \geq 0$. The weight income profile will be inverted U-shaped only when the effect of consumption on the marginal dis-utility of weight gains is relatively higher for larger incomes.

An illustrative reduced form of the type of complementarity that induces more weight concerns with a rise in income is the quasi-linear utility function of the form

$$U(W,F,C) = -(h/2)[W - W_0]^2 + fF + C$$

where h reflects the importance of weight concerns to the individual and f the value of calorie intake per se, both as measured in alternative consumption. When weight is proportional to the *net* consumption of calories, i.e.,

$$W(F,S) = F - S.$$

The optimal solution is

$$W^* = W_0 + (f-p)/h$$

That is, the individual will choose to be over- or underweight, relative to his ideal weight, if the price of calories (p) is low or high relative to his preference for food per se (f), and the degree to which he will be either overweight or underweight will fall with how much he cares about his weight (h). If how much he cares is a positive function of income, h(I), representing the positive relation between health and income, then

weight rises with income whenever the population is underweight, $dW^*/dI > 0$ when $p > f$, and falls with income whenever the population is overweight $dW^*/dI < 0$ when $p < f$. In other words, the income effect on weight interacts positively with price when income raises health investments

$$d/dp[dW^*/dI\ ] = h_I\ /h^2 \geq 0$$

Hence the effect of income in increasing weight should fall with economic development, because the ratio of income to costs of producing food, I relative to p, is higher in the advanced nations.

When food prices are low, people prefer, ceteris paribus, to consume calories, but their concern with being overweight limits their caloric intake. Wealthier or educated individuals care more about their weight, for health or other reasons, and so they limit their weight more. When food prices are high relative to incomes, many people are underweight because they cannot afford sufficient caloric intake, but wealthier individuals forgo other consumption in order to maintain or gain weight. So we expect technologically less developed economies, in which the share of income spent on food is large because food is expensive to produce, to exhibit a positive relation between income and weight because richer individuals care more about their health, while for the same reason we expect technologically advanced economies, in which income is high relative to the price of food, to exhibit a negative relation between income and weight (for empirical evidence, see Sobal and Stunkard 1989; Jeffrey et al., 1999). Thus in poor or early societies the obese are relatively wealthier, but in wealthy modern societies the obese are relatively poorer. So without other effects operating at the same time, such as the effect of technological change in making work, including work in the household, increasingly sedentary, income growth will tend

to make the growth in obesity brought about by declining food prices self-limiting.

Endogenous Calorie Usage and Physical Life Styles

We have assumed thus far a fixed level of physical activity. But the amount of physical activity is, of course a choice, and indeed a choice that is affected by such activities as occupation, housing, transportation, as well as, of course, exercise. Let I(S) denote the income that can be earned when S calories are expended. The marginal effect I_S thus measure the loss ($I_S \leq 0$) or gain ($I_S \geq 0$) in income from a more active life style. The relevant measure of income is full income, including any tradeoffs between higher-earning but more sedentary jobs, cheaper suburban housing inducing more sedentary forms of transportation (commuting versus walking), or technological change enabling more efficient but also more sedentary home or market production. The choice of intake and expenditure of calories now solves

$$\text{Max}_{(F,S)}\, U(W(S,F),F,I(S) - pF).$$

The necessary first-order conditions for an interior solution are

$$\begin{aligned} d/dF: &\quad U_W W_F + U_F = pU_C \\ d/dS: &\quad U_W W_S = -I_S U_C. \end{aligned}$$

The first FOC is identical to the one discussed before, but is now also conditional on the optimal level of calorie expenditure. The second FOC implies that a necessary condition of an interior solution is that the individual is overweight if and only if he forgoes income to spend calories

$$W \geq W_0 \;\Leftrightarrow\; I_S \leq 0.$$

This follows from the fact that the marginal utility of weight is negative when overweight and positive when underweight. The second condition requires this marginal utility U_W to have the same sign as I_S. This has important consequences for the effect of technological change on the growth of obesity. Technological change has caused the price of calories to fall because food prices have declined and the amount of physical exertion required when supplying labor to fall also. In an agricultural or an industrial society, work is strenuous; in effect, the worker is *paid* to exercise; I_S is positive. In a modern postindustrial society, work tends to be sedentary. The consequence is that people must *pay* for undertaking, rather than be paid to undertake, physical activity; I_S has become negative.

An illustrative case is again the modified quasi-linear utility function

$$U(W,F,C) = -(h/2)[W - W_0]^2 + fF^a + C, \qquad 0 < a < 1.$$

When weight is proportional to the *net* consumption of calories as in

$$W(F,S) = F - S$$

and when the income associated with a given amount of calorie, expenditure is linear function of that activity,

$$I(S) = I_0 - I_1 S$$

The most preferred choices are

$$F^* = [(p + I_1)/af]^{1/(a-1)} \quad \& \quad S^* = [(p + I_1)/af]^{1/(a-1)} - W_0 - I_1/h$$

These induce the most preferred weight:

$$W^* = W_0 + I_l/h$$

The individual chooses to be above or below his ideal weight depending on much income he forgoes when engaging in more physical activity (I_l) and how weight conscious he is (h). As physical activity shifts from raising to lowering income, weight naturally rises, but this may well occur with no change, or even a reduction in calorie consumption

$$dW^*/dI_l \geq 0 \quad \& \quad dF^*/dI_l \leq 0.$$

For if work is less strenuous, people eat less.

Obesity and the Allocation of Time

One of the important ways in which physical activity may be related to income is through the effects of the allocation of time, and in particular labor supply, on weight. The amount of time that one works, and the character of the work, affects weight in at least two respects: the first is through increasing earned income, which we have shown has an important effect on weight; the second is through affecting the amount of calories expended on the job. However, leisure can be allocated to weight control, as through off-the-job physical activity. By reducing the number of calories expended per hour worked, technological change in the workplace has reduced the financial incentives to control weight and so has increased obesity; but this trend has been accompanied by a rise in off-the-job physical activity illustrated by increased jogging and increased use of treadmills and other exercise machines in homes or in gyms.[6] This substitution of leisure-time for work-time physical exertion has been brought about by the change in the nature of work in the

[6] On the efficacy of leisure-time physical activity as a method of weight control, see, e.g., Haapanen et al. (1997); Williamson et al. (1993).

direction of greater sedentariness. The allocation of time is important here because consumption of calories requires money income and is thus goods-intensive, as opposed to physical activity of calories, which is time-intensive. Although one can buy food in the market, one cannot buy a given amount of physical activity, it has to be self-produced, which takes time. This might lead one to expect high-wage earners to be more obese, as they have more income to buy calories and their foregone income is higher when using leisure to expend calories. But, when labor supply has an inverted U-shape as a function of wages, because of the effect of income on leisure, the incentives for weight to rise with income maybe dominated by the negative labor supply effect of higher income. This is exemplified by the positive effect of retirement on exercise due to the abundance of leisure, e.g., by replacing work by golf.

To incorporate the allocation of time into our analysis we generalize the budget constraint to include earned income in the labor market in addition to unearned income

$$C + pF \leq wH + I$$

where w is the hourly wage and H is hours worked. The time constraint states that time is split between work, physically inert leisure (i.e., leisure that has no weight effects), and leisure devoted to off-the-job exercise:

$$H + L + E \leq T.$$

The time spent in leisure-time exercise, E, consists of active measures of weight reduction. These measures, which need not be *intended* to control weight, include smoking, taking diet pills (as distinct from eating less), and exercise.

Total physical activity (S) B given by

$$S = sH + E$$

where s is calories expended per hour of work. When technological progress "lightens" work, s falls.

The individual chooses the number of hours to work and to exercise, as well as the amount of food to consume to maximize

$$U(W(F,sH + E), I + wH - pF, F, T - H - E).$$

The necessary first-order conditions for an interior maximum are

(1) $U_W W_{SS} + U_C W = U_L$ (Labor Supply)

(2) $U_W W_S = U_L$ (Recreational Exercise)

(3) $U_W W_F + U_F = pU_C$ (Calorie Intake).

Equation (2) directly implies, for anyone who does exercise, that since "inert" (i.e., weight-unaffecting) leisure presumably is valued (so that $U_L > 0$) and exercise reduces weight ($W_S < 0$), weight must, at the margin, have a negative effect on utility ($U_W > 0$); otherwise no one would exercise.[7] In other words, only overweight individuals exercise for the purpose of weight control. By the same token, for someone who does not exercise at all, the marginal effect of weight on utility must be positive since lack of exercise will lead to a weight gain. This in turn implies that in equation (1) the utility that an exercising person obtains from working an extra hour in a sedentary job is less (other things being equal) than for a nonexercising person, because the extra hour of sedentary work

[7] This is abstracts from people exercising not to lose weight but to maintain muscle tone, improve their physical appearance, and increase their cardiovascular fitness.

requires the exerciser to exercise more in order to maintain his desired weight. And in equation (3), the exerciser derives more, and the nonexerciser less, utility from consumption of other goods, since the exerciser is willing to expend resources to prevent that consumption from raising his weight.

The full effect of any parameter on the observed weight depends on how it directly affects weight, holding inputs constant, together with how it affects the inputs into producing weight. Consider the full weight effect of technological change that causes a shift to sedentary work. Let w(s) denote the wage affects earned when the calories spent per hour of work is s; then a fall in s affects weight according to

$$dW/ds = W_F(dF/ds) + W_S[sdH/ds + H + dE/ds]$$

The reduction in calories used per hour work may imply that these inputs into weight are offsetting, so that weight gains may occur although food intake is falling and off-the-job exercise is rising. In other words, we may have

$$dW/ds \leq 0 \quad \& \quad dF/ds \geq 0 \quad \& \quad dE/ds \leq 0.$$

The jogging and gym "revolution" and the fall in calorie consumption, including through dieting, is a substitution brought about by technological change at work and may offset a rise in obesity due to work-related technological change. The technological changes that lower physical activity on the job also raise productivity and hence wages, which in turn affect weight through affecting hours worked, exercise, and food consumption.

The secular shift in work from manufacturing and mining to services implies, because most services involve light work, that average weight will be higher in modern, developed nations because there is less on-the-

job exercise. In addition, this reallocation has not only taken place in the market but in household production as well. Household labor-saving devices, such as dishwashers and washing machines, vacuum cleaners, prepared foods, microwave ovens, and the like, have reduced the caloric expenditures in household work.

Another possible, though speculative, factor in increased obesity is improvements in medical technology that have reduced the health detriments of obesity. In our model, this would represent a fall in the marginal utility of weight gain, U_W, because now additional weight does not change one's health, and hence utility, as much as it used to. If the utility of prevention is negatively related to the efficacy of treatment, the value of being thin as a disease-prevention method has fallen. Suppose the only adverse health effect of obesity was high blood pressure; when effective drugs for treating high blood pressure are developed (and assuming that they cost less than the adverse health effects of having high blood pressure), as they have been, the health costs of obesity fall. But against this must be weighed the effect of medical advances in increasing longevity by reducing other health risks. To take an extreme example, suppose that as a result of medical advances the average age of death of thin people increased from 70 to 80, but of obese people from 65 to 68. Then despite the increased longevity of obese people, their loss of longevity from being obese would increase, from 5 years (70 – 65) to 12 years (80 – 68).

People may respond to changes in the incentives to control obesity in different ways. As cutbacks in food consumption reduce money costs, while increasing the amount of exercise increases time costs, we are led to predict that, as we observe, most people who attempt to lose weight do so by means of reducing food intake (F) as opposed to raising physical activity (S).[8] Put simply, while both exercise and dieting impose

[8] See, e.g. Horn and Anderson (1993).

nonpecuniary costs, off-the-job exercise costs resources in the form of forgone money income, but dieting saves pecuniary resources.

At first glance it may seem that different populations have responded quite differently to the increased incentives for obesity. For example, Europeans are thinner on average than Americans (Seidell, 1995). The reasons may be economic rather than cultural. Food is cheaper in the United States than in Europe, and Europe is less suburbanized than the United States. This, plus the much higher price of gasoline in Europe than in the United States, due to steep difference in gasoline-tax rates, causes Europeans to be less sedentary in their travel. The fundamental cause may simply be higher land prices in Europe, which result in Europeans living much closer to each other and to work and shopping, at distances where walking is more efficient than driving.[9] Americans also watch television much more than Europeans, in part because American television offers much more variety than European. The United States is the world's leading innovator in passive entertainment, which is highly sedentary. Indeed, about half the leisure time of the average American is spent watching television (Robinson and Godbey, 1997)—a completely sedentary activity.[10] Other things being equal, the higher the quality of television, the higher is the opportunity cost of recreational exercise and hence the lower the demand for thinness. Television is a peculiar product because the marginal pecuniary cost of consumption is zero (except for pay-TV), and so small increases in perceived quality may lead to significant increases in amount demanded.

SECTION 4: PUBLIC INTERVENTION TO LIMIT OBESITY

[9] There is an analogy to the whether to fly or take the train; even though a plane is much faster per mile traveled, below a certain distance the train is the more time-efficient method of transportation.

[10] Except for people who use exercise machines at home or in gyms. Such machines, especially treadmills, can be used while watching television.

The public health community, and many health economists as well, have raised concern about an impending "crisis"—an international obesity "epidemic." The most commonly recommended public intervention to combat this epidemic is publicly financed education about the benefits of dieting and exercising. But few people do not understand *how* to loose weight: you simply eat less and exercise more. Rather, they do not *prefer* to lose weight. The issue is preferences and technology, not information. People may be overweight in a medical sense that differs from the actual weight desired by most people, or may even be overweight with respect to their own preferred weight, but an economically sound case for public regulation cannot be based on deviations from either of these ideals, but rather on deviations from the Pareto-optimal weight distribution in a population, that is, deviations that some people are willing to pay others to reduce or eliminate.

The question is therefore whether obesity creates negative externalities that might warrant public intervention through Pigouvian taxes or subsidies. Examples would include a calorie tax, subsidies for exercise, a tax on exercise substitutes such as driving, or subsidies for educating the public in the health hazards of being medically overweight. The first external effect to consider concerns physical appearance, a good enjoyed not only by the person himself but by others observing him. Although many people would derive benefits from increased "beauty" of strangers encountered in the streets and other public places, and beauty in our society is negatively related to obesity, the pecuniary and non-pecuniary private benefits of beauty are so great that the elasticity of weight to tax or subsidy policies would probably be small. Since, moreover, personal beauty is a positional good (one is beautiful in comparison with other people who are less good looking), an increase in the number of beautiful people harms the people who are already beautiful and so may not increase aggregate social welfare.

One potential external effect of obesity, as is true for any other health-related behavior, derives from public financing of health care.[11] It may seem obvious that since medical care is heavily subsidized, and obesity increases morbidity and mortality (see, e.g., K. Narbro et al., 1996), taxing obesity in some fashion would be bound to reduce a negative externality through tax-financed health insurance. But this ignores the fact that reducing mortality increases the fraction of the population that is elderly, and the elderly not only consume a disproportionate fraction of medical expenditures but are more heavily subsidized for those expenditures than younger people. There are tradeoffs here both between health expenditures per period and the number of periods (that is, the length of life), and between the subsidized and the non-subsidized fraction of health expenditures. Suppose that taxing obesity would reduce average per-period medical expenditures by 10 percent but increase average length of life by 5 percent; then lifetime medical expenditures would fall by approximately 5 percent. But suppose further that the percentage of lifetime expenditures subsidized would increase—because more people would be living to Medicare-eligibility age—from 20 percent to 30 percent. Then the size of the net subsidy would increase by roughly 40 percent. A further consideration is that efforts to lose weight impose their own health costs. Apart from the direct costs of diet pills and the like, there is the indirect cost of eating disorders and dangerous weight loss brought about by efforts to lose weight (see, e.g., Flynn, 1997).

A related point is that if obesity did create a negative externality, the current campaign to reduce smoking, especially so by males (Grunberg and Klein, 1998, p. 174; WHO, 1999), which has been effective, would be perverse since smoking is a method of weight control. Because of its

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[11]See e.g. Keller et al (1989). However, note that when technological change is the source of growth in obesity the same technological change raises the tax-base of publicly financed insurance.

weight-controlling effect, smoking is a substitute for exercise, and for many people a lower-cost substitute, particularly since it substitutes time for goods in controlling weight. The fall in smoking itself is unlikely to explain the rise in obesity, mainly because the effect of smoking on weight is rather small and transient (see O'Hara et al., 1998; Green and Harari, 1995; Flegal et al., 1995; and Gerace et al., 1991; Mizoue et al., 1998). But, to the extent that people do smoke to control their weight, the dangers of smoking are equivalent to the dangers of diet pills; and, consequently, we can expect cigarette producers to join with meat producers in opposing the taxing of obesity since an increase in obesity would stimulate the demand for cigarettes.

Like efforts to reduce smoking, efforts to reduce heart disease by reducing the intake of saturated fats may (paradoxically in the case of fat reduction) contribute to obesity. Foods that contain fat allay hunger pangs faster than other foods, and so people who reduce their fat intake often substitute carbohydrates that increase the eater's overall caloric intake (Brody, 1999).

Even if it were desirable to reduce weight through Pigouvian taxes or subsidies on food intake or physical activity, the weight effects of such measures would be mitigated by the complementarity between calorie intake and physical activity. In the case of exogenous physical activity and a separable utility function, applying the implicit-function theorem to the first-order condition for food intake, $U_W W_F + U_F = pU_C$, implies that physical activity raises calorie intake

$$F_S = U_W W_{FS} + U_{WW} W_F W_S / SOC \geq 0$$

where $SOC \geq 0$ when the second-order condition holds. This positive relation of calories implies that the total fall in weight as a result of a rise in physical activity is smaller than the partial effect of physical activity on weight, because food consumption rises with more activity.

$$dW/dS = W_S + W_F F_S \geq W_S.$$

This implies that public stimulation of the physical activity may not be an effective method of weight control since it also stimulates food consumption. A corrective Pigouvian tax would therefore partly be offset by reactive changes in untaxed determinants of obesity.

SECTION 5: ALTERNATIVE HYPOTHESES

In this concluding section we examine other hypotheses besides technological change, which we have emphasized, for explaining the recent growth in obesity.

Asymmetric Information, and Obesity as a Signal

It is often argued that income was positively related to weight historically because being obese indicated a high status when not everyone could afford to eat. This is essentially an argument that weight is a signal under asymmetric information about wealth, and so provides an alternative to our hypothesis, which emphasizes food prices and the effect of changes in technology. In the nineteenth century, thinness was a signal of malnutrition and tuberculosis, and fatness a signal of prosperity; stout men and women were therefore considered handsome and stout women beautiful and sexy.[12] Of course, it may be doubted how many people actually overate in order to signal prosperity since alternative, less costly signals were available. In any event, with the virtual eradication of malnutrition and tuberculosis in the wealthy countries, and with

[12] To see this clearly, imagine that people spend 100 percent of their income on food, which is approximately true historically. Then poor people will eat less than rich and so be thinner, and weight will be a good signal of income.

expenditures on food a steadily falling percentage of household expenditures, obesity ceased to have value in signaling valued traits; instead it became a negative signal (Cassell, 1995). Today, thinness may be valued as a signal of trustworthiness, because it indicates a degree of self-control or self-discipline (Brownell, 1991, p. 4).

Note that the welfare implications of weight as a signal, as with other signaling activities, would imply today that there may be over-investment in thinness from a social standpoint, which in turn would cast doubt on the value of public programs designed to combat obesity.[13]

Since people preferred in the past to signal obesity but prefer today to signal thinness, signaling cannot be a complete explanation because it predicts that obesity should *fall* rather than rise over time. Another consideration that limits the plausibility of a signaling explanation of obesity and thinness is that weight is an imperfect signal. People differ in their genetic ability to control their weight (Bouchard, 1991; Brownell, 1991, p. 8), and so one's amount of willpower or self-discipline cannot simply be inferred from one's thinness.

Market versus Household Production of Food

We have pointed out that technological change in agriculture led to the reduction in food prices that made population-wide obesity even feasible, let alone desirable. In addition, market production of food hass increasingly become a substitute for household production (Haines et al., 1992), signaling a change in the share of diets *prepared*, and not onlyproduced, by the market through restaurants. It is often argued that fast food is responsible for the rise in obesity. But, we believe that fast food is a consequence of technological change, rather than an independent explanation of obesity.

The fact that food is delivered faster is a natural response to the increased value of time induced by technological change; the output foregone per meal has risen, holding the time it takes to eat constant. Technological innovations in food preparation have reduced the time it takes to consume a meal. However, in a competitive market in which consumer surplus is maximized, it seems unlikely that homemakers and restaurants would have different incentives with regard to caloric supply. It therefore seems unlikely that a rise in obesity can be blamed on the fast-food industry. More importantly, caloric intake has not increased much on average, and the fast-food industry cannot be held accountable for the reduction in physical activity.

Addiction, Genes, and Obesity

One possible reason for obesity is that eating is addictive, in the economic sense of involving inter-temporal complementarity in consumption, or that there is a large genetic component to obesity that is not influenced much by the incentives stressed here. The problem with both these explanations is that although they may well explain cross-sectional differences, it is unclear how they could explain the rapid change over time in obesity. Such change would be much slower if it were transmitted genetically; and a change in preferences over time would be an unsatisfactory explanation because it could be offered for any changes in obesity. But addictive preferences may interact with the changes in budget sets that we have argued are more important; people could not afford to act on their addictions historically, but now have the means to. However, if this is the case, the changes in budget sets are the causal force, not changes in tastes.

SECTION 6: CONCLUSION AND FUTURE RESEARCH

Our analysis suggests several avenues for future research. One would be to assess empirically the extent to which physical activity on the job has affected obesity. This can be done with available data sets (such as, in the United States, the Nutrition and Health Examination Surveys (NHANES)) by looking across occupational categories at how people have changed their food consumption and total physical activity, whether on or off the job. Such an analysis should also address the limited power of technological changes at work to explain the rise in obesity among children. One possible explanation is that children take their eating and exercise cues from their parents, another that they are watching television more, and a third that with more and more parents working outside the home the children are less monitored in the health habits.

Second, our analysis was limited in its predictions concerning gender differences in weight and the role of matching markets (the marriage and dating markets) in determining weight. If weight affects one's ability to match, we would expect unmarried people today, as consumers in the marriage market, to be thinner than married people, thereby implying that the rise in the age of marriage and the rate of divorce in recent decades has actually increased the physical health of the population. The objection to attributing too large a role to matching markets in the determination of weight is that rising divorce rates would imply a decline in obesity. In addition, rational expectations would tend to limit the value of temporary reductions in weight at the initial phase of the match.

It is empirically true and interesting that women are more concerned with their weight than men and are more likely to be dieting (Brownell,

1991, p. 4). The greater value of thinness to women than to men is reflected in studies that find a greater negative correlation between earnings and overweight for women than for men (see, e.g., Register and Williams, 1990; Averett and Koreman, 1996; and Pagán and Dávila, 1997). Since marriage can be viewed as a form of employment and each spouse as the other's employer, these studies imply that a wife's household "wage" is reduced more by obesity than her husband's household "wage" is. The reason is that men value physical atractiveness in women more than women value physical attractiveness in men (see, with specific reference to obesity, Sobal, Nicolopoulos, and Lee, 1995). Yet an unanswered question is, if thinness is more valuable to women than to men, why are more women overweight (see Rodin, 1993)?

A particularly interesting case concerns black women, a much higher percentage of whom than of white women (49.2 percent versus 33.5 percent) are overweight (VanItallie, 1996, p. 891 (tab. 2); and Chitwood et al., 1996). There are two possible economic reasons even after correction for possible genetic differences (Argyropoulos, 1998). The first is that among poor people, who in this country are disproportionately black, thinness continues to be a signal of possible poor health or bad habits—drug addicts, alcoholics, people with AIDS, and homeless people tend to be thin because of malnutrition or disease. It is therefore not altogether surprising that although there is a positive correlation in the black community between slenderness and attractiveness (see Riley, 1998; Harris, 1995; and Thomas, 1988), black women have higher weight ideals than the ultrathin ideals held by white women (Flynn, 1996). Second, the marriage market is badly stacked against black women (Mullin, 1998; Philipson and Posner, 1993, pp. 75-78). This could incite even greater efforts of some women to achieve attractiveness, but it would reduce the gains from attractiveness to those women who would have very poor marital prospects even if they invested heavily in increasing their attractiveness. When young,

marriageable black men are hard to find, the matching incentive of black women to control their weight is reduced.

Finally, empirical analysis has focused up to now on changes in *average* weight over time and across populations. Given that, by definition, obesity concerns only the right tail of the weight distribution, future analysis may fruitfully address whether the average tendencies in the population mimic the behavior in that tail. It is conceivable that offsetting changes in food consumption on the bottom and top part of the distribution may mask much of the data that focus on average behavior.

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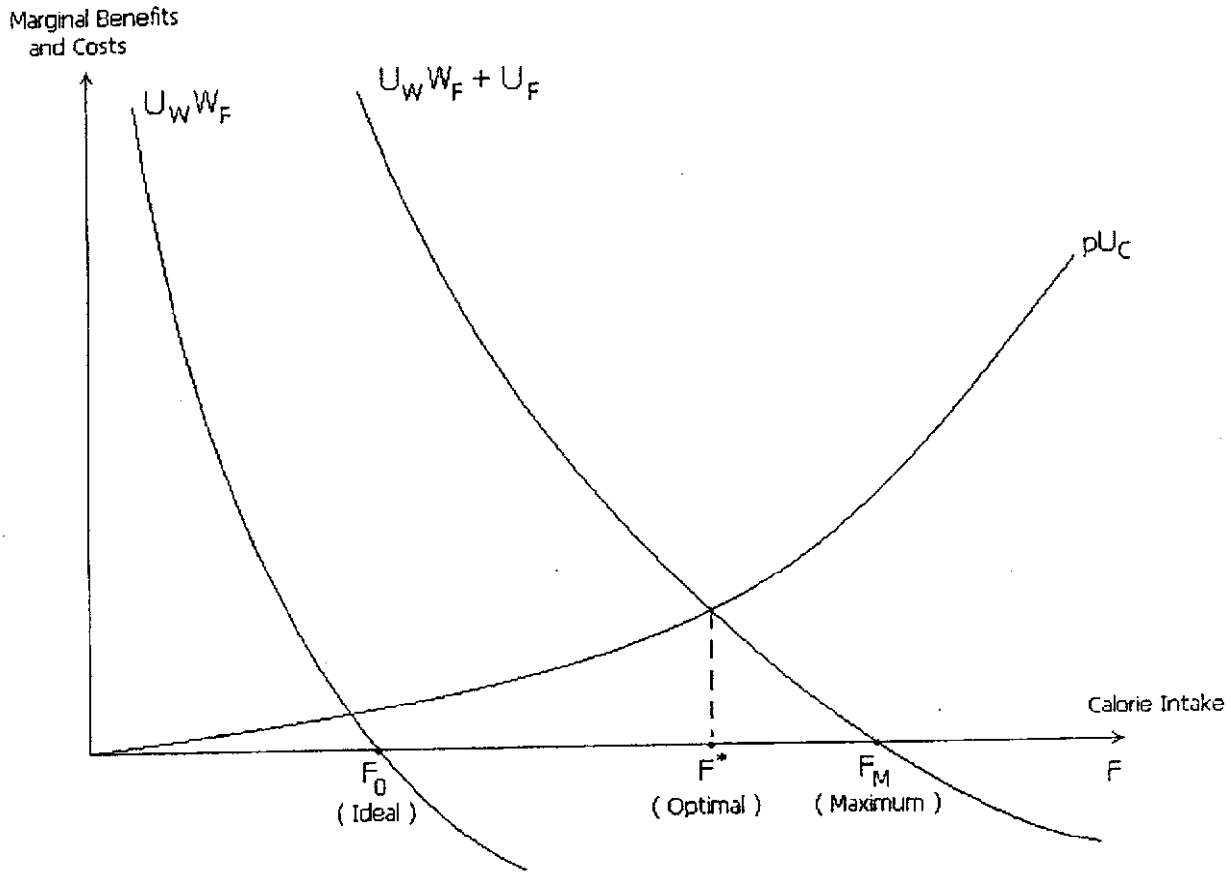

Figure 1: Ideal, Optimal, and Maximum Weight

StrategyOne

Addressing the Obesity Debate: A Consumer Point of View

A Report to:

IFIC International Food Information Council Foundation

June 19, 2003

StrategyOne

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StrategyOne

Objectives

- In light of the recent explosion of information and statistics on obesity, the International Food Information Council Foundation (IFIC) wants to know how *consumers* think about this issue. IFIC asked StrategyOne to conduct research with consumers to explore key themes associated with understanding how consumers regard the obesity issue, and how it relates to their attitudes about weight and health. The overall goal of the study is to get a read on general consumer perceptions of obesity. The output from this process will be used to create consumer messaging on weight management/control.

- Key questions the research attempted to answer are as follows:
  - How do consumers think about managing their weight?
    - In order to gather learning on this topic it is necessary to explore how consumers regard their overall health in general, where it fits in terms of life priorities, and their points of view on weight and their corresponding behaviors – i.e., their eating and physical activity habits.
  - What are the barriers to better managing weight, and what are the motivators?
    - Here, the goal is to identify what prevents consumers from paying more attention to health matters – specifically, food and exercise habits – and what inspires consumers to take action.

StrategyOne

Methodology/Caveat

- A total of eight focus groups were conducted for this study.
- Focus groups consist of a group discussion with 8-10 participants, led by a moderator. (A copy of the moderator guide is in the Appendix). They gather in-depth information on a specified topic or service. Participants are asked to share their honest opinions and viewpoints, and are told that consensus and agreement on every issue is neither necessary nor encouraged.
- Caveat: Focus groups offer great depth and breadth of information regarding respondent feelings about topics. They help define WHAT consumers think and WHY they feel as they do. But focus groups are qualitative in nature. The results of focus group research are not projectable to larger populations.

StrategyOne

Study Procedures/Respondent Profile

- The eight focus groups took place in Chicago and Baltimore (four groups, two among men and two among women, per market).
- To qualify, participants had to meet the following criteria:
  - Be between the ages of 35 and 55
  - Have an annual household income between $40,000 and $80,000 (for middle income groups) or between $25,000 and $60,000 (for the middle-to-low income groups)
  - Feel comfortable discussing issues related to body weight in group setting
- Additionally, participants had to view themselves as successfully managing their weight ("Succeeders") or struggling with their weight ("Strugglers"). Definitions used for recruiting purposes are shown on the next page. It is important to note that the relative degrees of success or struggle were based on participants' perceptions.
- Each group had a mix of respondents by marital status, presence of children in the household, employment status, education levels, income levels, and ethnicity. A least 3-4 respondents per group were minorities.
- Those who follow a special diet for medical reasons such as diabetes, heart disease, or cardiac conditions were screened out.
- A specific breakdown of the groups follows on the next page. The recruiting screener is in the Appendix of this report.

StrategyOne

Study Procedures/Respondent Profile

Group composition is shown below.

Those Who Perceive Themselves To Be:	Males 35 – 55 Years Old	Females 35 – 55 Years Old
Group 1: • Successfully managing weight, either by: o Body Mass Index (BMI) of 22 to 32 o Perceive themselves to be at a normal weight, slightly or moderately overweight o Having lost 10 pounds or more in the past 5 years and kept it off (some in group but not all) o Perceive themselves to be succeeding or to have moderate success with their weight o Mid income	One group in Baltimore	One group in Chicago (**Downtown**)
Groups 2 and 3 • Struggling with weight issues o Perceive themselves to be slightly to moderately overweight o Perceive themselves to have moderate success or to be struggling with their weight o BMI 25 to 32 o Mid income	One group in Chicago (**Suburbs**) One group in Baltimore	One group in Chicago (**Suburbs**) One group in Baltimore
Group 4 • Struggling with weight issues o Perceive themselves to be slightly to moderately overweight o Perceive themselves to have moderate success or to be struggling with their weight o BMI 25 to 32 o Lower to mid income	One group in Chicago (**Downtown**)	One group in Baltimore

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Executive Summary

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Executive Summary

- In the flurry of activity that makes up consumers' daily lives, health – one of their highest priorities – is often neglected.
  - They don't have enough time to fit in everything they want to do.
  - They don't always sense immediate consequences of putting their health on the backburner like they do with other priorities like work, home and family.
- This is consistent for both men and women, but for different reasons.
  - Women perceive themselves as caretakers. Many feel selfish if they prioritize their health activities (eating well and exercise) ahead of their children and families.
    - And, many don't necessarily look forward to exercise, sometimes describing it as "boring."
    - They see it as just another thing to fit into an already over-crowded, jam-packed schedule.
  - Men assume the role of family provider, so health often takes a backseat to work demands.
    - Men do not see prioritizing health as self-indulgent the way women do.
    - Men claim to enjoy exercise, which is often reinforced by others when activities involve a team sport.
    - But those with children feel guilty exercising because it takes away from time with the family.

StrategyOne

Executive Summary

- Consumers have many points of view on issues related to health and weight.
- They hold a broad view of health which includes weight management, weight control, and wellness. As such they see a commitment to healthier living involving overall life adjustment – to initiate the process and to make it last.
- They feel well-equipped with appropriate knowledge and information to make better health choices in terms of diet and exercise.
    - The issue has more to do with being motivated and disciplined to choose to do healthier activities – both in terms of exercise and eating.
- They don't like the word "diet" and they don't believe diets work.
    - To consumers, diet means denial and sacrifice.
    - They are not willing to give up favorite foods and occasional treats just to save some calories.
- Consumers say the ability to maintain their current health/weight is very doable. On the other hand, it is unrealistic for them to think they could be successful trying to make significant health improvements.

StrategyOne

Executive Summary

- Many obstacles get in the way of consumers taking charge of the weight, bodies, and overall health.
  - Priorities and time management. Consumers allow other pressures and activities to lessen their ability to effectively prioritize health.
  - Their habits do not keep pace with the changing needs of their bodies.
  - The need to see immediate results for their efforts make many people lose motivation fast.
  - Consumers place the majority of the responsibility on the individual to make appropriate changes and adjustments. Still, on a lesser scale, they see other factors contributing to the problem. These factors include:
    - Convenience and availability of fast food
    - Cultural attitudes/modern living impeding physical activity
    - Genetics, pre-determined body type
    - Corporate and governmental responsibility
- While all consumers are crunched for time, parents with kids have an especially hard time fitting everything in.
  - Parents are often more willing to sacrifice their health needs due to the over-whelming pressures and activities associated with raising children.

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Executive Summary

- The key themes of appearance and family represent opportunities to motivate consumers to want to take action.
  - Both activate powerful emotional responses from consumers, but the reasons behind them differ.
  - Appearance is tied to how consumers view themselves, their self-image/self-esteem (inner-directed) and how they relate with others (outer directed).
  - For those with families health is linked with their own mortality and their ability to enjoy family.
- Other motivations for consumers to take charge of their weight include a desire to prevent major illness and disease, but not on the same level as appearance and family.
- While consumers say they hear enough about diet and exercising tips, they did have some fresh ideas for ways to motivate themselves to stick with a routine:
  - Keeping a daily log of food intake
  - Formally scheduling exercise, putting it on the calendar
  - Having a buddy and/or support system (friends, family, and co-workers) to encourage and motivate

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Implications and Messaging Opportunities

StrategyOne

Implications

- It's not a lack of information. Consumers need to hear new kinds of information -- or a re-packaging of old information in new and relevant ways.
- It's all about motivation designed to jumpstart new thinking and behaviors. Consumers need a jolt of fresh messaging. They need to make health/weight more top-of-mind as a priority and receive newer strategies for incorporating healthier living into their schedules.
- Messaging must make health easy and attainable to get people started. They should emphasize small steps vs. major life changes.
- Positive reinforcement is needed to sustain people's efforts once they start.
- Consumers are looking for help and support on issues related to weight. While acknowledging their own role in achieving and maintaining a healthy weight, they are overwhelmed by they obstacles they face in attaining their goals.

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Implications/Messaging Opportunities

- Consumers would benefit from the following messaging strategies:
- **"Plan ahead!"** Although consumers know what to do, they need guidance on when and how to fit it in – both healthy eating and exercise, but more so with food. While consumers tend to think in advance about exercise, they are more likely to make spontaneous (translation – unhealthy) food choices. A new message might be one that emphasizes planning ahead is essential for eating right, along with ideas for how they can structure healthy eating behaviors within limited time frames. This is especially true for those with children.
- **How to keep pace with body changes throughout the decades**. Consumers talk a lot about how their bodies change over the years and less about the adjustments they need to make in their behaviors and habits as time passes. Consumers could profit from learning more about the specific transformations their bodies encounter with each new decade and how/when they should prepare for the coming decades.
- **Reinforcement for food behaviors they're not willing to change**. Consumers say they're not willing to give up their favorite foods, but they do often feel guilty about it. A communication for this idea could be one that says, "everything in moderation," but removes the guilt from the equation, and enforces the idea that a healthier lifestyle does not mean denying themselves of what they like to eat.
- **Setting the expectation that taking charge of one's health takes time**. Right now, consumers think getting their weight and health under control is a monumental task. That assumption, coupled with their need for instant results, makes them lose motivation. A message that confirms their "far from simple" viewpoint, but stresses it's "easier than you think, and here's how" might encourage more people to stick with programs they would otherwise give up on.

StrategyOne

Implications/Messaging Strategies

- **Linking consequences of neglecting weight to appearance for both men and women**. Perhaps more than any other motivator, appearance provoked the strongest emotional response when propelling someone to make changes regarding weight. While delivery of such messaging must be handled in a delicate manner, its relevance to consumers should not be overlooked. Importantly, this works for men as well as women, though targeted gender messages would need to be executed separately.

- **Taking time for self is a good thing, not a selfish one.** Consumers allow other things to get in the way of effectively managing their health. Part of it is a lack of planning and/or a lack of time. Part of it is entrenched in gender roles.

  - As caretakers women feel guilty about taking time out for themselves. Women also need to transfer their thinking that exercise is "just another chore" and begin to see that physical activity can be enjoyable and fun.

  - As providers men claim health takes a back seat to work and family demands.

- **Finding ways for families to implement physical activity and healthy food choices into their quality time together**. Consumers seem to separate and distance priorities from one another. When having to make a choice over spending time on their health versus their family, they always choose family. These need not be mutually exclusive. Consumers need more ideas on how to turn family time into time that benefits everyone, from a health perspective. Similarly, opportunities exist to give adults permission to take time for themselves.

StrategyOne

Implications/Messaging Strategies

- Consumers had their own suggestions for proposed solutions about how to tackle the weight problems and issues in America – specifically, how those "other factors" could step up more to the plate and do their part. Here's a sampling of their ideas:

- Consumers view the workplace as taking a more active stance in promoting employee health:

Have workplaces allow an ½ hour of company time for exercise. (Female Struggler, Suburban Chicago)

Have companies offer a free health club membership. (Male Struggler, Suburban Chicago)

Put a gym in every workplace – it eliminates an excuse. (Male Struggler, Downtown Chicago)

Insurance through your employer should cover a portion of a health club membership cost. (Male Struggler, Downtown Chicago)

- They view the need for more education:

Educate kids in schools on healthy eating choices. (Female Succeeder, Downtown Chicago)

Americans need education on how much weight has to do with certain health problems, like high blood pressure, for instance. They need to be shown the relationship between the two. (Male Succeeder, Baltimore)

- They believe corporations must also make modifications:

Fast food restaurants should stop super-sizing meals. (Female Succeeder, Downtown Chicago)

Tie some part of corporate responsibility to it. Require fast food restaurants to have a certain proportion of their sales come from the purchase of healthier food. (Male Struggler, Suburban Chicago)

StrategyOne

Implication: Target Parents with Kids

- Parents with children and families form a subset audience/population who present a particularly unique set of issues. They are vastly important, and an extremely vulnerable group, because of both the distinct challenges facing them (primarily, time constraints) compared to those who do not have (young) children and because of their responsibility in educating a future generation on healthy eating and weight control/management.

  Overall, consumers say they know what to do for better health, but time is often the problem. This is nowhere more apparent than among parents, and as a group, they could especially benefit from guidance on how and when to schedule in better eating and physical activity habits.

- Perhaps because of their children, they are acutely aware of what they need to do, but encounter obstacles:

  I haven't gotten my groove back since having my son three years ago. I feel like a salmon swimming upstream. I have long-range goals, like getting back to the gym and eating a lot of fruits and vegetables. And, I know if I exercised and ate better, I'd feel better. (Female Struggler, Baltimore)

  *It's like I'm in a tunnel . I know where I have been. I'm seeing what I want to be or where I want to go and I **can't** get there. It's a really long tunnel'. (Female Struggler, Baltimore)*

  To improve my kids would have to do fewer activities. (Male Succeeder/Baltimore)

StrategyOne

Implication: Target Parents with Kids

- The single greatest factor preventing families from a healthier lifestyle appears to be the combination of added pressures and a lack of time. Parents are often overwhelmed with not only their own responsibilities and schedules, but also those of their kids. They say they lack the time to provide a healthy dinner for their families, and seem to be at a loss for when to fit better eating and exercise into their already cramped schedules.

  It's still a choice we make, but the impact of work, family, and time constraints and the availability of fast food make it difficult. (Male Struggler, Suburban Chicago)

  I don't have time to exercise right now. I get home at 6PM and I want to spend a few hours with my family. Pretty soon it's 9PM – then what am I going to do? (Male Struggler, Suburban Chicago)

  The difference now is that I have more commitments and responsibilities tied to home – I have less self-interest and more interest in family and careers. (Male Struggler, Suburban Chicago)

  As a mom, my schedule is so busy. It's hard to fit in a workout even though I'd like to and I'm motivated to. (Female Succeeder, Downtown Chicago)

  In order for me to fit more exercise into my schedule, my family's going to have to be okay with it if I go play golf for a couple of hours each week. (Male Succeeder, Baltimore)

- Adding to this pressure is the realization that they are accountable for teaching their children good habits.

  Parents need to take responsibility and set an example for their kids and not eat junk themselves. (Female Struggler, Baltimore)

StrategyOne

Detailed Findings

StrategyOne

Life, Priorities and Health

StrategyOne

Life and Priorities

- On average, consumers are very busy. Some describe a frenetic pace of activity that makes it difficult to meet their many day-to-day needs. Many of their frequently cited activities* are listed below (in no particular order).

  - Driving/carpooling
  - Working
  - Running errands/returning phone calls
  - Laundry
  - Chores/cleaning
  - Grocery shopping
  - Watching television
  - Spending quality time with children

- Accordingly many claim it can be difficult to focus on their life priorities.

* To prepare for the groups respondents were asked to record their activities throughout a given day on a diary we provided. A copy of the diary is in the Appendix.

StrategyOne

Life and Priorities

- There is remarkable consistency in how consumers think about their top priorities. These are shown below in no particular order on the left. However, parents are a significant exception. They state a leading priority is managing children and family, one that takes considerable effort, time and energy.

In General		*Parents*
• Home	⟷	• **Children/family**
• Work/career		• Home
• Health		• Work/career
• Religion/spirituality		• Health
• Finances/income		• Religion/spirituality
• Relaxation/entertainment		• Finances/income
		• Relaxation/entertainment

StrategyOne

Life and Priorities

- **Parents, in particular**, say they often feel **rushed, harried, and anxious** when completing daily tasks because of the demands on their time, and say they don't have enough time for themselves.

- They feel they don't have enough time to do the things they say they need and want to do:

  It seems like there's never enough time to get all this stuff done – I feel rushed and stressed. (Male Struggler, Baltimore)

  Even during my commute I'm preoccupied thinking of other things that need to be done during the day. (Male Succeeder, Baltimore)

- They cite the lack of personal time, or what they call "me" time:

  It ends up that you never have very much "you" time. (Male Struggler, Baltimore)

  My only unwinding time is my 5 minute drive to and from work. (Female Struggler, Baltimore)

  Personal time is always at the bottom of the list when you're a parent and in leadership positions at work. (Male Succeeder, Baltimore)

- They end up making sacrifices for their families:

  One responsibility of parenthood is putting other people's priorities ahead of your own. (Male Succeeder, Baltimore)

  If I had more time, I'd spend it with my kids and spend more time cooking and baking. It's healthier, and it also provides more family-together time, when you have a sit-down dinner. (Female Struggler, Suburban Chicago)

StrategyOne

Life and Priorities

- Consumers recognize a distinction between what they do on a daily basis and what they say is an important priority. They admit their daily schedules do not always reflect their priorities.

  You have to work to survive to create money to live - our priorities often get confused. We're talking here about what we do everyday and our schedules don't include much time for the real priorities. (Male Struggler, Baltimore)

  There are some things in the day that you have to do and some things that you want to do. Often, the things you want to do get left out. (Female Struggler, Baltimore)

- Consumers tend to gravitate towards convenience in many aspects of their lives.
  - This theme is clearly evidenced in how consumers make food choices. Frequently they cite choosing fast food if away from home, or choosing less "healthy" food choices at home.
  - This explains why they are not as physically active as they know they should be.
- Consumers admit they are less disciplined, and often lax, in managing the priority they call health.

StrategyOne

How Consumers Define "Health"

- Consumers think of health in terms of proactive daily measures, like eating well and exercising, that promote a sense of wellness.
- As noted previously, when push comes to shove, they often make less healthy choices in favor of the need to focus on other, more urgent priorities like work, home and/or family.
- There are clear differences in why women put health on the backburner vs. men. This is particularly pronounced among parents with younger children:
  - For women, their role as caretakers and the need to accommodate everyone else first gets in the way of taking care of their own needs. They even feel guilty if they prioritize their health first, stating it may appear selfish to take care of themselves.

    I usually think of others before myself – the caregiver is the one who is usually in the worst shape (Female Struggler, Suburban Chicago)

    As women, because we're caretakers, it may seem selfish if we prioritize health first. (Female Succeeder, Downtown Chicago)

    I always put myself last. I had bronchitis and my doctor wanted to put me in the hospital, but my daughter had a problem and needed surgery, so I wouldn't go. I ended up getting really sick and then I had to put everything on hold. (Female Struggler, Baltimore)

    Health is a lower priority for me, personally, but I know if it were my husband or daughter, I'd take care of them right away. (Female Struggler, Baltimore)

StrategyOne

How Consumers Define "Health"

- Men (those with a family) assume the role of provider, often working long hours to ensure the family's overall survival.

You get into a cycle. You work late because your job demands it, and then you get home and you need to get something to eat. By that time, nothing's open but fast food so you eat it. Health clubs are either closing or it's too late in the day to exercise before bed. (Male Struggler, Downtown Chicago)

My biggest priorities are my kids. Providing for them, keeping them safe, and knowing if something happened to me, they'd be alright. (Male Succeeder, Baltimore)

Must go to work everyday to keep food on the table. (Male Struggler, Baltimore)

StrategyOne

How Consumers Define "Health"

- But there is a balance. Consumers also recognize that a failure to be healthy limits one's ability to function. They realize their own health is all-encompassing; meaning that the quality of their individual health extends outward to affect everyone and everything around them.

  Health relates to everything else. If you're not healthy, you can't do anything else. (Female Succeeder, Downtown Chicago)

  As women and mothers, if we don't have our health, who is going to take care of everyone and every thing? (Female Struggler, Baltimore)

  If you're health isn't there, you can't provide for your family. (Male Struggler, Suburban Chicago)

  If you take care of your body, everybody wins. (Male Struggler, Suburban Chicago)

  If you first take care of yourself, you'll do better with your relationships with your spouse and kids and you'll do better at work. (Male Struggler, Suburban Chicago)

- But a greater sense of urgency only tends to come into play when consumers consider the consequences of neglecting their health from a medical standpoint. While this creates more top-of-mind awareness among consumers, it does not necessarily motivate behavioral change.

  Some major health change – like a heart attack – would have to happen for me to make health a greater priority. (Male Succeeder, Baltimore)

  If a doctor told me I had to do certain things, or otherwise I would die, then I'd pay attention. (Male Struggler, Downtown Chicago)

StrategyOne

Healthy v. Unhealthy

- We asked respondents to imagine and describe two people walking into a room -- "healthy" and "unhealthy."
- Their descriptions include not only body shape, size and posture, but also encompass what they eat, how often they work out and whether or not they are confident/have a positive outlook on life. Importantly, people associate unhealthy with being overweight, unkempt, and depressed. The most frequently used descriptors for both healthy and unhealthy are shown below in no particular order.

Healthy		*Unhealthy*
• Active • Energetic • Confident • Smiling • Good complexion • Good posture • Bright and wide-eyed • Works out/is fit • Positive attitude • Well-rested	*vs.*	• Overweight • Unkempt • Smokes/drinks/does drugs • Walks slowly • Dejected, holds head down • Bundle of nerves • Lays on couch • Out of breath • Dull skin • Depressed/negative

- Most respondents see themselves as somewhere in the middle on the continuum from healthy to unhealthy. Not surprisingly, succeeders view themselves as a little closer to the healthy side, while the majority of the strugglers were on the other side of the scale, leaning more toward unhealthy. But, even suceeders admit to struggling with their weight and health.

StrategyOne

A Holistic Approach to Health

- More broadly, consumers also describe health holistically, involving the components of mental, emotional, and physical health. They state all of these elements must work together in contributing to good health.
- Consumers say health is about appearance and the absence of disease. It's about looking good and being in excellent medical health.

Looking good but also being in good medical health go hand-in-hand for me. (Female Succeeder, Downtown Chicago)

Health is a state of being – it's about being strong and fit and not having any type of disease – anything from a cold to cancer. (Female Struggler, Suburban Chicago)

Self and health go hand-in-hand. If you feel good about health, you feel good about self. (Female Struggler, Baltimore)

Health is about overall wellness – mind, body, and spirit. (Female Struggler, Suburban Chicago)

- Good health also means no restrictions and limitations on what they want to do physically at any given time, whether that's climbing a flight of stairs or playing ball outside with their kids.

The unhealthy person has to think, "Can I reach down and pick up that pen on the floor?" The healthy person doesn't give it a second thought. (Male Succeeder, Baltimore)

To me, health means being able to do everything you want to do without hindrance of any kind. (Male Struggler, Baltimore)

StrategyOne

A Holistic Approach to Health

- Finally, many consumers recognize that being healthy is really a commitment to an overall lifestyle that includes both eating well and exercising. It's about taking overall control of one's life to better ensure that healthy eating and exercise happen.

Fitness and health is really more overall – it's about a lifestyle. It's about maintaining. Eating well and exercising are only part of the journey to get to fitness. (Female Succeeder, Downtown Chicago)

It's really a commitment to an overall lifestyle. It starts with working out, and extends to eating habits and choices. You need to be conscious of it everyday. Pretty soon, your life starts to revolve around it, but it's important to keep up that commitment. (Male Struggler, Suburban Chicago)

StrategyOne

Where Consumers Stand On Issues Related to Weight

StrategyOne

It's NOT A Lack Of Information

- Consumers assert that they know what they need to do to take optimal care of themselves and manage their weight, both in terms of eating right and exercising. They point to the numerous amounts of relevant and accessible information available to guide them in the right direction on these fronts, and can readily recite tips on healthy eating and physical activity. They state the issue is not a lack of information or knowledge. Instead they claim it is a choice, or series of choices, they make to not actively eat well or exercise. This too is consistent among strugglers as well as succeeders.

It's not like we don't know what to do, but we just don't do it – we could all write a book on what you're not supposed to do. (Female Struggler, Suburban Chicago)

You know you need to eat less and exercise more – everybody knows this. You just don't do it. (Female Succeeder, Downtown Chicago)

I choose to eat a doughnut instead of a piece of fruit. I know in my head what's right. (Female Struggler, Baltimore)

Sometimes it's all consuming – when I know I'm not eating right or exercising. I feel guilty because I know what I should be doing but I'm not. (Female Succeeder, Downtown Chicago)

StrategyOne

Dieting and Losing Weight

- Consumers dislike the terms "dieting" and "losing weight." Such words are immediate turn-offs because they conjure up images of sacrifice, denying oneself, and eliminating favorite foods, which is precisely why consumers say dieting doesn't work. Simply put, consumers don't want to give up anything or deny themselves because it takes away from their enjoyment of life.

  While dieting doesn't appeal to them, they do strive to achieve health. This desire, on the part of consumers, does not necessarily carry over to behavior changes, even though they recognize the need to make overall lifestyle adjustments in order to sustain the ability to be healthy.

  Diet is a dirty word. (Female Succeeder, Downtown Chicago)

  To me, the word "diet" means sacrifice. (Female Struggler, Suburban Chicago)

  The word "diet" needs to be taken out of our vocabulary. (Female Struggler, Suburban Chicago)

  I finally got away from all those diet words and now I just watch what I eat. (Male Struggler, Suburban Chicago)

  Diet means suffering and giving up the things you like. (Male Struggler, Baltimore)

  Losing weight means you have to give up the things you love. (Female Succeeder, Downtown Chicago)

  I try not to worry about the pounds and instead think more about getting in shape. Muscle actually weighs more than fat. (Male Struggler, Suburban Chicago)

StrategyOne

Choosing the Moment over the Long-Term

- Consumers tend to make food choices moment by moment instead of planning out ahead.

  I do what I want. It feels good in the moment, but later I know it was bad. (Female Struggler, Suburban Chicago)

  Life's too short – if the holidays are here, I'm going to eat and deal with it later. (Female Struggler, Suburban Chicago)

  I had that piece of chocolate cake. I felt kind of bad, but it's something I wanted; I figured, "I'll suffer later." (Female Struggler, Suburban Chicago)

  I'm a meal eater of opportunity. I keep a crazy schedule. It may be 2-3 days before I have another sit down meal. I drink a lot of soda. I snack. When I get like this I feel out of control. (Male Succeeder, Baltimore)

- Consumers are not willing to remove certain foods from their overall diet. Bottom line – consumers will go ahead and have that bowl of ice cream when the urge strikes them. They will question whether they should indulge - either at that time, or reflecting upon it later – but the desire for favorite foods will often prevail.

  I watch what I eat, I dance. But, I'm not going to give up my wine. (Female Succeeder, Downtown Chicago)

  Eating is an enjoyable experience for me – it makes me happy. I don't eat anything I don't want. (Male Succeeder, Baltimore)

  I would rather exercise more to keep off the weight than give up the foods I enjoy. (Female Succeeder, Downtown Chicago)

  I would be better at managing my weight if I gave up soda. I drink too much regular soda. (Female Struggler, Suburban Chicago)

  I have no self-control when it comes to candy – I'm like my kids. (Male Succeeder, Baltimore)

StrategyOne

Ability to Get Healthier

- We asked respondents to rate themselves on a scale from 0 to 100 where 0=unhealthy and 100=healthy. While many respondents saw themselves right in the middle, answers still touched upon the extremes - from one man who gave himself a ten to others who said they were at eighty.

- Then, respondents were asked to name what they would need to do to improve their health score a little (by between 10-20 points) and what they would need to do to improve it a lot (by 30-40 points). Consumers view 10-20 points as "better" and achievable, while regarding 30-40 points as "near-perfect" and not only unrealistic, but also undesirable. They stated near-perfect health reflects an imbalance of the other extreme. They also acknowledge this is not the norm for the average person.

Achieving near-perfect health – is this attainable? Yes, when I become a millionaire and I can hire a personal trainer who is on me to push me to do what I need to. Is it realistic? No. (Male Struggler, Baltimore)

Those really healthy people – there's something wrong with them. They're like robots. (Female Succeeder, Downtown Chicago)

If we were all at 100% healthy, we'd be stick figures. (Female Struggler, Baltimore)

If you're 100% healthy, I see other absences in your life – you have no fun and don't take time for other things. There's no balance. (Female Succeeder, Downtown Chicago)

A lot of models don't really look healthy. The [plus-size] model, Emme, who's a larger woman, has this attitude that says, "I'm healthy, energetic, and this is how I'm supposed to be." (Female Struggler, Baltimore)

StrategyOne

Ability to Get Healthier

- When consumers mentioned specific actions they could take (or are already taking) to improve their health by the more realistic 10-20 points versus 30-40 points, their responses reflect the notion that small steps are better and more achievable than huge changes:

To improve by 10-20 points, I'd drink more water, put less butter on breakfast foods, watch less TV. (Female Struggler, Baltimore)

I think of exercise as preventative – that's how I concentrate on health. (Female Succeeder, Downtown Chicago)

I wanted to lose weight, so I kept a diary of everything I ate. I noticed I would nibble whenever I was stressed. I've tried to stop doing that and I've lost weight and now I'm maintaining. (Female Struggler, Baltimore)

If I worked to improve by 30-40 points, I'd become bored. I'd have to give up sweets and I don't want to do that. (Male Succeeder, Baltimore)

I gave up ice cream and now I eat fruit sorbets. (Female Succeeder, Downtown Chicago)

I used to eat ice cream in a bowl, now I eat it in a cup. (Female Struggler, Baltimore)

To me, maintaining good health is about balance, exercise, rest and not over-indulging in alcohol. (Female Succeeder, Chicago)

To improve by 40 points, exercise would then become a job, and not an adventure. (Male Succeeder, Baltimore)

I would eat more slowly and chew my food, not eat after 8 PM and stay away from soda. (Female Struggler, Baltimore)

StrategyOne

Overweight v. Obese

- Consumers hold strong points of view on what they consider to be the differences between overweight and obese.
- To them, overweight signals a lack of effort or laziness on the part of an individual. To this they attached only modest implications.

Overweight means that you know your ideal weight, but you're over it – maybe by five, ten pounds. (Male Struggler, Suburban Chicago)

Overweight is being anywhere from 10-20 pounds over what you should be. Obesity is a serious health risk. (Male Struggler, Downtown Chicago)

Is it really possible that two-thirds of Americans are overweight or obese? That seems awfully high to me. (Male Struggler, Baltimore)

- By contrast, obesity means carrying at least an additional 30 pounds and indicates a medical problem that warrants a doctor's attention. Accordingly, consumers generally associate obesity with more severe personal and/or social implications.

Someone who's obese is more than 30 pounds overweight. (Male Succeeder, Baltimore)

Obesity is extreme heaviness that requires a doctor's supervision. (Female Struggler, Suburban Chicago)

If you're obese, you're huge – you're way off the scales. (Female Struggler, Baltimore)

Obesity is more medical. Your health is in danger. (Male Struggler, Suburban Chicago)

Obesity is becoming an epidemic – I heard about it on the news. (Female Struggler, Baltimore)

StrategyOne

Barriers To Improvement

StrategyOne

Barrier: Bodies Evolve/Habits Don't

- Consumers readily acknowledge that their bodies change over the years and decades. They talk at length about how they cannot do what they used to do when they were younger and how their bodies are not as forgiving. However, (even though they inherently realize it) the one key element consumers do not voice is the need to alter their habits as their bodies change.

  It's in the back of my mind – I know that sooner or later I'll change my habits. (Female Struggler, Suburban Chicago)

  When I turned 31 or 32, I started to feel different than I had in my twenties. Now that I'm in my forties, I'm feeling something again. (Male Struggler, Baltimore)

  Twenty years ago, my boss said I'd put on weight once I hit my thirties and he was right. (Male Struggler, Downtown Chicago)

  Your metabolism changes as you age. (Female Struggler, Baltimore)

StrategyOne

Barrier: Response Time

- Consumers admit it is difficult to work on better managing their health/weight. Many claim they need to see quick results, not only to get motivated to start but also to sustain their efforts. From experience they know the response time is slow, if at all.

  The trouble with staying motivated for me is that I need to see quick results and that doesn't always happen, even when you're working on it. (Male Struggler, Downtown Chicago)

  I need an instant gratification kind of thing. (Male Struggler, Downtown Chicago)

  It's about seeing something right away to keep you motivated. (Female Struggler, Suburban Chicago)

  If I start a new program and don't see immediate results, I get discouraged and impatient. (Female Succeeder, Downtown Chicago)

- Some say there is an imbalance – negative effects from being unhealthy show up much faster than positive effects from attempting to be healthy.

  It's so easy to eat 10 cookies – it takes five minutes, but then it two weeks to work those cookies off. There's an imbalance there. (Male Struggler, Suburban Chicago)

StrategyOne

Barrier: Activity v. Exercise

- Some consumers say they have no time for exercise.
- Men tend to view "activity" as physical activity. Consequently, activity and exercise then become synonymous for them. Men tend to think of both as strenuous. Hence, both count towards achieving health. They enjoy such activities and often do it in groups with others, such as a team sport. For men, exercise is perceived as fun, and allows for some personal time, or what many men called "me" time.

  It makes you feel good if you are trying to do something for your health. It relaxes you. (Male Succeeder, Baltimore)

  When you exercise regularly you definitely see an improvement. (Male Struggler, Chicago)

  Exercise. I find it increases my energy. (Male Succeeder, Baltimore)

  You can actually have fun when you're improving your cardiovascular system if you're doing sports, or something like that. (Male Succeeder, Baltimore)

- By comparison, women view activity and exercise as two separate things. They also think of activity in a different way than men do. They claim to be active in doing many things, but admit such activities are rarely strenuous. Many women claim they just don't like exercise and think of it as just another thing to fit into their schedules. Women stressed how hard they think exercise is, and consistently used the term "working out" when talking about exercise.

  Activity and exercise are different. Activities are something you do every day, exercise you have to set aside time for. (Female Struggler, Suburban Chicago)

  All the running around you, you think that would be enough. It feels like exercise, but apparently, it's not enough. (Female Struggler, Baltimore)

  Activity is something you do for pleasure, exercise is something you have to do. (Female Struggler, Suburban Chicago)

  I don't like exercise. I've never cared for it and I don't enjoy it. (Female Struggler, Suburban Chicago)

  The only reason I exercise is because my doctor has told me that I have to do it. (Female Struggler, Suburban Chicago)

  Exercise is something I feel like I should be doing but don't. (Female Struggler, Suburban Chicago)

  I don't want to exercise because it's so hard. (Female Struggler, Suburban Chicago)

StrategyOne

Who Plays A Role In Health

StrategyOne

The Role of Other Factors in Health

- Most consumers feel the lion's share of responsibility for one's health belongs to the individual.
  - Respondents were asked during the focus groups to state the percentage (from 0-100%) they would attribute to personal responsibility vs. other, external factors. Answers ranged from about 50 to 100 percent on personal responsibility, with the average being approximately 80 percent personal responsibility, 20 percent other factors.
- But most also admit their ability to make healthy choices is far from simple.
- Many also acknowledge that other cultural, lifestyle, and societal forces play a role (the 20%).
- Consumers also say it's less expensive and more convenient to eat unhealthy, or often fast food. Still, they see it is about personal choice:

  It's cheaper to eat unhealthy food. (Female Struggler, Suburban Chicago)

  When you're busy, you're more likely to go get fast food. (Female Struggler, Suburban Chicago)

  Your kids want to go to a fast food restaurant. You know it's not good for you, but you hate to waste food so you end up eating the fries even if you don't want to. (Male Succeeder, Baltimore)

  It is personal responsibility, but society could help out a lot. If fast food wasn't so readily available, it would help. It would force us to consider healthier alternatives. (Female Struggler, Baltimore)

  You still have the choice to make the decision to go to that fast food restaurant. (Female Struggler, Suburban Chicago)

StrategyOne

The Role of Other Factors in Health

- Consumers feel the issue of weight cannot be solely attributed only to personal responsibility. Consumers do not believe the individual can be alone in this struggle. They need and desire help and support, but feel many other factors get in the way. For instance:

- Consumers acknowledge how today's lifestyles impede opportunities for physical activity:

It's hard to be physically active in today's world, but it still comes down to choices. (Female Succeeder, Downtown Chicago)

Our lifestyles are different now. Before, people used to walk places; now, everyone drives everywhere. (Female Struggler, Suburban Chicago)

- They credit genetics as playing a role:

I don't think it's just diet and exercise. Other things can come into play, like genetics. (Male Struggler, Downtown Chicago)

- They also go so far as to say greater societal forces impact their weight issues:

I'd be more successful in managing my weight if we change American society in a way that goes away from an emphasis on complex carbohydrates, which the body changes into fat. Most people just don't get it. (Male Struggler, Baltimore)

While I think the majority of it is personal responsibility, it's not just pure and simple. I think it should be more of a public health issue, like smoking. (Female Struggler, Baltimore)

- And, they feel government and corporations need to assume some liability:

The fast food industry does have to take some responsibility. Their concern is not about healthy eating. It's about making the most money they can. (Male Struggler, Baltimore)

It's our choice, but we do get a lot of mixed signals from corporations and government. (Male Struggler, Suburban Chicago)

StrategyOne

Motivational Themes

Primary Themes That Strike A Strong Emotional Chord

An Impetus To Help Inspire Behavioral Changes In Consumers

StrategyOne

A Motivator: Appearance

- For men and women, a prime area of motivation emerges for addressing their weight – appearance. Unprompted, consumers speak at length about their weight and body in relation to how they think they look. This issue strongly resonates with consumers and hits home from an emotional perspective, because consumers closely tie their self-esteem and self-image to their appearance.

  Women, in particular, recount their ups and downs with weight in terms of clothes sizes, recalling their exact dress size at various times in their lives – going back five, ten, even twenty years. They candidly admit that their weight prevents them from doing certain activities, such as going to the beach or pool and wearing a bathing suit at a public swimming pool or avoiding dressing rooms.

  I'm very self-conscious in a bathing suit. I would get in a pool only if I could tell everyone to buzz off. (Female Struggler, Baltimore)

  When I went to the pool over the summer, I kept thinking that there were people there who knew me but had never seen me that way before. I wondered if they thought differently of me. (Female Struggler, Baltimore)

  When I get in a dressing room…it's not always a pretty sight. (Female Succeeder, Downtown Chicago)

StrategyOne

A Motivator: Appearance

- Women more frequently cite the impact weight has on wearing the clothes they want:

Success with my weight would be losing another ten pounds. I'm doing well and maintaining right now, but I want to feel even better. I want to be able to wear something "hoochey" with little straps if I want to. (Female Succeeder, Downtown Chicago)

It's awful when your clothes don't fit anymore – it's just an awful feeling. Women are supposed to look good and look neat. (Female Struggler, Baltimore)

I used to buy fitted clothes. I would like to be able to buy cuter clothes. (Female Succeeder, Downtown Chicago)

I don't like wearing sleeveless things. I think about how others see me and I don't want them to think, " Look at her and her fat arms – she shouldn't be wearing that." (Female Struggler, Baltimore)

I've not worn a bikini because of my weight. (Female Struggler, Baltimore)

StrategyOne

A Motivator: Appearance

- For men, the issue is of weight focuses on the broader impact, more than just clothing.

  When I think of taking care of my body, I think of a six-pack stomach and a great shape. (Male Struggler, Suburban Chicago)

  It motivates me when I see Men's Health magazine with pictures of guys who are cut. (Male Struggler, Suburban Chicago)

  Looking in the mirror is tough – I hate looking in the mirror. I would be so happy with a flat stomach. (Male Struggler, Downtown Chicago)

  I'm concerned about my weight because I want to be attractive to women. (Male Succeeder, Baltimore)

  My wife said that I expect her to look nice, so I want to look nice for her, too. (Male Struggler, Suburban Chicago)

- Interestingly, men and women default to thinking and/or addressing their weight when something related to their appearance triggers them to take action. Suddenly, because of appearance, overall health jumps more to the forefront of priorities.

  When I go up a clothes size, I say to myself, "Okay, it's time – I've got to do something." (Female Succeeder, Downtown Chicago)

  When health becomes a higher priority for me, it usually means I've gained weight and my clothes probably don't look good on me. (Male Succeeder, Baltimore)

  I notice the affect of my weight when my clothes don't fit. The way I carry myself starts to change. (Male Struggler, Downtown Chicago)

  When I go shopping for new clothes, maintaining my health suddenly becomes an issue. (Female Succeeder, Suburban Chicago)

StrategyOne

A Motivator: Family

- Family holds just as strong of an emotional pull - in terms of motivation - as appearance, although for different reasons.
  - Consumers talk about how certain moments related to family provide a wake-up call to jump-start their health into higher gear.
  - Parents talk about being short of breath when playing with their children, leading them to consider their own mortality and imagine what it would be like if they weren't around for key moments with their families.
  - There's also a desire among parents to fully participate in their lives with the family, which includes enjoying physical activities together.

To me, being fit means being able to lift my daughter in the air. (Male Struggler, Suburban Chicago)

When I'm running after my kids and I'm out of breath, it makes me wonder if I'm going to see them graduate. (Male Succeeder, Baltimore)

Once I was jogging with my daughter and I couldn't keep up with her - that really hit home. (Male Succeeder, Baltimore)

I want to be able to bounce my grandkids on my knee. (Male Struggler, Downtown Chicago)

I coached Little League and one time I was chasing a kid and he had to run with all his might to get away from me. That felt really good. (Male Succeeder, Baltimore)

StrategyOne

A Motivator: Preventative Health Measures

- Appearance is a strong (short-term) motivator that can and does translate into behavior, ("my pants are too tight.") Such mentions spur people to immediately go on diets and start exercising. Although appearance isn't always sustaining as a motivator, without a doubt it propels people to action in terms of their weight.

- On the other hand, consumers did name health and medical-related issues as more of long-term motivators. These factors serve as inspiration to pay more attention to their health, but importantly – and unlike appearance – do not necessarily spur any changes in behavior. Consumers bring up chronic diseases that run in the family, such as diabetes, and generalized risks, like heart attacks and strokes, and worry if they do not take appropriate measures they will suffer from problems later in life. But, even though consumers have these thoughts and considerations, they do not really do anything about it.

  I would like to lose the weight because I'm growing older and more susceptible to problems – why become a risk? Our family has made a commitment to helping each other. (Male Struggler, Suburban Chicago)

  I think more about my health now that I can't do as much – I can't run up and down the stairs and I have problems with arthritis. (Female Struggler, Suburban Chicago)

  I pay more attention to my health now because when I go to the doctor I hear moderately bad news – "you should watch this" – whereas before, everything was fine. (Female Struggler, Suburban Chicago)

  Things might not be affecting me now, but if I don't watch myself, things could catch up with me later. Diabetes runs in my family. (Male Struggler, Suburban Chicago)

  A major health change or disease would motivate me to pay more attention to my weight. (Male Succeeder, Baltimore)

  I think more about my health now, because I'm getting to the age my parents were when they got sick. (Male Struggler, Baltimore)

StrategyOne

Motivational Tips

- Consumers emphasize they know what to do in order to take charge of their health, such as getting enough physical activity, eating smaller portions, and stocking the kitchen with healthy snacking options. Since they say they have heard this information so many times, they consider themselves experts on the do's and don'ts of healthy behavior. That said, consumers did share other tips - ones that have either worked for them, or ones they believe would help them to incorporate better habits into their daily lives. These include:

- Keeping a daily food intake log

  For a while, I was writing down everything I ate in a given day. That really helped me look at my habits and make modifications, because I couldn't believe everything I was eating in one day until I saw it on paper. (Female Struggler, Baltimore)

- Scheduling fitness on the calendar as you would any other appointment (they say they are more likely to do it if it is designated at a specific time)

  You have to schedule it and fit it in with many other things demanding your time. If you don't schedule it, it doesn't happen. (Male Struggler, Suburban Chicago)

  I need to put it on my calendar. (Male Struggler, Suburban Chicago)

- Having others around to provide encouragement

  What works for me is encouragement from my family and the people I work out with. It's making it fit into your schedule. I work out while my wife takes our kids to church – I play basketball with other guys. (Male Struggler, Suburban Chicago)

  People at work, your wife and kids can all motivate you. (Male Struggler, Suburban Chicago)

  If I had someone to motivate me, that would be great – it would get me off the couch on the weekends. (Male Struggler, Downtown Chicago)

METHODOLOGY

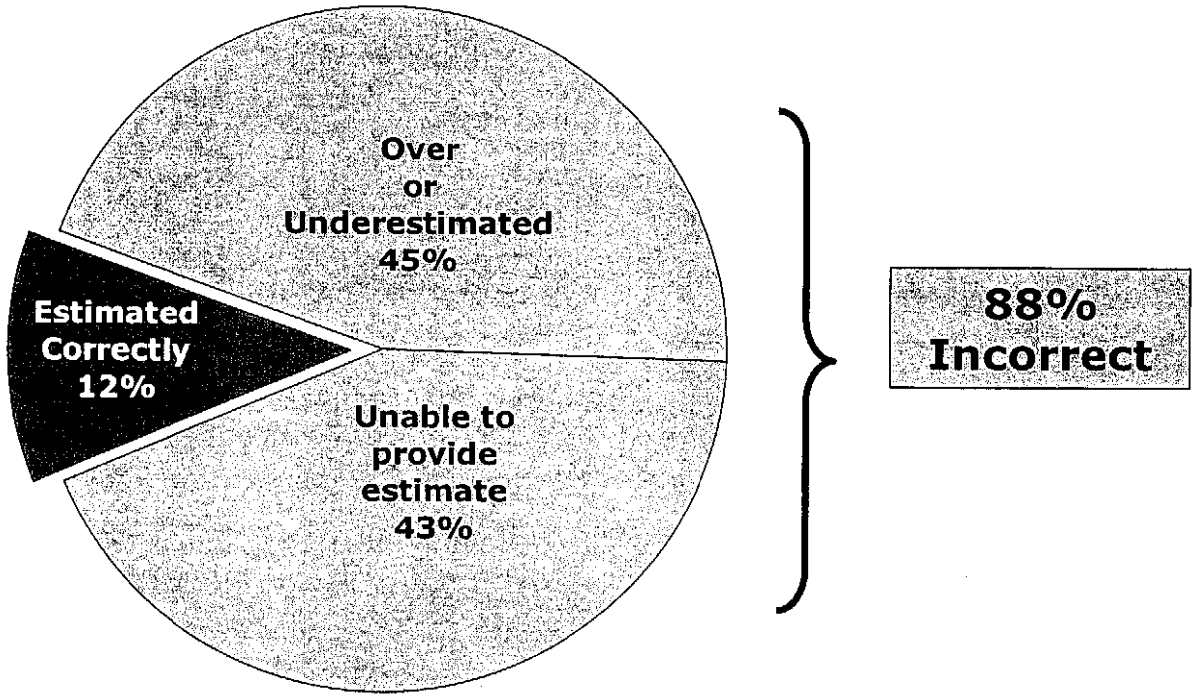
Survey conducted for the International Food Information Council (IFIC) Foundation by Cogent Research of Cambridge, Massachusetts.

METHODOLOGY	**Web survey**
POPULATION	**Americans ages 18+**
DATA COLLECTION PERIOD	**November 7-20, 2005**
SAMPLE SIZE (ERROR)	**n=1,000 (± 3.10 pp)**
SAMPLE COMPOSITION	**Survey data is reflective of the U.S. population based on key demographic variables.**

IFIC Foundation Food & Health Survey, 2006
http://ific.org

CALORIES PER DAY

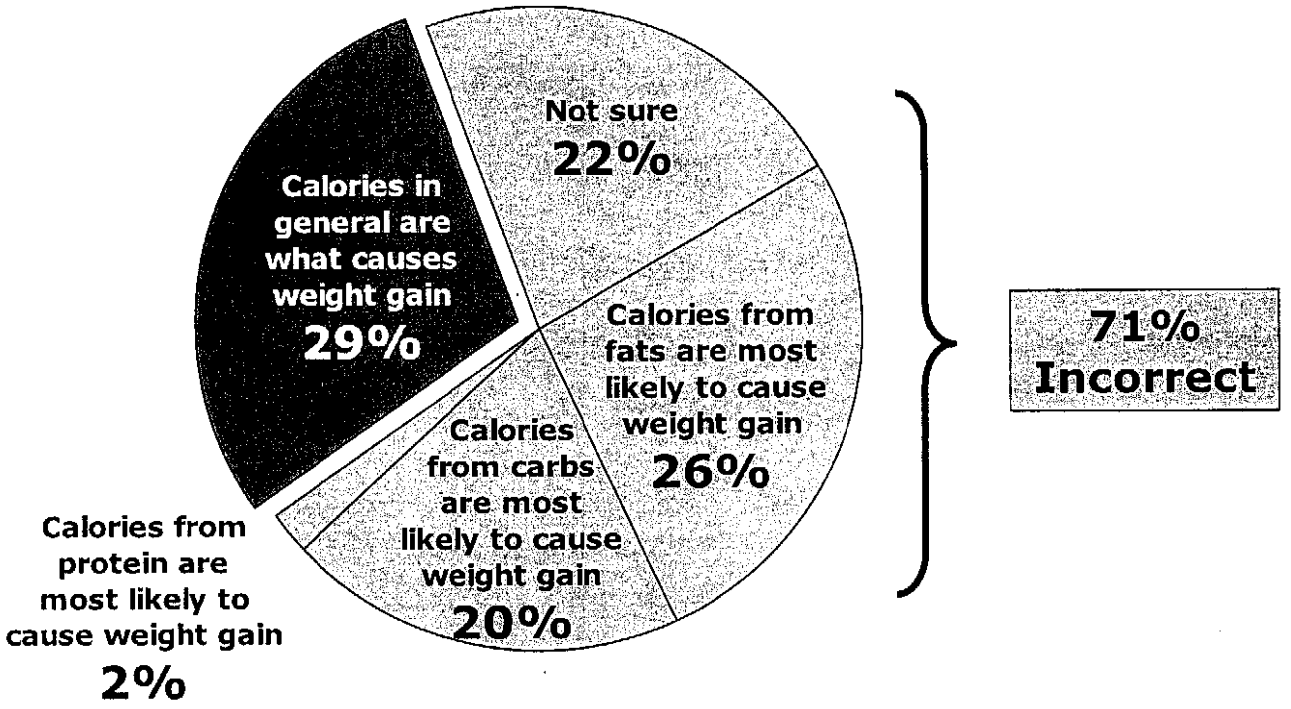
As far as you know, how many calories should a person of your age, weight, and height consume per day?



IFIC Foundation Food & Health Survey, 2006
http://ific.org

CALORIES AND WEIGHT GAIN

Which of the following statements do you agree with regarding the relationship between calories and weight gain?

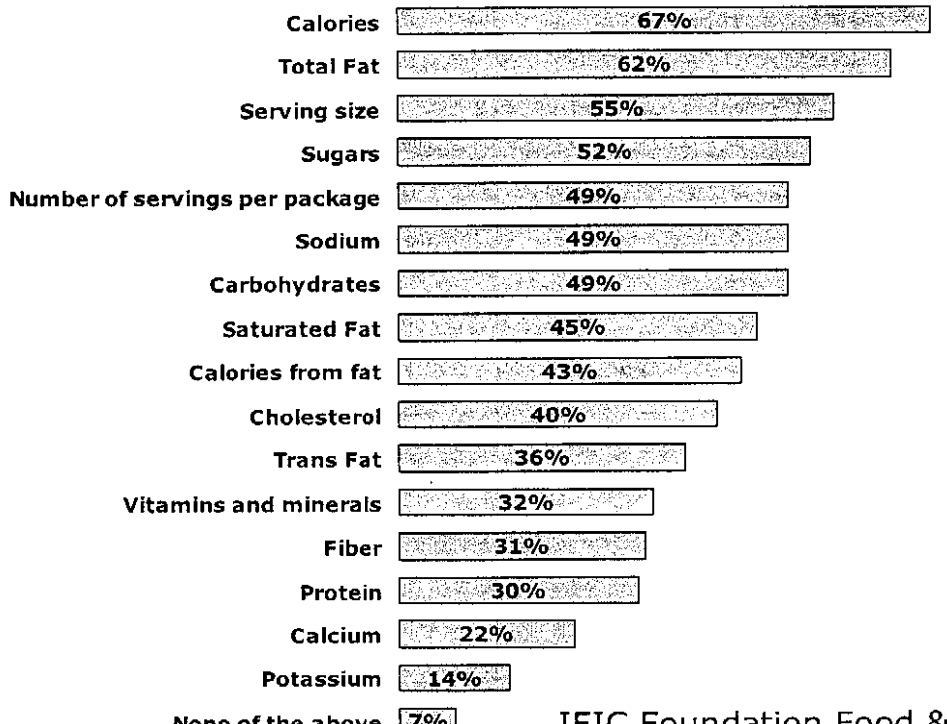


IFIC Foundation Food & Health Survey, 2006
http://ific.org

NUTRITIONAL FACTS PANEL: USAGE

Which of the following information, if any, do you use on the Nutrition Facts Panel?

Note: Question asked only of the 94% of Americans that use the Nutrition Facts Panel.



IFIC Foundation Food & Health Survey, 2006
http://ific.org

CUTTING BACK ON CALORIES NOT TOP OF MIND

What have you done to improve the healthfulness of your diet in the past six months?

Note: Question asked only of the 57% of Americans that cited making a change to diet in past 6 months.

	Unprompted	Prompted
Eating fewer calories	2%	42%
Changing meal/snack patterns	9%	55%
Reducing amounts eaten at meals	12%	57%
Consuming less of a specific type of food or beverage	21%	68%

IFIC Foundation Food & Health Survey, 2006
http://ific.org

Attacking the Obesity Epidemic: The Potential Health Benefits of Providing Nutrition Information in Restaurants

Scot Burton, PhD, Elizabeth H. Creyer, PhD, Jeremy Kees, PhD, and Kyle Huggins, MBA

Objectives. Requiring restaurants to present nutrition information on menus is under consideration as a potential way to slow the increasing prevalence of obesity. Using a survey methodology, we examined how accurately consumers estimate the nutrient content of typical restaurant meals. Based on these results, we then conducted an experiment to address how the provision of nutrition information on menus influences purchase intentions and reported preferences.

Methods. For both the survey and experiment, data were analyzed using analysis of variance techniques.

Results. Survey results showed that levels of calories, fat, and saturated fat in less-healthful restaurant items were significantly underestimated by consumers. Actual fat and saturated fat levels were twice consumers' estimates and calories approached 2 times more than what consumers expected. In the subsequent experiment, for items for which levels of calories, fat, and saturated fat substantially exceeded consumers' expectations, the provision of nutrition information had a significant influence on product attitude, purchase intention, and choice.

Conclusions. Most consumers are unaware of the high levels of calories, fat, saturated fat, and sodium found in many menu items. Provision of nutrition information on restaurant menus could potentially have a positive impact on public health by reducing the consumption of less-healthful foods. (*Am J Public Health.* 2006;96:1669–1675. doi:10.2105/AJPH.2004.054973)

Sixty-four percent of American adults are either overweight or obese, and the obesity epidemic shows few signs of weakening.[1,2] Although the precise number of deaths attributable to obesity is difficult to estimate, obesity is clearly a major cause of preventable death.[3,4,5] Not surprisingly, improving the healthfulness of the American diet has become a national health priority.[4,6] The increasing prevalence of obesity-related diseases has been blamed, in part, on the increased consumption of foods prepared outside the home. Restaurant expenditures have increased consistently in recent decades; consumers now spend more than $400 billion annually.[7]

Increased consumption of food prepared outside the home and the rising percentage of overweight Americans have made the failure to disclose the nutritional content of restaurant foods a significant public health issue. Whereas the Nutrition Labeling and Education Act increased the availability of nutrition information on packaged foods, foods purchased for immediate consumption are exempt from nutrition disclosure requirements. Typically, fast-food restaurants make nutrition information available to consumers upon request through brochures or on their corporate Web sites. Most dinner house restaurants (i.e., restaurants that offer table service in an informal atmosphere) disclose the nutrient content of their menu items only via the Internet, if at all.

Laws governing the provision of nutrition information in restaurants have been under consideration by Congress. The Menu Education and Labeling Act would require chain restaurants with 20 or more outlets to provide key nutrient information. Legislation has also been proposed in several states (e.g., New York) that would require restaurants with 10 or more national locations to disclose the calorie and nutrient content, such as fat and saturated fat levels, of their foods.[8] The Food and Drug Administration has initiated preliminary discussions about national standards for the provision of nutrition information in restaurants in response to these legislative initiatives.[9]

We examined the potential public health benefits of providing easily accessible nutrition information in restaurants through 2 studies. In study 1, a survey of consumers was used to examine the accuracy of consumers' expectations of the calorie, fat, saturated fat, and sodium levels of restaurant foods, and sought to determine whether the difference between expected and objective levels varied depending on the calorie and nutrient levels of the items. In study 2, drawing on findings from our survey, we investigated how the provision of nutrition information on a menu affected consumers' attitudes and purchase intentions when objective calorie and nutrient levels were either much higher or about the same as consumers expected.

STUDY 1: SURVEY

Recent legal and regulatory initiatives regarding nutrition information disclosure in restaurants are largely driven by an interest in the negative health consequences associated with the overconsumption of calories and nutrients such as fat, saturated fat, and sodium. This raises an important question: What are the expectations of reasonable consumers regarding the nutrient levels of typical restaurant fare? Study 1 compared estimated calorie, fat, saturated fat, and sodium levels of foods typically served in dinner house restaurants with objective values determined by laboratory testing.

We proposed that most consumers lack the expertise necessary to estimate calorie and nutrient levels accurately. Because nutrition information is difficult, if not impossible, to obtain in most dinner house restaurants, consumers are unlikely to realize that large restaurant portions of higher-calorie and higher-fat menu items (e.g., large bowl of fettuccine Alfredo) may exceed a full day's worth of fat and saturated fat. Therefore, we expected consumers to substantially underestimate calories and fat,

saturated fat, and sodium levels. This is consistent with previous research showing that when presented with large portion sizes of less-healthful foods, professional nutritionists underestimated calorie levels by between 200 and 600 calories.[10] However, we anticipated that consumers' estimates would be more accurate for the food items lower in calories and fat (e.g., grilled chicken breast).

Thus, we hypothesized that (1) the difference between consumers' expectations and objective levels of calories and nutrients would be greater for items with higher levels of calories, fat, and sodium than for items with lower levels of calories, fat, and sodium (hypothesis 1) and that (2) a greater percentage of consumers would underestimate calorie and nutrient levels for menu items with higher levels of calories, fat, and sodium than for items with lower levels (hypothesis 2).

METHODS

Study participants were recruited through a statewide mail research panel and by undergraduate students. Ninety-seven percent of respondents had dined at a restaurant in the past month; the mean dining-out frequency was 14 meals. Almost all (97%) were high-school graduates and 81% had at least some college. The median age of respondents was 39 years, and 60% were female. The total sample size was 193 respondents. Results of tests of hypotheses were consistent across demographic groups, the household research panel respondents, and the sample of adult consumers.

For 9 restaurant entrées, survey participants were given serving size information and brief item descriptions, similar to information that would appear on a menu. For each item, participants estimated calories, fat, saturated fat, and sodium levels. Measures of the objective (actual) calorie and nutrient levels for each of the 9 items were obtained from independent laboratory testing performed previously for dinner house restaurant items.[11] Three items shown in Table 1 (e.g., grilled chicken breast) were lower in calories and fat (370 to 640 calories; 6 to 26 g of fat) than other entrées. Five items (e.g., hamburger with fries) were much less healthful (930 to 1660 calories; 63 to 97 g of fat). (Although it can be argued that there are no "unhealthful"

TABLE 1—Accuracy of Consumers' Estimates of Calories, Fat, Saturated Fat, and Sodium for Restaurant Menu Items[a,b]

	Calories				Fat				Sodium				Saturated Fat				
	Mean Calorie Expectation Estimates	Objective Calorie Levels	Mean Difference Between Expectations and Objective Levels (% of Misestimation)[c]	Percentage Underestimating Calories (Overestimating Calories)	Mean Fat Expectation Estimates, g	Objective Fat Levels, g	Mean Difference Between Expectations and Objective Levels (% of Misestimation)	Percent Underestimating Fat (Overestimating Fat)	Mean Sodium Expectation Estimates, mg	Objective Sodium Levels, mg	Mean Difference Between Expectations and Objective Levels (% of Misestimation)[d]	Percentage Underestimating Sodium (Overestimating Sodium)	Mean Saturated Fat Expectation Estimates, g	Objective Saturated Fat Levels, g	Mean Difference Between Expectations and Objective Levels (% of Misestimation)	Percentage Underestimating Saturated Fat (Overestimating Saturated Fat)
Less-healthful items																
Means	694	1336	-642 (-93)	90 (10)	32	76	-44 (-137)	90 (10)	457	2014	-1557 (-341)	93 (7)	15	30	-15 (-100)	80 (20)
Fettuccine Alfredo	704	1500	-796 (-113)	90 (10)	31	97	-66 (-213)	96 (4)	478	1030	-552 (-115)	88 (12)	13	48	-35 (-269)	95 (5)
Hamburger and fries	777	1240	-463 (-60)	88 (12)	37	67	-30 (-81)	85 (15)	523	1270	-747 (-143)	87 (13)	17	29	-12 (-71)	77 (23)
Chicken fajitas	784	1660	-956 (-136)	96 (4)	31	63	-32 (-103)	82 (18)	451	3660	-3209 (-712)	99 (1)	14	19	-5 (-36)	67 (33)
Chef's salad	452	930	-478 (-106)	90 (10)	21	71	-50 (-238)	97 (3)	328	2510	-2182 (-665)	99 (1)	9	18	-9 (-100)	82 (18)
Patty melt and fries	834	1350	-516 (-62)	84 (16)	41	81	-40 (-98)	88 (12)	504	1600	-1096 (-217)	93 (7)	20	37	-17 (-85)	80 (20)
More-healthful items																
Means	500	543	-43 (-9)	73 (27)	23	15	8 (35)	37 (63)	333	1180	-847 (-254)	92 (8)	11	6	5 (45)	30 (70)
Chicken breast	479	640	-161 (-34)	78 (22)	22	14	8 (36)	37 (63)	321	820	-499 (-155)	88 (12)	10	5	5 (50)	27 (73)
Pot roast	663	620	43 (6)	65 (35)	33	26	7 (21)	48 (52)	425	1310	-885 (-208)	92 (8)	15	11	4 (27)	47 (53)
Turkey sandwich	358	370	-12 (-3)	75 (25)	15	6	9 (60)	26 (74)	254	1410	-1156 (-455)	96 (4)	7	2	5 (71)	17 (83)
Very unhealthful item: cheese fries with ranch dressing	869	3010	-2141 (-246)	99 (1)	40	217	-177 (-443)	97 (3)	537	4890	-4353 (-811)	99 (1)	21	91	-70 (-333)	93 (7)

[a]Information provided for the 9 restaurant menu items included brief descriptions, size of the item in ounces, and any side dishes, all drawn from Jacobson and Hurley.[11]
[b]On the basis of a 2000-calorie diet, the recommended daily values are 65 g for fat, 2400 mg for sodium, and 20 g for saturated fat.
[c]This is the difference between consumers' calorie estimates and the objective levels determined by laboratory testing. The percentage (shown in parentheses) is the mean difference divided by consumers' calorie expectations (e.g., -642/694 = -93%).
[d]This is the difference between consumers' sodium estimates and the objective levels determined by laboratory testing. The percentage (shown in parentheses) is the mean difference divided by consumers' expectations (e.g., -1557/457 = -341%).

foods within the context of an entire diet, for the sake of brevity, we use the terms "less" and "more healthful" to refer to menu items higher/lower in calories, fat, and sodium.) The remaining item (cheese fries with ranch dressing) had extremely high calorie and nutrient levels (3010 calories; 217 g of fat) and was termed "extremely unhealthful."

RESULTS

For each menu item, Table 1 presents consumers' estimated (expected) calorie and nutrient levels, the objective levels, the mean difference between estimated and objective levels, and the percentage of consumers who either overestimated or underestimated calorie and nutrient levels. As shown, less-healthful items were judged to be higher in calories and fat than more-healthful items. This indicates that consumers are at least somewhat aware of nutritional differences among foods.

To test hypothesis 1, individual accuracy scores for calorie and nutrient levels were calculated by subtracting the objective levels from the consumer-estimated levels. These deviation scores were used as the dependent variables in a series of repeated-measures analyses of variance. Differences between consumers' estimates and objective values varied substantially across the more-healthful, less-healthful, and extremely unhealthful items.

For calories, results of the repeated-measures analyses were highly significant ($F=2530$; $P<.001$). On average, participants underestimated the calorie levels of less-healthful items by 642 calories; objective levels (1336 calories) were almost twice as high as consumers' estimates. The calorie content of cheese fries with ranch dressing (3010 calories) was underestimated by more than 2000 calories. Consumers slightly underestimated calories of the more-healthful items. Follow-up contrasts on the difference scores between expected and the objective calorie measures showed significant differences between the more- ($M=-43$) and less- ($M=-642$) healthful items, as well as between the less-healthful items and the extremely unhealthful item (t values = 37.4 and 54.8, respectively; $P<.001$ for both comparisons). Thus, as posited, the differences between consumers' calorie estimates and objective levels were far greater for items with less-healthful nutritional content.

Similarly, consumers' expectations of nutrient levels (fat, saturated fat, and sodium) were less consistent with the objective levels for less-healthful items than for more-healthful items. Results from repeated-measures analyses of variance for each nutrient using the difference between consumers' estimates and objective values as the dependent variable resulted in significant findings for all 3 nutrients (F values exceeded 700 for all tests, $P<.001$). For the less-healthful items, consumers underestimated fat and saturated fat levels by 44 g and 15 g, respectively—amounts that were more than 60% of the recommended daily values. Estimated fat and saturated fat levels for the more-healthful items were more consistent with objective levels (and even slightly higher). Consumers underestimated sodium levels for the more-healthful items by 847 mg, whereas they underestimated the amount of sodium in the less-healthful and extremely unhealthful items by 1557 mg and 4353 mg, respectively. For all nutrients, follow-up contrasts showed significant differences between the more-/less-healthful and less-/extremely unhealthful groups.

To address differences in percentages of consumers underestimating calorie and nutrient levels, cross-tabulation analyses were performed. As shown in Table 1, 90%, 99%, and 73% of respondents underestimated calories for the less-healthful, very unhealthful, and more-healthful items, respectively ($\chi^2=102.2$; $P<.001$). For fat, 90%, 97%, and 37% of respondents underestimated levels for the less-healthful, very unhealthful, and more-healthful items, respectively ($\chi^2=509.1$; $P<.001$). The pattern of findings was similar for saturated fat ($\chi^2=433.6$; $P<.001$). Although most consumers underestimated sodium levels of all the items, differences were significant ($\chi^2=13.3$; $P<.01$). These findings support hypothesis 2.

STUDY 2: EXPERIMENT

Given that consumers appear unaware of the high levels of calories, fat, and sodium found in many foods typically served in restaurants, the purpose of study 2 was to examine the potential public health benefits associated with the provision of nutrition information in restaurants. Specifically, we examined how providing nutrition information influenced consumers' attitudes and purchase intentions for restaurant menu items. For each menu entrée, consumers were also asked to estimate how likely they were to gain weight and develop heart disease if that food item was included as a regular part of their diet. These risk perceptions were expected to be influenced by the provision of nutrition information.

Classic expectancy disconfirmation theory can be used to predict consumers' responses when accurate calorie and nutrient information are disclosed.[12,13] According to this theory, consumers form initial expectations about specific product attributes. If the actual information or subsequent experience does not meet expectations, then attribute dissatisfaction will occur, which creates negative attitudes.[12] If actual product information exceeds expectations, positive attitudes result.

Study 1 showed that calories, fat, and sodium in less-healthful restaurant menu items are much higher than consumers expect. However, the objective nutrient levels of more-healthful items were relatively consistent or slightly better than what consumers expected. Therefore, for less-healthful items, the provision of nutrition information should disconfirm consumers' nutrition-related expectations resulting in unfavorable attitudes and decreased purchase likelihoods. Consumers' perceptions regarding the likelihood of weight gain and heart disease risk should also be higher.[14] Expectancy disconfirmation theory thus suggests that the discrepancy between expected and objective nutrient levels should result in an interaction between the provision of nutrition information and the healthfulness of the menu item. Negative disconfirmation for less-healthful items is expected to lead to decreases in measures of attitudes and purchase intentions and to increase choice preference for more-healthful items. In addition, these effects should generally be greater when both the number of calories and the nutrient levels are provided, compared with when calorie information (a single attribute) is presented alone.

Thus, we hypothesized that (1) when objective nutrition information is less favorable than consumers expect, providing nutrition information would have a greater negative influence on product attitudes and purchase intentions and a greater positive influence on perceived likelihood of weight gain and heart disease (hypothesis 3a); (2) when objective nutrition information is less favorable than consumers expect, providing *both* calorie and nutrient information would have the strongest influence (hypothesis 3b); and (3) providing nutrition information on menus would decrease choice preference for items with objective nutrition information that is less favorable than consumers expect and increase choice preference for items more consistent with expectations (hypothesis 4).

METHODS

Participants

Participants in a geographically dispersed area throughout a single south-central state responded to a mail survey. Participants were mailed packets that included 1 of the randomly assigned 6 menu stimuli, a survey including measures of interest, and a stamped self-return envelope. Completed surveys were returned by 241 respondents, a response rate of 50%. Almost all respondents were high-school graduates (97%), 63% were female, and ages ranged from 23 to 85 years. For the 6 groups in the design, cell sizes ranged from 38 to 42 participants.

Design

Study 2 had a 3 (nutrition information)×2 (daily value information)×4 (menu item) mixed experimental design. The nutrition information and daily value manipulations are between-subjects factors and menu item is a repeated-measure factor. Nutrient information conditions are: (1) calories, fat, saturated/trans fats, and sodium levels presented, (2) only calorie information presented, and (3) no nutrition information presented (status quo in most restaurants). (Note that most proposed legislation would require calorie-plus-nutrient information for restaurants that use menus, but only calorie information for fast-food restaurants with menu boards.) The daily value information disclosure is (1) daily value recommendations for fat (65 g), saturated fat (20 g), and sodium (2400 mg) based on a 2000-calorie diet, and (2) a control condition without daily values.[15,16] The nutrition information presented was based on laboratory tests of actual restaurant items. The provision of daily value information had no influence on the dependent measures and is therefore excluded from further discussion.

TABLE 2—Means (SD) for Purchase Intentions and Product Evaluation–Dependent Variables for Nutrition Information–Provision Conditions

	Items Less Consistent With Nutrition Expectations		Items More Consistent With Nutrition Expectations	
Dependent Measures for Nutrition Information–Provision Conditions	Chef's Salad	Hamburger and French Fries	Grilled Chicken Breast and Baked Potato	Turkey Sandwich
Product attitude				
No nutrition information	5.37 (1.8)	4.46 (1.8)	5.66 (1.4)	5.25 (1.6)
Calories only	5.18 (1.6)	4.16 (1.9)	5.80 (1.3)	6.02 (1.4)
Calories and nutrients	4.38 (1.9)	3.72 (2.0)	5.52 (1.5)	5.64 (1.5)
Purchase intentions				
No nutrition information	4.92 (1.7)	4.44 (2.1)	5.59 (1.6)	4.86 (1.9)
Calories only	4.68 (1.7)	3.80 (2.1)	5.58 (1.6)	5.86 (1.5)
Calories and nutrients	3.97 (2.0)	3.43 (2.1)	5.55 (1.7)	5.48 (1.7)
Perceived likelihood of weight gain				
No nutrition information	3.89 (2.0)	7.24 (1.9)	4.32 (1.9)	3.75 (2.0)
Calories only	4.71 (2.3)	7.80 (1.8)	4.43 (1.8)	2.97 (1.7)
Calories and nutrients	5.42 (2.3)	7.53 (1.8)	4.80 (1.7)	3.72 (1.8)
Perceived likelihood of heart disease				
No nutrition information	4.05 (1.8)	7.17 (1.6)	3.97 (1.7)	3.92 (1.9)
Calories only	4.59 (2.1)	7.62 (1.6)	3.86 (1.8)	3.10 (2.0)
Calories and nutrients	5.42 (2.1)	7.41 (1.5)	4.23 (1.6)	3.70 (1.9)

Four of the items included on the menu were deluxe hamburger with fries, chef's salad, chicken breast with baked potato, and turkey sandwich. As shown in Table 1, for the first 2 items, objective levels of calories, fat, and saturated fat exceeded consumers' expectations. For the latter 2, consumers' expectations were more consistent with objective levels. All information and manipulations were

TABLE 3—Effects on Purchase Intention and Product Evaluation–Dependent Variables

	MANOVA Results		Univariate F Values			
	Wilks λ	F	Product Attitude	Purchase Likelihood	Weight Gain Perceptions	Heart Disease Perceptions
Nutrition information	0.93	1.9	4.2*	2.9	4.2*	3.5*
Daily value information	0.98	1.2	2.9	0.9	0.0	0.7
Item type	0.40	60.0**	56.6**	47.9**	218.4**	231.8**
Nutrition information × Item type	0.91	2.5**	4.0**	5.2**	4.8**	4.6**
Nutrition information × Daily value information	0.94	1.8	2.2	1.4	0.4	0.1
Daily value information × Item type	0.98	1.1	1.4	2.4	0.3	1.2
Nutrition information × Item type × Daily value information	0.97	0.9	2.0	1.1	0.9	0.9

Note: MANOVA = multivariate analysis of variance.
*$P < .05$; **$P < .01$.

presented on a 4-color mock restaurant menu stimulus. Respondents were instructed to answer questions regarding the menu items; nutrition was not mentioned.

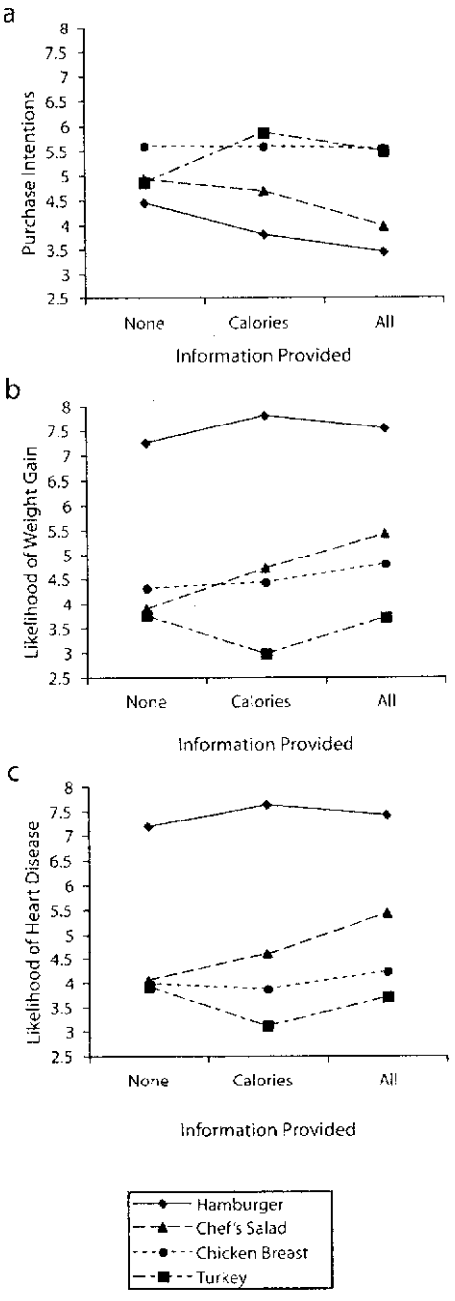
Measures

For each menu item, overall attitude toward the product and purchase intention were assessed using multi-item 7-point scales (all coefficient α's greater than 0.90). To assess consumers' risk perceptions (likelihood of weight gain and heart disease perceptions), 9-point, single-item measures drawn from previous research were employed.[14,17] (Specific items used for measures are available as a data supplement to the online article.) Items were recoded so that higher values indicated more-favorable attitudes and higher perceived risk. A single measure of choice among the 4 items was used ("If you had to choose one of the products described on the mock menu, which one product would you select?").

RESULTS

To test predictions, a doubly multivariate analysis was performed with SPSS 11.5 general linear models (SPSS Inc, Chicago, Ill). Dependent variable means are shown in Table 2 and multivariate and univariate results are shown in Table 3. There are main effects of nutrition information provision and menu item type for the dependent variables as hypothesized and a multivariate interaction between information provision and menu item ($P<.01$). Univariate interactions are significant for each of the 4 dependent variables. Plots of means relevant to interactions are shown in Figure 1. For the items inconsistent with nutrition expectations (hamburger and chef's salad), purchase intention means followed the predicted pattern. For the hamburger platter, follow-up contrasts showed that relative to the control ($M=4.44$), there were significant decreases in purchase intentions for both the calories-plus-nutrients ($M=3.43$; $t=-2.93$; $P<.01$) and calories-only ($M=3.80$; $t=-1.89$; $P<.05$; 1-tailed test) conditions. The difference between the calorie-only and calorie-plus-nutrients conditions was not significant.

For the chef's salad, contrasts show that compared with the no-information control condition ($M=4.92$), there was not a significant



Note. For the hamburger platter and chef's salad, consumers' calorie and nutrient expectations (assessed in study 1) generally were less consistent with objective levels than were the chicken breast dinner and turkey sandwich items.

FIGURE 1—Interaction between nutrition information provided and menu food item for purchase intentions (a), weight gain (b), and heart disease (c).

decrease in purchase intentions from the addition of calorie information ($M=4.68$). However, purchase intentions for the calories-plus-nutrient information condition ($M=3.97$) were significantly lower than both the control ($t=-3.18$; $P<.01$) and the calorie-only ($t=-2.41$; $P<.02$) conditions. This pattern is consistent with the nutritional composition of the chef's salad; it contains a moderate number of calories, but substantially exceeds the levels of fat and saturated fat expected by consumers. Thus, hypotheses 3a and 3b were supported.

With the provision of nutrition information, purchase intentions for the expectation-consistent items showed no effect in 1 case and a positive effect in the other case. Specifically, the purchase intentions means were flat for the chicken dinner (ranging between 5.55 and 5.59). For the turkey sandwich, relative to the control ($M=4.86$), the addition of calorie information ($M=5.86$; $t=3.68$; $P<.01$) and calorie-plus-nutrient information ($M=5.48$; $t=2.22$; $P<.05$) resulted in stronger purchase intentions.

Plots for the perceived likelihood of gaining weight and developing heart disease are shown in Figure 1b and 1c. For both variables, univariate analyses of variance were significant for the chef's salad ($P<.01$) and turkey sandwich ($P<.05$), but not significant for the hamburger platter or chicken dinner ($P>.15$). For the chef's salad, the calories-plus-nutrients condition led to higher perceived likelihoods of heart disease and weight gain, relative to the calories-only condition ($t=2.52$ and 1.87, respectively; $P<.05$). For the turkey sandwich, calories alone decreased both perceived likelihoods ($P<.05$), but the full information did not differ relative to the control. (Presumably, the higher sodium levels revealed in the full-information condition counterbalanced the positive effects of a lower-than-anticipated calorie level.) The pattern of means is particularly interesting for heart disease. With no information, the means for all items except the hamburger platter were almost identical but the calorie and nutrient information widened perceived differences among these items, and the chef's salad mean increased significantly ($P<.01$). These findings also supported Hypotheses 3a and 3b.

Consumers' item choices were examined across the 3 levels of nutrition information. Results were significant ($\chi^2=15.6$; $df=6$; $P<.02$). When calorie-plus-nutrient information was presented, the percentage of consumers choosing the turkey sandwich (which generally met or exceeded nutrition expectations) increased from 11% to 21%, and it decreased selection of items with higher levels of calories and fat than expected. The share of the chicken dinner (i.e., nutrient levels consistent with expectations) remained constant. In tests comparing the 2 items with higher calories and fat (i.e., items less consistent with expectations) to the 2 more-healthful items, selection of the higher-calorie, higher-fat items decreased from 37% to 24% ($P<.05$) when calorie and nutrition information were provided. These findings supported hypothesis 4.

DISCUSSION

As a response to the increased prevalence of overweight and obesity, which has been linked with the greater consumption of foods prepared outside the home,[18] legislation has been proposed at both federal and state levels that would require the provision of nutrition information for restaurant food items. Study 1 results showed that, for a number of items, consumers vastly underestimated calories, fat, saturated fat, and sodium levels. On average, less-healthful items were underestimated by more than 600 calories and between one third to a full day's worth of the recommended values for fat and saturated fat. If diners consumed 600 more calories than they realized for just 1 restaurant meal per week, an extra 30 000 calories a year would be added to their diets. These unaccounted calories could cause a weight gain of approximately 9 pounds annually, holding all other factors constant. Over several years' time, this degree of misestimation could cause significant weight gain. Given substantial differences between expected and objective values, these findings indicate that inclusion of nutrition information on menus offers informational benefits to consumers.

Study 2 findings showed that the addition of calorie and nutrient information for dinner house items influenced attitudes, intentions, and choices. Purchase intention and choice decreased for less-healthful items that were worse than expected (hamburger platter and chef's salad), whereas they remained constant or increased slightly for items more consistent with expectations. The largest changes occurred for the chef's salad, which had the largest deviations from consumer expectations. In the absence of nutrition information, the turkey, chicken, and chef's salad items were indistinguishable in terms of the perceived likelihood of heart disease. However, when calorie and nutrient information were provided, there was a larger difference in disease-risk perceptions.

Our findings have significant public health implications and provide support to the notion that new restaurant-oriented nutrition information initiatives may be warranted. However, circumstances unique to the restaurant industry, such as customized orders and portion size differences, will make provision of exact nutrition information for every single meal and every consumer difficult. Legislation would probably need to apply to items "as offered for sale," and nutrition disclosure would not include customized orders or daily specials.

Because our results showed that consumers substantially underestimated calorie levels for less-healthful dinner house items and that preference for the less-healthful items diminished when nutrition information was disclosed, provision of nutrition information for chain restaurants' standard menu items would appear helpful. We also recognize that further research may identify additional nutrition formats that may be equally or more effective at conveying nutrition information, and that combining possible social marketing initiatives with future nutrition disclosure research seems warranted. In sum, these findings suggest that the provision of easily accessible nutrition information in restaurants may provide significant public health benefits by making it easier for consumers to make more healthful food choices. ■

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Contributors

S. Burton and E. H. Creyer originated the design of the studies and formulated the hypotheses. S. Burton wrote the first draft of the article and performed initial analyses. J. Kees and K. Huggins worked on data analyses and data collection. All authors participated in critical review and revision of the article based on reviewers' recommendations.

Human Participant Protection

This study was approved by the institutional review board of the University of Arkansas. Informed consent was obtained from study participants.

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To: <jfreeman@health.nyc.gov>
Date: Mon, Oct 30, 2006 12:20 PM
Subject: City of New York - Correspondence #1-1-271985930 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-271985930
DATE RECEIVED: 10/30/2006 11:12:17
DATE DUE: 11/13/2006 12:16:31
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

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Sent: 10/30/2006 11:11:17
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: Neal.Fulves@barclayscapital.com (Neal)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Neal (Neal.Fulves@barclayscapital.com) on Monday, October 30, 2006 at 11:11:17

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Neal

State: NY

Country: United States

Email Address: Neal.Fulves@barclayscapital.com

Message: There's talk that trans fat in NY restaurants have been banned, or limited. I say ban it all together.

Although I would prefer a total ban on it, on everything, including all food, I say, Thank you, thank you, thank you..... this is a first step. Next, ban High Fructose Corn Syrup, another cause of obesity.

-Neal

REMOTE_HOST: 167.203.48.180
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; .NET CLR 1.0.3705; .NET CLR 1.1.4322)

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NATIONAL COUNCIL OF CHAIN RESTAURANTS
of the National Retail Federation

October 30, 2006

Rena Bryant
Secretary to the Board of Health
125 Worth Street CN-31
New York, NY 10013

Re: Comments Regarding Notice of Intention to Ban Trans Fat

Dear Ms. Bryant:

The National Council of Chain Restaurants (NCCR) appreciates this opportunity to comment on the proposal to amend the New York City Health Code to ban trans fat in restaurants (the Proposal). The NCCR is the national trade association exclusively representing the chain restaurant industry. NCCR members own and operate in excess of 50,000 restaurant facilities. Additionally, through franchise and licensing agreements, another 70,000 facilities are operated under their trademarks. In the aggregate, NCCR's member companies and their franchisees employ in excess of 2.8 million individuals. Many of these member companies and franchisees operate establishments in New York City and, therefore, would be significantly impacted by the Proposal.

NCCR members share the concerns of the Health Department about the link between certain fats and coronary heart disease (CHD), and accordingly, they have been making great strides over the past few decades to alter their menu offerings in response to consumers' growing interest in diet and health. In fact, many members have embraced plans to reformulate their trans fat-containing products, and already some have had success. We expect further innovation and progress will rise but the Proposal's timeframes are unrealistic and will inflict substantial unintended costs.

More fundamentally, NCCR strongly disagrees with the notion that only a ban will change industry practices. The food industry generally, and restaurants in particular, thrive based on our ability to meet ever-changing consumer preferences. The knowledge and consumer concern over the dietary impact of saturated fat produced fundamental shifts in the use of shortenings and oils common to chain restaurants and virtually every other sector of the food industry.

The move to the cooking oils that prompted the Proposal arose in response to the effectiveness of our industry to remove saturated fat. The move to partially hydrogenated vegetable oils came about from our listening to our customers. Our

success of just a few decades ago is traced to our innovation and technological advances. A similar transition is underway now. Any suggestion that a ban is necessary to advance the public health ignores the track-record and current efforts of our industry.

A constructive approach to addressing trans fat concerns must be considered in the context of the existing body of scientific evidence and the practical effect of the Proposal. Trans fat cannot be considered independently of saturated fat, nor the other risk factors for CHD. Because the Proposal fails to address these other risk factors and, in fact, will encourage a shift to oils containing elevated levels of saturated fat, it is not apparent how the Proposal will affect any true public health benefit.

Even if such a ban would benefit the public health, the switch in all restaurants from trans fat-containing oils to replacement oils is simply not practicable. There is a limited supply of replacement oils, and many of these oils are, in fact, higher in saturated fat—thus, the public health benefit of the ban becomes even more unclear. Moreover, we believe that, in its Proposal, the Department underestimates the far-reaching costs and burdens associated with a trans fat ban—a ban that will impact not only restaurants, but also oil and food suppliers, food manufacturers, oil processors, seed companies, and farmers.

This extensive burden cannot be justified by an illusory public health benefit. This fact highlights the importance of reviewing some potentially critical legal concerns, namely the Proposal's potential to violate the doctrines embodied in the Commerce Clause and the Supremacy Clause of the United States Constitution. The NCCR, therefore, urges the Board to reject the Proposal.

The Proposal is Unlikely to Have the Purported Public Health Benefit

Despite implications to the contrary in the Proposal, effectively addressing CHD risk is a complex issue. It would be wonderful if a simple ban of a nutrient would somehow save thousands of lives, yet science simply does not support such a simplistic theory.

The Proposal portrays trans fat as a "dangerous" nutrient that has "no safe level" in foods, and it attributes these findings to reputable governmental and public health authorities. These statements, however, are exaggerated, and a review of the cited authorities shows that important public health findings have been taken out of context. The Institute of Medicine and USDA's 2005 Dietary Guidelines for Americans, for example, both say that trans fat consumption should be reduced, but neither says that the nutrient is "dangerous" or has "no safe level." These mischaracterizations are misleading to consumers seeking reliable nutritional guidance, and they cannot justify a rash governmental action.

Moreover, the Proposal fails to acknowledge that trans fat cannot be considered independently of saturated fat. Again, the Proposal takes statements from public health

authorities out of context. The Proposal says that "trans fat appears to be even worse than saturated fat." The Dietary Guidelines, however, say, "Because dietary intake of saturated fat is much higher than that of trans fat and cholesterol, it is most important to decrease one's intake of saturated fat. However, intake of all three should be decreased."1/ This guidance comports with the findings of a preponderance of scientific studies, which show the importance of an overall dietary perspective, not a singular focus on one type of fat.

The Proposal Fails to Take Account of the Impracticability of An Abrupt Switch to "Healthier" Oils

Even if a ban of trans fats were deemed to serve a significant public health goal, an abrupt switch from partially hydrogenated oils to replacement oils is not feasible. In its Proposal, the Health Department assumes that restaurants will easily be able to replace their trans fat-containing oils and foods with a readily available supply of trans fat-free products. This is simply not so.

There is a very limited supply of replacement oils that have the same functional purpose as partially hydrogenated oils. It cannot be forgotten that the particular oil used in a food affects product taste, appearance, mouth feel, performance, and stability. Supplies of those replacement oils found to have similar properties have already been largely cornered by large packaged food manufacturers, seeking to reformulate products in response to FDA's new trans fat labeling rules. It will take years for the supply of these new oils to meet demand, particularly if cities, such as New York, seek to force "overnight" switches in the restaurant sector. Crop production simply cannot be increased "overnight" to meet this demand.

This reality coupled with an arbitrary compliance deadline in the Proposal will likely result in many restaurants resorting to oils that contain elevated levels of saturated fat. Without a critical review of the practicality of a mandated trans fat ban in the City, the Board may unwittingly be endorsing this type of nutritional trade-off. This runs afoul of the lofty public health goal of the Proposal.

The Proposal Ignores the Far-Reaching Costs and Burdens it Will Impose

In response to consumer demand, many NCCR members have been working for years to reduce their use of trans fat-containing oils, and they can attest to the costly and time consuming processes involved. To reformulate products, these companies have undertaken years of intensive research and development and trial-and-error testing. The innovation and hard-work necessary to bring about these changes takes time and the artificial deadlines imposed by the Proposal will prove insufficient.

1/ Dietary Guidelines Advisory Committee Report, *Nutrition and Your Health: Dietary Guidelines for Americans*, Part E, p. 12 (2004).

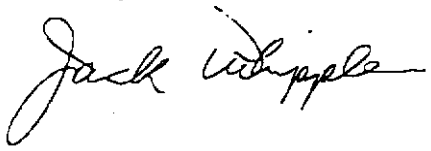
Once a new oil is found, restaurants must renegotiate contracts with suppliers or find new suppliers. Contract prices rise as the market for appropriate replacement oils tightens. Further, there are costs involved with training employees to use the new oils and with adjusting to the altered stability of reformulated products.

In short, even if a supply of appropriate replacement oils becomes available, the high costs associated with attaining these oils and with implementing the necessary changes throughout the supply chain and within the restaurant cannot be ignored. Some chain restaurants, indeed, have invested the time and money to switch oils. These changes, however, have been years in the making, and are proof that voluntary programs do work and consumer- or market-driven switches are happening. Eradicating the flexibility for each restaurant to invest the time and resources necessary to research and develop an approach appropriate for its unique business simply is not sound public policy.

* * *

For the foregoing reasons, NCCR urges the Board to carefully examine the illusive nature of the purported public health benefits and the impracticality and significant costs and burdens associated with compliance. Failure to do so may result in an arbitrary and capricious action. We believe that a critical review of these issues will dictate that the Board reject the Proposal.

Sincerely,



John R. Whipple
President

NATIONAL COUNCIL OF CHAIN RESTAURANTS
of the National Retail Federation

October 30, 2006

Rena Bryant
Secretary to the Board of Health
125 Worth Street CN-31
New York, NY 10013

Re: Comments Regarding Notice of Intention to Require Calorie Labeling at Certain Restaurants

Dear Ms. Bryant:

The National Council of Chain Restaurants (NCCR) appreciates this opportunity to comment on the proposal to amend the New York City Health Code to require that certain restaurants include prominent calorie statements on menus (the Proposal). The NCCR is the national trade association exclusively representing the chain restaurant industry. NCCR members own and operate in excess of 50,000 restaurant facilities. Additionally, through franchise and licensing agreements, another 70,000 facilities are operated under their trademarks. In the aggregate, NCCR's member companies and their franchisees employ in excess of 2.8 million individuals. Many of these member companies and franchisees operate establishments in New York City and, because of the nature of their businesses, they are likely to be significantly impacted by the Proposal.

Most NCCR members have been providing nutritional information to consumers for years. These efforts have been substantial and are continuing to evolve. Pursuant to the Proposal, however, these efforts to make nutritional information publicly available will trigger new legal duties to provide prominent calorie statements on menus and menu boards. The usefulness of this new presentation of information remains unclear, yet compliance with the requirements will undoubtedly impose significant costs on the affected restaurants—both in terms of compliance costs and in terms of potential lost business. This set of circumstances provides a disincentive for companies to continue providing any type of nutritional information to consumers. Restaurants should be encouraged in their health education efforts, not dissuaded from such effort by misplaced regulatory policies.

Further, the Proposal must be reconsidered because of the disparate impact it will have on the restaurant industry. The Proposal will only apply to "standardized" foods, which the Department hypothesizes will limit the reach of the Proposal to those 10% of New York City restaurants that are primarily "high volume" establishments. It is apparent that our membership, and not the other restaurants serving similar fare, is

being targeted. Moreover, no public health justification is given for singling out one type of establishment. This type of discrimination is not just unfair, but it triggers constitutional scrutiny, as it runs afoul of the principles embodied in the Commerce Clause of the U.S. Constitution. We, therefore, urge the Board to reject the Proposal.

Current Flexible Policies Allow a Diverse Industry to Meet Consumer Demands in Appropriate Ways

For years, NCCR members have been providing consumers with complete nutritional information about their products. The range of vehicles used by restaurants to convey this information reflects the diversity within the restaurant sector. Our efforts are constantly evolving, tailored to the consumer expectations and format of the particular chain restaurant. Among our members, there is great diversity in operations, formats, demographics of customers served, and the types of food provided. Accordingly, the methods of providing nutritional information varies; sometimes, for example, it is available through in-store brochures, while often is also available on restaurant websites.

While implementing the Nutrition Labeling and Education Act of 1990 (NLEA), the Food and Drug Administration (FDA) considered whether the nutritional labeling requirements being applied to packaged foods should be extended to cover foods served in restaurants, and it declined to do so. FDA acknowledged that "there are variations unique to restaurant foods" that make such requirements impracticable. 1/ The Board, too, should recognize the unique nature of the restaurant industry and permit restaurants to continue meeting the consumer demand for nutritional information in appropriately tailored ways.

The Proposal Fails to Recognize the Significant Costs It Would Impose

In its Proposal, the Department ignores two significant categories of costs that mandatory calorie labeling will impose. The first category includes all actual compliance costs, and the second includes the very real costs associated with competitive disadvantage.

The Proposal would require that affected restaurants provide accurate caloric values for each item on the menu. To do this, restaurants would need to invest in the analytical tests necessary to verify such values. Then, the restaurants would have to invest in new versions of all of their menus, including print menus, menu boards, and drive-thru menus. The mandated font size for the calorie statements is likely to make mere additions to these materials impossible, without rendering all printed information unreadable or inaccessible. The size and layout of all menus, therefore, will need to be reconsidered. And, of course, each time a menu item is reformulated in a manner that affects the caloric value, all menus and menu boards will need to be reworked. These costs add up and may be substantial. These costs will be imposed by New York City restaurants that will effect menu prices and may well effect the sustainability of residents' jobs.

1/ 58 Fed. Reg. 2387 (Jan. 6, 1993).

Moreover, there may be significant impact to the bottom lines of those businesses that begin providing the required calorie menu statements. As discussed further below, consumers may turn away from those restaurants that prominently display calorie statements, taking their business to establishments that do not display such information. Such behavior may be irrational, particularly when a consumer forgoes a hamburger at a national chain restaurant only to consume a hamburger at a local establishment of comparable caloric value not providing calorie statements, yet such misguided purchasing decisions are a likely result of the Proposal. And, indeed, this will impose added costs on the affected restaurants.

The Burdens Associated with the Proposal are a Disincentive to Offer Nutritional Information

Already, many restaurants are providing complete nutritional information to consumers, and they have invested significant amounts in doing so. Under the Proposal, however, the cost of providing this information becomes much greater. The compliance costs and the potential competitive disadvantage may persuade many restaurants to discontinue providing nutritional information altogether. This paradoxical result obviously does not help to address the Department's stated public health concern; in fact, it works in the opposite direction.

The Proposal Unjustly Targets Only One Segment of the Restaurant Industry

By limiting the reach of the Proposal to those restaurants serving "standardized" fare and already providing nutritional information to consumers, the Department unreasonably targets a small segment of the restaurant industry. The Department acknowledges that the Proposal is intended to reach approximately 10% of the City's restaurants, particularly those that are "high volume" establishments. In other words, the precise target of the Proposal seems to be the NCCR membership.

The public health justification for the Proposal, however, is not at all narrowly tailored to this segment of the industry. There is no reason to view the calories consumed at this 10% of restaurants any differently from the calories consumed at the remaining 90% of restaurants. A calorie is a calorie. If, as the Proposal implies, a consumer should know the precise caloric value of his meal, presumably he should know this value regardless of where he consumes it. The answer is not to impose costly, unworkable requirements on all restaurants. At the same time there is not justification for singling out chain restaurants for disparate treatment.

The inherent and blatant discrimination in the Proposal yields no public health justification. It is, therefore, suspect, and because the majority of the restaurants that will suffer the Proposal's disparate impact will be businesses with headquarters outside the City limits, the Proposal violates the principles of the dormant Commerce Clause, rendering it unconstitutional.

The Actual Public Health Benefit Related to the Proposal is Unclear

The assumptions upon which the Proposal is based are speculative and flawed. Consumers are unlikely to use the required calorie statements, and when they do, they are likely to use the statements inappropriately, minimizing any potential health benefit. We encourage the Board to test the Department's assumptions against the administrative record that reflects actual consumer behavior and the dubious value of mandatory calorie menu labeling.

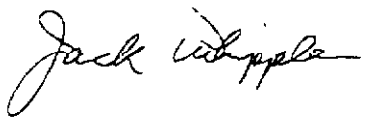
Moreover, if consumers do refer to the calorie statements when making purchasing decisions, they will be making such decisions based on estimates and outside of the important nutritional context. Due to frequent customization, consumers will still need to estimate the caloric value of an ordered meal. For example, after holding the cheese and adding mayonnaise to a particular standard menu item, the calorie statement will no longer reflect the actual purchased item. Customer customization is extremely common, yet there is no way that restaurants can provide values for all possible combinations of a particular menu item on a menu or menu board. Ironically, an increasing amount of customization reflects consumer efforts to make incremental dietary changes (e.g., substitute mayo with mustard). Many chain restaurants offer such healthier-eating tips. We question the merit of a proposal that impinges on this or any other type of customization.

Even when a calorie statement does accurately reflect the caloric value of a consumer's purchase, it may not guide the consumer to make the "healthiest" purchasing decision. Calories should not be taken out of context. Other nutrients, too, are important. For example, deciding based on calories alone, a consumer may select a 200-calorie hamburger, instead of a 350-calorie salad, when in fact, the calories in the salad may have come from so-called heart healthy nutrients, whereas the calories in the hamburger may have come largely from fat. It is important for consumers to understand the entire nutritional picture. The Proposal, however, does not facilitate reaching consumers with such a complete nutritional message; instead, it places the sole focus on calories, and perhaps, through its disincentive effect, places complete nutritional information even further out of consumers' reach.

* * *

For the foregoing reasons, NCCR urges the Board to reject the Proposal. There is a great deal that stakeholders can and must do to support informed, wise choices by consumers with respect to both diet and lifestyle. The Department's proposal falls well-short of the mark.

Sincerely,



John R. Whipple
President

MOUNT SINAI
SCHOOL OF
MEDICINE

Department of Health Policy

Mount Sinai School of Medicine
One Gustave L. Levy Place, Box 1077
New York, NY 10029-6574

Tel (212) 659-9567
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Testimony of Carol R. Horowitz MD, MPH
Public Hearing in Reference to
Notice of Intention to add §81.50 to Article 81 of the NYC Health Code

Good morning.

Before I begin, for the record, I'd like to ask that the calorie labeling law be clarified to specify what will be posted for combination meals.

I am a primary care doctor and a researcher at the Mount Sinai School of Medicine. In my research, I partner with Harlem leaders to study the health problems that lead to so much unnecessary suffering and death, and develop programs to improve health. The East Harlem Diabetes Center of Excellence and The East Harlem Partnership for Diabetes Prevention are using this community based research model to begin to tackle the diabetes and obesity epidemics in East Harlem (EH).

We believe that having calories posted on menus in places that already make calorie amounts public, could help people make informed choices about their diets, and could help in the struggle to prevent and treat diabetes and obesity. We know people grossly underestimate the calories in less-healthy menu items. We know that people given nutrition information choose lower calorie foods. No one *makes* them change; just giving information gives people the option of using the information to help make food choices.

We've learned lessons from our research in EH that apply to much of our city. The best way to describe EH is to compare it to the adjacent Upper East Side (UES). These 2 communities are separated by only one city block. But, differences in health make it seem like we are separated by an ocean. EH is the most obese community in NYC, UES is the least obese. As obesity and diabetes are closely linked, EH has the highest rate of diabetes in NYC; UES has the lowest.

What accounts for these differences in health? In addition to large socioeconomic differences that we canot affect by enacting public health laws, our research reveals several important factors. EH food stores have less healthy foods than those in the UES. Fast food venues are pervasive in EH. One in 7 restaurants in EH are fast food venues, versus only about 1 in 25 on the UES. One of the top 3 barriers EH adults say prevents them from eating healthy is difficulty finding *healthy* fast foods.

We have a new community-based, peer-led program that results in people losing weight and keeping it off. Our evaluation reveals that participants find learning to read labels particularly helpful. While EH stores may not have all the healthy choices that UES stores have, people are now researching their choices and making better ones *at those same stores*. When they ask us about how to eat healthier at fast food and take out places, should we tell them to avoid these food venues? We don't, and we don't think we should.

We advocate providing information about these foods, just as people have information about the foods they buy in stores- because food manufacturers are mandated to have nutrition labels on food items. Yes, most large chains do make nutrition information public. But, in our current digitally divided world, those with the most financial and educational resources also have the easiest access to this information and the greatest likelihood of deciphering it in its current format.

If this information is out *there*, why can't it be in the restaurants, and easy to read and understand for *everyone*? What is the down-side of posting the calorie content next to the price of foods? Is it likely to make people stop buying fast food? Why should it? It's inexpensive, people like it, and it's very convenient. And, many venues do offer lower calorie options. Would it be a burden for the business owners? Menus and menu boards regularly change to include new prices and new items. Calories could be incorporated with those changes. Would it confuse people? While there should be companion education programs, I don't think we should underestimate our fellow New-Yorkers. Would everyone want, need, or use the information? No, but not everyone uses all the information that is on menus now, or reads the labels mandated on food items in stores.

But, some people would read it, think about it, and have an opportunity to use it. If I see that I have a choice of 2 extra large sodas, they cost the same amount, but if I chose diet soda, it would save me 800 calories, I might choose the diet soda. Remember, cutting out 100 calories a day results in losing about 10 pounds a year. And, if restaurants saw people prioritizing lower calorie foods or people began to ask for more low-calorie options, they could expand their business to accommodate their patrons, just as they routinely change their menu to reflect other food trends.

1 in 2 Latino children born this decade will have diabetes as adults, and nearly 1 in 2 African American children face the same fate. We *know* weight loss can prevent diabetes and help people with diabetes live longer If we *don't* act now, generations after us will wonder why we *sat back and watched* the diabetes and obesity epidemics, and the poor health that comes with them, spread through our city. What are we waiting for?

Thank you.

Carol R. Horowitz MD, MPH
Assistant Professor, Departments of Health Policy and Medicine
Mount Sinai School of Medicine
1425 Madison Avenue
NYC, NY 10029

Comments on Phasing Out Trans Fat, and Calorie Labeling in Some NYC Restaurants:
NEED TO ADDRESS FOOD ALLERGIES
By Marcy Benstock (Work: 212-582-2578)
Mon. Oct. 30, 2006 Public Hearing at 125 Worth Street

My name is Marcy Benstock. I applaud and support the NYC Health and Mental Hygiene Department's (the "Department's") proposals to phase out trans fat in restaurants, and to require calorie labeling in some restaurants.

But the trans fat rule could actually harm public health unless the NYC Board of Health also requires restaurants to provide information on which specific cooking oils and shortening they use. Otherwise, if restaurants replace trans fats with edible oils that come from nuts and seeds (and don't disclose that), there will be an increase in allergic reactions, emergency room visits, coma and death for diners who are allergic to nuts and seeds and the cooking oils extracted from them.

The Department's 9/26/06 press release suggests replacing trans fat with such vegetable oils as canola (that is, rapeseed). But many people have true food allergies to the oils that come from nuts and seeds--including canola (rapeseed), cottonseed, safflower, sesame, and sunflower oils, almond and walnut oils, and possibly to peanut or soy oils as well. The claim that "dietary fats [other than trans fats]...are a natural part of a healthy diet" just isn't true for these people.

Avoidance essential. There's no cure for food allergies. "Strict avoidance...is the only means to prevent potentially serious reactions." (1) But people with allergies can't avoid ingredients like nuts, seeds and seed oils unless the ingredients are honestly disclosed.

Food allergies are dangerous and can be fatal. Allergic patients have very strong incentives to act on ingredient information--if restaurants provide it. Within minutes or hours of eating seed oils, for example, allergic patients will vomit, or suffer from nausea, hives, itching or tingling in the mouth, cramping or shortness of breath. "More severe reactions...canlead to loss of consciousness, asphyxiation, shock, or death." (2)

Gross underreporting. Estimates of the percentage of adults or children with food allergies are based on gross underreporting. Anaphylaxis is systemic shock, which can result in death. There was no code for the diagnosis of food-induced anaphylaxis in the International Classification of Diseases as of 1992. (3) Few food allergy sufferers even go to allergists, much less report their symptoms to any government record-keeping agency. Thus guesstimates of the prevelance of the problem are sure to be understated.

Sesame Seed Allergy is a good example of the regulatory deficiencies this gross underreporting helps lead to in the U.S. The European Commission (EC) and Canada have both added sesame to the list of major food allergens for food labeling purposes, even though the U.S. Congress and the FDA have shied away from this appropriate step. Studies have shown that sesame was the second leading cause of anaphylaxis in Israeli children and the fourth most common cause of allergic reactions to foods in Australian children. (4)

Inadequate FDA and Congressional definitions and classification of food allergens. Claims that most food allergies stem from tree nuts, peanuts, soybeans and other ingredients subject to current FDA labeling regulations do not have an adequate foundation. Similarly, the claim that low levels of certain allergens doesn't present a problem just isn't true. Even trace amounts of sesame, for example, can unleash life-threatening reactions. State laws often follow

federal laws, and those laws reflect lobbying, campaign contributions and pressure by the food industry rather than decisions on the merits in many cases. Thus the loophole in Sec. 81.08 (c)(ii) of the proposed Board of Health rule should be eliminated.

Explosion in adult-onset and childhood food allergies. There is one thing both allergists and food allergy sufferers agree on: there has been an explosion in food allergies in children, and in adult-onset allergies to foods in adults. The Department and the NYC Board of Health need to address this better than they have so far.

Restaurant disclosure is essential. Most allergy-related fatalities occur in eating establishments, according to the Food Allergy and Anaphylaxis Network and a NY Times Op Ed 5/14/06 ("A Shot in Time"). Allergenic oils were rarely a U.S. problem until the 1970's, when mystery vegetable oils began to be used. (Corn and olive oil and butter and lard were standard up until then.) One of the first surveys that was able to report anything other than isolated case reports found in 1988 that fatal anaphylaxis in their sample "occurred primarily in adults who unknowingly ingested the allergen while eating away from home." (5) Thus restaurant disclosure is now absolutely essential. McDonald's already has a handout listing all the ingredients in its foods, and this is incredibly helpful--and a great selling point--for food allergy patients.

Epipens in restaurants aren't a good enough answer. Epipens can be life-savers when someone has an anaphlyactic reaction to food. But Epipens can't always save you once a food allergen has been ingested. A 1992 study ("the 1992 study") reported on six fatal and 7 near-fatal cases of food-induced anaphlaxis in 13 children and adolescents who had to be admitted to an intensive care unit for intubation, mechanical ventilation, and vaspressor support. While all of the subjects of that 1992 study had been given epinephrene, seven died anyway (in spite of being given appropriate hospital emergency room care). Three of the seven who died seemed to get better at first--before they died. (They were were relatively symptom-free for one to two hours before they died.) (6) "A history of mild reactions does not preclude the possibility of a future severe reaction." (7)

Also, food allergies tend to get worse with every exposure. And "the administration of too much epinephrine can precipitate hypertension and cardiac arrhythmias." (8)

Conclusion. The Department's website says "Assuring safe and healthy dining options is a public health priority," along with preventing "dangerous and...preventable risks to restaurant goers." That's as it should be. I urge you not to push allergic diners out of the frying pan and into the fire. Please require, at minimum, the disclosure of the specific nut and seed oils used in food preparation in restaurants.

#

(1) FDA website. (2) FDA website.

(3) Hugh A. Sampson, M.D., Louis Mendelson, M.D., and James P. Rosen, M.D., "Fatal and Near-Fatal Anaphylactic Reactions to Food in Children and Adolescents," The New England Journal of Medicine, Aug. 6, 1992, p. 380 (hereinafter N Engl J Med 1992;380...)

(4) Melissa Conrad Stoppler, MD and Jay W. Marks MD, "Sesame Seed Allegery: A growing Problem?" MedicineNet.com, 10/26/06, citing Gangur V, et al., Sesame allergy: a growing food allergy of global proportions? Ann Allergy Asthma Immunol 2005;95;4-11 (7/25/05).

(5) Yunginer JW, Sweeney KG, Sturner WQ, et al. Fatal food-induced anaphylaxis. JAMA 1988;260;1450-2.

(6) N Engl J Med 1992;380...

(7) FDA website.

(8) "Lethal Food Allergy in Children," Editorial, N Engl J Med 1992;327...

Public Hearing: Proposal to ban the use of trans fats in foods service establishments and to require caloric labeling on menus in such establishments that make nutrition information publicly available.

Laurie Tansman, MS, RD, CDN
Department of Clinical Nutrition
The Mount Sinai Hospital
and
Department of Community & Preventive Medicine
Mount Sinai School of Medicine

I want to address these proposals from the perspective of public health policy.

When it comes to public health, there are two opposing theories: 1) Minimal government interference and 2) Social justice philosophy. This refers to the fact that society may share in the responsibility for a person's health – namely that "society" is the government.

The mission of public health is to assure conditions in which people can be healthy. To assure this requires policies that do result in government intervention. For example, the recent actions by the FDA regarding the contamination of spinach with E. Coli.

"We want the government to ensure that our food supply is safe, yet we also want the freedom to purchase unhealthful food," as identified in "Nutrition in Public Health" – a text edited by Dr. Sari Edelstein.

In regards to the trans fat ban in food service establishments, consumers do not essentially "have the freedom to make unhealthful choices" because many of them are not even aware that they are making an unhealthful choice. There are manifold ways that trans fats are used in food preparation unbeknownst to the consumer. I have personally witnessed the use of large amounts of partially hydrogenated fat that was added to the dish in which a frozen half of spring chicken was being broiled. The chicken was indeed being broiled as indicated on the menu but was also being fried as it was being cooked in large amounts of fat at high temperatures.

But the innocent consumer had no idea of this and so was unknowingly going to be consuming large amounts of unhealthy trans fats.

With the approval of this ban, consumers will be protected from the unknowing consumption of such an unhealthful food ingredient. In this way the government is interfering to assure a safe food supply. But if this ban is going to have a successful impact on the public health and indeed assure a safe food supply then it must also include that the fats that will be used in place of the trans fats be healthful fats or neutral fats; not other unhealthful fats such as many saturated fats.

In regards to the second proposal to require caloric labeling on menus in such establishments that make nutrition information publicly available, this is an outstanding first step by the government in helping the public to be an educated consumer yet allowing that consumer the freedom to make what might be an unhealthful food choice if that consumer has a significant weight problem and the particular menu item is especially calorically dense.

The next step…
…will be in requiring all restaurants to make available the caloric amount of their menu items. This would be a wonderful government initiative to help in addressing the obesity pandemic.

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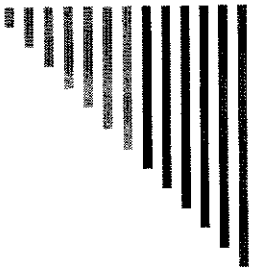

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Trans Fat Ban

- Was there fat added in the preparation of this chicken?
- If so, what type of fat was used?
- If it says on the menu that the chicken is broiled, can the customer assume that significant amounts of fat were not used in its preparation?

In regards to the trans fat ban in food service establishments, consumers do not essentially "have the freedom to make unhealthful choices" because many of them are not even aware that they are making an unhealthful choice. There are manifold ways that trans fats are used in food preparation unbeknownst to the consumer. I have personally witnessed the use of large amounts of partially hydrogenated fat that was added to the dish in which a frozen half of spring chicken was being broiled. The chicken was indeed being broiled as indicated on the menu but was also being fried as it was being cooked in large amounts of fat at high temperatures.

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In regards to the trans fat ban in food service establishments

Can you guess the calories in this cup of Caffe Latte Espresso with steamed milk?

A 16 fluid ounce serving provides approximately 260 calories.

In regards to the second proposal to require caloric labeling on menus in such establishments that make nutrition information publicly available, this is an outstanding first step by the government in helping the public to be an educated consumer yet allowing that consumer the freedom to make what might be an unhealthful food choice if that consumer has a significant weight problem and the particular menu item is especially calorically dense.

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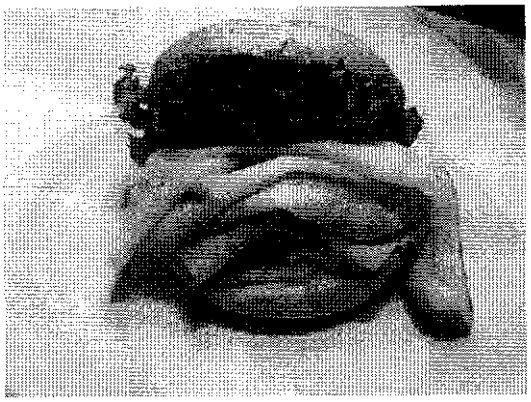
Can you guess the calories in this turkey sandwich?



To General Council - Boood of Healths.

Att: Renee Bryant
Re: Article 81 -
Fax 218-788-4315

I woulal like to shaore with the Board of Healths concerning my viewpoint re: article 81 -

I feel the the bakeries which offer those delicious cup cakes, cakes, all sorts of breads need to make the public aware of all ingrediants. In discussing this topic with several bakeries they did not deny that there are several oils.

I also would like to bring attention to movie theatres re: Pop corn - until company was confronted to give names of their vendors, their counter would say "Peanut Oil - or Canola. Our children should be protected against companies that only care about $$$.

Thank you.
Lillian Cohen

NEW YORK CITY COALITION AGAINST HUNGER
moving families beyond the soup kitchen

Testimony of Joel Berg
Executive Director, New York City Coalition Against Hunger
Before New York City Department of Health and Mental Hygiene
Hearing on Proposed Ban on Trans Fats at Food Service Establishments
October 30, 2006

Good morning. I'm Joel Berg, Executive Director of the New York City Coalition Against Hunger (NYCCAH), which represents the more than 1,200 food pantries and soup kitchens in New York City, and the more than 1.2 million low-income New Yorkers forced to obtain food from these charities. This testimony is submitted on their behalf.

This testimony makes three basic points:

1) We generally support the proposed ban on artificial trans fats at food service establishments.

2) Such a ban should occur only as part of much broader efforts by the City to: expand nutrition education, make nutritious foods more available and affordable in low-income neighborhoods; and work with the Federal and State government to improve nutrition labeling on all food products.

3) Because such a ban could actually reduce the overall amount of food provided to hungry New Yorkers by the city's already under-resourced soup kitchens and food pantries, funding for the City's Emergency Food Assistance Program (EFAP), managed by the City's Human Resources Administration (HRA), should be significantly increased by the Mayor and the City Council to make up for the food lost due to this policy change and to meet the growing overall demand for emergency food.

In general, we believe the Department's proposed ban on most trans fats in New York City food service establishments is a sensible approach that would improve the nutrition and health of New Yorkers of all economic backgrounds. Not only are trans-fats seriously damaging to coronary health, New Yorkers are rarely made aware when they are included in foods they are served. Directing the city's restaurants to eliminate them over time is a common sense approach that will increase the life-spans of all New Yorkers – low-income, wealthy, and middle-class alike.

Mayor Bloomberg has already taken a number of bold positions to improve the city's nutrition – such as implementing a universal school breakfast program, supporting an increase in the number of the city's farmers' markets, and helping bodegas obtain healthier foods – so this latest move further enhances his positive legacy on public health.

I caution, however, that efforts to ban trans fats need to be part of an even broader effort to increase nutrition education and improve the access to healthy, affordable foods citywide.

According to the *Tufts University Health and Nutrition Letter*, "Trans fat is no worse for your health than saturated fat." However, as is often the case, many credible experts take a different view. Many experts I respect believe that trans fats are indeed appreciably worse than other fats. But I think such a debate over the relative harms of different kinds of fats is distracting from the more important public health issues. It is clear the City needs a comprehensive plan to decrease the use of both trans and saturated fat while increasing the consumption of fruits, vegetables, and whole grains. This is surely not an easy goal, since many New Yorkers – myself included – relish the taste of fat-laden fries, pizza, ribs, and cheeseburgers, but given that the risks are literally life and death, we must surely make the effort.

We hope that Mayor Bloomberg uses this opportunity to join with the City Council to launch a comprehensive effort to attack the interrelated problems of hunger, poor nutrition, and obesity. Hunger and obesity are often the flip side of the same malnutrition coin. It is a challenge for all people to eat the right foods, but given that healthier foods with zero or low fat tend to be more expensive than their less nutritious counterparts, it is even more difficult for low-income New Yorkers to do so. We hope that the effort to ban trans fat prompts the Mayor to also support more broad-based efforts to increase utilization of the federally-funded Food Stamp and WIC Programs, which concretely enable New Yorkers in poverty to improve the nutritional quality of their food choices.

As a report soon-to-be-released by my organization will document, in too many low-income neighborhoods, it is nearly impossible to find fresh, nutritious food. Thus, we urge the City to focus on the broader reality that, if you can't find nutritious foods, or if you can't afford them, you can't eat them. Rather than patronizingly lecturing low-income New Yorkers on the need to eat better, our public instructions should devote more resources to giving low-income families the tools to enable them to do so. Culturally-sensitive nutrition education can be important, and should be expanded, but such efforts will only succeed if they are combined with improved *access* to nutritious foods.

We also urge the City to work with the Federal and State Governments to insist upon much more accurate and helpful nutrition labeling for all foods. I illustrate the need for better labeling by describing three bags of pretzels that I purchased within a two block radius of my office. Each bag appears to the naked eye to be of a similar size to the others. Yet one claims to be five servings, another claims to be two servings, and another claims to be one serving. I doubt that most consumers know to look at the portion sizes, and then times multiply the caloric and fat contents of each by the number of supposed portion sizes. I also doubt that the bag that is supposed to be five portions ever lasts five meals before it is finished. By the way, for the record, none of these bags had trans fats … but all of them were *delicious*.

Our biggest concern is that this regulation may have the unintended consequence of reducing the amount of food distributed to low-income, hungry New Yorkers by the hundreds of charitable soup kitchens across the city. The regulation covers any establishment, licensed by the Department of Health and Mental Hygiene, at which "food is sold or distributed for free." This wording seems to indicate that it would cover all soup kitchens in the city, which are licensed by the Department. Given that food pantries are not currently licensed by the Department, my reading is that this new rule would not cover stand-alone pantries.

We do think that, by including soup kitchens in this regulation, the City is sending the positive message that low-income New Yorkers are just as entitled as other New Yorkers to food without harmful substances.

On the other hand, this is a case where theory and reality collide. I understand that HRA's EFAP program doesn't currently ban trans fats, so we may faced the absurd situation in which one City agency (DOHMH) would be penalizing soup kitchens for accepting food funded by another City agency (HRA).

But even if HRA bans trans fats in EFAP, only a small portion of the overall supply of food used by pantries and kitchens in the city comes from EFAP. The balance of the food comes from the State HPNAP Program, the Federal TEFAP Program, and private donations from local, regional, and national sources. Given that many of these other sources of food currently have some trans fats, if the trans fat ban is enforced at soup kitchens, that could result in a dramatic reduction in the amount of food available for distribution at soup kitchens.

It is critical to note that, even without the ban in place, the city's soup kitchens and food pantries lack sufficient food to meet the growing demand. Given that there are now roughly 1.8 million New Yorkers living below the meager federal poverty line, it should be no surprise that 1.2 million New Yorkers now are forced to use soup kitchens and food pantries. According to my organization's 2005 annual survey of pantries and kitchens, the number of people served by these agencies rose by an estimated 40% from 2001 to 2005. Yet, over that same time period, Federal, State, and City support for these agencies has either been reduced or stayed flat. Because these agencies were unable to obtain enough food, money, staff, and volunteers to help meet their growing need, in 2005, nearly half (47%) were forced to ration food by turning people away, reducing portion sizes, and/or limiting hours of operations. Thus, taking away food with trans fat would make a bad situation worse.

The new ban would also create an administrative nightmare for these agencies, most of which are incredibly small and run entirely by unpaid volunteers. Roughly 50% of the agencies in the city have just food pantries, 25% have just soup kitchens, and 25% have both food pantries and soup kitchens. Thus, for the 25% of agencies with both, they would need to have dual sets of records, and likely dual sets of storage space, to separate the food which they can legally distribute in their pantry from what they can distribute in their kitchen. That would be an administrative headache for any entity, but especially for a small, volunteer-run program.

Thus, advocates for low-income New Yorkers face the possibility of a yet another "lose-lose" choice – either fully supporting a ban which could reduce food distribution to hungry New Yorkers or asking for kitchens to be excluded from the ban, thereby providing food to low-income New Yorkers that is not "safe" enough to be provided to other New Yorkers.

I would propose a third alternative: that the Mayor and the City Council agree to increase EFAP funding to a level high enough to make up for **all** the current government and private donations that included trans fats. Ensuring that no additional people go hungry as a result of this ban would seem the least the City could do.

We strongly hope that the City implements this ban as part of a much more comprehensive plan to reduce hunger and strengthen community food security citywide.

File HP
CC: A Caporuso (original)
R Bryant FYI
L Silver FYI

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Mon, Oct 30, 2006 9:10 PM
Subject: City of New York - Correspondence #1-1-272132308 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-272132308
DATE RECEIVED: 10/30/2006 21:00:14
DATE DUE: 11/13/2006 21:06:24
SOURCE: 3-1-1 Call Center
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT: 10/30/2006 21:01:00
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

Message Type:

Topic: Restaurant Related Issues

First Name: JESSEY

Last Name: HOLLMES

Apartment Number:

Street Address: 14 AVENUE A

City: NEW YORK

State: NY

Postal Code: 10009

Country:

RECEIVED
2006 OCT 31 P 3:56
DOHMH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

Work Phone #: 2126776149

Email Address:

Message: TWENTY PEOPLE WANT THE DEPARTMENT OF HEALTH AND MENTAL HYGIENE NOT TO REGULATE THE TRANS FAT AMOUNT BECAUSE IT WILL DAMAGE THE BUSINESS THEY ARE IN. THIS REGULATION WILL CAUSE MANY RESTAURANT TO LOSS MONEY.

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Mon, Oct 30, 2006 10:25 AM
Subject: City of New York - Correspondence #1-1-271933050 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-271933050
DATE RECEIVED: 10/30/2006 09:16:38
DATE DUE: 11/13/2006 10:21:32
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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All other web forms are to be handled by the receiving agency.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/30/2006 09:15:51
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: ira@gershenhorn.com (Ira Gershenhorn)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Ira Gershenhorn (ira@gershenhorn.com) on Monday, October 30, 2006 at 09:15:51

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

2006 OCT 31 P 3:54
RECORDS ACCESS OFFICER
DOH/SECRETARY'S OFFICE
RECEIVED

Message Type: Complaint

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Ira

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Message: Re: NYT 10/30/2006 City May Ask Restaurants to List Calories

YOU PEOPLE ARE FREAKING NUTTTTSSSS!!
Leave the restaurants alone already!
Enough with the regulations!

If you REALLY care about people's health there are alot of targets to go after. HOW ABOUT people Yakking on their Cell phones while driving in the city? GO after that one. Its already a law. It only needs to be enforced. Especially the ones in their big SUVs who don't pay attention to pedestrians anyway.

Do something positive. Make playgrounds better.
Stop telling us NO. Do something that makes us say Yes - let's do that.

Margo G. Wootan is an idiot. She's just trying to preserve her consulting fees. Let her come up something creative instead of more stupid rules.

Anyone can say - "let's regulate".

REMOTE_HOST: 24.215.163.77
HTTP_USER_AGENT: Mozilla/5.0 (Windows; U; Windows NT 5.0; en-US; rv:1.8.0.7) Gecko/20060909 Firefox/1.5.0.7

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GHI

Testimony of
Maria Lopes, M.D.
Senior Vice President and Chief Medical Officer
Group Health Incorporated

Before the
New York City Board of Health

Regarding a Proposed Amendment to
Article 81of the New York City Health Code to Add a New Section 81.08
Regarding Foods Containing Artificial Trans Fat

125 Worth Street
New York City

October 30, 2006

Good Morning.

My name is Maria Lopes, M.D. I am Senior Vice President and Chief Medical Officer of Group Health Incorporated (GHI).

Thank you for permitting me to speak in favor of the proposed amendment to Article 81of the New York City Health Code to add Section 81.08 to the Health Code which would restrict the service of foods by New York City food service establishments containing trans fat.

GHI has a long history of caring for the health needs of New York City. The company was established in 1937 to provide low cost, high quality health insurance coverage to working individuals and their families. It is a statewide health insurer which, along with its wholly owned subsidiary GHI HMO, provides health care coverage and administrative services to more than 2.6 million people, including over 828,000 New York City employees, retirees and their dependents. GHI offers customers a variety of PPO, EPO and HMO programs, as well as prescription drug, dental and vision plans. Throughout its history GHI has pioneered many of the programs that are now standard in the health insurance field.

In addition to its long history of innovation in health insurance, GHI has continued to develop and offer to its subscribers many programs designed to keep them healthy, identify health conditions at an early stage and provide care coordination for those with chronic conditions. These programs include among others, asthma management, arthritis self-help courses, cancer screening programs, post-partum depression screening, diabetes management, and a renal disease management program.

While individuals, employers and their health plans can do much to live and promote healthy life styles, there is also a role for government. In our modern society, and particularly in a large urban environment such as New York with thousands of dining options, government can assist with educating the public and setting standards that limit the population's risk of exposure to foods and substances that are harmful.

Prevention of a condition is always preferable to treating someone once they have the disease. This includes actions such as the one being proposed today to remove an unhealthy substance – trans fat - from the City's food service establishments.

We have known for decades that consumption of trans fatty acids might be contributing to the significant increase in coronary heart disease. Studies show that trans fats have adverse effects on the lipid profile, raising LDL and decreasing HDL cholesterol. According to published articles from the Harvard School of Public Health, removal of trans fats from the industrial diet could prevent tens of thousands of heart attacks and cardiac deaths each year in the U.S.

In a recent article in the *New England Journal of Medicine* researchers detail how trans fats from partially hydrogenated oils have harmful effects on blood lipids, promote inflammation, and cause blood-vessel abnormalities, increasing risk factors for heart disease, sudden cardiac death, and diabetes.

In New York State, cardiovascular disease is the leading cause of death, killing more than 70,000 residents each year. For every person who dies from a heart attack or angina, 18 people live with these conditions. For every person who dies from a stroke, seven people cope with the consequences of a non-fatal event. Many of these survivors become disabled and no longer lead productive lives. They also are at high risk for additional events. These numbers are increasing as the epidemic of heart disease and stroke continues.

Under new FDA guidelines, as of January 1, 2006, trans fats must be listed on food labels. However, foods labeled "zero trans fat" may still contain up to 0.5 grams per serving of trans fat from partially hydrogenated oils. Restaurants, bakeries, and other food establishments are not required to have nutrition labels on the foods they sell, and trans fat content of commercially-prepared foods may be substantial: French fries and chicken nuggets from U.S. fast food restaurants have 5 to 10 g of trans fats per serving, according to research published in the *New England Journal of Medicine*. This regulation would restrict food service establishments from using artificial trans fat containing substances. Instead they would have to switch to readily available substitutes that would cost essentially the same as the substances containing artificial trans fat.

The increase in cardiovascular disease is anticipated to worsen given the growing obesity epidemic in the US: two-thirds of American adults are overweight, half of these are obese and 15 percent of children between ages six and nineteen and 10 percent of children between ages two and five are

overweight. Disparities in obesity, diabetes and heart disease are even more pronounced among Hispanic and African American New Yorkers. GHI applauds the Department's efforts to educate the public about healthy nutritional choices to improve the health status of the population.

Finally, I want to comment briefly on the Department's proposal to require certain restaurants to post calorie information regarding their food items on sign boards and menus where it can be reviewed before people order. GHI is pleased to see that this requirement is limited to those (chain) restaurants that have the capacity to produce the information. Often these restaurants have portion controlled serving sizes and already provide calorie and nutritional information, but not always in places where it is easily visible prior to ordering.

Again, thank you for letting me speak in support of both these proposals.

I would be pleased to answer any questions you have on my statement.

Mozaffarian D, Katan M, Ascherio A, Stampfer J, Willett W: Trans Fatty Acids and Cardiovascular Disease. New England Journal of Medicine,2006; 354:1601-1613. Mozaffarian D, Katan M, Ascherio A, Stampfer J, Willett W: Trans Fatty Acids and Cardiovascular Disease. New England Journal of Medicine,2006; 354:1601-1613.

Health Disparities in New York City, Commonwealth Fund and New York City Department of Health and Mental Hygiene, 2004.

PDLO HP
CC ACATEROLLS
(ORSC)
R BRYANT
L SILVER

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Mon, Oct 30, 2006 5:15 PM
Subject: City of New York - Correspondence #1-1-272099540 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-272099540
DATE RECEIVED: 10/30/2006 16:07:04
DATE DUE: 11/13/2006 17:11:35
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/30/2006 16:06:44
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: gthorn@chafer.edu (Greg Thorn)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Greg Thorn (gthorn@chafer.edu) on Monday, October 30, 2006 at 16:06:44

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 31 P 3:59

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: Greg

Last Name: Thorn

Street Address: 3130 Yorba Linda Blvd.

Address Number: J4

City: Fullerton

State: CA

Postal Code: 92831

Country: United States

Work Phone #: 714-741-7231

Email Address: gthorn@chafer.edu

Message: I would like to sincerely thank you for the ban you are considering on Trans Fat at restaurants in your city. This is such a positive step toward healthy eating. I genuinely hope other cities and states will follow your lead! Thank you for looking out for the health and well being of all restaurant patrons. Sincerely, Greg

---

REMOTE_HOST: 65.125.183.250
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1)

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FORZA FITNESS

"Blending of mind and body"

October 30, 2006

Department of Health and Mental Hygiene
Board of Health
125 Worth Street
New York,, NY 10013

Dear Committee Member:

Re.: Public Hearing Statement

How we eat directly affects how we live our lives, both in terms of quality and quantity of life. Living in a free society, no one, regardless of socioeconomic status, should ever have to worry whether the foods s/he chooses is loaded with unhealthful substances that can cause health problems. Trans fats must be eliminated.

The freedom of choice over the quality of a food should be with the consumer, not with business owners. Trans fats have been proven, through numerous scientific studies from around the world, to cause many serious health problems, most notably, heart disease. The time has come for business owners to take responsibility and honor the trust that their customers bestow upon them when entering their place of business.

Sincerely yours,

Salvatore Fichera, MS
Exercise Physiologist
(212) 687-1646
sal@ForzaFitness.com
www.ForzaFitness.com

Testimony of
ELLEN J. FRIED, JD, MA

on behalf of the

New York City Nutrition Education Network
NYCNEN

to the

New York City
Department of Health and Mental Hygiene

On

Proposed Amendment of
Article 81 of the New York City Health Code
Adding
§ 81.08 - Foods containing artificial trans fat
§81.50 – Calorie Labeling

Monday, October 30, 2006

Good Morning. I want to thank Commissioner Frieden and the New York City Department of Health and Mental Hygiene for taking the initiative to propose important changes to this city's food supply that are the focus of these hearings. I am Ellen Fried, an attorney and food policy educator. I am chair of the public policy working group of the New York City Nutrition Education Network known as NYCNEN.

Founded in 1998, NYCNEN is a collaborative network of individuals, including nutrition professionals and educators, and approximately 50 plus organizations in New York City. Members may be tax-supported, voluntary, for-profit or not-for-profit. NYCNEN members include representatives from health centers, emergency food providers, agriculture organizations, advocacy groups, academic programs, government agencies, nutrition education programs and private consultants.

What all members have in common is their mission to improve the food and nutrition environment for a healthier New York City. This is accomplished through:

- a dynamic organizational environment that encourages members to actively participate, exchange ideas, contribute and network with one another
- promotion of food systems that support improved nutrition and public health
- enhancing nutrition education practices that embrace cultural competency, empowerment critical thinking and literacy levels
- providing a forum for professional development
- recognizing the impact of sound public policy on nutrition and health and support such actions
- supporting relationships between research and nutrition practice

NYCNEN supports the proposed amendment of Article 81 of the New York City Health Code (Health Code) since the proposals are actions its members agree will improve New Yorker's health. Section 81.08 would require New York City (NYC) food service establishments that already provide nutritional information for standardized menu items to make calorie information available on menu boards and menus. Section 81.50 would restrict NYC food service establishments from using artificial trans fats, with the exception of foods served in the manufacturers' original sealed packages. These proposed changes will greatly benefit the health and well-being of New Yorkers who consume meals prepared outside the home.

The Board's proposals are firmly rooted in numerous science-based studies that have linked consumption of trans fat with heart disease and have demonstrated that the majority of the populace is incapable of accurately assessing the caloric content of meals prepared outside the home. This reflects both a lack of strong nutrition education and the fact that it is impossible to calculate nutrition values without knowing what and how much went into creating a menu item.

The mandatory removal of harmful, artificial trans fats, especially from fast food chains, takes the guess work, and most importantly, a harmful ingredient, out of eating out. As nutrition and food educators, NYCNEN members are particularly concerned with populations – adults and children alike – who are most at risk for nutrition related diseases. Removing trans fats will lower the risk of disease for anyone who eats out in New York City – and that's just about everyone – but especially for people who are dependent on inexpensive and highly processed food. Lower disease rates, in turn, will likely lower medical costs to the City associated with nutrition related disease risk factors.

The Department's proposals will have a positive, far-reaching effect for nutrition educators, who will be able to urge New Yorkers to follow the City's lead and acknowledge that trans fats are unhealthy. Building upon the City's proposals, educators can more easily discourage the use of products that contain trans fats and encourage the use of alternatives with equivalent taste and mouth feel. Nutrition educators can also emphasize the importance of moderating calorie intake with the aid of specific calorie counts for popular, standardized, fast food menu items conspicuously posted and readily available at the point of purchase.

The changes in the proposed amendments are significant steps forward in combating the dual threats of obesity and other diet-related chronic diseases.

Specifically, NYCNEN supports:

- The mandatory ban on the use of partially hydrogenated vegetable oils ("PHVO") since NYC's voluntary Trans Fat Education Campaign did not result in a substantial decline in the use of PHVO-containing oils in NYC food service establishments;

- The inclusion of free feeding programs in the ban of artificial trans fats. The populations that rely on free feeding programs – from Head Start programs to soup kitchens - are often at risk for nutrition related diseases. The removal of harmful trans fats from these food sources is likely to have a positive health effect.

- The phase in of the ban that will permit food service establishments to make a smooth transition by first changing cooking oils within six months and then allowing an additional 12 months to source other trans fat free products;

- Providing consumers with the basic calorie information they need, in plain sight, at the point of purchase by clear and conspicuous posts on menu boards and menus. This readily available calorie information will finally provide consumers with the tools to make informed food choices at the time and place the information can influence their decision-making.

- The focus on restaurant chains with standardized menu items. Many adults and children frequent these restaurants several times a week. The simultaneous removal of trans fat from products coupled with the posting of actual calorie counts acts to counter typical consumer assumptions that trans fat free also means reduced calorie. This is also important because of typical marketing campaigns to increase consumption through "value" meals.

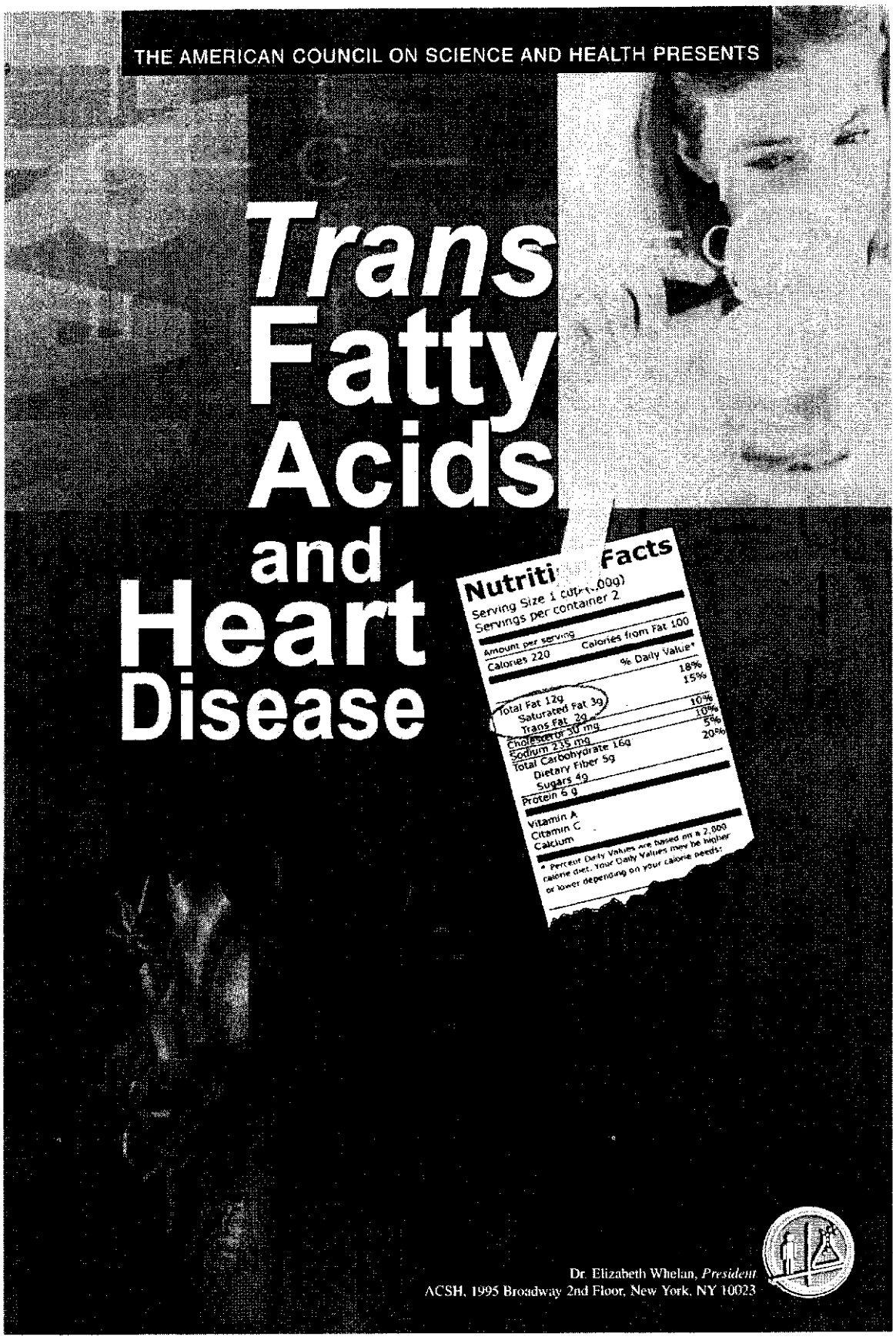
NYCNEN wishes to applaud the bold and necessary steps being proposed by the Department and its leadership in banning a harmful substance from the food supply. Indeed, other cities and states have been encouraged to follow New York City's lead in taking action to protect and improve the nutritional health of its citizens.

On behalf of NYCNEN I urge the Department to adopt these proposals in their entirety in accordance with its rule-making authority to protect the wholesomeness of food served directly to consumers throughout New York City and to prevent and control diseases in the population.

Thank you.

Contact Information:

Ellen J. Fried ejf208@nyu.edu


THE AMERICAN COUNCIL ON SCIENCE AND HEALTH PRESENTS
Trans Fatty Acids and Heart Disease
Nutrition Facts
Serving Size 1 cup (228g)
Servings per container 2
Amount per serving
Calories 220
Calories from Fat 100
% Daily Value*
Total Fat 12g 18%
Saturated Fat 3g 15%
Trans Fat 2g
Cholesterol 30 mg 10%
Sodium 235 mg 10%
Total Carbohydrate 16g 5%
Dietary Fiber 5g 20%
Sugars 4g
Protein 6 g
Vitamin A
Vitamin C
Calcium
* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:
Dr. Elizabeth Whelan, President
ACSH, 1995 Broadway 2nd Floor, New York, NY 10023

ACSH PRESENTS

Trans Fatty Acids and Heart Disease

By
Kathleen Meister, M.A.

Edited by
Ruth Kava, Ph.D., R.D.
Director of Nutrition, ACSH

Art Director:
Jennifer Lee

October 2006

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Executive Summary

- Most of the *trans* fatty acids (TFAs) in the U.S. food supply are derived from partially hydrogenated vegetable oils. TFAs also occur naturally in beef, lamb, and dairy products. TFAs accounted for about 2.5 percent of the energy (calorie) content of the U.S. diet prior to any changes prompted by the 2006 requirement for the inclusion of *trans* fat in nutrition labeling.

- TFAs are one of several dietary factors that affect blood lipid levels, and blood lipid levels are one of several factors that influence the risk of heart disease.

- Until the early 1990s, scientists generally believed that the impact of TFAs on blood lipid levels was minimal, and that fats that contain TFAs were a desirable replacement for saturated fats. More recent research indicates, however, that TFAs raise blood levels of undesirable low-density lipoprotein (LDL) cholesterol to an extent comparable to that produced by saturated fatty acids and that TFAs, particularly at high levels of intake, may also lower levels of desirable high-density lipoprotein (HDL) cholesterol, an effect that saturated fatty acids do not share.

- Based on the effects of TFAs on lipid levels, it has been estimated that replacing all of the TFAs from partially hydrogenated vegetable oils in the U.S. diet with *cis* unsaturated fatty acids could lead to as much as a 3 to 6 percent reduction in heart disease risk. This value should be regarded only as a rough estimate because there are multiple sources of uncertainty in the data used to calculate it. Moreover, the reduction achievable in practice is likely to be substantially lower than calculated estimates because *cis* unsaturated fatty acids cannot replace TFAs in some food applications for reasons related to texture or stability.

- Much higher estimates of the benefit that could be achieved by removing TFAs from the diet have occasionally appeared in the scientific literature and the news media. These estimates are based on epidemiological data that may not reflect a cause-and-effect relationship.

- Contrary to some reports in the news media, the calorie counts of fats containing TFAs are no higher than those of other fats. The scientific rationale for limiting the consumption of TFAs is related to effects on blood cholesterol levels, not effects on obesity. All types of fat are equally high in calories.

- As part of an overall effort to reduce risk factors for heart disease, advice to the public to limit consumption of both saturated fatty acids and TFAs by

substituting polyunsaturated or monounsaturated fats whenever possible is justified by the scientific evidence. Scare tactics, including claims that there should be zero tolerance for TFAs in the food supply, are not justified.

- Overstating the health effects of TFAs is harmful to public health because it promotes an overemphasis on this single dietary factor as opposed to other aspects of diet, other risk factors for coronary heart disease, and other public health priorities. By drawing attention away from other, more significant health risks, the current exaggerated focus on TFAs may actually cause more problems than it solves.

Introduction

The recent addition of *trans* fat information to the Nutrition Facts labels on food products, combined with news media reports and activists' warnings, have brought these fats to the forefront of public concern. In a national survey conducted in November 2005, 81 percent of a representative sample of U.S. consumers reported being aware of *trans* fats, and 54 percent indicated that they were trying to decrease their *trans* fat consumption (IFIC Foundation, 2006).

Putting the role of *trans* fatty acids (TFAs) into perspective can be difficult, both because of the intensity of the rhetoric surrounding them and because of widely varying claims about the extent of the health risk they pose. Should American consumers believe the Food and Drug Administration's claim that between 600 and 1,200 heart attacks per year will be averted by *trans* fat labeling on food products? Or should they believe the predictions by some scientists that removal of TFAs from the food supply could prevent more than 200,000 heart attacks per year? Is some number between these two extremes more realistic? Or are the data insufficient to justify confidence in any numerical estimates at all?

In this report, the American Council on Science and Health (ACSH) reviews the scientific evidence on the health effects of TFAs in foods, explaining the origins of the widely divergent estimates of the health impact of TFAs and providing perspective on the relative importance of TFA intake in comparison with other aspects of diet and other risk factors for coronary heart disease.

Chemical Nature and Origin of *Trans* Fatty Acids

The fats in foods are made up of *triglycerides*—molecules consisting of three fatty acids chemically bonded to an alcohol called glycerol. Each fatty acid consists primarily of a linear chain of carbon atoms with hydrogen atoms bound to them. Different types of fatty acids have different physical properties. The fats in foods consist of a multitude of fatty acids, with different types of fatty acids predominating in fats from different sources.

The carbon atoms in a fatty acid chain may be linked to each other by either single or double bonds. (See Figure 1.) If all of the links in the carbon chain are single bonds, the fatty acid is *saturated*. If one or more of the links is a double bond, the fatty acid is *unsaturated*. A fatty acid with one double bond is called *monounsaturated*; one with two or more double bonds is called *polyunsaturated*.

The term *saturation* refers to whether or not the fatty acid contains as many hydrogen atoms as possible. Saturated fatty acids contain the maximum possible number of hydrogen atoms; unsaturated fatty acids contain fewer. This is illustrated in Figure 1. The two carbon atoms involved in the single bond in the figure are bound to a total of four hydrogen atoms, but the two carbon atoms involved in the double bond are bound to only two hydrogen atoms.

The double bonds in an unsaturated fatty acid can have either of two configurations, *cis* or *trans*. If the hydrogen atoms are on the same side of the double bond, the configuration is called *cis*; if they are on opposite sides, it is called *trans*. (See Figure 2.)

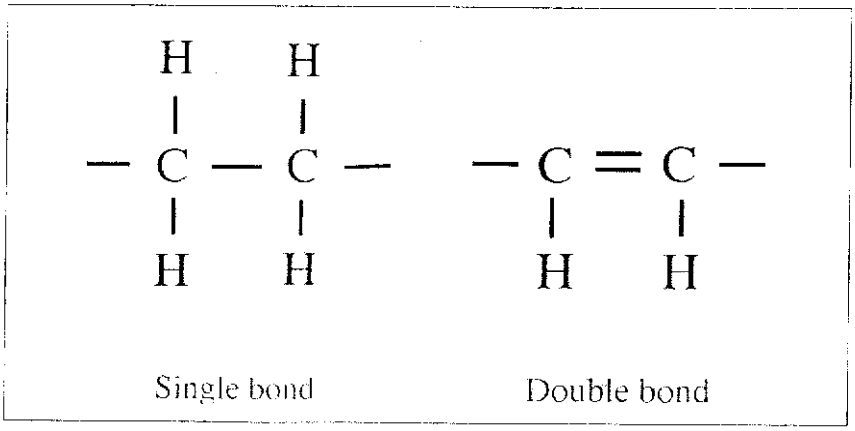

Figure 1: The carbon atoms in a fatty acid may be linked to each other by single or double bonds. In saturated fatty acids, all of the bonds are single bonds. Unsaturated fatty acids have one or more double bonds. A saturated fatty acid contains the maximum possible number of hydrogen atoms; an unsaturated fatty acid contains fewer hydrogen atoms.

Because hydrogen and other atoms cannot rotate freely around carbon-to-carbon double bonds, the difference between *cis* and *trans* is a meaningful one. The physical properties of TFAs, such as their melting point, differ from those of *cis* fatty acids. The double bond angle of a TFA is smaller than that of a *cis* fatty acid, resulting in a more linear chain and a higher melting point—properties that are more similar to those of saturated fatty acids than those of *cis* unsaturated fatty acids.

Most of the unsaturated fatty acids in foods contain only *cis* double bonds. The less common TFAs in foods come from two sources:

- Some TFAs are produced naturally by microorganisms in the digestive tracts of ruminant animals and are, therefore, present in the fats in foods derived from these animals, such as beef, lamb, and dairy products. Their presence in these foods is natural; it is not a result of food processing. Between 2 and 8 percent of the fatty acids in dairy products and between 2 and 11 percent of the fatty acids in meats derived from ruminant animals are TFAs; by contrast, less than 0.5 percent of the fatty acids in pork fat, which is derived from a nonruminant animal, are *trans* (Pfalzgraf et al., 1994). Foods derived from ruminant animals account for approximately 20 to 25 percent of the total TFAs in American diets, according to an analysis of national survey data (from the Continuing Survey of Food Intakes by Individuals [CSFII]) collected in 1989-1991 (Allison et al., 1999).

- The remaining TFAs (75 to 80 percent of the total) come from vegetable oils, most commonly soybean oil, that have been processed by *partial hydrogenation*. In this procedure, hydrogen is added to the fatty acids, resulting in conversion of some of the unsaturated fatty acids to saturated ones. During this process, some of the *cis* fatty acids that are not hydrogenated are converted to TFAs. The hydrogenation process is used to convert liquid oils into semisolid forms that are more suitable for some types

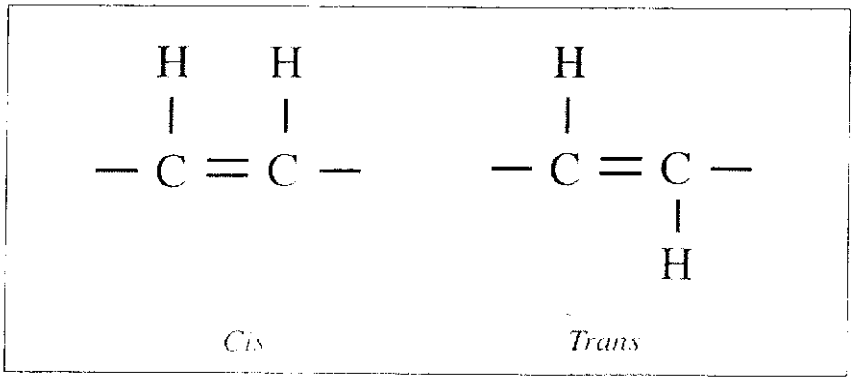

Figure 2: The double bonds in a fatty acid can be in either the *cis* or the *trans* configuration. The shapes of *cis* fatty acids and TFAs differ, with resulting differences in physical properties such as melting point.

of food processing, such as baking (ISEO, 2006). It also increases the stability of oils that would otherwise become rancid easily (ISEO, 2006). Thus, partially hydrogenated vegetable oils can be used for some purposes for which animal fats such as lard were traditionally used. The quantity of TFAs in partially hydrogenated oils varies depending on the degree and conditions of hydrogenation. Typically, the partially hydrogenated fats used in commercial baking or frying contain 14 to 18 percent TFAs (United Soybean Board, undated). It is noteworthy that TFAs are formed only during *partial* hydrogenation. If a fat is fully hydrogenated, all of the unsaturated fatty acids are converted to saturated fatty acids.

There are a variety of different TFAs, with different chain lengths and different numbers and locations of double bonds. Although the health effects of individual TFAs have not been studied in humans, the results of studies in cell culture suggest that differences among the individual TFAs may exist (Chen et al., 2006). The exact mix of TFAs naturally present in ruminant animal products differs from that in partially hydrogenated vegetable oils. Thus, the health effects of the TFAs from the two sources may not be identical.

Partially hydrogenated oils began to be used early in the twentieth century, and their use increased steadily throughout most of the century (ASCN/AIN Task Force on *Trans* Fatty Acids, 1996). In the United States, the partially hydrogenated oils used in foods are of vegetable origin, with soybean oil most commonly used; in other parts of the world, however, partially hydrogenated fish oils have also been used.

Partially hydrogenated vegetable oils are used in a wide variety of foods, often as replacements for fats of animal origin, such as butter, lard (pork fat), or tallow (beef fat). The initial impetus for their use was usually cost; for example, margarines (also called oleomargarines) made from partially hydrogenated vegetable oils were less expensive than butter. Later, when the link between high intakes of saturated fatty acids and higher blood cholesterol levels became evident, partially hydrogenated vegetable oils were also regarded as a good substitute for the more saturated animal fats for health reasons. For example, in a 1988 issue of its publication *Nutrition Action*, the Center for Science in the Public Interest (CSPI) stated[1] (Blume, 1988):

> Despite the rumors, there is little good evidence that trans fats cause any more harm than other fats...All told, the charges against trans fat just don't stand up. And by extension, hydrogenated oils seem relatively innocent.

These statements accurately reflected the scientific knowledge at that time.

Fats rich in TFAs provide the same amount of energy (calories) as other fats do—about 9 calories per gram (45 calories per teaspoon), which is more than

1 CSPI is now one of the strongest opponents of partially hydrogenated oils

twice the energy provided by the same amount of protein or carbohydrate. Substituting other types of oils for partially hydrogenated vegetable oils will not reduce the total fat or total calories in foods. Unfortunately, misconceptions about this point seem to be common. News reports sometimes describe *trans* fat as "fattier" or more caloric than other types of fat.[2] This is incorrect.

The major food sources of TFAs for American adults (prior to any changes in food formulations prompted by the recent inclusion of TFAs in nutrition labeling) were cakes, cookies, crackers, pies, bread, etc. (40 percent of total intake); animal products (21 percent); margarine (17 percent); fried potatoes (8 percent); potato chips, corn chips, popcorn (5 percent); household shortening (4 percent); salad dressing (3 percent); breakfast cereal (1 percent); and candy (1 percent) (FDA, 2003a). Of course, all of these values are subject to change, and many may have already changed with the recent reformulations of food products.

Intakes of TFAs

Estimating the intake of TFAs is not easy because the amounts of TFAs in particular foods have changed over time and because, until very recently, data on the TFA contents of foods were limited. As the FDA noted in its 2003 document requiring the listing of TFAs on food labels starting in 2006, there are multiple sources of uncertainty in published estimates of TFA intake. The available data suggest that average TFA intakes of U.S. consumers probably fall within the range of 1.3 g to 12.8 g per day (FDA, 2003b). When trying to pinpoint U.S. TFA intakes more closely, researchers have often relied on intake data from national diet surveys, particularly the CSFII surveys. Based on 1994-1996 CSFII data, the FDA calculated the average total *trans* fat intake for adults to be 5.84 g/day, or 2.55 percent of total energy (calories) (FDA, 2003b). This estimate is reasonably consistent with values obtained from other studies.

It has been reported that the TFA content of Americans' diets changed little between the 1970s and the early 1990s (ASCN/AIN Task Force on *Trans* Fatty Acids, 1996). During this period, the use of vegetable fat increased. However, at the same time, changes in the processing of vegetable fat led to substantial decreases in TFA content. The two trends counterbalanced each other. For example, soft tub margarines with lower *trans* fatty acid content became increasingly popular, replacing hard stick margarines with higher levels of

2. For example, an article on the ABC News website about a lawsuit against KFC concerning the *trans* fatty acid content of its products was headlined "KFC Sued for Fattening Menu." Similarly, an Associated Press story about different levels of TFA in fast foods in different countries carried the headline "Fast-Food Fries, Chicken Fattier in the U.S." In reality, neither of the issues discussed in the stories (both of which will be described later in this report) had anything to do with the calorie or total fat levels in the food products.

TFAs (ASCN/AIN Task Force on *Trans* Fatty Acids, 1996). Data from an ongoing series of surveys in Minnesota indicate that TFA intakes have been gradually decreasing in recent decades as part of a general decrease in fat intake (Harnack et al., 2003); however, it has been suggested that the groups of people studied in these surveys may not be representative of the overall U.S. population (Thorpe, 2003).

The FDA's 1999 proposal requiring the TFA content of foods to be listed on food labels (FDA, 1999) and the 2003 regulation that actually required *trans* labeling, effective in January 2006 (FDA, 2003b), have prompted some food manufacturers to take steps to reduce or eliminate TFAs in their products (the ways in which this is being done are described later in this report). The impact of such changes on average TFA intake has not yet been assessed.

Coronary Heart Disease

Although TFAs have been investigated in relation to a variety of health conditions, the principal concern is their possible link to cardiovascular diseases, especially coronary heart disease. Cardiovascular diseases (a category that includes stroke, congenital heart defects, heart failure, rheumatic heart disease, and several other ailments in addition to coronary heart disease) is the leading cause of death in the U.S., accounting for 37.3 percent of all deaths. Coronary

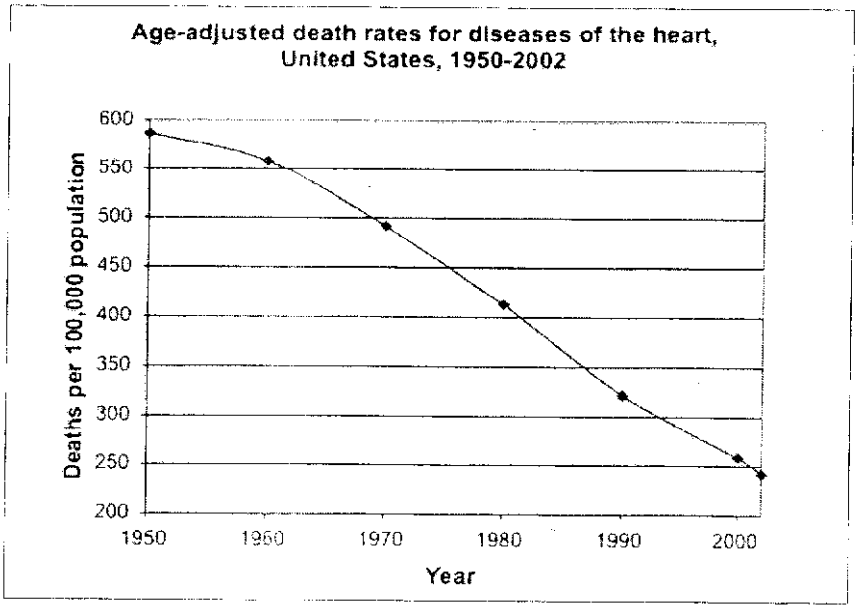

Figure 3: Data from Table 36 in *Health, United States, 2005*, published by the National Center for Health Statistics (updated March 2006). Available online at http://www.cdc.gov/nchs/data/hus/hus05.pdf#036

heart disease alone accounts for 53 percent of cardiovascular disease deaths and about one in every five total deaths. It is the single largest killer of both men and women in the U.S. All statistics in this paragraph from AHA, 2006.

Because coronary heart disease is such a common and serious problem, much research has been devoted to identifying factors that influence the risk of this disease and to devising ways to counteract these risk factors. These efforts have met with considerable success. Although the death rate from heart disease is still high, it is much lower than it used to be. Between 1950 and 2002, as shown in Figure 3, the heart disease death rate in the U.S. dropped by almost 60 percent, from 586.8 to 240.8 per 100,000 people (National Center for Health Statistics, 2005).

Evolving Views on the Health Effects of TFAs

Researchers have been investigating the health effects of TFAs for several decades. In the 1960s and 1970s, some studies showed that TFAs had a modest elevating effect on blood cholesterol, while others seemed to indicate no effect (reviewed by Korver and Katan, 2006). In the 1980s, independent reviews of the scientific evidence by the U.S. Federation of American Societies of Experimental Biology (Senti, 1985) and the British Nutrition Foundation (British Nutrition Foundation, 1987) both concluded that at the levels of intake that prevailed at that time, consumption of TFAs posed no measurable health risk. Both reports called for additional research. In the mid-1990s, three expert panels reached conclusions similar to those of a decade earlier (Allison et al., 1995; ASCN/AIN Task Force on Fatty Acids, 1996; British Nutrition Foundation, 1995) and again called for continued research on this topic.

In general, until the early 1990s, the evidence indicated that the effects on blood cholesterol levels of partially hydrogenated vegetable oils containing TFAs were more desirable than those of animal fats or tropical oils (which are rich in saturated fatty acids) but less desirable than those of unmodified vegetable oils (which are rich in *cis* unsaturated fatty acids) (Allison et al., 1995). It was pointed out that since partially hydrogenated oils were typically used to replace fat sources rich in saturated fatty acids, their use helped to reduce saturated fat intake (ASCN/AIN Task Force on Fatty Acids, 1996). Moreover, experts noted that the amount of TFAs in the U.S. diet was far less than the amount of saturated fatty acids, and that concerns about *trans* fat should not be allowed to detract from the well-established goal of reducing intake of saturated fat (ASCN/AIN Task Force on Fatty Acids, 1996). One expert panel recommended that people with high cholesterol should limit their intake of TFAs (National Cholesterol Education Program, 1994), but no official recommendations were

made for the general public. (It is customary and reasonable for health authorities to give stronger advice to those with preexisting risk factors for heart disease than to the general population.)

More recently, expert panels and official recommendations have expressed a greater degree of concern about TFAs, reflecting newer evidence, to be discussed in detail later in this report, indicating that the adverse effect of TFAs on heart disease risk may be comparable to, or possibly greater than, that of a similar quantity of saturated fatty acids.

In 2002, the FDA was developing a regulation for TFA labeling of food products. They asked the Food and Nutrition Board (FNB) of the Institute of Medicine, which was nearing completion of its report on Dietary Reference Intakes for fats and other macronutrients, to release the section of the report pertaining to TFAs several months early so that the FDA could take its findings into consideration.

The released section of the FNB report (FNB, 2002a) stated: "There is a positive linear trend between TFA intake and total and LDL cholesterol concentration [in blood], and therefore increased risk of CHD [coronary heart disease], thus suggesting a Tolerable Upper Intake Level (UL) of zero." The report noted that achieving a zero intake of TFAs would not be feasible because it would require extraordinary changes in dietary intake that could introduce other undesirable effects and risks, such as inadequate intake of nutrients. Therefore, the FNB recommended that "TFA consumption be as low as possible while consuming a nutritionally adequate diet" but did not recommend zero intake.[3] The wording of these conclusions is clearly more negative than those of the expert reviews in the 1980s and 1990s.

The evolution of the views about TFAs is also illustrated by the wording of the discussion of these fatty acids in three successive editions of the federal government's Dietary Guidelines for Americans. The pamphlet that presented the 1995 edition of the Guidelines (USDA/HHS, 1995) stated:

> Partially hydrogenated vegetable oils, such as those used in many margarines and shortenings, contain a particular form of unsaturated fat known as trans-fatty acids that may raise blood cholesterol levels, although not as much as saturated fat.

In 2000, the Guidelines (USDA/HHS, 2000) no longer said that TFAs would raise cholesterol levels to a lesser extent than saturated fat, but instead said the following:

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3. Some activist groups and news media have used the FNB report to justify claims that "the only safe intake of *trans* fat is zero." However, it is clear from a full reading of the report that the FNB did not intend for people to eliminate *trans* fatty acids from their diets at all costs. Nor did the FNB intend to place a higher priority on *trans* fatty acids than saturated fatty acids. In the full version of its report on fats and other macronutrients (FNB, 2002b), which was published several months after the excerpt on *trans* fats was released, the FNB issued recommendations on saturated fatty acid intake that were worded in almost exactly the same way as its recommendations on *trans* fatty acids.

> Foods high in trans fatty acids tend to raise blood cholesterol. These foods include those high in partially hydrogenated vegetable oils, such as many hard margarines and shortenings. Foods with a high amount of these ingredients include some commercially fried foods and some bakery goods.

The 2005 edition of the Guidelines (USDA/HHS, 2005), unlike its predecessors, made a specific recommendation to limit TFA intake, as follows:

> Consume less than 10 percent of calories from saturated fatty acids and less than 300 mg/day of cholesterol, and keep trans fatty acid consumption as low as possible.

In June 2006, the American Heart Association (AHA) became the first to set a quantitative recommendation pertaining to *trans* fatty acid intake.[4] In a new version of its dietary and lifestyle guidelines, the AHA recommended that *trans* fat consumption be limited to less than 1 percent of total energy (calories) (Lichtenstein et al., 2006). This is roughly 1 gram per day for a person consuming 2000 calories daily and is less than half the average intake reported in the CSFII survey in the mid-1990s (Allison et al., 1999). It has been estimated that eliminating partially hydrogenated oils would lead to a dietary intake of TFAs of about 1 percent of calories; the remaining TFAs would come primarily from meat and dairy products and from the small amounts of TFAs produced during the deodorizing of vegetable oils (Lichtenstein et al., 2006). The same set of guidelines also called for a more stringent limitation on saturated fatty acid intake than had previously been recommended for the general population—to less than 7 percent of total calories rather than the 10 percent recommended in previous AHA guidelines (previously, such low levels of saturated fatty acids had been recommended only for those on therapeutic diets). It also addressed many other issues pertaining to diet/lifestyle and heart disease. However, news coverage of the new recommendations focused on the *trans* recommendation, with headlines such as "American Heart Association urges limit on *trans* fat in diet" (*USA Today*) and "Heart group offers guideline on *trans* fat" (*Chicago Tribune*).

It is important to note that all current recommendations in the U.S., including the new AHA recommendations, call for people to limit their intake of saturated fatty acids as well as TFAs. It has long been established that saturated fatty acids elevate blood levels of LDL cholesterol,[5] and limiting the amount of sat-

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4. Although the 2005 Dietary Guidelines for Americans did not include a quantitative recommendation for *trans* fat intake, the committee of experts that makes recommendations to the federal agencies that issue the guidelines did suggest an intake of not more than 1 percent of calories (Dietary Guidelines Advisory Committee, 2004). This recommendation was not adopted in the final Dietary Guidelines report. An FDA advisory committee made the same quantitative recommendation (discussed in Lichtenstein et al., 2006), but no official FDA policy statements that include a quantitative goal for *trans* fatty acid intake have been made.

5. For the purposes of dietary guidance and public health recommendations, it is customary to group all saturated fatty acids together. However, individual types of saturated fatty acids differ in their effects on blood lipid levels. Notably, stearic acid (a saturated fatty acid with 18 carbon atoms) does not raise LDL cholesterol (Kris-Etherton et al., 2005). As will be discussed later in this paper, it may be possible for food technologists to exploit this property of stearic acid when reformulating products to decrease their *trans* fatty acid content.

urated fatty acids in the diet has been a public health priority for decades. Americans typically consume four to five times as much saturated fatty acids as TFAs; thus, experts advise that continuing to make an effort to choose foods low in saturated fatty acids is a top priority. This viewpoint is expressed, for example, in the 2005 Dietary Guidelines for Americans (USDA/HHS, 2005), which state:

> Population-based studies of American diets show that intake of saturated fat is more excessive than intake of trans fats and cholesterol. Therefore, it is most important for Americans to decrease their intake of saturated fat. However, intake of all three should be decreased to meet recommendations.

Authorities in some other countries have taken different views toward TFAs. A notable example is Denmark, where the use of fats containing 2 percent or more of industrially produced TFAs has been banned. The Danish scientific report that served as the official basis for this decision (Danish Nutrition Council, 2003) did not mention what fats would be substituted for TFAs in the Danish diet or consider how the resulting changes would affect overall dietary patterns.

People sometimes ask whether it would be better to use butter rather than margarine in order to avoid the TFAs that may be present in margarine. The answer is no. Although butter contains smaller amounts of TFAs than many margarines do, it is also much higher in saturated fatty acids. When both saturated fatty acids and TFAs are taken into consideration, margarine is the better choice (FDA, 2003c). Among margarines or "spreads," the softer tub or liquid varieties are the best choices because they are lowest in both saturated and TFAs. In fact, some products currently on the market contain no TFAs at all.

How Great Is the Impact of TFAs?

So how detrimental is the effect of TFAs? Or, to put the question in more positive terms, how great is the benefit that could be achieved by reducing dietary intake of TFAs? The answer depends upon the interpretation of a complex body of scientific evidence, including 1) studies in experimental animals; 2) controlled diet studies in which human volunteers were fed diets containing different types and proportions of fatty acids while blood levels of cholesterol and related lipids were measured; and 3) epidemiologic studies in which the association between TFA intake and heart disease risk was assessed in populations of people consuming their ordinary diets. The answer also depends on what assumptions are made about the types of fat or other food components that will replace any TFAs eliminated from the food supply.

Experimental Animal Studies

Studies in experimental animals are not as relevant to the human situation as are studies of human populations, but they offer the unique advantage of allowing researchers to examine all of the animals' tissues at the end of the experiment. The number of animal studies of TFAs and heart disease is limited. The available evidence from animal studies indicates that TFAs have effects on blood cholesterol and other lipids similar to those of saturated fatty acids, but that TFAs do not worsen the arterial damage (atherosclerosis) that leads to heart attacks (Chen et al., 2006). Whether these findings are applicable to humans has not been established.

Controlled Diet Studies

The earlier impression that TFAs had a lesser impact on cholesterol levels than saturated fatty acids do has been revised as scientists develop a deeper understanding of the health implications of different cholesterol fractions, including the undesirable low-density lipoprotein (LDL) cholesterol and desirable high-density lipoprotein (HDL) cholesterol. Improved techniques have made it possible to measure the impact of dietary changes on these specific fractions.

Several studies have been conducted in which people were fed controlled diets with different fatty acid contents for various periods of time, with blood levels of cholesterol and related lipids measured before and after the administration of the test diets. The results of these studies have consistently indicated that, in comparison to diets containing *cis* unsaturated fatty acids, diets containing TFAs raise levels of LDL cholesterol to an extent roughly similar to that produced by a similar amount of saturated fatty acids (reviewed in FDA, 1999 and FNB, 2002a). It is uncertain whether this effect results from specific effects of TFAs, or from the accompanying decrease of cholesterol-lowering *cis* fatty acids, or both (Nicolosi and Dietschy, 1995). There does not appear to be a threshold level below which substituting *trans* or saturated fatty acids for *cis* unsaturated fatty acids does not influence LDL cholesterol levels (FNB, 2002a, see especially Figure 1 in that document). Therefore, quantitative recommendations for saturated or TFA intake usually reflect what is potentially achievable without compromising other aspects of the diet, such as adequate intakes of nutrients, rather than any evidence for a specific optimal intake.

The effect of TFAs on LDL served as the principal justification for the FDA proposal to require TFA labeling on food products (FNB, 2002a). Since TFAs have been consistently shown to elevate LDL cholesterol and since LDL cholesterol is a well-established indicator of heart disease risk, the FDA concluded that providing consumers with information about the TFA content of food products was justified.

There is also evidence, although it is not quite as consistent, that in comparison with consumption of *cis* unsaturated fatty acids, consumption of TFAs may also decrease levels of desirable high-density lipoprotein (HDL) cholesterol. However, this effect has been seen primarily in metabolic studies in which TFAs were administered at levels much higher than those typically consumed in the U.S. (in some studies, as much as 10 percent of calories, as opposed to the 2 to 3 percent of calories typical in the U.S.); in the smaller number of studies in which TFAs were administered at levels closer to typical intakes, little if any impact on HDL cholesterol was detected (reviewed by Chen et al., 2006).[6] If a measurable effect of TFAs on HDL cholesterol occurs mainly at relatively high intakes, as this evidence suggests, then decreasing TFA intakes from 2 or 3 percent to 1 percent of total calories may not have a meaningful beneficial impact on HDL cholesterol.

Because there is uncertainty about the effect of TFAs on HDL cholesterol, the FDA did not rely on this effect when justifying its regulation requiring TFAs to be listed on food labels (FDA, 1999 and 2003b), nor did FNB rely on it when making its recommendation that intake of TFAs should be minimized (FNB, 2002a). However, if the effect occurs at realistic levels of TFA intake, then the benefit of replacing TFAs with *cis* unsaturated fatty acids might be as much as twice as great as that predicted on the basis of LDL cholesterol changes alone (FDA, 2003b).

How large could the benefit be? To answer this question, researchers have attempted to project the changes in the number of coronary heart disease deaths that might result from changes in TFA intake, using various assumptions. Such projections should be regarded as extremely rough estimates because they are based on uncertain data. Indeed, some scientists regard such projections as so uncertain that they should not be used in decision-making. ACSH presents projections of the effect of TFA on heart disease deaths primarily to show how certain numbers discussed in the news media were calculated and to compare the estimates that result from consideration of different types of data.

On the basis of effects on LDL and HDL cholesterol, one group of researchers has calculated that if almost all of the TFAs from partially hydrogenated oils in the U.S. diet were replaced by *cis* unsaturated fatty acids, the number of coronary "events" (nonfatal heart attacks or deaths from coronary heart disease) could be reduced by about 6 percent (Mozaffarian, 2006). Since about 1.2 million such events occur in the U.S. each year, this means that a projected 72,000 might theoretically be averted (Mozaffarian, 2006). About 40 percent of heart attacks are fatal (AHA, 2006); thus, one can project on the basis of LDL and HDL changes that replacement of nearly all the TFAs from partially hydro-

6 Some epidemiologic evidence also supports the idea of a lack of relationship between TFA intake and HDL cholesterol at realistic intake levels. For example, in the Netherlands, HDL cholesterol levels remained unchanged during a time period in the 1990s when TFA intake decreased significantly (Houterman et al., 2001).

genated oils in the U.S. diet could hypothetically prevent about 29,000 deaths per year.

However, even if these highly uncertain estimates prove to be accurate, they are substantially higher than what is likely to be possible in practice. Because oils consisting primarily of *cis* unsaturated fatty acids do not function well in some food processing applications such as baking, it may not be possible to replace nearly all TFAs with *cis* unsaturated fatty acids. In some applications, the only possible replacement for partially hydrogenated oils may be fats high in saturated fatty acids (the fats that partially hydrogenated oils originally replaced). Moreover, the estimates are based on the assumption that TFAs have adverse effects on both LDL and HDL cholesterol levels; however, at realistic intake levels, only the effect on LDL cholesterol has been definitively established. The projected health impact of changes in TFA intake if only LDL cholesterol is considered is about half of that projected if effects on both LDL and HDL cholesterol are assumed (FDA, 2003b). Thus, if TFAs have adverse effects only on LDL cholesterol at usual levels of intake, it can be very roughly estimated that about 3 percent of coronary events, or 36,000 total and 14,500 fatal coronary events per year, might theoretically be averted by near-total replacement of TFAs in partially hydrogenated vegetable oils with *cis*-unsaturated fatty acids.

Because TFA labeling in the U.S. and the resulting reformulation of food products are very recent developments, no data are yet available on the impact of these changes on public health. It would be of interest to collect such data in the coming years, both in the United States and in countries such as Denmark where more drastic decreases in TFA intake have occurred. The results of such data collection might prompt further refinement in dietary recommendations.

Epidemiologic Studies

Some researchers have suggested that the potential decrease in coronary events (or heart disease deaths) that could result from near-elimination of the use of partially hydrogenated oils containing TFAs is substantially greater than the 3 to 6 percent suggested by studies of effects on blood lipid levels. Decreases as great as 19 to 22 percent, or well over 200,000 coronary events per year, have been projected (Mozaffarian, 2006). These are startlingly high numbers that seem to imply that TFAs could play a role in heart disease risk comparable to that of the major risk factors for heart disease—smoking, undesirable blood lipid levels, and high blood pressure. Where do these unusual numbers come from?

These higher estimates are derived not from metabolic studies but rather from prospective observational epidemiologic studies of large population cohorts. The term *prospective* refers to studies in which information on exposure to factors that might influence the risk of illness is collected before any of the study

participants become ill; such studies are considered superior to *retrospective* studies, in which exposure data are collected after diagnosis, because they are not influenced by differences in the ways that ill and well people may recall past events.[7] In prospective epidemiologic studies, large groups of people are recruited, and each person is asked to provide extensive information about his or her health and lifestyle; the participants' subsequent health is monitored by periodic follow-up questionnaires. The relationship between consumption of TFAs (as assessed by dietary questionnaires) and subsequent coronary events has been analyzed in four studies of this type: a study of female U.S. nurses (Oh et al., 2005), a study of male U.S. health professionals (Ascherio et al., 1996), a study of male smokers in Finland (Pietinen et al., 1997), and a study of elderly people in the Netherlands (Oomen et al., 2001). In all four studies, after other factors were taken into account, coronary events were more common in people with the highest TFA intakes than in those with the lowest intakes. When the results of the four studies were pooled together using a technique called meta-analysis and other factors were taken into account (in a multivariate analysis), higher TFA intake was associated with a 23 percent increase in coronary events (Mozaffarian et al., 2006). This is substantially higher than what would be predicted based on effects on blood lipid levels alone. The high (19 to 22 percent or 228,000 to 264,000) estimates of the potential decrease in coronary events that could be achieved by reducing TFA intake are based on projections from the results of these prospective studies, combined with various assumptions about the extent to which TFA intake could be reduced and the nature of the nutrients that would replace it in the diet.

These estimates are also based on another critically important assumption, namely, that the association between TFA intake and coronary events seen in the epidemiologic studies is causal. However, this assumption may not be valid. In observational studies, associations between two factors do not necessarily reflect a cause-and-effect relationship. Instead, they may occur by random chance or because each of the factors mentioned is related to a third factor (called a confounding factor) that is truly responsible for the relationship.

To understand the impact of random chance, it is important to understand the nature of statistical tests, most of which are designed in such a way that 5 percent of all tested relationships will be "statistically significant," regardless of whether a true relationship exists. If many comparisons are made, some will be "statistically significant" simply as a matter of chance even if no association exists.

To understand the impact of confounding factors, it may help to consider this simple example: Assume that you observe several thousand people on the

7 The relationship between *trans* fatty acid intake and heart disease risk or various markers of heart disease risk has also been examined in retrospective and other types of epidemiologic studies. The designs of these studies are weaker than the design of prospective studies and thus their findings (which have been inconsistent) are less persuasive. These other epidemiologic studies are not discussed further in this report.

streets of an American city. You record information on two factors: 1) whether or not the individual is wearing a skirt; and 2) whether or not the individual is bald. You will almost certainly discover that there is a strong negative relationship between the two factors, i.e., very few bald people are wearing skirts, and very few skirt-wearers are bald. But this does not prove that skirt-wearing prevents baldness or vice versa. As you undoubtedly realize, the relationship is due to a third factor: gender. Baldness is much more common among men than women, and (at least in the United States) far fewer men than women wear skirts.

In real observational epidemiologic studies, researchers make an attempt to measure obvious potential confounding factors (such as gender) that might influence the results of a study and take these factors into account when analyzing the results of their research. They also ask questions that are designed to help determine whether the association between two factors is likely to be causal, such as the following:

- *Is the relationship a strong one?* If a relationship is very strong, such as the more than tenfold increase in the risk of dying from lung cancer associated with cigarette smoking (Sherman, 1992), it is relatively easy for researchers to be confident that it is a true association, rather than a result of confounding factors or chance. For weaker relationships, making this distinction is much more difficult. Some weak relationships are indeed causal but others are not.
- *Does the relationship occur consistently in different populations and under different circumstances?* If it does not, a causal relationship is less likely.
- *Is the relationship biologically plausible?* It is very difficult to envision a biological mechanism by which skirt-wearing might protect against baldness; on the other hand, the possibility that inhaling tobacco smoke into the lungs might cause a disease of the lungs is certainly plausible.
- *Do other types of scientific evidence support the relationship?* For example, if evidence from studies in experimental animals is consistent with the findings of observational epidemiologic studies, the case for causality is strengthened. However, it is also important to remember that people are not giant rats; there may be important differences between species that preclude extrapolation of findings from animal studies to the human situation.
- *Is the methodology of the epidemiologic studies of high quality?* For example, in studies that evaluate the relationship between dietary factors and other variables, the quality of the method used to assess dietary intake and the accuracy of the food composition data used in the study are important.

Even if the answer to each of these questions is yes, it does not prove that a relationship observed in an observational study is causal. The best way to determine causality is to conduct an intervention study—that is, a study in which people are randomly assigned to be exposed to the agent under investigation or an inac-

tive placebo for a period of time (this is usually set up in such a way that the study participants do not know whether they are getting the active agent or the placebo), and changes in their health are monitored (ideally, by physicians who also do not know whether the participant is receiving the active agent or the placebo). Studies of this type are expensive and they are not always possible for ethical or practical reasons. In instances when intervention studies have been conducted, however, they have sometimes had surprising results. In some well-known instances, intervention studies failed to support hypotheses that had been proposed on the basis of high-quality observational epidemiologic studies with consistent, biologically plausible findings.

For example, during the 1980s, observational studies suggested that beta-carotene, an antioxidant pigment found in vegetables, might protect against lung cancer. The evidence was consistent in different population groups, there were plausible mechanisms for such an effect, and evidence from animal and test-tube studies seemed to support the hypothesis. Yet controlled trials of beta-carotene supplementation, completed during the 1990s, not only failed to show a protective effect against lung cancer, they actually showed that beta-carotene slightly increased the risk of lung cancer among smokers (Alpha-Tocopherol, Beta Carotene Cancer Prevention Study Group, 1994; Omenn et al., 1996).

Another instance in which a prediction was proven wrong involved the use of the hormones estrogen and progestin by postmenopausal women. A large body of observational evidence suggested that women taking these hormones had a 40 to 50 percent reduction in heart disease risk, and other types of evidence, including animal experiments, supported this association. But when researchers conducted a large trial in which women were randomly assigned to take the hormones or an inactive placebo, those taking hormones actually had a slightly higher risk of heart disease than those taking placebos (Writing Group for the Women's Health Initiative Investigators, 2002).

These are only two examples of many instances in which observational findings have been contradicted. Some analyses indicate that the findings of the majority of studies of this type will not be confirmed by further research (Ioannidis, 2005).

How can observations turn out to be so wrong? One possibility is that the variables measured might have been merely markers for other factors that truly do influence disease risk. For example, one can speculate that the beneficial effects once thought to be due to beta-carotene might actually be attributable to the consumption of a healthful diet that includes ample amounts of vegetables, and that beta-carotene, which is found in vegetables, serves as a marker for this type of diet. Similarly, the use of postmenopausal hormones might be a marker for seeking medical care and complying with doctors' instructions (the use of hormones involves regular doctor's appointments and taking daily doses of med-

ication). In the case of TFAs, one can speculate that high intakes might be a marker for more general dietary patterns—such as frequent consumption of high-calorie fried foods and bakery products, perhaps in place of more nutritious choices such as fruits and vegetables—or for other aspects of lifestyle associated with these dietary patterns.

It is unlikely that a long-term intervention study of TFAs will ever be conducted because of both ethical considerations and the large number of confounding factors. So the question of whether TFAs have an effect on heart disease risk greater than that predicted by their effects on serum lipids alone may never be answered definitively.

Some scientists, particularly those in the research group from the Harvard School of Public Health that conducted the two largest epidemiologic studies, have argued strongly that the relationship seen in these studies is likely to be causal and that therefore the reduction in heart disease risk that could be achieved by reducing dietary TFA intake is likely to be far greater than would be predicted by effects on blood lipid levels alone (Mozaffarian et al., 2006). They base their argument largely on biological plausibility and consistency with other types of scientific evidence, noting that TFAs may have other effects, in addition to their impact on blood lipid levels, that might contribute to heart disease risk. If TFAs influence heart disease risk by several mechanisms, it is plausible that their impact on heart disease risk might be greater than that predicted by lipid effects alone.

On the other hand, some aspects of the epidemiologic data on TFAs cast doubt on the likelihood of a causal relationship. The association between TFAs and heart disease, though potentially very important in public health terms because heart disease is extremely common, is not particularly strong; in the epidemiologic studies, people with high TFA intakes had a risk of heart disease only about 23 percent higher than that of those with low TFA intakes. For associations of this magnitude, it is difficult to distinguish real effects from those due to confounding factors. In general, increases of risk of less than 100 percent (a doubling in risk) are considered relatively weak effects; epidemiologists do not consider such weak associations to be as reliable as stronger ones. This is particularly true in cases where assessment of exposures is difficult, as in the case of diet, which is very challenging to evaluate.[8]

Questions can also be raised about the methods used to assess exposure to TFAs. In large epidemiologic studies, diet is usually assessed using food frequency questionnaires, in which respondents are asked to indicate how often

8 Examples of exposures that are much easier to evaluate are cigarette smoking, use of a specific medicine, or travel to a specific country. Researchers can get reasonably accurate information about a person's exposure to these factors by asking only a few questions (e.g., Have you ever taken Drug X? For how long? At what dose?). In contrast, extensive questioning is needed to obtain even an approximate measure of an individual's dietary habits.

they consume specified amounts of each of a large number of different foods. The three largest prospective studies that examined the relationship between TFA intake and heart disease risk used this method (the much smaller Zutphen Elderly Study used a different technique [Oomen et al., 2001]). Food frequency questionnaires, although they correlate reasonably well with more intensive methods of assessment, are relatively crude, and people may have difficulty remembering the information called for on the questionnaire. Assessing TFA intake with these questionnaires is even more difficult than assessing intakes of many other food components because 1) TFAs are found in a wide variety of foods, 2) adequate data on the TFA content of various food products have been difficult to obtain, and 3) the levels of TFAs present in foods may vary from brand to brand and from year to year. As the FNB noted in its report on TFAs (FNB, 2002a):

> Estimating the amount of TFAs in the food supply has been hampered by the lack of an accurate and comprehensive database on which to derive the data and the trend towards the reformulation of products over the past decade to reduce levels...Additionally, the variability in the TFA content of foods within a food category is extensive and can introduce substantial error when the calculations are based on food frequency questionnaires that heavily rely on the grouping of similar foods.

Similarly, in its original proposal for TFA labeling of food products, the FDA (1999) noted that one of the reasons why the epidemiologic studies of TFAs and heart disease must be interpreted with caution is "the imprecision associated with the dietary collection methodologies used."

Another limitation of the epidemiologic studies is that they focused narrowly on coronary heart disease, rather than taking a broader look at the relationship between TFA intake and overall health. In future research, it would be of interest to examine the relationship between TFA intake and total deaths because the total death rate is what determines longevity in population terms.

Putting the Scientific Findings into Perspective

Because it is uncertain whether the relationship between TFA intake and heart disease risk observed in the epidemiologic studies is causal, it would not be prudent to rely solely on the results of these studies for quantitative prediction of the benefits to be gained by reductions in the use of partially hydrogenated vegetable oils. Instead, it is more appropriate to rely on the more reliable, though more modest, predictions of benefit derived from metabolic studies, while recognizing the possibility that decreasing TFA intake might have a greater benefit than the metabolic studies predict if mechanisms of action other than effects on blood lipid levels prove to be involved. In addition, the overall effect of decreasing TFA intake could even be detrimental depending on what substitu-

tions are made. For example, substituting a cooking fat containing a much higher level of saturated fatty acids for one that contained a relatively small amount of TFAs would not improve the quality of the diet.

Overstating the potential benefit to be gained from decreasing TFA intake could be harmful to public health by promoting an overemphasis on this single dietary factor as opposed to other aspects of diet and other risk factors for coronary heart disease. A variety of factors—including modifiable ones such as cigarette smoking, high blood pressure, obesity, diabetes, physical inactivity, and blood cholesterol levels, as well as factors that cannot be modified, such as age and family history—all play roles in the causation of heart disease. Food choices influence several of the modifiable risk factors. An exaggerated focus on the role of TFAs, not backed up by solid data, could prompt people to pay less attention to other aspects of diet and other measures important in reducing their risk of heart disease, such as smoking cessation or weight loss.

Even with regard to lipid levels alone, TFAs are not the only or the most important determinant. Data from U.S. national surveys show that LDL cholesterol levels in men aged 50 to 74 and women aged 60 to 74 years decreased between the mid-1970s and 2002 (Carroll et al., 2005), a period when TFA intake is believed to have changed very little. Clearly, other factors—such as changes in other aspects of diet or the increased use of lipid-lowering drugs—must have been responsible for this change.

Concern about overemphasizing TFA intake to the exclusion of other factors prompted the FDA to make a change in its original proposal for TFA labeling before the regulation was even put into place. The FDA had originally planned (FDA, 1999) to accompany the listing of the amount of TFAs on the nutrition label with a footnote stating, "Intake of *trans* fat should be as low as possible." In the final version of the rule, however, the footnote was omitted because of concerns that it might place undue emphasis on TFAs relative to other heart-unhealthy fats, thereby potentially undermining official recommendations that call for consumers to limit their intakes of *both* saturated fatty acids and TFAs, in the context of a nutritionally adequate diet (FDA, 2003b).

The idea that TFA intake is only one of multiple factors that need to be taken into account in planning a healthful diet often seems lost in a sea of inflammatory rhetoric, presumably prompted by the "unnatural" or technological origin of most TFAs in a manufactured product rather than a "natural" agricultural commodity. The New York City health commissioner has likened *trans* fat to asbestos and lead (Santora, 2005), and in 2005, the New York City Department of Health and Mental Hygiene (DOHMH) asked restaurateurs and food suppliers in the city to eliminate the use of partially hydrogenated vegetable oils (DOHMH, 2005). In September 2006, New York City proposed a regulation

that would require all restaurants to phase out the use of "artificial *trans* fats" (i.e., *trans* fats from partially hydrogenated vegetable oils) over an 18-month period (DOHMH, 2006). A supermarket chain in the United Kingdom recently announced with great fanfare that it was removing all hydrogenated fatty acids from its house-brand products (Fletcher, 2006). Recent articles in the *New York Times* about the presence of TFAs in chicken nuggets and Girl Scout cookies, respectively, carried the provocative titles "Nuggets of Death" (Teicholz, 2006) and "Killer Girl Scouts" (Kristof, 2006). It is understandably difficult for people to put concerns about TFAs into perspective when confronted with this type of journalistic excess and fearmongering.

One of the most prominent opponents of TFAs is CSPI (the same group that expressed moderate and reasonable views about TFAs in 1988). This organization recently sued KFC over its use of partially hydrogenated frying oils, claiming in the lawsuit that KFC is exposing the public to "deadly dangers" inherent in "the worst oil available and imaginable" and that the restaurant chain's conduct is "outrageous and performed with evil motive, intent to injure, ill will, and without legal justification or excuse" (Hoyte v. Yum! Brands Inc., 2006). The organization has also petitioned the FDA to ban partially hydrogenated oils (CSPI, 2004a) and (somewhat contradictorily) to require restaurants to disclose their use (CSPI, 2004b). In 2004, in response to the McDonald's restaurant chain's not meeting its self-imposed deadline for reformulating its frying oils to contain less *trans* fat, CSPI ran a full-page advertisement in the *New York Times*: half the ad consisted of a graphic photograph of a man receiving cardiopulmonary resuscitation (CSPI, 2004c). This type of alarmism does not represent science and is not in the public interest.

The need to consider aspects of a food product other than TFAs when evaluating its healthfulness is sometimes overlooked even by scientists. For example, in April 2006, a much-publicized letter to a medical journal reported that the amounts of TFAs in potato and chicken products sold by the McDonald's and KFC restaurant chains differed greatly from country to country (Stender et al., 2006), apparently reflecting the use of different types of frying fat. Both the letter and related news reports seemed to assume that the products with the lowest TFA levels would automatically be the most healthful. This assumption is not necessarily valid, however. A product low in TFAs would not be considered healthful if it is high in saturated fatty acids (as it would be, for example, if it were fried in coconut or palm oil). To properly compare the healthfulness of the fat content of the various chicken and potato products, it would be necessary to have information on *both* their saturated and TFA contents. Unfortunately, no saturated fatty acid data were reported in the fast food study. Therefore, the statement made by Michael Jacobson of CSPI in response to this study (CSPI, 2006) that "McDonald's and KFC's products are much healthier [in Denmark] than they are here" cannot be supported by the actual data provided by the researchers.

Product Reformulation

It is sometimes suggested that food manufacturers and restaurants could instantaneously improve the healthfulness of their products by substituting unmodified vegetable oils that contain no TFAs for partially hydrogenated oils that do contain them. Reality, as usual, is more complex.

Most of the partially hydrogenated vegetable oil used in the United States is soybean oil; industry sources indicate that soybean oil accounts for 79 percent of all edible oil used in the U.S. Thus, reducing the TFA content of a food product usually involves substituting some other type of fat for partially hydrogenated soybean oil. However, the most readily available substitute—unmodified soybean oil—is not usually a suitable choice. Unmodified soybean oil is rich in highly unstable unsaturated fatty acids, particularly linolenic acid, which makes it poorly suited for deep-fat frying. Because it is a liquid oil, it is also unsuitable for some uses in baking, where semisolid fats are necessary. Therefore, other approaches are necessary, such as the following:

- In some instances, liquid vegetable oils that are rich in *cis* unsaturated fatty acids but not as unstable as soybean oil can be substituted for partially hydrogenated oils. However, this approach cannot be used for shortenings in baked goods, where a semisolid texture is essential.
- Another option in some situations is fully hydrogenated vegetable oils. Fully hydrogenated oils do not contain any TFAs; instead, depending on the fat they are derived from, they may consist largely of an 18-carbon saturated fatty acid called stearic acid. Unlike some other saturated fatty acids, which raise LDL cholesterol levels, stearic acid has little or no effect on blood lipids (Kris-Etherton et al., 2005). Fully hydrogenated oils, which have a hard, waxy texture, can be blended with unhydrogenated liquid oils to create a semisolid fat that can be substituted for conventional partially hydrogenated vegetable oils in some food processing applications.
- In some instances, vegetable oils processed or modified in other ways may be substituted for partially hydrogenated vegetable oils. For example, fully hydrogenated oils or oils naturally high in saturated fatty acids can be chemically combined with unhydrogenated oils by a process called *interesterification*, which rearranges fatty acids on glycerol molecules, creating products similar in texture to conventional partially hydrogenated vegetable oils but without any *trans*.
- Oils from plants bred to have more favorable fatty acid profiles may be suitable for some purposes. For example, new varieties of soybeans that produce an oil with less of the highly unstable linolenic acid have been produced.
- Additives such as polling agents or emulsifiers may be added to unhydrogenated oils to create desired textures and other types of additives, such as

antioxidants, may be added to increase stability and retard spoilage.

- Finally, in many applications, it is possible to replace partially hydrogenated oils with fats rich in saturated fatty acids, such as lard or other animal fats or coconut or palm oils, which can provide both desired stability and texture. From a nutritional standpoint, substituting saturated fats for partially hydrogenated oils is not usually an improvement, but in some instances, particularly in baking, it may be the only way to produce a *trans*-free product acceptable to consumers.

With all of these approaches, replacing TFAs is not simply a matter of substituting a different type of fat for partially hydrogenated vegetable oil in a recipe. Many changes may need to be made in the composition and processing of a food to yield an acceptable product. Switching to replacement oils may also increase costs (which will eventually be passed on to consumers) and create supply problems. It will likely take several years before sufficient supplies of many of the newer oils are available to all the food processors who want them. Introducing new *trans*-free oils into large markets, such as fast food restaurants, is particularly difficult because the oils need to be available in large amounts—something that cannot be achieved overnight. Many food companies are in the process of reformulating products to reduce or eliminate TFAs, using one or more of the approaches described above. However, it has proven to be challenging to maintain quality attributes important to consumers, such as texture, flavor, and shelf life, while modifying the products' fatty acid contents.

Finally, it is important to note that some types of food products cannot exist without either saturated fatty acids or TFAs. An example is margarines and other "spreads." The saturated fatty acids or TFAs in these products are the source of the hardness that these products need. Sophisticated technology has allowed the amounts of these fatty acids in such products to be greatly decreased, but complete elimination is not possible (Korver and Katan, 2006). If you remove all of the saturated and *trans* fatty acids from these products, you will not have a margarine or spread; you will have an oil with a buttery flavor, or at best, a pourable/squeezable product.

TFAs and Food Labeling

In 1999, the FDA proposed requiring information on TFA content to be included in the Nutrition Facts label on food products, and in January 2006, a regulation requiring *trans* labeling went into effect. The regulation did not ban TFAs or in any way compel food manufacturers to modify their products. Nevertheless, the knowledge that this requirement was going into effect prompted many food manufacturers to take steps in advance toward reformulating their products to reduce or eliminate TFAs. The presence of TFA information on food labeling has likely also prompted some consumers to change their buying habits and perhaps even to inquire about the TFA content of unlabeled products and restaurant foods.

Based on the admittedly tentative information available before the labeling regulation went into effect, the FDA made two estimates of the potential decrease in coronary heart disease that might result from decreased intake of TFAs as a result of the labeling change. Based on the assumption that benefits would result only from changes in LDL cholesterol levels, the FDA estimated that the new rule would annually prevent 600 cases of coronary heart disease and 240 deaths; based on potential changes in both LDL and HDL cholesterol, the FDA estimated that the rule would prevent 1200 cases of coronary heart disease and 480 deaths per year in the general U.S. population (FDA, 2003b). These estimates are substantially lower than the other estimates discussed in this report because they are based on the understanding that labeling alone may result in relatively modest changes in the public's eating habits.

Summary and Conclusions

A substantial body of scientific evidence indicates that the effects of *trans* unsaturated fatty acids on LDL cholesterol levels are less desirable than those of *cis* unsaturated fatty acids. It is also likely that TFAs have undesirable effects on HDL cholesterol when consumed at high levels, but whether such effects occur at the levels of TFA intake common in the United States has not been demonstrated. Whether TFAs influence heart disease risk by other mechanisms, in addition to their effects on blood lipids, has not yet been clearly established.

On the basis of projected effects on LDL cholesterol or LDL and HDL cholesterol combined, it has been very roughly estimated— with considerable uncertainty— that replacement of nearly all TFAs from partially hydrogenated vegetable oils with *cis* unsaturated fatty acids could theoretically lead to a reduction in heart disease of [illegible] percent. The reduction achievable in practice is likely to be substantially [illegible] because *cis* unsaturated fatty acids cannot

replace TFAs in some food applications for reasons related to texture or stability; in these instances, saturated fats are the only practical substitutes. Moreover, supply and cost considerations may limit the opportunities for reformulation of some food products.

Much higher estimates of the benefit that could be achieved by replacing TFAs in the diet with *cis* unsaturated fatty acids have frequently appeared in the scientific literature and the news media. These estimates are based on data from prospective epidemiological studies. Studies of this type cannot demonstrate a cause-and-effect relationship, and their results can be influenced by confounding factors and by the difficulty of assessing TFA levels in the diet. The results of the epidemiologic studies are important and should not be dismissed out of hand. However, relying too heavily on the possibly exaggerated estimates of benefit derived from these studies, which are much higher than those derived from other lines of evidence, would be unwise because it could detract attention from other aspects of diet that influence blood lipid levels, such as saturated fatty acid intake, and from other priorities in heart disease prevention, such as weight control, exercise, and abstinence from cigarette smoking.

Although scientists now agree that TFAs are not as healthful as their *cis* counterparts, exaggerated claims that TFAs pose dire health threats even in trace amounts are not supported by scientific evidence and are unwarranted. TFAs are not poison; they are simply one of several dietary factors that affect blood lipid levels, and blood lipid levels are only one of several major factors that influence the risk of heart disease. Efforts to decrease the risk of heart disease should involve a comprehensive and balanced focus on all of the major risk factors, rather than an overemphasis on one relatively minor issue to the exclusion of all others. Focusing too much attention on a single "bad" dietary factor is unwarranted and can even promote unwise dietary choices, such as selecting a food containing a much larger amount of saturated fat rather than one with a small amount of *trans* fat.

The kind of balanced perspective that is appropriate here is illustrated by the new 2006 guidelines from the American Heart Association—the same set of guidelines that made headlines because they were the first to set a quantitative goal for TFA intake. These guidelines did not specifically focus on TFAs to the exclusion of all else. Instead, they included seven diet and lifestyle goals, only one of which pertained to blood lipid levels and nine dietary recommendations for the public, only one of which dealt with the types of fat in the diet. Comprehensive recommendations of this type, which address all of the major risk factors for heart disease, including smoking, obesity, diabetes, high blood pressure, and physical inactivity as well as unhealthy blood lipid levels, reflect current scientific and medical consensus. Scare tactics and obsessive efforts to purge TFAs from the diet do not.

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Testimony of David R. Jones
President, Community Service Society of New York
Board of Health Hearing
October 30, 2006

I am David R. Jones, president of the Community Service Society of New York. For more than 160 years, the Community Service Society has been committed to improving the lives of New Yorkers trapped in poverty. Over the years, we have addressed numerous issues of health that are of concern to poor New Yorkers. Reducing artificial trans fat and calories in food are issues that go to the heart of the everyday life of low-income families.

I would like to congratulate the Department of Health for its initiatives to reduce the amount of artificial trans fat in the food the city's restaurants serve the public and to have many restaurants - especially fast food chains - list the calories of food on their menus. There was a time when New York City led the nation in the protection of food and clean water. I hope this legislation is the beginning of a return to that preeminence.

The department is proposing a partial phase-out that would remove most artificial trans fat from

restaurant cooking over an 18-month period. Artificial trans fat is an unnecessary and dangerous ingredient in food. It has been shown to increase so-called bad cholesterol and lower good cholesterol, increasing the risk of heart disease. High caloric fast foods have been shown to lead to obesity.

What has all this to do with low-income New Yorkers, particularly people of color, the primary constituency of the Community Service Society? I see trans fat as a life and death issue for these communities, crossing boundaries from health to jobs to education.

It is not surprising that the five city neighborhoods which are ranked as the highest in the percent of residents living in poverty should also be the five neighborhoods ranked the highest in hospitalization rate per 10,000 of population for heart disease. The neighborhoods: Hunts Point/Mott Haven, Highbridge/Morrisania - both in the Bronx - Central Bronx, Bushwick/Williamsburg in Brooklyn, and East Harlem.[1] Poverty and ill health go together, and a major reason is the diets of poor people.

[1] U.S. Bureau of the Census, 2000; City of New York, 2005.

Cutting down on trans fat makes good sense for public health reasons. Our research at the Community Service Society has revealed a relationship between joblessness and the effects of poor health. Data from our recent annual survey of low-income New Yorkers, *The Unheard Third*, show a surprisingly high incidence of health problems among unemployed New Yorkers.

In our survey, 25 percent of respondents who were jobless mentioned health problems as a factor that made their search for a job difficult. This was a higher percentage than other, more obvious reasons - not enough prior experience (18 percent) and not enough education or training (17 percent).[2]

Trans fat is prominent in fast foods. The lack of access to fresh produce and the prevalence of fast food restaurants in many low-income neighborhoods have contributed to a dietary disaster, an epidemic of heart disease, diabetes, and obesity.

Low-income families, often paying more than half their earnings for rent, are left with an average of only $30 a week per person to cover all other needs.[3] This situation often forces them to skip meals or make

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[2] *The Unheard Third*, Community Service Society, July/August 2006.
[3] Victor Bach, Making the Rent: Housing Hardship and Rent Burdens Among Poor New Yorkers, Community Service Society, April 2005.

unhealthy choices such as fast food packed with trans fat.

The health problems of communities of color are well documented. According to a University of Michigan study conducted between 2001 and 2003, African Americans had higher rates than whites for three major chronic health problems: high blood pressure, diabetes, and stroke. The prevalence of diabetes and high blood pressure was especially high among African American women, with 35.4 percent reporting high blood pressure and 12.3 percent reporting diabetes.[4]

The prevalence of diabetes among African Americans is about 70 percent higher than among white Americans. Twenty-five percent of blacks between the ages of 65 and 74 have diabetes, including one in four black women 55 years of age or older.[5] According to the National Diabetes Education Program, the prevalence of type-2 diabetes is two times higher among Latinos than among non-Latino whites.

Add to this the fact that African Americans and Latinos are much more likely to be uninsured than the

[4] Black Americans: U-M study documents differences within the community, University of Michigan Institute for Social Research, University of Michigan News Service, January 22, 2004.
[5] See BlackHealthCare.com.

rest of the population. In 2005, 14.1 million Latinos were without health insurance, an increase of 2.2 million since 2000. In 2005, the number of African Americans without health insurance was 7.5 million, increasing by 795,000 since 2000.[6]

The high incidence of these health problems in communities of color serves to undermine job retention, particularly among low-income workers engaged in physical labor. This is exacerbated by their lack of health benefits and paid sick days. Our survey revealed that among full-time low-wage workers, only 45 percent had health insurance and 46 percent got paid sick leave.

One result of welfare reform was the entrance of many single mothers of color into the work force. Many of their school age children are disproportionately latchkey kids who watch hours of television where they are bombarded by ads for sugar-laden greasy foods. They are easy prey to the junk food industry and the fast food chains that see them as markets they can readily exploit. The prevalence of junk food in schools - and the absence in many

[6] U.S. Census Bureau, August 2006.

schools of physical education programs - only adds to the problem.

A steady diet of high caloric fast foods - laced with trans fat - is not only unhealthy for children, leading to obesity and, later in life, to diabetes and heart disease. Poor nutrition can seriously impair their ability to function well in school, damaging chances for an adequate education and job prospects. Seen this way, fast food diets are an impediment to a successful future for mostly poor African American and Latino youngsters.

Artificial trans fat kills at least 500 people in New York City every year, more than the number that die in motor vehicle accidents. Yet it is a problem that is solvable. The Department of Health determined that artificial trans fat can be easily replaced by healthier oils without changing the taste of foods.

Cutting down on trans fat and empowering consumers with nutritional information on restaurant menus are good moves. For communities of color, they will have benefits that go beyond matters of health, affecting many facets of everyday life.

We strongly support the Department of Health's initiatives.

Community Healthcare Network

Testimony of Catherine Abate
President and CEO
Community Healthcare Network

And

Fay Cesarano
Director of Nutrition

Hearing before the New York City Department of Health and Mental Hygiene on Proposed Amendments to Article 81

Monday, October 30, 2006
10:00 AM

Community Healthcare Network

Introduction to Community Healthcare Network

Catherine M. Abate
President & CEO

My name is Catherine Abate, President and CEO of Community Healthcare Network, a non-profit health care organization that has provided comprehensive community-based primary care, mental health and social services to the underserved New Yorkers for more than 20 years. An important part of our delivery of quality healthcare services is communicating with our patients in a culturally competent manner, giving them appropriate health education. In so doing, we hope to increase their health literacy and their ability to make healthy decisions for themselves. We are here to lend our overwhelming support to the proposed nutrition initiatives based on our organization's experience of serving low-income patients who are often faced with health complications related to nutritional deficiencies.

Let me describe the patients we see – many of our patients are uninsured or underinsured immigrants; more than 40 % are uninsured and include the working poor and the homeless. Ninety per cent live at or below the federal poverty level, the majority of whom are African-American, Asian, Caribbean, or Latino. They generally come from under-serviced and low income communities where there is an epidemic of obesity, heart disease and diabetes. These poorer neighborhoods are less likely to have supermarkets that offer a variety of affordable health foods, and are more likely to have fast food restaurants that make it easier to consume low-cost, high-calorie foods saturated in trans-fats.

Many times our patients have little awareness that the food choices they are making are unhealthy and increase their risk for chronic disease. They need education, support, re-enforcement and language-appropriate resources that are easily accessible, in order to make healthy diet and life style modifications.

I would like to introduce Fay Cesarano, the Director of Nutrition who has day to day experience in providing nutritional services to our patients.

Fay Cesarano, RD, CDN, CDE
Director of Nutrition

My name is Fay Cesarano, and I am a registered dietitian, a certified dietitian/nutritionist, a certified diabetes educator, and the Director of Nutrition of Community Healthcare Network. In more than 15 years of experience in the field of nutrition, I have helped patients face the challenges of fighting nutrition-related diseases on a daily basis. Of all the thousands of patients we service, from prenatal, HIV, Adult, and pediatric primary care, there is not one who is not need of, or would not benefit from nutrition intervention.

Of particular concern to us are our children. The children we serve, as Ms. Abate mentioned, generally come from under-serviced low income communities that are inundated with fast food

restaurants and local grocery stores (bodegas) that sell high calorie processed foods. Being exposed to trans-fats and non-nutrient dense foods from an early age puts them at an even greater risk for developing nutrition-related problems as they get older. It saddens me to report that it is not uncommon for our pediatricians to refer patients as young as nine and ten years old for medical nutrition therapy for obesity, hyperlipidemia, and pre-diabetes.

Creating Positive Outcomes. Aggressively advocating for and phasing out the use of dangerous trans-fats in food service establishments, and requiring calorie labeling in some restaurants prior to the point of purchase (primarily fast food restaurants that are frequented by low- income families) will help create healthier communities.

There is no down side to eliminating and reducing trans-fats. No matter the economic costs of phasing out trans-fats, the health and human costs would be even greater. In our health centers, patients who report regular consumption of foods high in trans-fats consistently have more health problems, such as overweight, pre-diabetes, elevated cholesterol levels, and borderline hypertension, which, if left unattended can develop into costly and chronic medical conditions. Our goal at CHN is to not only treat nutrition-related conditions, but to *prevent* illness through education and information.

In regard to making the calorie content of menu items available prior to the point of purchase at some restaurants, again I feel that this is a positive change. Most people are not aware of how many calories they are taking in at meals, and even an expert can only estimate when selecting menu items. Having food calories readily available prior to purchase provides consumers with the tools they need to make more responsible and healthier food choices.

Social Marketing Campaign/Consumer Education. While it would be of great service to implement the proposals to eliminate trans-fats and require calorie labeling in the food industry, it is equally important to continue educating the consumer and empowering them to make healthy life style changes. Community Healthcare Network supports these nutrition initiatives, but firmly believes that implementation will not be effective without education.

Adequate funding must be made available to create nationwide social marketing campaigns that are comprehensive, culturally sensitive and reach out to a variety of consumers. Consumers must become aware of the potential dangers in the foods they eat. It is critical for the public to know what trans-fats are, what calories represent, and how they have the power to maintain and potentially improve their quality of life by making better food choices. Education should be provided in multiple languages and venues (broadcast and print, bill boards, public transportation, houses of worship, community based organizations, hospitals and health centers, schools and day care centers, work sites, local businesses, and public gathering spaces) so that as many population groups as possible will be exposed to this pertinent and timely information.

On behalf of Community Healthcare Network, I thank the NYC Department of Health & Mental Hygiene for creating this forum of discussion on a critical topic, and look forward to partnering with you on these valuable initiatives.

FPLC IHP
(c: A CAFFERELLI
(ORIGINAL)

R BRYSON
FYI

LSELLION
FYI

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Mon, Oct 30, 2006 6:15 PM
Subject: City of New York - Correspondence #1-1-272108840 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-272108840
DATE RECEIVED: 10/30/2006 17:08:21
DATE DUE: 11/13/2006 18:11:20
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/30/2006 17:08:17
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: CJGoodmanIII@earthlink.net (Clifford Goodman)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Clifford Goodman (CJGoodmanIII@earthlink.net) on Monday, October 30, 2006 at 17:08:17

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 31 P 3:59

Message Type: Complaint

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: Clifford

Middle Name: J.

Last Name: Goodman

Suffix: III

Street Address: 577 Prospect Avenue

Address Number: 3C

City: Brooklyn

State: NY

Postal Code: 11215

Country: United States

Work Phone #: 347-689-2249

Email Address: CJGoodmanIII@earthlink.net

Message: I am against your efforts to ban trans fatty acids, this is an issue of personal responsibility and shouldn't be regulated by local, state or federal governments. I agree that these fats are unhealthy, but people should be able to make their own choices about what to eat.

Cliff

REMOTE_HOST: 69.22.250.126
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

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CITIZENS' COMMITTEE for CHILDREN
OF NEW YORK INC

TESTIMONY BEFORE THE NEW YORK CITY BOARD OF HEALTH

PUBLIC HEARING ON AMENDMENTS TO THE NEW YORK CITY HEALTH CODE IN RELATION TO CALORIE LABELING AND THE PHASING OUT OF TRANS FATTY ACIDS FROM FOOD SERVICE ESTABLISHMENTS

OCTOBER 30, 2006

Good morning. My name is Luisa Sanchez and I am the Senior Policy Associate for Health and Mental Health for Citizens' Committee for Children of New York, Inc. (CCC). CCC is an independent multi-issue child advocacy organization that works to ensure that every New York City child is healthy, housed, educated, and safe. Thank you for this opportunity to testify.

CCC is here today to encourage the New York City Board of Health to approve two amendments to the New York City Health Code that will go a long way in helping children, adolescents and families live healthier lives. CCC supports amending the Health Code to phase-out trans fatty acids in food service establishments and mandate calorie labeling in menus or menu boards. For many children and families, access to affordable, nutritious food is a difficult challenge, and meals prepared outside the home are more readily accessible and are frequently consumed by New Yorkers.

The proposal to require disclosure of caloric information on restaurant menus or menu boards will allow parents to make better food choices that will improve their children's nutrition, reduce obesity and promote life-long healthy diets and lifestyles. Close to a quarter or 470,000 New York City children are obese, increasing the likelihood that they will develop chronic diseases, such as diabetes later, in life. With obesity rates in the city more than double the national average, it is critical that the Board of Health adopt this proposal.

The proposal to phase-out artificial trans fats from restaurants and other food service establishments in the City will also help our children live longer, healthier lives. While the health effects of this proposal might not be evident until later in life, the

phasing-out of artificial trans fats will help determine our children's health in the future. Many studies have found that trans fatty acids raise the risk of heart disease and can also contribute to an increase in total cholesterol levels and a drop in the "good" cholesterol. Artificial trans fats are worse than any other natural fat, lack nutritional value and are easily replaceable - New Yorkers and their families should not be forced to unknowingly consume trans fats when dining out.

Together, these amendments will help control both the obesity epidemic and reduce the risk of cardiovascular disease in New York City. We urge the New York Board of Health to approve the proposed amendments to the City's Health Code to further the goal of promoting and protecting the health of New York's children, adolescents and families.

Thank you.

October 30, 2006

Rena Bryant
Secretary to the Board of Health
City of New York
125 Worth Street
CN-31
New York, NY 10013

Dear Ms. Bryant:

I am writing you regarding the City of NY's intention to amend the City Health Code. I am an operator of 12 Burger King restaurants in New Jersey and am quite concerned about the actions that NY plans to take since they code have a long lasting effect on actions throughout the balance of the country. We are a business that provides among all else a safe and desired establishment to eat. We have voluntarily disclosed in the past our nutritional information through many forms, i.e. Posters and brochures and have been on the forefront of food science, developing healthful, tasteful products for our consumers to enjoy. The actions contemplated by the City of NY seem to discriminate, to identify us that have delivered so much in the past. Our volunteerism may become our noose, since most of us have "standardized" menus. The non-compliers, non-volunteers get a "buy" once again.

I also agree with many of the "talking points" you may have seen. If not, they follow:

Regarding Trans Fat Ban:

The issue of banning trans fat is not an effective means of improving the overall health of New Yorkers.
Banning artificial trans fat in the city of New York will not accomplish the stated goals of the City Health officials. This proposal takes a very narrow approach to a much larger health issue. It does not propose a meaningful solution, and may prove to be misleading to both restaurants and consumers. The City of New York should focus on the larger health picture at hand and work to educate its citizens and business communities on the important aspects of leading a healthy lifestyle.
Greater education is the missing element of these proposals.
The public needs more education to understand key concepts about diet and the role of specific fats. Guidelines from nutrition professionals

DOMINATE FOOD SERVICES, L.P.
DOMINATE FOOD SERVICES II, LLC
1600 Route 22 • Suite 100 • Union, NJ 07083 • (908) 686-2223 • Fax: (908) 686-2503
A Franchisee of Burger King Corporation

include the concepts of moderation and balancing food choices. Premature requirements may do more to misinform consumers and have a potentially adverse impact on products that bear claims or brand names based on the level of saturated fat. The proposed ban can lead to the very kind of confusion that nutrition education and guidelines are meant to prevent.

"Ping -Pong" between Health Issues

The restaurant industry is a hospitality industry, and as such, we work to meet the needs and desires of our customers every day. Over the years, our society has received a great deal of information on a large number of health issues. Whether it was low fat, fat free, low carb, high fiber, low sugar, our nation's restaurants have created hundreds of menu items to meet the growing needs of our customers. Menu items and product formulations continue to change and evolve with current science. Market forces are currently making trans fat free options available in restaurants without legal mandates. Consumers will have this choice without new regulations. The restaurant industry has made great strides in reducing and eliminating artificial trans fat from their menu items. Research is ongoing and these changes will continue to take place.

Voluntary Compliance

Although there has been progress in reducing trans fat in the American diet, the process has been a challenge because of the lack of viable substitutes for partially hydrogenated vegetable oil. That challenge is being overcome by food technology research. In the foreseeable future, new research developments underway should provide suitable alternatives to the currently available partially hydrogenated oils used for cooking oil, shortening and margarine.

Denmark is a poor case Study for New York City.

The case of Denmark's removal of artificial trans fat by limiting industrially produced trans fat content in food to 2% of total calories from fat is cited in this proposal. This example, however, does not provide an ideal model for New York City. Most notably is the fact that while Denmark has successfully eliminated trans fat in their foods, they have done so by using palm oil. Palm oil is 50% saturated fat, and therefore does nothing for the desired health effects.

Consumer trans fat consumption and the contribution of FSEs

The proposal notes that "National surveys show that Americans spend almost half (47%) of heir food dollars eating out."

• This statement only gives part of the story, and leads to an illogical

conclusion. While it is true that Americans are spending more money on foods consumed away from home, this does not substantiate the conclusion that they are eating more meals away from home. In fact, National Restaurant Association research shows that the average American consumes 4.2 meals per week that are prepared away from home. This means that 76% of all meals are still prepared at home.

Unintended Consequences

Prematurely making switches in product formulation can lead to unintended consequences. It is often the case that when a manufacturer aims to reduce the amount of trans fat in a product, the amount of saturated fat increases.

- Ignoring saturated fat hurts consumers, not the industry.
- The FDA states that it is important to choose foods with the lower combined amount of saturated fat and trans fat and the lower amount of cholesterol.

Consider the combined amount of saturated fat and trans fat. "Consumers should avoid increasing their intake of saturated fat in an effort to minimize trans fat. The two kinds of fats must be considered together," says Alice Lichtenstein, Chair of the American Heart Association (AHA) Nutrition Committee and Professor at the Friedman School of Nutrition at Tufts University.

Supply

One major issue that some restaurants are facing is that of the supply of trans fat free oils. While some restaurants have made the change and are in the process of changing, there is currently not an available supply of oil alternatives for some restaurants. It will be matter of years, not months, before the crop supply is available to produce enough trans fat free oils for some restaurant chains.

Restaurants don't just serve customers, they are customers themselves. Many of our restaurants' suppliers still provide products with trans fat. For example, many restaurants receive their french fries already parfried. This is the level at which the saturation of oil occurs. Even if these restaurants change their frying oils, their items still come from the suppliers with trans fat. There are restaurants that are working with their suppliers to change to trans fat free products. But again, this is not a process that can happen overnight.

Regarding Menu Labeling:

We support the need to address obesity, but menu

labeling isn't the solution.
We applaud the New York City Health Department for its efforts to address the growing obesity issue affecting Americans. Every approach should have a reasonable expectation of solving the problem; the restaurant industry has collectively known for a long time that menu labeling is not a promising solution or even an effective piece of it.

Menu labeling doesn't work because consumers tell us so.
We know through industry research that customers do not favor placing nutrition information on menus or menu boards and that it will not dramatically change their behavior.

The restaurant industry is already providing customers with more comprehensive information.
Our industry has been successful because we've listened to our millions of customers and responded to their needs. For those customers who want information, many restaurant chains already provide comprehensive nutrition information (more than just calories) in brochures, tray liners, posters and Web sites.

• The proposal places an unnecessary responsibility on the restaurant chains who already lead the way in providing nutrition information and education on healthy diets to our customers.

Higher level education is needed to change appropriate behaviors.
Despite all the government and private sector programs on the subject and advances in nutrition labeling and availability of information, the obesity problem has only continued to grow. Experts have identified that addressing this issue requires changing individuals' overall approach toward food and behaviors which are culturally ingrained.

• International Food Information Council (IFIC) research shows that 88 percent of consumers do not know how many calories they need daily; 50% won't even guess. They have no context with which to apply menu labeling information. This is a complex problem that requires educating the public on the basics of nutrition and how to make responsible decisions for their personal health management.

Even "standardized" menu items are increasingly difficult to label due to customer customization.
First there is tremendous variability in even a "standardized" product that is made in thousands of different restaurants daily. Secondly, to

help customers make their own smart menu choices, restaurants have provided the ability to customize products — to "have it your way" or "made for you." Customization allows for a customer to "hold the mayo," it does not allow for consistent calorie information.

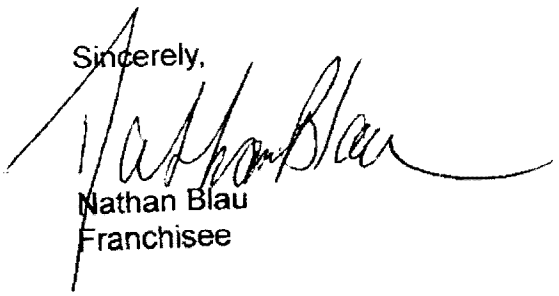
- A major restaurant chain was targeted by CSPI in 2003 when one extra swirl of soft serve ice cream purchased at one of their restaurants increased the calorie count on the product.
- Coffee chains have a variety of sizes and ways to order drinks with whole, 2% or skim milk. It's inappropriate to provide customers with "averaged" calories counts.
- And what about our world famous New York bagel with a schmear. No two schmears are equal, especially in calorie counts.
- Pizza is the most customizable food items available — it would be impossible to provide one calorie count per recipe.

Restaurants could be held liable for fluctuations in calorie content of "standardized foods."

Many of our nation's restaurants have responded to customer's request for nutritional information and are providing that valuable information in a way that works best for them and their customers. Even those companies that do provide information in this fashion understand that it creates an expectation of accuracy that simply may not be achievable in some instances due to the great variability within the restaurant preparation process, even on standardized menu items.

Your consideration of this letter is appreciated.

Sincerely,



Nathan Blau
Franchisee

14 unit multi-Concept Restaurants - Pascamino's / Ruby Tue's / Bluefin & Blue Water Grill
15-Volume 81.08 Trans Fat Proposal

In researching this issue over the last few months, B.R. Guest has easily found products that are equal to or superior in quality to products that contain Trans Fats. We [redacted] found replacements for such items as solid shotening used in baking, cooking oils, and peasnut butter.

. Restaurants similar to us shouldn't have any problems finding products that are Trans Fat free. We cook basically "from scratch" and use "real foods" and "natural" products. Trans Fat products are [redacted] inventions of food laboratories [redacted]. If we stick to the products our grandparents and great grandparents used we will stay "trans fat free."

. Since this proposal has been made more and more distributors are stocking Trans Fat Free alternatives and [redacted] prices are coming down. Just looking at advertisments in Food related magazines and reading labels in supermarkets will show you the heightened awareness in the food processing industry and the strong pressure [redacted] the market place to replace trans fats in processed foods with natural, trans fat free oils.

. Processed food manufacturers that still haven't caught on to the need to go to non hydrogenated oils containing no Tran's fats will feel even more pressure because of the proposal the Board of Health is considering, and it will go a long way to educating manufacturers, distributors and consumers alike.

AMA
AMERICAN
MEDICAL
ASSOCIATION

Michael D. Maves, MD, MBA, Executive Vice President, CEO

October 30, 2006

Ms. Rena Bryant
Secretary to the New York City Board of Health
125 Worth Street CN-31
New York, New York 10013

Dear Ms. Bryant:

On behalf of the American Medical Association's (AMA) physician and resident members, we applaud the efforts of New York City's Department of Health and Mental Hygiene to phase out artificial trans fats in all restaurants and to require calorie labeling in some restaurants.

As the obesity epidemic sweeps our nation, it is crucial that Americans begin to make healthier food choices. Obesity has become a major threat to public health today. It is causing problems in children that were unthinkable twenty years ago. Americans are eating about one-third of their calories outside the home, which is problematic because people tend to eat less healthy when they dine on restaurant foods. They consume more calories and saturated fat, fewer nutrients and less fiber. It is no surprise that restaurant foods are an important contributor to rising rates of obesity, heart disease and stroke.

Phasing out artificial trans fats in all restaurants is an innovative strategy to reduce New Yorkers' exposure to these harmful fats. The science on the dangers of trans fats is very clear. It raises cholesterol levels more than saturated fat. Many thousands of Americans die from heart disease due to excess trans fat consumption. In fact, the United States Food and Drug Administration (FDA) now requires labeling of trans fats in processed foods because of their negative effects on health. Any measure to limit exposure to trans fats will have a positive impact on the public's health.

In addition, the AMA supports requiring restaurants that have items common to multiple locations to provide standard nutrition labels for all applicable items, available for public viewing. By increasing consumers' awareness of what they eat, it is our hope that consumers will be more likely to think twice about eating unhealthy foods.

These proposed regulations are laudable. We wish New York City success in its efforts to improve the health of all of those who dine in New York City.

Sincerely,

Michael D. Maves, MD, MBA

10/30/06

TESTIMONY TO NYC BOARD OF HEALTH RE: PROPOSED REGULATION OF *TRANS* FATTY ACIDS IN RESTAURANT FOOD

(Intention to Amend Article 81 of the NYC Health Code)

Ruth Kava, Ph.D., R.D.
Director of Nutrition
American Council on Science and Health

The proposed amendment of the NYC Health Code aims to restrict NYC food service establishments (FSEs) from providing foods containing *trans* fatty acids (TFAs) that are produced by artificially hydrogenating vegetable oils. It is predicated on the assumption that doing so will significantly decrease the consumption of these fats by FSE patrons, and that this decreased consumption will have a discernable health benefit—in particular a decrease in heart disease. It is the position of the American Council on Science and Health that the scientific data do not strongly support such a health benefit.

As of 2003, the FDA estimated that the average intake of TFAs by Americans contributed about 2.6% of total calories.

Since that time, food manufacturers have been required to list TFAs on their food labels, and the amount of these fats in foods has been declining. Although some media reports attribute unique detrimental health effects to TFAs, in fact, the strongest evidence indicates that they are similar to saturated fats in their health effects—that is, TFAs increase blood levels of LDL ("bad") cholesterol, which is turn are linked to an increased risk of heart disease.

There is some evidence—by no means conclusive—that TFAs also decrease the blood levels of HDL ("good") cholesterol. But the data suggesting that this is the case are not robust. Only at high levels of consumption have TFAs been seen to have such an effect—not at the levels that are commonly consumed by Americans.

Because of these effects on blood lipids—LDL increases and possible HDL decreases—it is logical to assume that further

decreasing the amounts of TFAs consumed will have an effect on the prevalence of deaths from heart disease. But there are no data demonstrating that the effect on blood lipids actually translates into an effect on heart disease—all we have are widely varying estimates. Denmark has limited the amount of TFA allowed in their foods to <2% of total calories, but again we do not know if their replacement of TFAs with other fats has had a beneficial effect on the population's health—and we may not know for a number of years.

To a great extent, any health effects of minimizing TFAs from our foods and diets will depend on the nature of their replacements. If they are replaced with highly saturated fats, which are known to also raise LDL cholesterol, the effect may not be beneficial. There are other proposed replacements, but again, we do not know the health effects of all of them. Let us not forget that the reason we now have

as much TFAs in our diets as we do is that 20 or so years ago food manufacturers and purveyors were encouraged to substitute them for more highly saturated animal fats—because the latter were thought to pose a greater health risk. How do we know that 1)further reduction in TFAs will be beneficial or 2)their replacements will be any better in terms of blood lipid levels and heart health?

Although the proposed ban on the use of trans fats by New York City food establishments sounds like a health-promoting step, in fact the science to support such a move is not yet robust, and such a ban is, in our opinion, both coercive and premature.

Ruth Kava, Ph.D., R.D.
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PH: 212-362-7044
Fax: 212-362-4919

To: **Rena Bryant**
Department of Health and Mental Hygiene, Board of Health
Via Fax: **212-788-4315**
Via Email: **RESOLUTIONCOMMENTS@HEALTH.NYC.GOV**
Re: **Testimony of the American Cancer Society, Eastern Division (NY and NJ)**
In Support of Proposed Amendment (§81.50) to the New York City Health Code
Requiring Calorie Labeling in Food Service Establishments
Date: **October 30, 2006**

The American Cancer Society, Eastern Division applauds the efforts of the New York City Board of Health in proposing this important policy initiative to help address the urgent problem of obesity. The following comments are focused on the proposal to require calorie labeling in food service establishments.

Obesity is a major epidemic with serious implications for the health and economic status of our country and New York City. While most know that excess pounds raise the risk of heart disease, hypertension, diabetes, stroke, and other fatal health problems, few are aware of the linkage between obesity and cancer. It is currently estimated that 14% of cancer deaths among males and 20% of deaths among females are attributed to obesity (Calle et al., 2003). Consequently, more than 2250 New York City residents die each year from preventable obesity-related cancers. National health care expenditures are estimated at $70 to $100 billion per year and are expected to grow with the increasing rates of overweight and obesity (Olshansky, 2005). Healthcare costs are 56% higher for obese persons compared to normal weight persons. This puts significant financial pressure on Medicaid and the New York City budget since obesity is approximately twice as high in low-income populations compared to higher income groups (Willet and Domolky, 2003). CDC's Pediatric Nutrition Surveillance Study of 2002 found that New York State has the 3rd highest rate of low-income overweight children in the country.

Every five years the American Cancer Society issues Nutrition and Physical Activity Guidelines for Cancer Prevention. A national panel of experts in cancer research, prevention, epidemiology,

public health, and policy develops the Guidelines, and as such, they represent the most current scientific evidence related to dietary and activity patterns and cancer risk. Given the evidence regarding obesity, the current Guidelines released September 28, 2006 (listed below), reflect an increased emphasis on weight control.

ACS Recommendations for Individual Choices

1. Maintain a healthy weight throughout life.
   - Balance caloric intake with physical activity.
   - Avoid excessive weight gain throughout the life cycle.
   - Achieve and maintain a healthy weight if currently overweight or obese.
2. Adopt a physically active lifestyle.
3. Consume a healthy diet, with an emphasis on plant sources.
4. If you drink alcoholic beverages, limit consumption.

Community efforts are essential to create a social environment that promotes healthy food choices and physical activity. Therefore, the ACS Guidelines also include a key recommendation for community action to accompany the four recommendations for individual choices to reduce cancer risk. This recommendation for community action recognizes that a supportive social environment is indispensable if individuals at all levels of society are to have genuine opportunities to choose healthy behaviors.

ACS Recommendations for Community Action

Public, private, and community organizations should work to create social and physical environments that support the adoption and maintenance of healthful nutrition and physical activity behaviors.

- Increase access to healthful foods in schools, worksites, and communities.

The American Cancer Society strongly supports the addition of Article §81.50 to the New York City Health Code. This proposal to require calorie labeling is consistent with the ACS guidelines and would help create the environmental changes needed to impact the current trend in obesity.

Like other voluntary health organizations, ACS disseminates nutrition guidelines in order to empower individuals with information to make informed decisions. However, the information must be readily available when the purchase decision is being made. People have grown accustomed to having nutrition information on packaged foods in supermarkets (3/4 of people report using labels) and they want it on menus as well. A recent, industry-sponsored poll showed that 83% of Americans want restaurants to provide nutrition information. Menu labeling legislation has been introduced in 17 states and cities across the country, as well as in the U.S. Congress.

In addition to providing consumers with information to help them make informed decisions, menu labeling would provide an incentive for restaurants to add new menu items and reformulate existing options to reduce the calories. We saw this happen when Nutrition Facts labels went on packaged foods in 1994 and we see it now with companies lowering or eliminating trans fats in response to the FDA requiring trans fat labeling.

With approximately half of the food dollar now being spent away from home (almost doubling since 1970), it is appropriate to make caloric information visible in restaurants where foods are typically higher in fat, calories, and larger portion sizes prevail (Finkelstein et al, 2004). Since the proposed labeling amendment applies to restaurants with standard menus that already make nutrition information available, most fast food chains will need to post the caloric content of foods. This is a desirable change since one study found that children who ate fast food obtained from 29 percent to 38 percent of their total energy intake from that source and ate more total fat, more saturated fat, more total carbohydrate, more added sugars, more sweetened beverages, less fluid milk, and fewer fruits and non-starchy vegetables than those who did not. The same study estimated that on a typical day nearly one third of children in the U.S. eat fast food (adolescents visit a fast-food outlet twice per week on average) and that these extra calories pack on an extra six pounds per child per year. Parents especially deserve to have more easily viewed caloric information to compare menu items and inform their food purchases outside the home.

Further, people need calorie labeling information because it is difficult to estimate the calories in restaurant meals. A study conducted by the Center for Science in the Public Interest and New York University found that even well-trained nutrition professionals couldn't estimate the calorie

content of typical restaurant meals. They consistently underestimated calorie amounts and the underestimates were substantial – by 200 to 600 calories. For example, when shown a display of a typical dinner-house hamburger and onion rings, the dietitians estimated that it had 865 calories, when it actually contained about 1,500 calories. If trained nutrition professionals can't estimate the calories in restaurant meals, an average consumer doesn't stand a chance.

The current provision of nutrition information, although inadequate, does show that providing nutrition information for restaurant foods is feasible, practical, and affordable. If a company can provide nutrition information on a website, or behind a counter, it should be able to put calorie numbers on their menus, where people can see them and use them when ordering.

We have seen in the fight against tobacco the substantial benefits of taking an aggressive policy-based approach that makes it easier to pursue healthier behaviors while creating barriers to unhealthy practices. In the early years of tobacco control, some states such as California and Massachusetts implemented a variety of population-based interventions although the efficacy was not clear. It was only these initial "real-world" efforts, evaluated and proven successful, that led to best practices being disseminated to other states. Like lessons learned in tobacco, strategies such as the proposed labeling provision, should be part of a comprehensive approach to address obesity and the many factors contributing to the problem. Fortunately, New York City has already implemented other citywide changes such as improving the school lunch program.

Finally, the National Academies' Institute of Medicine recommends that restaurant chains "provide calorie content and other key nutrition information on menus and packaging that is prominently visible at point of choice and use" (2006). The Food and Drug Administration, Surgeon General, and U.S. Department of Health and Human Services also recommend providing nutrition information at restaurants.

The American Cancer Society supports the significant step proposed by the City of New York as part of a comprehensive approach to addressing obesity, and we believe it is likely to promote reductions in obesity and cancer. We urge the adoption of Proposed Amendment §81.50 to the New York City Health Code.

Testimony
Proposed Ban of Industrially-Produced Trans Fatty Acids in New York City Restaurants and Commercial Kitchens

A.H. Strelnick, MD
Professor of Family and Social Medicine
Albert Einstein College of Medicine
Montefiore Medical Center
Bronx, NY

October 30, 2006

Thank you for this opportunity to speak in support of the New York City Department of Health and Mental Hygiene's proposed elimination of partially hydrogenated oils from commercial kitchens and restaurants so that New York City consumers may purchase foods and food products free of industrially produced trans fatty acids.

My name is Hal Strelnick. I was trained as a family physician at Montefiore Medical Center in the Bronx and have practiced family and community medicine in the Bronx since 1975. I am Professor of Family and Social Medicine at the Albert Einstein College of Medicine, where I direct our Hispanic Center of Excellence and our minority health disparities center, known by its acronym, Bronx CREED (Bronx Center to Reduce and Eliminate Ethnic and Racial Health Disparities).

My remarks are based largely on a recent scientific review of the medical literature, entitled "Trans Fatty Acids and Cardiovascular Disease," published in the April 13, 2006, issue of the *New England Journal of Medicine*, written by authors from Wageningen University in the Netherlands and the Harvard School of Public Health.

As you know, trans fats are formed from vegetable oils during their partial hydrogenation into semi-solid fats for use in margarines, commercial cooking, and food manufacturing to prolong shelf-life, stabilize deep frying oils, and enhance the palatability of baked goods and

sweets. Trans fats increase the risk of heart attacks and strokes through at least three different and well-documented mechanisms: (1) they decrease high density lipoprotein (HDL) or "good" cholesterol and increase low density lipoproteins (LDL) or "bad"cholesterol, triglycerides, and Lp(a) lipoproteins; (2) they promote systemic inflammation, and (3) they cause endothelial dysfunction, that is they interfere with the cells that line the body's blood vessels. To directly quote the *New England Journal of Medicine*, "On a per calorie basis, trans fats appear to increase the risk of cardiovascular disease more than any other macronutrient, conferring a substantially increased risk at low levels of consumption (1 to 3 percent of total energy intake).... [A] 2 percent increase in energy intake from trans fatty acids was associated with a 23 percent increase in the incidence of cardiovascular disease [i.e., heart attacks and strokes.]" The evidence of trans fats contribution to sudden death and diabetes is less well documented.

Since January 1, 2006, the U.S. Food and Drug Administration (FDA) has required nutrition labels for all conventional foods to include trans fats as well as cholesterol, saturated fats, and total fats. Following its 2005 Dietary Guidelines Advisory Committee's recommendation to limit consumption of trans fats to below 1 percent of caloric intake, the U.S. Department of Agriculture made limiting trans fat intake a key element of its new food pyramid guidelines. In 2004 Denmark placed a 2 percent limit on trans fats and essentially eliminated the use of partially hydrogenated vegetable oils, which were replaced by *cis* unsaturated fatty acids, tropical saturated oils, and fully hydrogenated vegetable oils without increasing consumption of saturated fats. Both government and industry agreed that these changes did not appreciably affect the quality, cost, or availability of food, including the french fries and chicken nuggets of U.S fast food chains. Canada is considering following this Danish model. In Norway, Finland, and the Netherlands cooperative efforts between government and the food industry have also

resulted in substantial reductions in consumption of trans fats, again without increases in costs or reductions in the quality or availability of foods. In the United States Kraft Foods, Frito-Lay, and Wendy's have already voluntarily reduced or eliminated trans fats from their products.

The authors of the *New England Journal of Medicine* article estimated that near elimination of trans fats from the American diet would conservatively prevent 72,000 (6%) to 228,000 (19%) of the 1.2 million heart attacks, strokes, and deaths from cardiovascular disease each year. The article's senior author, Walter C. Willett, MD, DrPH, of the Harvard School of Public Health, calculated that a trans fat ban would mean 500 fewer deaths from cardiovascular disease in New York City each year.

The New York City Department of Health and Mental Hygiene first tried a voluntary program to achieve the laudable goals of reducing and eliminating trans fats from the city's restaurants and commercial kitchens, but this failed to move the industry. Consumers do not have labels to read to determine whether trans fats are in their french fries, chicken nuggets, or morning muffin, so they have no real choices. For a modest cost New York City can save lives now by eliminating this unnecessary and risky chemical from our diets, a step that would disproportionately benefit those living in low income communities like the South Bronx who are most reliant on fast food restaurants because they are the only restaurants in their neighborhoods.

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Sun, Oct 29, 2006 3:48 PM
Subject: City of New York - Correspondence #1-1-271804990 Message to AgencyHead: DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-271804990
DATE RECEIVED: 10/29/2006 14:40:50
DATE DUE: 11/12/2006 15:46:58
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/29/2006 14:40:01
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: libertyproject@yahoo.com (scot dee)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
scot dee (libertyproject@yahoo.com) on Sunday, October 29, 2006 at 14:40:01

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 31 P 3:53

Message Type: Compliment

Topic: Restaurant Related Issues

Contact Info: Yes

M/M: Mr.

First Name: scot

Last Name: dee

Street Address:

State: NY

Country: United States

Email Address: libertyproject@yahoo.com

Message: GO, GO, GO!!!!

Trans Fat must Go, and NYC is leading the nation on this issue!!! It is the RIGHT thing to do!!

Take it all the way, we support you!!!!

REMOTE_HOST: 68.36.41.44
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

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From: <outgoingagency@customerservice.nyc.gov>
To: <clong@doitt.nyc.gov>, <anguyen@doitt.nyc.gov>, <ksheldon@doitt.nyc.gov>, <swinberg@doitt.nyc.gov>, <jfreeman@health.nyc.gov>
Date: Sun, Oct 29, 2006 12:36 PM
Subject: City of New York - Correspondence #1-1-271776340 NYC.govFeedback -Health Issues

Your City of New York - CRM Correspondence Number is 1-1-271776340
DATE RECEIVED: 10/29/2006 12:34:36
DATE DUE: 11/12/2006 12:35:42
SOURCE: WEB

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/29/2006 12:34:28
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: inajun@hotmail.com ( )
Subject: NYC.govFeedback

Below is the result of your feedback form. It was submitted by
(inajun@hotmail.com) on Sunday, October 29, 2006 at 12:34:28

This form resides at
http://www.nyc.gov/html/misc/html/feedbackform.html

Topic: Health Issues

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2006 OCT 31 P 3:54

How You Locate Site: other

Other-How You Locate Site: am New York

Looking For Particular Info: Particular Information

What were you looking for: Dr. Thomas Frieden's work

Did you find: yes

Please explain: I read his biography in this website.

What Look For: Health care, food safety, and environmental protection

Find Useful Info: yes

What useful Info: If possible, could you please tell Dr. Frieden that I support his effort to make New Yorkers healthy. I am a certified Johrei healer and give healing work to others as a volunteer worker. I also study nature farming that is better than organic one. If I can do something to create a better, healthier New York with him, please feel free to contact me at inajun@hotmail.com or call me at 917-216-3422. Again, thank you for your effort. Take care.

Rating: good

Name: Junko Inaga

City; Staten Island

state: NY

Country: USA

REMOTE_HOST: 4.236.156.187
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.1.4322)

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October 29, 2006

Rena Bryant
Secretary to the Board of Health
125 Worth St CN-31
New York, New York 10013

Re: Proposal 81.08 and Proposal 81.50

Dear Ms. Bryant,

As a healthy food advocate and food systems educator, I am writing in support of the NYC Department of Health & Mental Hygiene & NYC Board of Health's Proposal 81.08 of the Health Code to phase out artificial trans fat in NYC restaurants and foodservice operations. I believe that it is in the best interests of the NYC community to remove trans fats from the food supply because this ingredient has been linked to increased risk of heart disease.

Please make sure that the products containing trans fats that are removed from the supply chain linking restaurants and food manufacturers in accordance with Proposal 81.08 do not find their way into the emergency food system. There must be additional regulations that protect the health of our city's hungriest people from the same products containing trans fats that will no longer be used in restaurants and foodservice operations.

In addition, requiring some restaurants and large foodservice operations to clearly post calorie content on menu boards and menus as described in Proposal 81.50 is another proposal that may positively effect the health of New Yorkers. The alarming rise in obesity in our city may be curtailed in part by making this information easily accessible to consumers so they can consider better food choices when they order.

While these regulations will no doubt appear onerous to the restaurant industry, it is critical that the industry provide healthier food and more information to the customer during this time of documented increase in diet-related diseases in New York City. The NYCDOHMH and the NYC Board of Health should be applauded for these proposals.

Sincerely,

Hilary Baum

Hilary Baum
Baum Forum/Public Market Partners; New York City Food Systems Network Advisory Board
5454 Palisade Ave
Bronx, New York 10471
718 884 5716/ 718 884 2724 (f)
hilarybaum@aol.com
www.baumforum.org

305 Seventh Avenue
New York, NY 10001

Tel: 212.989.0909
Fax: 212.989.0983

www.citizensnyc.org

CITIZENS for NYC
Your Partner For Better Neighborhoods

Peter H. Kostmayer
President, Citizens for NYC

Testimony for the Department of Health and Mental Hygiene
Public Hearing

October 30, 2006

10/30/06
Testimony

Thank you to the members of the panel for the opportunity to testify today.

My name is Peter Kostmayer and I am President of Citizens for NYC. For more than 30 years, Citizens for NYC has been funding and training hundreds of neighborhood and community groups dedicated to fighting the conditions that perpetuate poverty, strengthening community networks that provide essential services and pushing solutions that advance a better and more equitable society. We support a wide array of groups working to advance healthy communities around the city.

Lack of access to healthy, safe food is an urgent problem for many neighborhood groups in our network. The abundance of fast food chains and convenience stores selling processed junk food with little to no nutritional value has resulted is a growing epidemic of obesity, poor health and heart disease within the communities where we are most invested.

Several recent studies have shown that low-income neighborhoods have less access to healthy food (like fresh produce) which, when available, tends to be prohibitively expensive. For this reason, growing numbers of community groups from around the City are approaching Citizens for NYC for help in starting projects to bring healthy food to their neighborhoods. In response, we recently launched a new program dedicated to ensuring that all New Yorkers have access to enough affordable, nutritious and healthy local food at all times. As part of this program, we help community groups start and maintain food-producing community gardens and farmers' markets and we help Community Supported Agriculture (CSA) groups increase membership through revolving loan funds for community residents who cannot afford the initial investment. This past year, Citizens for NYC funded over 30 groups working to bring safe, healthy, nutritious food to low-income communities around the City and we are looking to expand this program in the coming year.

However, the rise in obesity related health problems can also be attributed, in part, to a rise in the number of meals eaten outside the home, particularly in fast food restaurants, where it is more difficult to avoid dangerous food additives and get information about food's nutritional content. Whereas the Food and Drug Administration requires that nutritional content be listed on packaged food, there is no realistic way for the consumer to know whether the meals they buy in restaurants contain dangerous additives and it is very difficult to get nutrition information. As a result, many consumers are unaware of the high levels of unsafe chemicals and calories in the food they consume.

Volunteer groups are an essential component of a healthy society and Citizens for NYC has a long history of helping citizens take an active role in improving their communities, propose solutions to community problems and advance a higher quality of life for all. However, small citizen-led initiatives cannot be the full story. A citywide commitment to reducing the growing epidemic of heart disease and obesity depends upon dedicated citizen action and good public policy. Neighborhood groups can play a key role in educating the community about the harmful effects of trans-fats, connecting neighborhood residents to healthier food options, and encouraging local restaurants to switch to healthier

alternatives. However, these small scale initiatives cannot and should not replace government interventions to advance public health and safety.

For this reason, we strongly support the Administration's initiative to phase out trans-fats from restaurant food and we commend Mayor Bloomberg and Health Commissioner Frieden for their bold leadership. As with the smoking ban, this Administration has once again put New York City ahead of the curve when it comes to protecting public health and has set a precedent for cities around the country to follow.

The scientific evidence is clear that consumption of trans-fats dramatically increases the risk of heart attack, which is the leading cause of death for New Yorkers. It is a dangerous, unnecessary, avoidable food additive with no known health benefits that is foisted upon consumers without their awareness or consent. Requiring restaurants to reduce trans-fats to less than 1% is sound public policy and a simple and powerful way to improve the health of all New Yorkers, regardless of income. Trans-fat simply does not belong in the food supply and there is no reason why New Yorkers should continue to be subjected to this dangerous food additive.

In addition, we strongly support the Administration's proposal to require some restaurants to post calorie information on menu boards and menus. While this would affect only a small portion of restaurants, it is an easy way to help consumers make better, more informed food choices. By having access to information about how many calories a food contains before they purchase it, New Yorkers can take greater responsibility for their own health and well-being. By posting the calorie content of its foods, restaurants would simply be giving New Yorkers the same information that they have access to when they go to the grocery store.

Both of these proposals are innovative and forward-thinking measures that will go a long way toward addressing the growing epidemic of heart disease, obesity and poor health. We commend Mayor Bloomberg and Health Commissioner Frieden for their commitment to making New York City a healthier place to live and urge the Board to adopt these two proposals.

East Harlem Partnership for Diabetes Prevention
c/o Union Settlement Association
237 East 104 Street
New York, New York 10029

October 27, 2006

Ms. Rena Bryant, Secretary
New York City Board of Health
125 Worth Street, CN-31
New York, New York 10013

Dear Ms. Bryant,

On behalf of the East Harlem Partnership for Diabetes Prevention, I write this statement to you and the Board of Health regarding the proposed amendment of Article 81 of the New York City Health Code.

As leaders of the East Harlem community, it concerns us deeply how restaurants utilize trans fat rather than other alternatives which would substantially reduce the risks of heart disease. It would be an extraordinary service for the Board of Health to regulate to restaurants the reduction and elimination of trans fat contained in foods sold to our community members. We are in hopes that with this regulation, a citywide education campaign take place to inform community members as to the negative aspects of trans fat oil.

Also, we support your proposal to require calorie labeling in restaurants. This will afford community members the opportunity to eat nutritiously. Many community members are fearful of dining at certain establishments while attempting to preserve an established calorie count. Your proposal will allow community members the option of choosing which foods would be appropriate for their needs. Your proposal may also cause a much needed impact on the health of our children. With the child obesity epidemic on the rise, this impact may reduce the catastrophic effects of heart disease, diabetes and asthma throughout our youth. Children are the best targets of all the FSE's that serve their food with trans fat and it would not be in their best interest to post or publicize the calorie count of their products. Regulating the FSE's to do such may reverse the attraction by most children. This could also be accomplished by the citywide education campaign mentioned earlier.

We, as the East Harlem Partnership for Diabetes Prevention unequivocally support the efforts of the Board of Health in regards to their aforementioned proposals.

Respectfully submitted,

Cesar M. Vasquez
Chairperson

October 26, 2006

Les Dames
d'Escoffier New York
Board of Directors

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Green Tables Initiative Chair
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Toria Emas
Chicago

First Vice President
Katherine Newell Smith
Washingotn, DC

Ms. Rena Bryant
Secretary to the Board of Health
125 Worth Street CN-31
New York, New York 10013

Dear Ms. Bryant,

We are writing on behalf of the **New York Chapter of Les Dames d'Escoffier International (LDEI)**, a professional and philanthropic organization of women of achievement in the culinary, fine beverage, and hospitality professions. From Alice Waters and Lidia Bastianich to the late and beloved Julia Child, the work of LDEI members in 26 chapter cities across the US and Canada reflects our contemporary food culture and concerns.

In order for all food service establishments to easily comply with the proposal by the NYC Department of Health & Mental Hygiene & Board of Health to Amend Article 81 of the Health Code to phase out artificial tans fats, they would need an equal knowledge and understanding of alternative fats, and how they function in different food preparations. Yet most do not possess, or even have easy access, to such sophisticated knowledge.

Helping consumers eat healthfully and our industry to provide healthful, delicious food to the dining public is a mission our LDE-NY members have not wavered from. It is also in keeping with our new philanthropic focus, Green Tables: The LDEI Civic Agriculture and Garden Initiative. Green Tables was established to foster understanding about the healthfulness of our food sources. It would be our pleasure, therefore, to assist the Department of Health -- through its inspectors after the final rule is established – providing reliable information from an informed culinary perspective, to food service establishments needing guidance on alternative fats and oils that are healthful as well as cost efficient, and how to use them.

Sincerely,

Lynn Fredericks
LDE-NY Contemporary Issues Committee

Dear Board of Health,

I am writing you this letter because I'm a concerned New Yorker and I have the right to express my opinion on trans fat. I think there is an extremely large amount of trans fat use in the food we eat almost every day. Now, every time we go to eat with our family or friends we have to worry what type of oils they use in cooking our food. Not only is trans fat dangerous to our health but it increases the chances of heart attacks. We do not want to decrease our life span because we eat a McDonald's hamburger, its unfair to the public because the industry wants to use trans fat. We are talking about people's life.

Sincerely,

Stefan DeSola

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2008 OCT 27 A 10:44

Jule Hewitt
Promotion
cc:
A CAPPUCCIO
CORRIGAN
R BRYANT
L-SELLER

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Fri, Oct 27, 2006 1:55 PM
Subject: City of New York - Correspondence #1-1-271430750 Message to AgencyHead, DOHMH - Other Health Matters

Your City of New York - CRM Correspondence Number is 1-1-271430750
DATE RECEIVED: 10/27/2006 12:47:40
DATE DUE: 11/10/2006 13:51:30
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/27/2006 12:46:59
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: sjkm@nyc.rr.com (Sigrid Junkermann)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Sigrid Junkermann (sjkm@nyc.rr.com) on Friday, October 27, 2006 at 12:46:59

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

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2006 OCT 31 P 3:53

Message Type: Request for Information

Topic: Other Health Matters

Contact Info: Yes

M/M: Ms

First Name: Sigrid

Last Name: Junkermann

Street Address: 498 W 55th St

Address Number: 3S

City: New York

State: NY

Postal Code: 10019

Country: United States

Work Phone #: 212-397-0298

Email Address: sjkm@nyc.rr.com

Message: Dear Mr. Frieden,
I writing you, inspired by your recent push to eliminate trans fats from restaurant menus. IMO, restaurants are a very effective target for such measures. I would be interested in knowing more and possibly participating in the city's efforts in the area of prevention of degenerative disease, particularly diabetes and heart disease. Having taught nutrition (and biology) for a number of years, the focus of my interest is mainly, but not exclusively, on the nutritional aspect of prevention. Due to a family history of diabetes, combined with my education and work, I have been interested and acquired a lot of knowledge in the field of diabetes over the years.
Is there a panel or discussion group within your department that I could possibly join? Or would you have another suggestion as to how I could get involved?
Thank you for your attention.
I am looking forward to hearing from you.
Sincerely
Sigrid Junkermann
Adjunct Asst. Professor of Biology/Nutrition

REMOTE_HOST: 69.201.146.167
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 1.0.3705; .NET CLR 1.1.4322; Media Center PC 4.0)

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To: The New York Board of Health

I live in New York City, and I believe that trans-fat should not be band from restaurants, stores or anywhere. Trans-fat can be found in vegetable shortening, some margarines, crackers, candies, baked goods, cookies, snack food, fried foods and salad dressing just to name a few. If you ban trans-fat there will be a major problem manufacturing, ordering and buy all of the foods listed above. The cost of food would increase, the taste of people's favorite food would change and the food market will take a big lost. This will affect millions of employers, employees, consumers and customers. I believe that the FDA should just make the restaurants and manufactures post labels on the food that contains trans-fat to customer aware.

Thank You

Noel Richards

Noel Richards

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2006 OCT 27 A 10:43

October 16, 2006

New York City Department of Health
Rena Bryant, Secretary Board of Health
125 Worth Street CN-31
New York, NY 10013

To Whom It May Concern:

It has been brought to my attention that the New York City Health Department is in the process of passing a law that would prohibit the use of Trans Fatty Acids in New York City restaurants and fast-food chains. (Let me just say, it's about time.) This obesity epidemic engulfing our teens and children needs to end. And if one of the most revered cities in the world can do something about it, then why not? Of course, the restaurants and fast-food chains will argue that it's too costly, but I think risking the health of our future is a much heavier price to pay.

Sincerely

Nadia M. Balkaran

To The New York City Board of Health:

In the recent plans to make a regulation that would prohibit the city's 20,000 restaurants from the serving of food that contains more than a minute amount of artificial Tran's fats, I believe that the rule should be authorized for numerous reasons. When smoking was banned in restaurants, owners protested to the decision but the public's health was at risk and no predicament should overcome that. The risk of the public should never be compared to any consumer product. The ban of Trans Fat in New York could set nationwide examples for other major cities that followed the ban of smoking in restaurants. Passing this ban of Trans Fats in food would be beneficial to the health of the public and would reduce health risks that are direct results from eating food that contains Trans Fats. Some doctors have said that it "no one will miss it when it's gone." Taking steps now to correct the future will lead Americans to healthier lives.

Sincerely,

Michael Valdez

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Lovie Sermons
2773 Dewey ave.
Bronx N.Y. 10465

To: N.Y.C. Board of Health

I am writing this letter because I do not support the rule of making it mandatory for restaurants to remove fatty acid. I think the choice should be left for the customers to decide. These days, alternative foods, different ways of cooking foods are the way of the future, for example the George Foreman grill drains the fat from the foods cooked on this grill. If a person wants to enjoy fries, burgers, or whatever on any given day that includes trans fatty acid, that should be their right.

Although trans fatty acid is linked to increased risk for heart attacks, people should know how to eat responsibly. No one should be eating foods that include trans fatty acid on a consistent basis, that would not be responsible. To make it mandatory is sort of dictating the way people live, when this is supposed to be the "land of the free." Smoking cigarettes lead to a lot of dangerous health risks, more than trans fatty acid can and I don't see anyone making it mandatory for tobacco businesses to stop selling them. Its people's choice to make if they want to smoke cigarettes or not, starting at the age of 18, so why can't we choice to eat what we want whatever we want.

Signed,
Lovie Sermons

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2006 OCT 27 A 10: 44

To Whom It May Concern:

I live in Queens, New York. I am aware of the proposal set forth by the New York City Board of Health and I am strongly against it. New York State has always been a state that supports the idea of pro-choice in most controversial issues dealing with the government and in the manner decisions are made. This proposal does not support the pro-choice frame of mind we New Yorkers have. It should be the choice of the consumer as to whether they want to eat in restaurants whose food has substantial levels of trans fat.

The duty of the New York City Board of Health should simply be to inform the public and to then allow the public to make a decision on their own. As long as the information is available to the public, the job of the New York City Board of Health is complete. We deserve the right to choose where we want to eat and what we want to eat. If the Board of Health starts strictly regulating these trans fats, what's next? Is the Board of Health going to say restaurant owners can no longer serve steak because it is too fattening. Regulating trans fat is going too far. Simply inform the public of the health risks involved and then allow consumers to decide on their own what they will and will not consume.

Thank You,

Ingride Joseph

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2008 OCT 27 A 10: 44

To The New York City Department of Health:

DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER

2009 OCT 27 A 10:44

As a lifetime resident of New York City and a conscientious patron of many New York City restaurants I am writing to voice my concern about the proposed ban of "Trans Fat". In New York we pride ourselves on upholding the highest standards when it comes to our civil liberties. My concern is that with the amount of control placed in your hands, if this regulation is adopted, the patrons of the New York City restaurants then lose our right to choose freely what we are eating. I understand the health benefits from this proposal would be to the advantage of some patrons. However, those who would benefit from this ban are those who are over consuming and if they are so choosing then they are abusing their own rights and consequently their bodies. If this rule is promulgated where will the line be drawn between an agencys' regulatory power and the encroachment upon our private civil liberties. I strongly believe that this infringement will not be taken lightly by the restaurant patrons of this City and will create more animosity towards this Agency and definitely not compliance.

Thank You ,

Ida Como

Ida Como

Harlem Consumer Education Council, Inc.

P.O. Box 1165 Triboro Station, New York, NY 10032 • (212) 795-0234

FLORENCE M. RICE
PRESIDENT

LUCIL LAZELLA MIDDLETON
PRESIDENT
YOUTH CONSUMERS EDUCATIONAL COUNCIL

October 27, 2006

Rena Bryant
Secretary to the Board of Health
125 Worth Street CN-31
New York, NY 10013

To The Members of the New York City Board of Health:

As the President of the Harlem Consumer Education Council and a resident of New York City, I urge you to support the Department of Health and Mental Hygiene's recommendation to limit the amount of trans fat in restaurant food and to require certain restaurants to list calories on menus.

Trans fat promotes heart disease, killing roughly 50,000 Americans each year. Many resaurant foods contain far too much trans fat. A three-piece Extra Crispy combo meal (with a drumstick, two thighs, potato wedges, and a biscuit) at KFC contains a staggering 15 grams of trans fat. The American Heart Association recommends that people eat no more than 2 grams of trans fat per day.

People have gotten used to having nutrition information on packaged foods in grocery stores and have a right to know what is in their food in restaurants. Without clear, easy-to-find nutrition information, it is difficult to make informed choices at restaurants. Otherwise how can you know that a tuna fish sandwich has 50% more calories than a roast beef sandwhich? Or that a small chocolate milkshake at McDonald's has more calories than a Big Mac?

The Department of Health's recommendation to both limit trans fat in restaurant foods and to require calorie disclosure on menus in certain restaurants are excellent steps toward helping New Yorkers watch their weight and reduce their chances of getting heart disease. Please support these important health measures.

Sincerely,
Florence Rice
Florence M. Rice, President
Harlem Consumer Education Council

NEW YORK
Amsterdam News

2 — NO. 30 SATURDAY, JULY 25, 1981

The new Black view

35¢ - Outside NYC 40¢
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N.Y. AMSTERDAM NEWS / Sat. July 25, 1981 — 1

Harlem's Consumer Advocate speaks out against enfamile formula

By J. ZAMGBA BROWNE
Amsterdam News Staff

Harlem's Consumer Advocate Florence Rice has begun a campaign aimed at alerting mothers in her community against feeding their infants with the enfamile formula that contains iron.

Mrs. Rice attributes this iron formula with causing obesity and other health defects in children and she is trying to urge Black mothers to return to breast feeding their babies.

She told the Amsterdam News that she is concerned about those children who have become obese as a result of the iron content in the formula because they are usually scorned by their neighborhood friends and school mates.

In addition, Mrs. Rice said the opportunity for advancement in the American society for Blacks who are fat and chubby is slim as compared to those who are of normal size.

Mrs. Rice also said that companies in this country that manufacture baby formulas should be thoroughly supervised because their products are resulting in the deaths of millions of infants; particularly those who are in Third World nations.

She was highly critical of the Reagan Administration for voting recently against a World Health Organization's infant formula code in Geneva.

Mrs. Rice condemned the vote, saying that it doesn't reflect the sentiments of the overwhelming majority of Blacks in Harlem and across the nation.

"I am flabbergasted that the Reagan Administration would place a higher priority on the preservation of profits than on the preservation of human life," Mrs. Rice said in an interview.

She further said she will mount a door-to-door campaign if possible, to educate mothers in her community about

New York City Department of Health:

I am writing in response to your proposal to ban the use of trans fats in New York City restaurants. As a New York City resident, I frequently go to restaurants in the area that I don't know whether they are using trans fat in their cooking.

Many people are unaware of the risks they face when consuming trans fat. Studies have shown that trans fat can lead to an increase in heart disease and heart attacks. Many people feel that banning trans fat in restaurants would raise prices of food because the known alternatives are more costly, even if the cost difference is not very drastic. However, you cannot put a price on health. I would much rather pay an extra dollar or two if it means I don't have to constantly worry about what I'm consuming.

Because the use of trans fat is so common, it would be necessary and proper to regulate its use in restaurants throughout New York City. Consuming food that are cooked in trans fat is not healthy, and it would be extremely beneficial to the public to know that they could walk into a restaurant without having to worry about consuming food that could be dangerous to their health.

Sincerely,

Christina Ciminera

From: "Brooke Bennett" <bbennett@institute2000.org>
To: <resolutioncomments@health.nyc.gov>
Date: Fri, Oct 27, 2006 4:45 PM
Subject: Comment on Amendment of Article 81

****

Brooke Bennett
Nutrition Coordinator
Bronx Healthy Hearts/Bronx Health REACH
16 East 16th Street
New York, NY 10003
Office: 718-588-1235 or 212-633-0800 x344
Fax: 212-989-2840
Email: bbennett@institute2000.org

THE INSTITUTE
FOR URBAN
FAMILY HEALTH

Rena Bryant
Secretary to the Board of Health
125 Worth Street CN-31
New York, New York 10013

Dear Ms. Bryant,

The Institute for Urban Family Health is a 20-year old non profit health care organization that operates 10 full time and eight part time health centers in Manhattan and the Bronx, several health professional training programs, and numerous health outreach and health promotion programs including Bronx Health REACH and Bronx Healthy Hearts. These programs are committed to eliminating racial disparities in health outcomes through better access to healthy foods, nutrition education and opportunities for physical activity. Efforts are focused in southwest Bronx neighborhoods where cardiovascular disease, obesity and diabetes rates are some of the highest in New York City.

The Institute for Urban Family Health, Bronx Health REACH and Bronx Healthy Hearts support the NYC Department of Health & Mental Hygiene & Board of Health's proposals to amend Article 81 of the Health Code. The suggested amendments, to phase out artificial trans fats in NYC restaurants and food service operations and to require calorie labeling on menus/menu boards in certain restaurants, demonstrate bold efforts to address the issues of obesity and heart disease and have the potential to positively affect the heart health of millions of NYC residents.

We applaud the trans fat educational campaign led by the Department of Health last year, as well as the research efforts put forth to ensure the trans fat proposal is feasible for operators and can be cost neutral in the long run. However, we hope the same level of support will exist if the amendment is passed. Through our experiences working with small, ethnic restaurants in the southwest Bronx to assist them in promoting their healthier menu options, we recognize that their limited resources may not allow for "trial and error" periods when testing new recipes, using new distributors, etc. Therefore, we encourage the Department of Health to:

- Work with distributors to ensure fair (perhaps even temporarily discounted) prices for trans fat-free oils/products.
- Continue the trans fat educational campaign during the phase out period and beyond.

We believe the trans fat proposal is important to the health of our city and hope that the Department of Health will engage all restaurants as partners to ensure a successful transition across the board

A second issue we wish to raise concerns the calorie labeling proposal. While we feel that it would be an effective way to help customers make calorie comparisons between different foods and various serving sizes, we feel a concurrent educational campaign is needed to make the message more effective. Not all consumers are familiar with what a calorie is or what constitutes appropriate caloric intake, therefore, we encourage the Department of Health to, at a minimum, refer consumers to resources that address the "big picture" of healthy eating.

Sincerely,

Neil Calman, MD
President, Institute for Urban Family Health
16 East 16th Street
New York, NY 10003

To: Rena Bryant
Secretary to the Board of Health
(212) 788-~~4324~~ 4315 Fax

From: Amy J. Schwartz
Executive Director
212-722-1063 *tel*

Date: 10/27/06

Re: Registration for October 30, 2006 Public Hearing
Proposal Amendment to Article 81

Pages: 3 (including cover)

Please see the attached letter requesting pre-registration to speak at the October 30, 2006 Public Hearing for Proposal Amendment to Article 81 concerning Trans Fat and restaurant posting of calorie content on menus.

I can be reached at (212) 722-1063 or ajschwartz@nyc.rr.com, or info@phanyc.org .

Thank you.

Amy Schwartz
Executive Director
PHANYC
1710 First Avenue, Suite 282
New York, NY 10128
212-722-1063
info@phanyc.org
www.phanyc.org

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Executive Director
Amy J. Schwartz, MPA

October 27, 2006

Rena Bryant
Secretary to the Board of Health
125 Worth Street CN-31
New York, New York 10013

Dear Ms. Bryant,

The Public Health Association of New York City is registering to speak at the New York City Department of Health and Mental Hygiene Public Hearing on the Proposal Amendment to Article 81 of the Health Code, to be held on Monday, October 30, 2006.

PHANYC, the largest and oldest independent public health organization in the city, writes in support of recent proposed amendments to Article 81 of the Health Code to (1) require restaurants to list the calorie content on menus and (2) to require restaurants to phase out *trans* fat. We support these amendments because they will help New York City to reduce the single largest cause of death, cardiovascular disease, and the fastest growing major cause of death, diabetes. These proposals will also add one more tool to New York City's efforts to reduce obesity and to reduce the unacceptably high disparities in health between better off and poor New Yorkers and between whites, on the one hand, and African-Americans and Latinos on the other.

The proposal for restaurants to list calorie content of food is a modest but important step in making New Yorkers aware of the high calorie content of many restaurant foods. By enabling New Yorkers to make more informed choices , the City can lend a helping hand to the many New Yorkers who want to lose weight. The proposal will affect only about one in ten restaurants but since these establishments are chains with high volume business and serve high proportions of low-income people, this targeting has a strong public health rationale.

The proposal to phase out artificial *trans* fat will also help to reduce cardiovascular disease and diabetes and will protect New Yorkers from a substance that has no known nutritional value. Moreover, numerous research studies over the last 12 years have shown that *trans* fats contribute to tens of thousands of premature deaths. The failure of the New York City food industry to voluntarily label or remove dangerous *trans* fats despite this evidence makes public health regulation a logical next step.

Critics of the proposed regulations, primarily food lobbyists and their supporters, raise two spurious arguments that we urge the Board of Health to reject. First, they suggest that the proposed *trans* fat regulation will restrict New Yorkers freedom of choice. But no New Yorker has ever ordered a portion of *trans* fat. These products were added to the food supply not to benefit consumers but to enhance food industry profits. After these regulations are in effect, New Yorkers will continue to enjoy every food now available, but without the worry that an unnecessary and hidden ingredient is harming their health.

1710 First Avenue • Suite 282 • New York, New York 10128
tel: 212-722-1063 • fax: 212-722-0726 • email: info@phanyc.org • www.phanyc.org

Second, some critics say that since other products and practices contribute to obesity, cardiovascular disease and diabetes, why pick on *trans* fats or require caloric labeling? In our view, this is like arguing that since seat belts don't prevent all car crashes, we should abandon their use. Unfortunately, no single intervention can reverse these epidemics. Rather, an accumulation of individual, community and policy steps will be needed to stem these conditions. Labeling the caloric content and phasing our *trans* fats in restaurants are two modest, low cost and effective steps for improving health. These steps will save lives, educate New Yorkers about the ongoing need to pay attention to their diet and contribute to a climate where further steps can be taken to save more lives.

We endorse the passage of these two amendments with enthusiasm.

Sincerely,

Nicholas Freudenberg, DrPH
President, Public Health Association of New York City

Amy J. Schwartz, MPA
Executive Director, Public Health Association of New York City

Martin R. Fine
East Hampton, NY

October 26, 2006

BY FAX – (212)788-4315 & E-Mail

Department of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

ATTN: Rena Bryant

RE: "Trans Fat" – New Law

The proposed "legislation" is an outrageous governmental intervention and sweeping intrusion into the personal lives of millions of people regarding the health and diet of not only eight or more millions that live in New York City, but the tens of millions more that visit each year from around the country and the world. If Dr. Frieden can ban Trans fat today - why can't he ban pizza tomorrow and ice cream the next day;

why can't he ban eggs (cholesterol)?
why can't he ban steak (fat & cholesterol)?
why can't he ban hot dogs (fat & cholesterol)?
why can't he ban potato chips (fat & salt)?
why can't he ban butter (fat)?
why can't he ban cookies (sugar & fat)?
why can't he ban candy (sugar)?
why can't he ban cheese (fat, salt & cholesterol)?
why can't he ban bacon (fat, fat & cholesterol)?
why can't he ban doughnuts (fat & cholesterol)?
why can't he ban sodas (sugar)?
why can't he ban hamburgers & Cheeseburgers (fat & cholesterol)?
why can't he ban pies & cakes (sugar & fat)?
why can't he ban salt on restaurant tables?
why can't he ban peanuts (fat)?;

and myriad other forms of sweets and other forms of food and snacks that are "scientifically" deemed to be bad for you by the City.

In the 1930's the National Socialist Party, in Germany, commonly known as the "Nazis" attempted similar goals with respect to producing a healthier "super race"; New York City should not follow this path for more than obvious reasons. If obesity and medical problems are an overwhelming

problem in the City does Dr. Frieden propose to exterminate or otherwise eliminate the obese and sickly people as the most efficient method of reducing the City's health costs? This is the logical conclusion of the proposed "law".

Furthermore, in order to enforce this proposed "law", after the inevitable lengthy and expensive court proceedings by myriad people outraged by an all-encompassing government intervention in the daily lives of citizens and non-citizens alike, - the City will have to hire a huge "FOOD POLICE" force to enforce this law. There are literally tens of thousands of restaurants and food venues, approximately fifty to one hundred thousand restaurants of various types and sizes in NYC, and enforcement of this law will be insanely expensive and counterproductive. Furthermore, does the City intend to enforce these laws against food vendors on the streets (who have no sanitary facilities, virtually no refrigeration and spread disease, diarrhea and E.Coli on a daily basis), in the ball parks and other public venues, if so, how?

This whole proposal is a dramatic example of a government run amok and insane micromanagement of people's lives. The City should stick to the problems authorized by law and common sense, and not waste time and tax money of tens of millions of people with this proposed nonsensical regulation. Stop the Murders, stop the Robberies, stop the Rapes, stop the Assaults, stop the Muggings - hire more real policemen not "FOOD POLICEMEN"; build more housing that is affordable. Don't waste city tax funds enforcing nonsensical laws. Cut everybody's taxes; don't keep raising them to fund an ever expanding and intrusive and Nazi-like government to fund absurd missions. The government is not the "super nanny", and the people are not infants. Stop this madness.

Sincerely,

Martin R. Fine

From: <meltom5@aol.com>
To: <resolutioncomments@health.nyc.gov>
Date: Thu, Oct 26, 2006 4:26 PM
Subject: Trans fat

Martin R. Fine
East Hampton, NY

October 26, 2006

BY FAX – (212)788-4315 & E-Mail

Department of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

ATTN: Rena Bryant

RE: "Trans Fat" – New Law

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against food vendors on the streets (who have no sanitary facilities, virtually no refrigeration and spread disease, diarrhea and E.Coli on a daily basis), in the ball parks and other public venues, if so, how? This whole proposal is a dramatic example of a government run amok and insane micromanagement of people's lives. The City should stick to the problems authorized by law and common sense, and not waste time and tax money of tens of millions of people with this proposed nonsensical regulation. Stop the Murders, stop the Robberies, stop the Rapes, stop the Assaults, stop the Muggings - hire more real policemen not "FOOD POLICEMEN"; build more housing that is affordable. Don't waste city tax funds enforcing nonsensical laws. Cut everybody's taxes; don't keep raising them to fund an ever expanding and intrusive and Nazi-like government to fund absurd missions. The government is not the "super nanny", and the people are not infants. Stop this madness.

Sincerely,

Martin R. Fine

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NORTH GENERAL HOSPITAL
Growing With Our Community, Caring For Your Health

THE TEEN TEAM

October 26, 2006

81.08

To the Board of Health re the proposal on trans fats:

We were told that our generation was supposed to be the longest living generation so far. But this isn't the case. Instead, trans fats and other technology have shortened our lives and increased our health risk at a young age. Each year, heart disease is becoming more common in children. If we take trans fats out of the foods we enjoy, we decrease the risk of high cholesterol and heart disease. By taking the lead, New York will show that they care about our generation and the future of other generations to come.

Everyone talks about changing the environment but no-one does anything. We work hard to make our lives healthier by increasing our physical activity, eating more fruits and vegetables and reducing our fats despite advertising that promotes the opposite. But we still enjoy our french fries, just in smaller sizes. By reducing trans fats, New York will show us that they are working hard to help us, and that french fries can still be part of a healthy lifestyle.

Sincerely,

Sharmaine (15 years old), Shavonesia (18 years old), Jasmin (16 years ld), Shelley (15 years old), Kenny (15 years old), Michael (16 years old) and Rikki (18 years old), Maybelline (15 years old); Veronica (13 years old); Shelby (13 years old) and Amirah (14 years old).

Cathy Nonas, MS,RD,CDE

1879 Madison Avenue, New York, NY 10035
Telephone: (212) 423-4555 Fax: (212) 423-4399
www.northgeneral.org
Affiliated with the Mount Sinai School of Medicine

From: Candace Young
To: ANGELL, SONIA; Caffarelli, Anna; Chang, Christina; Chaves, Maritza; Desai, Erica; Goldstein, Gail; Johnson, Christine; Silver, Lynn; Tucker, Andrew
Date: 10/26/2006 4:06:10 PM
Subject: Fwd: TFA Statement

Statement from DOE on their efforts to eliminate trans fat from the school lunch, breakfast, and after-school snack programs in NYC.

>>> "McKie Herman" <HMcKie@schools.nyc.gov> 10/26/06 3:52 PM

Good afternoon Candace,

The comment for the public hearings on trans fat is attached.

Herman McKie

Herman McKie MS, RD
Nutrition Coordinator
SchoolFood
44-36 Vernon Blvd.
Long Island City, NY 11101, Rm 413
(718) 707 - 4230
(347) 539 - 2551
Hmckie@schools.nyc.gov <mailto:hmckie@nycboe.net>

SchoolFood requires all entree items and baked goods served as part of the National School Breakfast(NSB) and Lunch(NSL) programs; afterschool snack and supper programs contain less than 0.5 grams trans fatty acid. In addition we are reviewing all of our prepackaged snack foods so that they will meet guidelines. We have worked in conjunction with manufacturers to reformulate foods containing trans fatty acids since the 2004 - 2005 school term, and procure products that are free of partially hydrogenated oils. The process is not easy but with a commitment from industry we were able to accomplish our goals. As direct result of our efforts a trans fat free oil that can be used for salads and general recipe preparation along with a trans fat free french fry will be available this school term. These items adhere to specifications for trans fats in addition to lower fat, sodium and cholesterol. SchoolFood recognizes the importance of protecting the health and well being of our students and we will continue our mission to provide healthy and nutritious food to the public school system.

A Statement from the New York Academy of Medicine regarding proposed amendments to the New York City Health Code

October 25, 2006

The New York Academy of Medicine is a 160 year-old institution the mission of which is to enhance the health of the public. In light of that mission the following comments are offered:

- With regard to the proposal to restrict service of food products containing artificial trans fats in food service establishments or by mobile food units, the Academy is in strong support. Abundant scientific evidence has demonstrated that dietary trans fat increases the risk of coronary heart disease, the leading cause of death in New York City. This powerful adverse effect is largely due to alteration in the cholesterol compartments in circulating blood, such that levels of LDL (bad) cholesterol rise, and levels of HDL (good) cholesterol fall. The degree of these changes is such that careful scientific studies have concluded that between 6% and 23% of coronary heart disease events could be avoided if trans fats in the diet were replaced by healthy alternatives. Trans fats appear to affect the risk of coronary heart disease by additional mechanisms as well, especially the promotion of inflammation, an important contributing cause in coronary events.

  It should be added that there is no known positive health value derived from the ingestion of trans fat, and further, adverse effects are seen even at very low levels of intake.

  Studies in other countries have demonstrated that other, safer fats can be substituted in food preparation with no noticeable change in flavor or consumer acceptability. Since

one-third to one-half of food dollars are spent outside the home, the present proposal to require the restriction of artificial trans fat containing products in food service establishments and mobile food commissaries is eminently reasonable, and the proposed timeframe will not impose undue hardship on such establishments.

Accordingly, the New York Academy of Medicine vigorously supports this proposal.

- The second proposed amendment to the Health Code concerns providing information on the calorie content of menu items in food service establishments, where these have been established, and where portion size and content are reasonably standardized. In light of the striking epidemic of obesity nationally, and in the City of New York, and in further view of the fact that this has become associated with an epidemic of type II diabetes, measures to blunt the epidemic, and to reverse it, are urgently needed. There is abundant evidence that, provided with information related to caloric content, consumers in food service establishments respond by reducing the number of calories they ingest, and since most people have great difficulty in estimating the caloric content of their diets, and are correspondingly mystified by their progressive overweight and the failure of fad diets, the modest proposals of the Department of Health and Mental Hygiene seem eminently sensible, in fact possibly too modest.

  The Academy endorses this proposal as well.

It should be noted that objections to efforts by governmental agencies to introduce new public health measures such as these have been resisted for hundreds of years. The introduction of vaccination, for example, was preceded and, in its early years accompanied by, widespread and

vocal resistance. Similarly, in more recent years the proposal to fluoridate the New York City water supply was also met with resistance on the basis that government was intruding by introducing health-related measures that people could not decline. In the event, of course, both measures have proven eminently worthwhile, and have preserved health and even lives for very many people. The present proposals are aimed at health risks a good deal more widespread and just as dangerous as smallpox, the disease for which vaccination was first introduced, and the proposed alterations to the Health Code are preventive rather than prescriptive. Both proposals make eminently good public health sense.

Jeremiah A. Barondess, M.D.

Immediate Past President

JAB:cbg
s:\cbg06\nyc\doh&mh\statement-hlthcode

FILE HP

CC: A CATFORCE CORRESPONDENCE

R BRYANT

L. SILVER

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Wed, Oct 25, 2006 6:30 PM
Subject: City of New York - Correspondence #1-1-271000950 Message to AgencyHead, DOHMH - Restaurant Related Issues

Your City of New York - CRM Correspondence Number is 1-1-271000950
DATE RECEIVED: 10/25/2006 17:20:22
DATE DUE: 11/08/2006 18:26:14
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

****
If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

****

RECEIVED
DOH/SECRETARY'S OFFICE
RECORDS ACCESS OFFICER
2006 OCT 31 P 3:51

-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/25/2006 17:19:41
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: PO BOX 1401 (Donald Roberts, LTC ,USA Retired)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Donald Roberts, LTC ,USA Retired (PO BOX 1401) on Wednesday, October 25, 2006 at 17:19:41

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

Message Type: Misc. Comments

Topic: Restaurant Related Issues

Contact Info: Yes

First Name: Donald

Middle Name: W.

Last Name: Roberts, LTC ,USA Retired

Suffix: Sr.

Street Address: PO BOX 1401

Address Number: PO BOX 140

City: FULTON

State: MS

Postal Code: 38843

Country: United States

Work Phone #: 662 842 1122

Email Address: PO BOX 1401

Message: I'st a sad day in the USA when you propose to tell me what I can eat. I served this nation almost 30 years. I do visit the city and I am intelligent and "free" enough to make my own health decisions without your intrusion. You're trying to create a "Nanny State". Shame on you folks. If I need your input in to my dietary decisions I'll ask you for it. Othrwise sit down, shut up and stay out of your citizens private business.

REMOTE_HOST: 69.60.33.251
HTTP_USER_AGENT: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.7.5) Gecko/20060912 Netscape/8.1.2

****

Dear Ms. Rena Bryant,

As a resident of New York City, I urge you to support the Department of Health and Mental Hygiene's recommendation to limit the amount of trans fat in restaurant food and to require certain restaurants to list calories on menus.

Trans fats from partially hydrogenated oils increase "bad" cholesterol and decrease "good" cholesterol in blood, increasing the risk of heart disease. Heart disease is the number-one cause of death for women and men in New York City and the nation. Nationally, trans fats cause approximately 50,000 premature deaths each year and about 1,500 in New York City . The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet."

Since January 2006, almost all packaged foods are required to list trans fat on their Nutrition Facts labels. However, restaurants are exempt from such disclosure. Yet, New Yorkers are getting about one-third of their calories from restaurants and other food service establishments, and many restaurant foods contain high levels of trans fat. For example, the chicken pot pie at KFC has 14 grams of trans fat. That is as much as the American Heart Association recommends consuming for a whole week. A large order of McDonald's French fries contains 8 grams of trans fat.

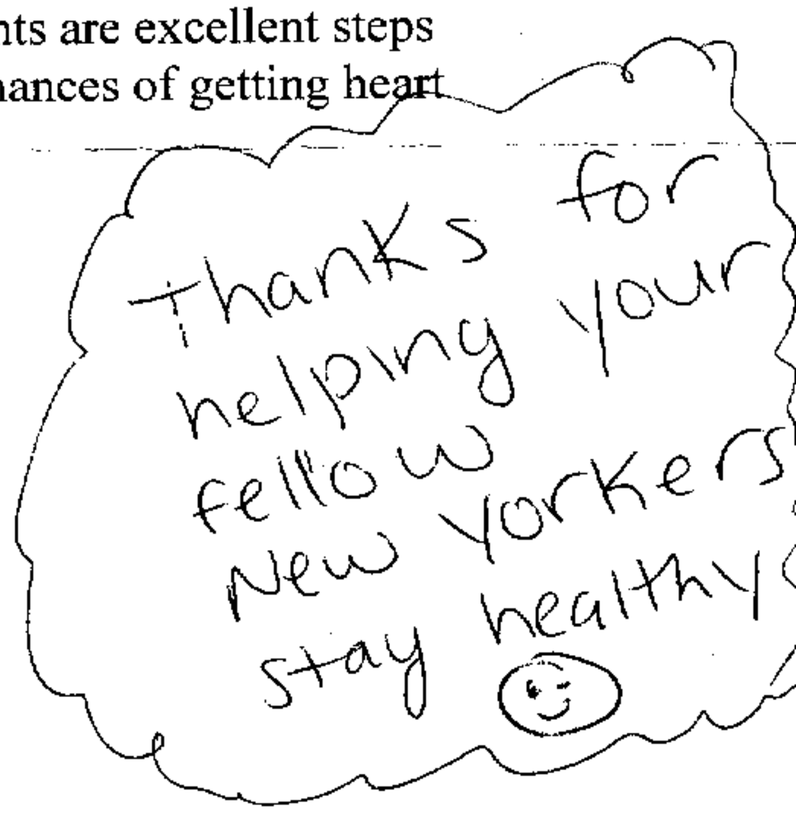
Although Americans get about a third of their calories from restaurants and other food service establishments, few restaurants provide nutrition information at the point of decision-making. It's nice that information may sometimes be found on the Internet or brochures, but that's not very helpful when you're weighing your choices at a restaurant. As a result, people often consume more calories than they realize. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke and an order of chicken tenders has more calories than the baby back ribs at a typical dinner house restaurant.

People have become accustomed to having nutrition information on packaged foods in grocery stores and want it at restaurants. Rather than hiding nutrition information on websites, restaurants should provide it to their customers where they need it and can use it.

The Department of Health's recommendation to both limit trans fat in restaurant foods and to require calorie disclosure on menus in certain restaurants are excellent steps toward helping New Yorkers watch their weight and reduce their chances of getting heart disease. Please support these important health measures.

Sincerely,
[Your name]
[Your address]

Mindy ASH
445 E80TH STREET
APT 8J
New York, N.Y.
10021



October 20, 2006

Department of Health

To Whom It May Concern:

As a concerned citizen of this wonderful city, I feel that it would be right to do away with the use of trans-fatty acids. Fatty acids should not be consumed at the rate it is being consumed foe the simple reason that, with all the publicity this subject has been getting and with the research that I have done on my own, I found that consuming so much of this harmful poison, we are only abusing our bodies and far too many of us do not know it. Our bodies can develop illnesses; Illnesses such as coronary heart disease have been linked to the consumption of trans fat. From my research done as a student, I have become more aware and more so disgusted that even our most favorite fast food restaurants use this anti-health oil to cook our foods which we devour on a daily basis, all so they can have a longer shelf life resulting in more profit for the restaurant. A longer shelf life for the oil but which is the opposite affect the trans fat has on us. A funny fact! To prevent illnesses, my family, many classmates, and I, ask that you continue to guard our well being just as we will continue to show our support to you. Please bring trans fat to an end before it brings our bodies to an unfortunate end.

Respectfully yours,

Stacey Jean-Louis

Stacey Jean-Louis

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st. john's UNIVERSITY

Professor M. Noe
Legal Studies Department
College of Professional Studies

Tel 718 990-7335
noem@stjohns.edu
8000 Utopia Parkway
Jamaica, NY 11439
www.stjohns.edu

October 20, 2006

New York City Department of Health
125 Worth Street
New York, N.Y. 10013

Dear Chairperson,

I am currently teaching Administrative Law to Legal Studies students. One topic we have reviewed is rulemaking in an Administrative Agency. It came to my attention that your agency is considering a rule regarding the use of trans-fatty acids in New York City restaurants. During the informal rule making process, it is appropriate for the public to voice their opinion.

I am enclosing letters from my students who would like you to consider their opinions on this rule before you. Please feel free to contact me regarding this submission. Thank you for your attention to this matter.

Very truly yours,

Professor Mary Noe

Professor Mary Noe

Public Hearing

New York City Board of Health

Monday October 30, 2006

10:00 A.M. to 1:00 P.M.

125 Worth Street

2nd Floor Auditorium

New York, N.Y. 10013

Public Comments

Department of Health and Mental Hygiene

Board of Health

Monday October 20, 2006

Commissioner Frieden and members of the New York City Board of Health: I am honored to be here this morning representing the American Academy of Pediatrics, an organization founded in 1930, that today represents 60,000 U.S. pediatricians dedicated to promoting optimal physical, mental, and social health and well being for all infants, children, adolescents and young adults. In Chapters 2 and 3 of District II of the American Academy we take seriously our obligation as clinicians not only to counsel our patients and their families when we see them in the office, but to advocate for them in the arena of public policy. It is that obligation that brings me here before you this morning. The American Academy enthusiastically supports the proposed amendments to Article 81 of the New York City Health Code recently proposed by the New York City Department of Health and Mental Hygiene. These two proposed amendments, one restricting the sale and distribution of foods containing artificial trans-fats, and the second requiring the posting of calorie information for consumers at the time of purchase, are both important public health initiatives that will have desirable consequences for the health of New York City residents.

As we have noted in our written comments to the Commissioner, trans-fats are known to be linked to the development of adult atherosclerotic heart disease, yet what is less well appreciated is that the precursors for this condition emerge early in childhood[1] at a time when patterns of food consumption are first being formed. Disturbing research reported in the *Journal of the American Dietetic Association* in 2004 indicated that for 19-24 month old toddlers, French fries are the most commonly consumed vegetable, less than 10% are consuming any dark green vegetables, one third are eating no fruit at all, and fully 60% are being fed baked desserts.[2] Since the vast majority of trans-fats are found in commercially prepared fried and baked goods, these eating patterns predispose even very young children to the ingestion of trans-fats as regular elements of their diet. A sound approach to the threat posed by these conditions should combine regular dietary counseling as part of routine primary care in the office setting with innovative public health interventions that promote healthy eating patterns. As professionals who interact every day with parents concerned about their children's health, we recognize the importance of both of these strategies and applaud the New York City Department of Health and Mental Hygiene in its efforts to have food service establishments restrict the amount of trans-fats included in the foods they sell. There are healthy substitutes for these substances that are equally flavorful, easily obtained, and as economical. By restricting foods containing trans-fats, the Department of Health and Mental Hygiene will have taken an historic step in the direction of improving the cardiovascular health of all New Yorkers.

The second proposed amendment to the New York City Health Code, §81.50, is equally important to the health of children and receives our unqualified support as well. Epidemiologic evidence from longitudinal studies indicates that overweight and excess caloric intake among other risk factors track from childhood to adult life.[3,4] Moreover the twin epidemics of obesity and type II diabetes are becoming increasingly severe even in the young pediatric age group over time,[5] particularly in areas such as New York City where recent estimates indicate that one fifth of kindergarteners are obese.[6] As with the issue of trans-fat consumption, we believe that addressing the problem of excess caloric intake in the pediatric population must be a multi-pronged approach. As has recently been stated in a Policy Statement from the American Academy of Pediatrics when addressing a primary prevention approach to nutrition:[7]

> *Education, with the support of the health care community, combined with health policy and environmental change to support optimal nutrition and physical activity, are central to this health strategy.*

Parents routinely struggle when trying to resist the effects of well-financed food-related messages in print and electronic media that daily attempt to influence their children's food purchases. A recent report in the *New England Journal of Medicine* indicated that American children are exposed to approximately 40,000 food advertisement s per year, 72 percent of which are for candy, cereal, and fast

food.[8] What's more the Institute of Medicine believes that these messages are successful in shaping product preferences and eating habits.[9] Any aid that we can provide beleaguered parents to help guide their choice of foods toward more nutritious alternatives constitutes an important public health intervention. If parents and young people are to be able to make wise decisions concerning which foods to consume when dining out, it is imperative that they be provided accurate information about the caloric content of foods *at the time* they are making their decisions about what to buy. Such information, clearly displayed at the time of purchase, will, when combined with the messages conveyed at primary care visits, enable parents and their children to moderate their intake of high calorie items containing large quantities of fats and carbohydrates. Mandated labeling of the type proposed by this amendment brings more, not less information into the marketplace thereby helping to promote more well-informed choices.

The American Academy of Pediatrics endorses a vigorous governmental role in addressing public health issues. We agree with Institute of Medicine's recent report that invokes a role for government at all levels in confronting public health crises such as the childhood obesity epidemic.[10]

Chapters 2 and 3 of District II of the American Academy of Pediatrics have historically recognized the vital contributions of the New York City Department of Health and Mental Hygiene in promoting the health of New York City residents

through a variety of critical activities. The two proposed amendments to the New York City Health Code are very much in keeping with this rich tradition and we are very pleased to join with the Department in support of their adoption.

Andrew D. Racine, M.D., Ph.D., F.A.A.P.

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[1] Berenson GS, Srinivasan SR, Bao W, Newman WP 3rd, Tracy RE, Wattigney WA. Association between multiple cardiovascular risk factors and atherosclerosis in children and young adults. The Bogalusa Heart Study. *N Engl J Med.* 1998; 338: 1650-1656.

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[3] Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. *N Engl J Med.* 1997; 337: 869-873.

[4] Feunekes GI, de Graaf C, Meyboom S, van Staveren WA. Food choice and fat intake of adolescents and adults: associations of intakes within social networks. *Prev Med.* 1998; 27: 645-656.

[5] Mei Z, Scanlon KS, Grummer-Strawn LM, Freedman DS, Yip R, and Trowbridge FL. Increasing prevalence of overweight among low-income preschool children: the Centers for Disease Control and Prevention Pediatric Nutrition Surveillance, 1983-1995. Pediatrics 1998; 101 (1). URL: http://www.pediatrics.org/cgi/content/full/101/1/e12.

[6] Obesity in Early Childhood: More than 40% of Head Start Children in NYC are Overweight or Obese. NYC Vital Signs. NYCDOHMH. 2006. 5(2).

[7] American Heart Association, Gidding SS, Dennison BA, Birch LL, Daniels SR, Gilman MW, Lichtenstein AH, Rattay KT, Steinberger J, Stetler N, Van Horn L. Dietary recommendations for children and adolescents: A guide for practitioners. *Pediatrics* 2006; 117: 544-559.

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[10] Koplan JP, Liverman CT, Kraak VI, Wisham SL. eds. Committee on Progress in Preventing Childhood Obesity. *Progress in Preventing Childhood Obesity. How do we Measure up?* Institute of Medicine of the National Academies. Washington, D.C.: National Academies Press. 2006.

From: "Steve Hanson" <sphanson@brguestinc.com>
Date: Thursday - October 19, 2006 1:05 PM
Subject: Nutrition Initiatives write up

10/19/06

Please see a small change to our write up for the Trans Fat Proposal:

In researching this issue over the last few months, B.R. Guest have easily found products that are equal to or superior in quality to products that contain Trans Fats. Restaurants such as ours, shouldn't have any problems finding products that are Trans Fat free. Since this proposal has been made more and more distributors are stocking Trans Fat Free alternatives and the prices are coming down causing no economic hardship.

Stephen Hanson

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FORZA FITNESS

"Blending of mind and body"

October 18, 2006

Ms. Rena Bryant
Secretary to the Board of Health
125 Worth Street, CN-31
New York, NY 10013

Re.: Public Hearing on Trans Fats

Dear Ms. Bryant:

As a professional speaker and exercise physiologist, I am truly excited about participating as a speaker at the 10/30 public hearing for the banning of trans fats. I whole-heartedly support, and applaud, NYC Health Commissioner, Dr. Thomas Frieden in his bid to ban trans fats from NYC eating establishments.

While many people fear that such a change is an imposition on our freedom to choose what we eat, the reality is that permitting the use of trans fats is an imposition on our freedom of choice to eat healthfully. People who oppose this amendment (except for food businesses, whose primary motivation is profit-driven) don't realize how deadly artificial food substances can be. They need to be informed that substances like trans fats can have drug-like effects on the human body. Allowing trans fats in our foods is preventing us all from living lives that are disease-free.

I believe that such an amendment is long overdue. Freedom of choice is what all Americans are entitled to. And as such, Americans should have the freedom to eat foods that are not poisoned with dangerous substances that compromise our health. Changes such as banning trans fats is a first step that can contribute to saving enormous amounts of money while saving numerous lives, and while enhancing the quality of life for all.

Sincerely yours,

Salvatore Fichera

Salvatore Fichera, MS
Exercise Physiologist
(212) 687-1646
sal@ForzaFitness.com
www.ForzaFitness.com

EMPIRE STATE MEDICAL ASSOCIATION

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FOR IMMEDIATE RELEASE
October 19, 2006

Statement of the Empire State Medical Association on the New York City Health Department's Proposal to Phase Out Artificial Trans Fat In All Restaurants

Harlem, NY – The Empire State Medical Association is the New York affiliate of The National Medical Association (NMA). The association promotes the collective interests of physicians and patients of African descent. We carry out this mission by serving as the collective voice of physicians of African descent and a leading force for parity in medicine, elimination of health disparities and promotion of optimal health.

The Empire State Medical Association applauds the New York City Health Department's proposal to eliminate artificial trans fats in all New York City restaurants and make calorie content for foods served in restaurants publicly available on menus and menu boards.

Trans fats are linked to heart disease and this proposal is especially relevant to people with diabetes who are at increased risk for heart attack and stroke. Heart disease is the leading cause of diabetes-related deaths. Adults with diabetes have heart disease death rates about 2 to 4 times higher than adults without diabetes. This also places a tremendous financial strain on our healthcare system. Between the ages of 45 and 64, African-American men have a 70 percent higher risk for heart failure than white men. For African-American women between the ages of 45 and 54, their risk is 50 percent greater than white women's.

The change in food labels could lead to significant progress in reducing health disparities, if black shoppers read them and make better choices. It remains to be seen how many food makers will eliminate trans fats on their own, as the producer of one popular brand of potato and corn chips did in 2003, when the federal government announced plans for the new labels. The front of that brand's packages declare the chips contain 0 percent trans fat, though they remain high in salt and low in nutritional value.

Still more needs to be done to make healthy food choices more available in low-income communities, where supermarkets with fresh produce sections have gone missing. Fatty foods must also be reduced in school cafeteria menus. Listing trans fat on food labels is a step toward helping everyone to live longer, healthier lives.

Many African-Americans now live in homes with multiple-wage earners who have less time to prepare meals. As a result, we've seen a shift towards the consumption of high-calorie convenience foods and larger portion sizes. At the same time, we have inadequate levels of physical activity. Together, these are contributing to an overwhelming obesity epidemic among Americans of all ages and across all population segments particularly in Central Brooklyn, South Bronx, Harlem and Southeast Queens in New York City. In New York City the obesity rate among African American Women is as high as 50%. Reversing this trend will require improving diet and increasing physical activity patterns in our communities and a conscious and well informed change in dietary consumption.

For more information, please visit www.nyesma.org.

# # #

October 18, 2006

New York City Board of Health,

United States of America has one of the poorest diets in the whole world. She has the highest population of obesity patients in the world. To our knowledge, poor diets yield to various deadly illnesses like obesity, heart diseases, diabetes, etc and to curb these illnesses, what we eat has to be regulated. In a fast pace society like New York City, sometimes we are unmindful of our meals and the ingredients used in preparing them. In some cases, we are privileged to know the content of our meals by the food labels listed on the side of the food items, but we ignore them because our priority is to meet up with the busy life of "The City." The good news is that City agencies are concerned with the health of their residents. They are concerned with the average diet a New York resident consumes on daily basis. As a result, the New York City Board of Health has "voted unanimously to move forward with the plans" of curbing the use of trans fat in about 20,000 restaurants and I am in support of this. Trans fat is one category of unsaturated fat and probably the "worst kind" that contributes in causing the deadly illnesses listed above. There should be regulations minimizing the use of trans fat in restaurant. Life is precious and we should preserve it

Trans fats are chemically altered artificial fats or hydrogenated oils used as substitute to natural oils in preparing food products. Just from the phrase "chemically altered artificial fats," there is a notion that the natural component of oil has been tampered to suit a specific purpose. Since it is man altering the fats, we should be aware that it is for personal reasons usually profit reasons. From the economic view, trans fats are used to extend the shelf-lives of products and

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they are inexpensive compared to their alternatives. One major criticism to the regulation of trans fat will be that trans fat prolongs the storage life of food products therefore yielding more profits and minimizing food wastage. If this is the reason trans fat should be considered in preparing food products, this indirectly depicts that the profit food industries make outweighs the lives of the consumers buying the products. It explains that the lives of consumers are of lesser value as long as the ultimate goal is reached which is profit. Since trans fat may lead to death, The City is likely to lose residents who patronize fast food restaurants to death. This may result to restaurants to losing their best customers and also losing profit. So, why not regulate the use of trans fat now than waiting until the last minute when the result will be pyrrhic victory. If trans fat is regulated at present, customers retain healthy lives and companies seek alternative oils close to the price of trans fat to prepare food products. It is costlier to lose lives than to preserve food.

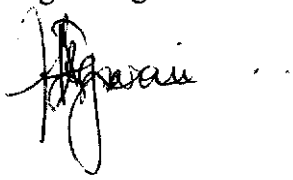
From the health perspective, trans fats raises LDL (bad) cholesterol level and at the same time, decreasing HDL (good) cholesterol level leading to clotting in the heart and a final result of coronary heart disease. Some scientists advise that people should consume minute amount of trans fat because even a moderate size can be harmful to our health. But the New Times article on trans fat conveys a different message by stating that a "typical American diet contains 5.8 grams of trans fat per day," and "...a single five-ounce serving of French fries at many restaurants contained[s] 8 grams of trans fats." These figures are not close to the scientists' explanation of minute and this means that on a daily basis, an American increases his/her risk of a heart attack by eating a typical meal. With this information, we can understand why we are tagged the nation with the poorest diet and highest number of obesity patients. Even when the rules promulgated January 1, 2006 asking that food labels which include trans fat should be listed on food items, there is still a high consumption of trans fat. People tend to ignore reading

food labels on food items and it is duty of agencies to intervene and make a more substantive rule to protect the public. If there is a question on one's right to choose, it was abused when we ignored the food labels on food items. Therefore, those rights have to be limited and we can still exercise them by choosing from wise choices.

I feel deeply concerned about this issue because my whole life for three years revolves in New York City. To be precise, I live in Queens, school at St. John's University Jamaica, Queens, work at Jamaica, Queens, and definitely eat in restaurants located at Queens. With these facts, my comments should be read and considered in making a final decision whether or not a rule should be promulgated to regulate trans fat.

Thank you,

Agwai Ogochukwu Irene



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David Diamond, *Chair*

Gary Parker, M.S.W., *District Manager*

October 16, 2006

Thomas R. Frieden, MD, MPH
Commissioner
The NYC Department of Health and Mental Hygiene
125 Worth Street, Third Floor
New York, New York 10013

Re: DEPARTMENT OF HEALTH PROPOSAL TO BAN TRANS FAT

Dear Commissioner Frieden:

At the regularly scheduled monthly meeting of Community Board Five on Thursday, October 12, 2006, the Board passed the following letter by a vote of 17 in favor; 16 opposed; 0 abstention:

Manhattan Community Board Five, representing Midtown Manhattan, would like to thank you for the opportunity to comment on two proposed Health Department initiatives.

The first would require New York City restaurant owners to substitute trans fat oils for other healthier oils such as olive, canola, safflower or grapeseed. While Community Board Five agrees that restaurants should limit the amount of trans fats, we are uncomfortable with mandating the removal of such trans fat oils. Community Board Five is concerned that enforcement of the current proposal as is would be difficult and costly. Additionally, it would be problematic for health inspectors to ensure that trans fat oils were not present in restaurant foods.

Community Board Five instead favors a campaign aimed at continued education of restaurant owners and their consumers about the dangers of trans fat oils. We recommend requiring restaurant owners to indicate the presence of trans fat oils in foods through a visible and easily recognizable symbol placed near the item on a menu. This symbol would serve the purpose of educating consumers about the presence of trans fat oils and allow them to make an informed choice as to whether or not to consume the item.

The second proposed initiative would require restaurants that currently display the calorie contents of food and drink items to now display these calorie contents on menus and menu boards. We are concerned that this may place an unfair burden on restaurant owners who may incur significant costs in order to upgrade menus and menu boards to provide this new mandated information. Furthermore, we are concerned about the imposition this new initiative may place upon smaller restaurants that may have variable or changing menus items on a frequent basis.

Community Board Five prefers a pilot program that targets the larger chain restaurants such as McDonalds and Starbucks. We believe that this pilot program should require all restaurants at a certain seating capacity, volume of service and/or with multiple locations to display calorie information on menus and menu boards. Important information on the favorable and/or unfavorable impact of the legislation and costs should be gathered and

assessed at completion. Community Board Five does not want to burden smaller restaurants that are already seeking to educate their consumers through their voluntary provision of nutritional information with additional mandated requirements.

Manhattan Community Board Five appreciates and recognizes your commitment to the health and well-being of New Yorkers and we thank you once again for the opportunity to comment on both these important health measures.

Sincerely

David Diamond
Chair, Community Board Five

Susan Baida
Chair, Human Services & Youth Committee

Cc: City Council Speaker Christine Quinn
City Councilmember Dan Garodnick
City Councilmember Rosie Mendez
City Councilmember Joel Rivera, Chair of the Council Committee on Health

Columbia University
MAILMAN SCHOOL
OF PUBLIC HEALTH

OFFICE OF THE DEAN • Allan Rosenfield, MD
DeLamar Professor and Dean

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October 17, 2006

Rena Bryant
Secretary to the Board of Health
Department of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Notice of Intention to Add §81.08 and §81.50 to Article 81 of the New York City Health Code

Dear Ms. Bryant:

The Mailman School of Public Health is pleased to have this opportunity to submit our comments on the proposed amendments to Article 81 of the New York City Health Code to restrict the service of products containing artificial trans fat at all food service establishments (FSEs) and to provide information to consumers on the calorie content of menu items at the time of ordering at FSEs where such information is publicly available. Columbia University's Mailman School of Public Health is the only accredited school of public health in New York City and among the first in the nation. Its students and over 270 multi-disciplinary faculty engage in research and service in the city, nation, and around the world. The Mailman School brings its expertise to bear on various public health challenges that face the nation today.

The two proposals announced by the New York City Department of Health and Mental Hygiene represent important steps in protecting the health of all New Yorkers. Scientific evidence clearly demonstrates the association between increased trans fat intake and the risk of coronary heart disease. A major goal of public health is to prevent health problems from occurring, and the most effective means of prevention is eliminating health hazards. The measure to phase-out artificial trans fat in restaurants reduces a major source of this hazardous and unnecessary substance in people's diets. If New Yorkers were to replace all sources of artificial trans fat with healthy alternatives, there would be a significant reduction in coronary heart disease events such as heart attacks, even by the most conservative estimates. It is estimated that 500 or more deaths from heart disease would be prevented each year in New York City.

The measure to have certain restaurants post calorie information on menus and menu boards, visible at the time of ordering food, gives customers the ability to make informed choices about what they eat. Consumers have this ability when they buy packaged foods and beverages and should have calorie content information available more often when eating at restaurants. Studies show that readily accessible nutrition information can

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positively affect people's food choices. Without such information, people often underestimate the amount of calories they are taking in.

The statistics on the obesity epidemic are of great concern. In New York City, more than half of adults are overweight and one in six is obese. People who are overweight are at increased risk for diabetes, heart disease, stroke, high blood pressure, arthritis, and cancer. Diabetes alone affects three quarters of a million New Yorkers. The health and economic burden on individuals and society stemming from the obesity epidemic is substantial. Curbing this epidemic requires strong and innovative efforts on all fronts. Empowering individuals to make healthier food choices, along with encouraging increased physical activity among children and adults, is an important part of such efforts.

Both of these proposals recognize the economic and social reality that New Yorkers frequently dine out – more than one third of daily caloric intake comes from food eaten away from home. Protecting the health of New Yorkers, therefore, necessitates public health measures that target food service establishments. These proposals may set standards for other public health agencies to follow.

Sincerely,

Allan Rosenfield, MD

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October 16, 2006

Rena Bryant
Secretary to the Board of Health
125 Worth Street CN-31
New York, New York 10031

Dear Rena Bryant,

My name is Jolie Beauregard I am a senior at St. John's University and I currently reside in Manhattan. I often eat at many of the restaurants stretched out along my block in Manhattan; therefore I feel I have a right to express my opinion regarding the ban of trans fat within restaurants.

I do not believe it is beneficial to ban trans- fat acids from food for many reasons; we all know that New York is one of the most expensive places to live in the country and by prohibiting restaurants to use trans fat it will in turn increase prices for the business, and they will pass that on to the consumer. Also, as Americans we take pride in our Constitutional Rights and the freedom of choice, by banning something as simple as trans- fat acids it also takes away our right to choose. One may ask themselves when will it end?

Respectfully yours,

Jolie Beauregard

Jolie Beauregard

BEA Inc. I'm lovin' it **AJD Inc.**

C/o Diekmann, P.O. Box 295, Pleasantville, NY 10570
(914) 747-4416 (Office)
(914) 747-4543 (Fax)

September 29, 2006

TO: Honorable Mayor Michael Bloomberg
City of New York

Mr. Joel Rivera, Director
NYC Department of Health

Dear Mayor Bloomberg & Mr. Rivera:

We are writing in opposition to the NYC Department of Health initiative that proposes to put restaurant calorie counts on menu boards. As McDonald's owner-operators in the City of New York (who already promote healthy lifestyles for our customers via our excellent corporate program), we feel strongly that the implementation of this initiative will create severe service barriers and cost hardships for our franchises and will slow down the quick service concept for our customers.

New Yorkers and tourists in New York City ***expect*** our fast and friendly service. Adding calorie counts to menu boards will create confusion and disapproving attitudes and will undermine the quick-service concept that is a key component of our business. In addition, the expense of changing-out menu boards is cost prohibitive for us as small business owners. The idea of adding calorie counts to our menu boards in a no-win situation for customers and for all quick service restaurant owners.

McDonald's is already an industry leader in promoting a global initiative to help our customers maintain active and balanced lifestyles. For more than 30 years, we have provided our customers with nutritional information for our products. Beginning in 2006, our packaging will display easy-to-understand nutritional information. We are currently working to eliminate trans fat from our products. Our Web site and tray liners and nutritional brochures offer valuable nutrition and fitness tips. Our customers currently have the information they need to make healthy, informed decisions about what products they are buying for themselves and their families. Adding caloric counts to our menu boards is only redundant and will cause our consumers and employees unnecessary stress while trying to accomplish quick service transactions.

Choosing a healthy lifestyle is not a choice that our customers make in one minute during their lunch breaks standing at our front counters. It is a long-term commitment

that is made thoughtfully and conscientiously and is integrated into their daily lifestyles in a balanced approach.

While we strongly support our customers' best interests and have excellent support programs in place, it is also necessary to protect our interests as small business owners in the City of New York. Mandatory caloric menu board labeling does not address the complex issues behind obesity and unhealthy lifestyles. The passing of this initiative will surely create negativity and confusion for our business, for our city and for our consumers.

We are opposed to mandatory caloric menu board labeling. Thank you for your interest and kind consideration.

Yours truly,

Bill & Elaine Diekmann
Owner Operators
New York City

BED:als

Paloma Garcia
22-30 97th Street
East Elmhurst, NY 11369

October 15, 2006

To Whom It May Concern:

Thank you in advance for your attention to this matter. I would like to take this opportunity to establish my opinion towards your trans fat debate. I am grateful that proactive measures are trying to be taken to try to reduce the ongoing health problems that have plagued Americans for so long such as heart disease. In the U.S. alone, an estimated 61.8 million people live with cardiovascular disease. Heart disease and stroke, the main components of cardiovascular disease, account for nearly 40 percent of all deaths in the nation. I can only imagine what the number of diagnosed people with heart disease will be ten years from now. I understand that we as a free society are free to choose whether or not to eat healthy, but there are people that sometimes live too busy a life to make better health choices. America is a country of opportunity where most of everyone's objective is to succeed. Many of us are all too consumed in work or family to take time out to learn the benefits of eating right. We are so inclined to grab the most convenient food at our reach. So why not have "healthy" fast food at our reach? If trans fat reduction or at least trans fat awareness can wake us up to healthier lifestyles; why not? Who does not want to live a longer and healthier life? If any decision can be made towards a better and more prolonged life, this would be the answer- reduce trans fat in restaurants. Yes, trans fat has many advantages like better taste and longer shelf life, but as Lynne D. Richardson, a member of the Board of Health and a professor of emergency medicine at Mount Sinai School of Medicine said, "human life is much more important than shelf life."

Paloma Garcia

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Conscious Cooking

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RE: I SUPPORT THE PROPOSALS TO ADD BOTH §81.08 AND §81.50 TO ARTICLE 81 OF THE NYC HEALTH CODE

To: Ms. Rena Bryant
Secretary to the Board of Health
NYC Department of Health and Mental Hygiene

Fax: (212) 788-4315 **Phone: (212) 788-5010**

Date: 10-14-06 **(must be before 10/30/06)**

Dear Ms. Bryant:

Please include my comments as testimony in support of the proposals to add §81.08 (which would restrict the serving of products containing artificial trans fats in NYC restaurants) and §81.50 (which would require restaurants that make nutritional information available to post caloric information for individual items on menu boards and menus to enable consumers to make informed choices among such items at the time of ordering) to Article 81 of the NYC Health Code.

please pass this!

Sincerely,

First Name: MAHIMA **Last Name:** JOISHY

Street Address: 277 BROADWAY, #708 **Zip Code:** 10007

☐ Queens ☒ Manhattan ☐ Brooklyn ☐ Bronx ☐ Staten Island

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Conscious Cooking

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What is §81.08? This ruling would restrict NYC restaurants from serving food containing artificial or added trans fats. (Thus, meat and dairy products containing natural trans fats would be okay to serve, but restaurants would not be able to use oil and shortening that contains trans fat.) Trans fats lower "good" HDL cholesterol, and raise "bad" LDL cholesterol. There are healthier fat alternatives that are widely available and should be used, however the restaurant industry has yet to widely replace trans fat with available alternatives.

What is §81.50? This ruling would require restaurants that already make nutritional information available to post the calorie information for individual items on their menu boards and menus. This would enable consumers to make more informed choices among such items at the time of ordering. §81.50 is aimed at restaurants that use standard recipes for menu items, such as McDonalds and Starbucks. It's not aimed at smaller independent restaurants and would only affect about 1 in 10 restaurants, mostly chains.

By voicing (or faxing) your opinion, you are in good company. Here is what the experts are saying:

"If New Yorkers replace all sources of artificial trans fat, by even the most conservative estimates, **at least 500 deaths from heart disease would be prevented each year in New York City** - more than the number of people killed annually in motor vehicle crashes. Based on long-term studies, the number of preventable deaths may be many times higher. **Trans fat from partially hydrogenated vegetable oil is a toxic substance that does not belong in food.**" *Walter Willett, M.D., Dr. P.H., Chair of the Department of Nutrition at the Harvard School of Public Health.*

"I can't think of a better or more practical way to teach people about calories in food than to list them right next to the prices. If restaurant companies really want consumers to be healthier and to make better food choices, they should support both the banning of trans fats and the listing of calories, in New York and across the country." *Marion Nestle, a professor of food studies and public health at New York University, is the author of "What to Eat."*

www.conscious-cooking.com

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Smaller chains and restaurants like Sylvia's, Juniors and the Carnegie Deli have already removed trans fat ingredients without government intervention, and some larger companies have made the switch without major difficulties. Ruby Tuesday, Au Bon Pain, and even Wendy's, have all sharply reduced trans fats in their products.

Other local restaurant owners want you to know that they are also in agreement:

Chip Shop owner Chris Sell, said, "I can find trans fat-free and cholesterol-free oil for the same price as oil full of trans fat and cholesterol, so I am always going to choose the trans fat-free oil. We have been completely trans fat-free for the past five years."

Allysa Torey, **Magnolia Bakery** owner said, "We make all our products without trans fat, including our famous cupcakes. We only use shortening in a small number of our seasonal products and don't anticipate any issues in making the change."

Leslie Meenan, Managing Partner at **Café Habana** said, "Cooking with trans fat-free oils accentuates the natural flavors of the food. It is just as easy to cook without trans fat and the food tastes better."

Monica Von Thun Calderòn, owner of **Grandaisy Bakery**, said "Grandaisy Bakery has been totally committed to baking without trans fat since its inception because the health of our customers is important to us. Simple ingredients make a great tasting product."

Mohammad Moqbul Hossain, partner in **Taste of Tandoor**, said "Taste of Tandoor is already cooking without any artificial trans fat. The food we make for our customers, we also eat ourselves, so we are committed to making healthy food."

Manuel Colon, General Manager of **Bistro Cassis**, said, "We switched to trans fat free-oil because we liked the taste better than food fried in oil with trans fat. We have not had to change recipes or increase prices to customers as a result of the change."

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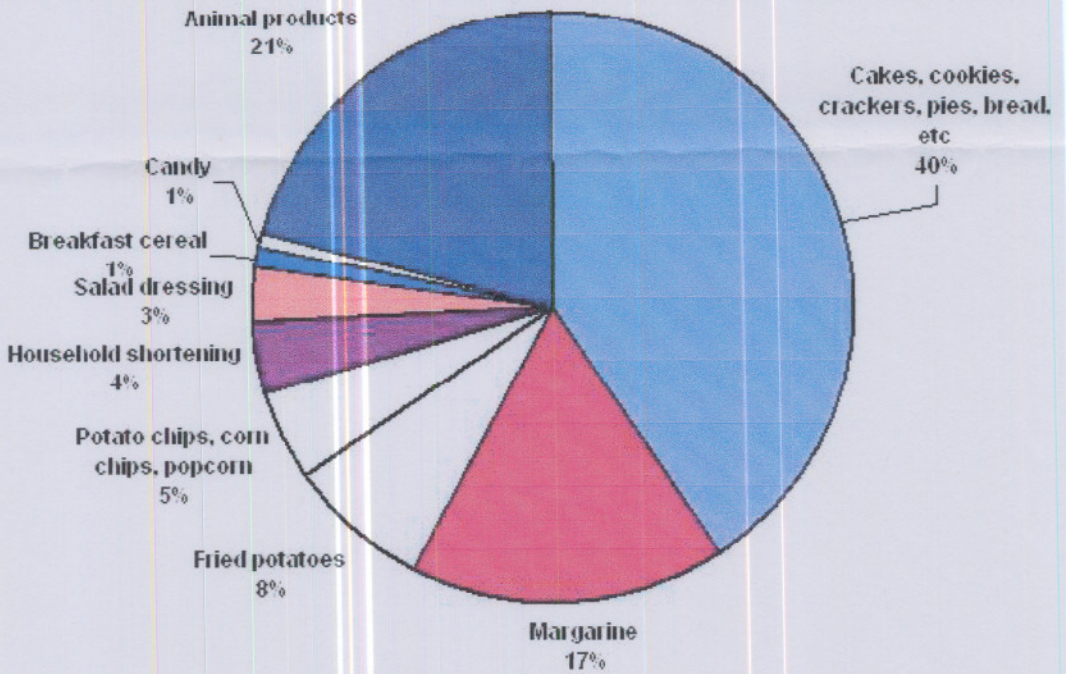
Sources of Trans Fat in the U.S. Diet



FDA Consumer magazine. September-October 2003 Issue. Pub No. FDA04-1329C. URL: http://www.fda.gov/fdac/features/2003/503_fats.html

For more information:

www.nyc.gov/html/doh NYC Department of Health and Mental Hygiene Read the 2 proposals online. Attend the hearing in person on 10/30.

www.nytimes.com Many recent articles about the Trans Fat Proposal

www.conscious-cooking.com Holistic health counseling and healthy cooking classes with Diane Kolack, HHC. The best way to avoid unhealthy restaurant food is to stay at home and cook your own food. Learn to make 30 minute meals that leave more in your pocket and less around your middle. Email diane@conscious-cooking.com for more information.

www.conscious-cooking.com

Article 81

From: Sandy Solmon <sandy@SWEETSTREET.com>
To: "'mrobins1@health.nyc.gov'" <mrobins1@health.nyc.gov>
Date: 11/2/2006 11:39:10 AM
Subject: Transfat Information and Presentation from Sandy Solmon - Sweet Street Desserts

Dear Michelle:

It was a pleasure meeting you on Monday, October 30, 2006. I look forward to working with you to resolve this situation.

The essence of the issue is that : while the intent of the proposed New York City law is to ban products containing more than .5 grams of artificial transfats, the wording of the law is such that it would also ban products that contain substantially less.

It has been most difficult for me to create a simple educational piece to help your department and the commissioners understand the more subtle and unforeseen repercussions of the second phase of this ruling.

I believe if these issues are not resolved in advance, they will create an enforcement nightmare as well as a potential legal issue for the city. How do your inspectors interpret the labels in an instance where the product contains dairy, a trace amount of hydrogenated fat at a level of .03 (out of an allowable .49 to be labeled in New York as transfat free) with the resulting label reading above .5 grams transfat? The inspector could not know either from the nutritional label nor the ingredient statement that the artificial transfats were actually under the allowable limit. The inspector might even fine the restauranteur for carrying this product. This presentation provides the background information to walk you through the problem. At the end, you should clearly understand how it occurs.

Clearly, New York's intention is not to create this kind of situation, but if the second part of the proposed law were to be implemented this could easily happen. In Sweet Street's product lineup there are several instances of popular desserts, sold in large quantities in New York, that would fall into this subgroup. I can think of several instances of popular desserts, for instance a snickers bar pie which is cheesecake based, called the Big Blitz with Snickers. The Snickers bars contain allowable amounts of hydrogenated fats and the dessert contains large amounts of dairy. Together we have both a label and an ingredient statement problem.

Please review the presentation and call me to clarify any points that are

confusing to you. Please look in our brochure at the items referenced in the presentation to review examples of products that might fall into this difficult subgroup.

I am looking forward to talking to you further on this topic with the intention of crafting a solution that will resolve all of our problems. Please call me when you have reviewed this information and we will discuss in greater detail.

Very truly yours,

Sandy Solmon

President, Director of Research and Development

CC: Sandy Solmon <sandy@SWEETSTREET.com>

October 30, 2006
To: New York City Board of Health
From: Michael F. Jacobson, Ph.D., Executive Director, and Margo Wootan, D.Sc., Director of Nutrition Policy, Center for Science in the Public Interest

Re: Comments in Support of Menu Labeling and Limits on Tans Fat in Restaurants

The Center for Science in the Public Interest is a nonprofit health-advocacy organization with more than 15,000 members and subscribers in New York City. Among other things, CSPI led the effort to win passage of the law requiring nutrition labeling on packaged foods and to add trans fat to those labels. We also publish *Nutrition Action Healthletter*, the nation's largest-circulation health newsletter.

CSPI applauds the Department of Health for its ground-breaking recommendations to limit trans fat in restaurants (Section 81.08) and require calorie labeling on menus at some restaurants (Section 81.50). We strongly urge the Board of Health to adopt these two amendments.

Section 81.50: Calorie Labeling at Restaurants

Menu labeling would enable New Yorkers and visitors to make informed decisions about their own health by providing them with information that is sorely lacking at most restaurants. With two-thirds of Americans overweight or obese, we need to give people a fighting chance at eating better and maintaining a healthy weight. Requiring calorie disclosure on menus is one effective, low-cost way to support healthy eating and put the brakes on obesity.

Nutrition labeling in restaurants is needed because eating out is no longer an occasional, special occasion. Americans are eating out twice as much as in 1970. Away-from-home foods now provide at least one-third of the average person's calorie intake.

Restaurant meals tend to be less healthy than home-prepared meals. We have provided the Board of Health with a summary of about 20 studies that link eating out with obesity (see Attachment 1). Restaurant meals typically are higher in saturated fat and lower in such nutrients as calcium and fiber. For example, children typically eat almost twice as many calories when they eat a meal at a restaurant compared to at home. Women who eat out more often (more than 5 times a week) eat about 300 more calories each day on average than women who eat out less often.

It is not uncommon for restaurant entrees to provide a half-a-day's worth of calories -- and that is without an appetizer or dessert. Certainly, no one thinks that cheese fries are a health food, but who would guess they have a day-and-half's worth of calories? Or that a large chocolate shake at McDonald's has more calories than four hamburgers?

Although restaurants provide a range of menu choices, without nutrition information, it can be difficult to compare options and make informed decisions. For example, at Starbucks your coffee beverage might have anywhere from 10 to almost 800 calories. An ice cream at Haagen Dazs can cost you as little as 120 calories or more than 1,200. And few people would guess that a small chocolate shake at McDonald's has as many calories as a Big Mac.

People know that a small serving has fewer calories than a large one, but it is very difficult to accurately estimate the calorie contents of restaurant meals (see Attachment 2). A study conducted by CSPI and New York University found that even well-trained nutrition professionals cannot accurately estimate the calorie contents of typical restaurant meals. They consistently underestimated the amounts, and the underestimates were substantial – by 200 to 600 calories. For example, when shown a typical dinner-house hamburger and onion rings, the dietitians estimated that it had 865 calories, when it actually contained about 1,500 calories. If trained nutrition professionals cannot estimate the calories in restaurant meals, an average consumer does not stand a chance. Importantly, other research indicates that, given a modicum of nutrition information, consumers would actually improve the nutritional quality of the meals they order at restaurants (see Attachment 2).

In addition to providing consumers with information to help them make informed decisions, menu labeling would provide an incentive for restaurants to add new menu items and reformulate existing options to reduce the calories. We saw this happen when Nutrition Facts labels went on packaged foods in 1994, and we see it now with packaged-food companies lowering or eliminating trans fat in response to the FDA's requirement for trans-fat labeling.

The current system of voluntary labeling at restaurants is not working. Half of the largest chain restaurants do not provide a single shred of nutrition information to their customers. The restaurants that do provide information generally provide it on websites, which have to be accessed before leaving to eat out, on hard-to-find, difficult-to-read posters or brochures, or on tray liners or fast-food packages, which people do not see until after they order.

Note, however, that the current provision of nutrition information does show that providing nutrition information for restaurant foods is feasible, practical, and affordable – despite some companies' contentions that it is too impractical to provide such information. If a company can provide nutrition information on a website, it should be able to put those calorie numbers on their menu boards and menus, where people can find them and use them when ordering.

People have grown accustomed to having nutrition information on packaged foods in supermarkets and they want it on menus. National polls show that about two-thirds of Americans want restaurants to be required to provide calorie information on menus and menu boards. Menu labeling bills have been introduced in the legislatures of 17 states and cities across the country, as well as in the U.S. Congress.

We have two small suggestions to strengthen the New York City menu labeling proposal.

1) We encourage the Board of Health to change the menu-labeling requirement in Section 81.50(a) from restaurants that have nutrition information available on or after March 1, 2007, to restaurants that have nutrition information available on or after the date on which this amendment is adopted.

2) The Board of Health should add a new subsection 81.50(b)(iv):

> *If a restaurant sells food that is on display to customers, such as baked goods displayed in a glass case, meals or items displayed at the counter, a salad bar, buffet line, cafeteria service, or other arrangement, calories must be provided for such items per serving, as usually offered for sale. If the calorie information is not on the menu or menu board, it must be provided directly adjacent to the displayed item in a typeface and font that is readable by customers when viewing the displayed item or that is at least as large as other information provided about the item.*

To summarize: We urge the Board of Health to adopt the Department of Health's recommendation and require calorie disclosure on menus and menu boards at restaurants that already have that information.

Section 81.08: Foods Containing Artificial Trans Fat

Partially hydrogenated oils—think Crisco—are the source of most of the trans fat in our diet and have had a dramatic recent history. Twenty years ago, everyone thought they were perfectly safe. But that all changed around 1990, when research began demonstrating that trans fat, on a gram-for-gram basis, is the single most harmful type of fat—even worse than the saturated fat in meat and dairy products—in terms of promoting heart disease. There is now virtual unanimity that people should consume as little trans fat as possible from partially hydrogenated oils.

In 1993, my organization began urging the Food and Drug Administration (FDA) to require trans fat to be listed on package labels. That finally came about this past January (2006). But over that 13-year period, the evidence of trans fat's harmfulness built up to such an extent that in 2004 we petitioned the FDA to regulate partially hydrogenated oil much more strictly and get it out of the food supply entirely. While the FDA considered that petition, we also petitioned the FDA to require any restaurants whose offerings contain trans fat to post signage or menu notices to that effect.

Several large food manufacturers, including Kraft and ConAgra, have responded to FDA's labeling requirement by switching to healthier, trans-free oils. However, restaurants do not provide labeling, and few major chains have switched to healthier oils. The regulations you are considering would help protect New Yorkers from a very significant cause of heart disease. Harvard researchers recently estimated that each year trans fat causes 72,000 to 228,000 heart attacks, including roughly 50,000 fatal ones. Those deaths are unnecessary, and many could be prevented by the recommendation being considered today.

The nice thing about getting rid of partially hydrogenated oil that contains trans fat is that New Yorkers will enjoy improved health without needing to make any effort on their own. Restaurant foods will automatically be healthier…and the switch to healthier oils should save on the order of 500 lives a year (that assumes that trans fat causes 50,000 premature deaths annually, that about 3 percent of Americans live in New York, and that restaurant foods provide about one-third of the trans fat). Of course, New Yorkers could do even better by choosing trans-free packaged foods and using trans-free shortenings and margarines when they cook at home.

The American Heart Association and the federal government's Dietary Guidelines Advisory Committee have recommended that Americans get less than 1 percent of their calories from trans fat, or about 2 grams per day. Many restaurant foods contain far more than that. One Chocolate Doughnut at Starbucks contains 5 grams of trans fat—2 days' worth. A large order of McDonald's fries provides 4 days' worth of trans fat. A Chicken Pot Pie at KFC provides 14 grams, a whole week's worth.

Limits on trans fat should be achievable by every restaurant, big or small. Consider:

- Wendy's, Ruby Tuesday, Chili's Grill & Bar, Ruth's Chris, and Panera's Bread have all largely switched to healthier oils, and KFC announced today that it is doing so, also. Some small chains and individual restaurants also do quite well without trans fat. Wendy's said that the new oils will not cost any more. Legal Sea Foods said that their fish tastes better now that it is fried in a trans-free oil.
- Denmark has essentially banned partially hydrogenated oil by setting a 2 percent limit on trans fat. McDonald's, KFC, and Burger King, as well as all Danish companies, have switched to trans-free oils, apparently without any problems or complaints.
- McDonald's fries foods without trans fat in much of Europe, Israel, Australia, and New Zealand,—but not in New York City or the rest of the United States.

The restaurant industry is objecting to this proposed ordinance, partly because they say it is difficult to change oils. Roughly half of partially hydrogenated fats are used for frying. Those uses can easily be replaced using any number of oils, including soybean, canola, corn, or sunflower oil, or low-linolenic soy oil, or expeller-pressed soybean oil. Some of those oils cost more per gallon than partially hydrogenated oils, but may have a longer cooking life, resulting in cost-savings for restaurants.

It can be harder to replace partially hydrogenated fats when solid fats are needed. But even here, we have found that some food processors and restaurant have switched to healthier oils for pie crusts, pastries, cakes, and cookies. In May 2004, we surveyed supermarkets and found many categories of food in which some brands used partially hydrogenated shortenings, while competing brands used trans-free shortenings (see Attachment 4). Substitutes include such ingredients (sometimes as mixtures) as high-oleic canola oil, trans-free Crisco (a mixture of soybean oil and fully hydrogenated [trans-free] soybean oil), inter-esterified oil (an enzymatically combined mixture of trans-free fully hydrogenated and liquid oils, palm or coconut oil, and butter. To help bakers and restaurateurs switch to healthier oils, it is important that the health department provide technical assistance by means of printed materials, the Internet, and the telephone. Of course, the vegetable-oil industry will also be providing support.

Some conscientious restaurateurs know that trans fat is bad and are switching voluntarily. But, unfortunately, most are not switching. That is why New York City—and every other city and state—should fulfill its responsibility to protect consumers' health by implementing the trans-fat policy you are considering today. You could save several hundred lives every year at virtually no cost to the city and only a temporary, minimal cost and inconvenience to the restaurants. We urge the Board of Health to adopt this important recommendation.

Research Regarding the Association of Away-from-Home Foods and Body Weight

Overall studies show:

- Eating out more frequently is associated with obesity, higher body fatness or higher BMI (Pereria et al., 2005; Taveras et al., 2005; Thompson et al., 2004; Binkley et al., 2000; Jeffery & French, 1998; Ma et al., 2003; McCrory et al., 2000; McCrory et al., 1999).
    - For example, women who eat out more often (more than 5 times a week) consume about 290 more calories on average each day than women who eat out less often (Clemens et al., 1999).
- Eating more fast-food meals is linked to eating more calories, more saturated fat, fewer fruits and vegetables, and less milk (Taveras et al., 2005; Schmidt et al., 2005; Bowman & Vinyard, 2004; Paeratakul et al., 2003; French et al., 2001; Jeffery & French, 1998; McNutt et al., 1997).

The following is a brief annotated bibliography of sources regarding the association between away-from-home foods and overweight/obesity, as reviewed in a presentation by Dr. Alice Lichtenstein of Tufts University at the April 26-27, 2005 meeting for the Food and Drug Administration (FDA) for the Keystone Forum on Away-From-Home Foods: Opportunities for Preventing Weight Gain and Obesity. Please note that studies use different terms for away-from-home foods establishments; including "restaurants," "away-from-home food outlets," and "quick-service" or "fast-food restaurants." Furthermore, researchers may define these terms differently. Thus, one should consult the individual studies for more detail and clarity.

1. Binkley, JK et al. "The Relation between Dietary Change and Rising U.S. Obesity." International Journal of Obesity 2000;24:1032-1039. Using CSFII data from 1994 to 1996, the researchers found that source of food is a significant determinant of Body Mass Index (BMI). This association was shown for both restaurants generally and fast-food outlets specifically. For females, the correlation was significant for fast-food outlets only but for males, the correlation was significant for restaurants generally as well as fast-food outlets specifically.

2. Bowman, SA et al. "Effects of Fast-Food Consumption on Energy Intake and Diet Quality among Children in a National Household Survey." Pediatrics 2004;113:112-132. Using CSFII data from 1994 to 1996 and the Supplemental Children's Survey from 1998, the researchers found for four to nineteen year olds, thirty percent (30%) of the sample population consumed fast food on a typical day. Those who ate fast food consumed more calories per gram of food and had poorer diet quality. The higher fast food consumption was associated with males, older children, higher household income, non-Hispanic Afro-Americans, and residence in the South.

3. Bowman, SA et al. "Fast-Food Consumption of U.S. Adults: Impact on Energy and Nutrient Intakes and Overweight Status." American College of Nutrition 2004;23:163-168. Using CSFII data from 1994 to 1996, the researchers found that 25% of adults reported eating fast food. The study found that such fast food provided greater than 33% of total calorie intake and found a positive association between fast-food consumption and overweight status.

4. Clemens, LH et al. "The Effect of Eating Out on Quality of Diet in Premenopausal Women." Journal of the American Dietetic Association 1999: 99:422-444. The study group was composed of premenopausal women. Groups were categorized as "low eating out" for meals consumed out five

times or less per week and "high eating out" for meals consumed out six to thirteen times per week. The researchers found eating out frequency associated with higher intakes of calories, fat, and sodium.

5. Ebbeling, CB et al. "Compensation for Energy Intake from Fast Food among Overweight and Lean Adolescents." JAMA 2004: 291:2828-2833. In the first part of this study, the participants were instructed to eat as much or little as they desired in a one-hour period in a food-court setting. The participants, thirteen to seventeen years old, had large caloric intake (1652 calories) and overweight participants ate more than leaner counterparts in both absolute terms as well as in estimated daily calorie requirements. In the second part of this study, caloric intake was determined for participants under "free-living" conditions for two days when fast food was eaten and not eaten. The researchers found that overweight adolescents consumed significantly more total calories on fast food days (almost 18% more). Lean adolescents had no significance difference in total calorie intake between fast food and non-fast food days.

6. French, SA et al. "Fast Food Restaurant Use among Women in the Pound of Prevention Study: Dietary, Behavioral and Demographic Correlates." International Journal of Obesity 2000;24:1353-1359. This three year prospective intervention trial found that frequency of fast-food restaurant use was associated with higher caloric intakes and higher fat intake (as percent of calories) and lower consumption of fiber and fruit. The frequency of fast-food restaurant use was also positively associated with younger women, those with lower income, and those with non-White ethnicity.

7. Guthrie, JF et al. "Role of Food Prepared Away from Home in the American Diet, 1977-78 Versus 1994-96: Changes and Consequences." Society for Nutrition Education 2002;34:140-150. Using data from 1977-78 NFCS and 1994 to 1996 CSFII data, the researchers found changes in source of calories consumed over time. Food prepared away from home (restaurants, schools, daycare, or other) increased from 18% to 34% of total calories. Meals and snacks prepared away from home contained more calories per eating occasion and those meals and snacks were higher in fat and saturated fat and lower in fiber, calcium and iron per calorie consumed.

8. Jeffery, RW and French SA. "Epidemic Obesity in the United States: Are Fast Foods and Television Viewing Contributing?" American Journal Public Health 1998: 88:277-280. The study considered the correlation between fast-food intake and energy intake and body mass (the study also looked at TV, VCR, and cable TV watching). Recruitment was done via the USDA Women, Infants, and Children program (WIC) for those not pregnant one year prior to or following WIC enrollment. Total calorie intake and BMI were positively associated with fast-food consumption.

9. Lin, BH et al. Diets of America's Children: Influence of Dining Out, Household Characteristics, and Nutrition Knowledge. Washington, DC: USDA, 1996. Ag Economic Report No. 726. Using data from USDA's 1989-91 Continuing Survey of Food Intakes by Individuals and the Diet and Health Knowledge Survey, USDA researchers found that the foods that children eat from fast-food and other restaurants are higher in fat and saturated fat and lower in fiber, iron, calcium, and cholesterol than foods from home.

10. Maddock, J. "The Relationship between Obesity and the Prevalence of Fast-Food Restaurants: State-Level Analysis." American Journal of Health Promotion 2004: 19:137-143. The researchers consider state-level data on percent of population which is obese, fast-food restaurants per square mile, and self-reported behaviors from physical activity to fruit and vegetable consumption. The study found state levels of obesity inversely related to the number of residents per fast-food restaurant density and the number of square miles per fast food establishment. Other factors

associated with obesity were income, fruit and vegetable intake, and percentage population of African-Americans.

11. Manchino, L et al. "The Role of Economics in Eating Choices and Weight Outcomes." USDA, Economic Research Service, WDC 2004. Ag Info Bulletin No. 791. The researchers used data from USDA's 1994-96 Continuing Survey of Food Intakes by Individuals and the 1994-96 Diet and Health Knowledge Survey. The researchers found that overweight and obese women go significantly longer intervals between meals than healthy-weight women, and receive more of their daily calories from fast-food restaurants.

12. McCrory, MA et al. "Overeating in America: Association between Restaurant Food Consumption and Body Fatness in Healthy Adult Men and Women Ages 19 to 80." Obesity Research 1999: 7:564-571. The study group was comprised of "healthy" men and women. Restaurant consumption averaged 7.5 times per month. After controlling for age and gender, frequency of restaurant consumption was associated positively with body fatness (as measured by underwater weights). The association was unaltered after controlling for education, smoking status, and alcohol intake. The association increased after controlling for physical activity.

13. Paeratakul, S et al. "Fast-food Consumption among U.S. Adults and Children: Dietary and Nutrient Intake Profile." Journal of the American Dietetic Association 2003;103:1332-1338. Using data CSFII from 1994 to 1996 and 1998, the researchers found that 37% of adults and 42% of children reported eating in fast-food establishments. On the basis of two non-consecutive twenty-four hour diet recalls, adults and children who reported eating fast foods had higher intakes of calories, fat, saturated fat, sodium, and soft drinks and lower intakes of vitamins A and C, milk, fruits and vegetables than people who did not eat fast food.

14. Pereira, MA et al. "Fast-Food Habits, Weight Gain, and Insulin Resistance (The CARDIA Study): 15-year Prospective Analysis." Lancet 2005;365:36-42. This study used data from the Coronary Artery Risk Development in Young Adults (CARDIA) study. The CARDIA study included 3031 females and males from eighteen to thirty years of age in 1985/86, and included a follow-up fifteen years later. The analysis found that change in fast-food frequency was positively associated with changes in body weight. Those who frequented fast-food restaurants more than two times per week at baseline and follow-up gained an additional 4.5 kg (about 10 pounds) over the fifteen years and had a two-fold greater increase in insulin resistance.

15. Satia, JA et al. "Eating at Fast-Food Restaurants is Associated with Dietary Intake, Demographic, Psychosocial, and Behavioral Factors among African Americans in North Carolina." Public Health Nutrition 2004;7:1089-1096. This study considered a cross-sectional sample of 658 African-Americans from twenty to seventy years of age in North Carolina. The study found eating in fast-food restaurants to be associated with higher total fat intake, saturated fat intake, and lower vegetable intake. Frequent eaters in such establishments were more likely to be younger, never married, obese, and/or physically inactive.

16. Schmidt, M et al. "Fast-Food Intake and Diet Quality in Black and White Girls." Archives of Pediatric and Adolescent Medicine 2004;159:626-631. In a longitudinal multicenter cohort study of 2379 girls (ages 9 to 19 years), increased fast-food intake was associated with increased intake of energy and fat and saturated fat intake (as a percent of calories).

17. Thompson, O M et al. "Food Purchased Away From Home as a Predictor of Change in BMI z-score Among Girls." International Journal of Obesity 2004: 28:282-289. The researchers conducted a

longitudinal growth study with girls eight to twelve years of age as the baseline with a follow-up when they were eleven to nineteen years of age. The study showed that at baseline, eating at quick service restaurants more often was associated with increases in BMI. This was most evident when quick service frequency was two times a week or greater.

18. Zoumas-Morse, C et al. "Children's Patterns of Macronutrient Intake and Associations with Restaurant and Home Eating." Journal of the American Dietetic Association 2001;101:923-925. This study combined data from two populations: 1) 376 children, seven to eleven years old; and 2) 435 adolescents, twelve to seventeen years old. It found that the largest consumption of calories took place in restaurants. The study found that children typically eat almost twice as many calories when they eat a meal at a restaurant (765 calories) compared to an average meal at home (425 calories). Children and adolescents also ate more energy from fat and saturated fat when eating at a restaurant compared to at home.

Summary of Findings: Influence of Providing Nutrition Information at Restaurants

The following are some of the studies that have assessed if consumers can accurately estimate caloric content of their food choices, and, when reliable nutrition information was provided, how it affected people's food choices.

Burton, Creyer, Kees, and Higgins (2006)
Burton and his colleagues (2006) explored how much the average consumer knows about the calories, fat and other macronutrient levels found in foods served at restaurants. Their results show that consumers substantially underestimated the levels of calories, fat, saturated fat and cholesterol found in many less healthful menu items. When objective, quantitative nutrition information was provided, consumers had more unfavorable attitudes towards the less healthful menu options. Consumers' purchase intentions for the less healthful items were also significantly diminished by the provision of nutrition information.

Backstrand et al, (1997)
A study conducted by the Center for Science in the Public Interest and New York University found that even well-trained nutrition professionals could not accurately estimate the calorie content of typical restaurant meals. Although the dietitians were able to accurately estimate the caloric content of a cup of whole milk (the control in the study), they consistently underestimated the calories in restaurant foods and meals. Their estimations were off by large amounts – by 200 to 600 calories. For example, when shown a typical dinner-house hamburger and onion rings, the dietitians on average estimated that it had 865 calories, when it actually contained 1,550 calories. Since not even experts in the field of nutrition are able to accurately estimate the caloric content of restaurant foods, consumers are unlikely to do better.

Conklin, Lambert, and Cranage (2005)
Conklin, Lambert, and Cranage examined the use of nutrition and ingredient information by college freshman at the point of sale in campus dining facilities. Results showed that females were more likely than males to use the nutrition information labels to make food choices. Whereas females used to nutrition information to identify and select lower fat, lower calorie foods, males used the information to select foods with higher levels of protein. These results confirm the findings of a previous research that found that the provision of nutrition information can have a positive influence on the food purchase behaviors of college students.

Kral et al. (2002)
The relationship between dietary restraint (that is, whether or not the consumer was consciously trying to regulate food consumption for the purpose of body weight regulation) and food intake differed depending on whether or not nutrition information was presented. While the intake of food by restrained eaters was not influenced by information provision, unrestrained eaters consumed less food when nutrition information was presented.

Kozup, Creyer, and Burton (2003)
A series of laboratory studies conducted by Kozup and his colleagues demonstrated that many consumers have very little knowledge of the high levels of calories, fat, and saturated fat found in many

popular, less healthful restaurant items. For example, for some items such chicken fajitas and chef salad, actual calorie levels were twice what consumers expected. When levels of calories, fat, and saturated fat substantially exceeded consumers' expectations, the provision of nutrition information had a significant negative effect on product attitude, purchase intention, and choice. The authors suggest that the provision of nutrition information on restaurant menus could potentially have a positive impact on public health by reducing the consumption of less healthful menu items.

Burton and Cryer (2004)
Burton and Creyer found that when favorable nutrition information was presented on restaurant menus, consumers had more favorable attitudes towards the items and higher purchase intentions. When unfavorable nutrition information was presented, there was a negative influence on product attitudes and purchase intentions. The authors note that the results imply that if restaurants were required to disclose nutrition information, consumers would be more likely to choose more healthful menu items. In addition, requiring restaurants to provide nutrition information may encourage restaurants to improve the healthfulness of their menu options.

Milich Anderson, and Mills (1976)
In a study in a cafeteria setting, signs indicating the calorie content of available foods significantly decreased the number of calories that people purchased (Milich et al., 1976).

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Trans-Containing and Trans-free Versions of Similar Products (May 2004)

Note: Serving sizes of products in a category are not always identical. Data are from labels or other company information, except where indicated. Products made with partially hydrogenated oil are in **bold***; products containing little or no partially hydrogenated oil are in regular type. All units are grams.*

Product Category	Product	Serving	Oil(s)	Total Fat	Sat. Fat	Trans Fat	Sat. + Trans Fat	Info. Source*
Cookies	**Nabisco Oreo**	**34g**	**PH** soybean**	**7**	**1.5**	**2.5**	**4**	
	Nabisco Golden Uh-Oh Oreo	34g	palm, high-oleic canola	7	2	0	2	
	Nabisco Reduced Fat Oreo	34g	high-oleic canola, palm	4.5	1	0	1	
	Frookie Frookwich Chocolate Sandwich Cookies	31g	canola	7	2	0	2	
	Country Choice Sandwich Cremes	27g	high-oleic sunflower and/or safflower	5	0.5	0	0.5	
	365 (Whole Foods) Sandwich Cremes	27g	canola	5	0.5	0	0.5	
	Newman's Own Newman-O's cookies	28g	palm	4.5	1.5	0	1.5	
	Famous Amos Vanilla Sandwich Cookies	**33g**	**PH soybean and/or cottonseed**	**6**	**1.5**	**NA*****	**>1.5**	
	Country Choice Vanilla Sandwich Cremes	27g	oleic safflower	5	0.5	0	0.5	
	Frookie Frookwich Vanilla Sandwich Cookies	33g	soybean	6	0.5	0	0.5	
	Nabisco Nilla Wafers	**30g**	**PH soybean**	**6**	**1.5**	**2**	**3.5**	
	Keebler Golden Vanilla Wafers	**31g**	**PH soybean and/or cottonseed**	**6**	**1.5**	**NA**	**>1.5**	
	Country Choice Vanilla Wafers	30g	oleic safflower or oleic sunflower	5	0.5	0	0.5	

*From product labels, telephone calls to companies, or company websites, except where indicated.

**PH=partially hydrogenated

***NA=not available

Archway Oatmeal Raisin	**29g**	**PH soybean and/or cottonseed**	**3.5**	**1**	**NA**	**>1**
Country Choice Oatmeal Raisin	23g	canola, high-oleic sunflower and/or high-oleic safflower	3	0.5	0	0.5

Product Category	Product	Serving	Oil(s)	Total Fat	Sat. Fat	Trans Fat	Sat. + Trans Fat	Info. Source
	Nabisco Chips Ahoy!	**33g**	**PH soybean**	**8**	**2**	**1.5**	**3.5**	
	Nabisco Reduced Fat Chips Ahoy !	32g	high oleic canola, palm	5	1.5	0	1.5	
	Newman's Own Chocolate Chip Cookies	33g	palm	7	3	0	3	
	Nabisco Fig Newtons	**31g**	**PH soybean**	**2.5**	**0**	**1**	**1**	
	365 (Whole Foods) Organic Fig Bars	38g	soybean	1	0	0	0	
	Nabisco Ginger Snaps	**28g**	**PH soybean**	**2.5**	**0.5**	**1**	**1.5**	
	American Natural & Specialty Brands Mi-Del Ginger Snaps	30g	canola	4	0	0	0	
	Nabisco Teddy Grahams Honey	**31g**	**PH soybean**	**4**	**1**	**1.5**	**2.5**	
	Hain Kidz Chocolate Animal Grahams	30g	oleic safflower	3	0	0	0	
	Our Family Farm Wild Animal Vanilla Cookies	33g	soybean	3.5	0.5	0	0.5	
	Hain Kidz Animal Crackers	28g	soybean	2	0.5	0	0.5	
Crackers	**Nabisco Wheat Thins**	**31g**	**PH soybean**	**6**	**1**	**2.5**	**3.5**	
	Giant Food Original Thin Wheats	**29g**	**PH soybean and/or cottonseed**	**6**	**1.5**	**N/A**	**>1.5**	
	Hain Wheatettes	30g	oleic safflower	3.5	0	0	0	
	Nabisco Ritz	**16g**	**PH soybean**	**4**	**1**	**1**	**1**	NAH 9/96*
	Barbara's Rite Lite Round	15g	high-oleic safflower	1	0	0	0	
	Late July Classic Rich Crackers	15g	high-oleic safflower, palm	2	0	0	0	
	Hains Rich Baked Crackers	15g	oleic safflower	2.25#	0.5	0	0.5	
	Kraft Cheese Nips	**30g**	**PH soybean**	**6**	**1.5**	**2**	**3.5**	
	Sunshine Cheez-It	**30g**	**PH soybean and/or cottonseed**	**7.5**	**1.5**	**1.5**	**3**	CR 3/2003*
	Late July Cheddar Cheese Crackers	30g	oleic safflower	5	1.5	0	1.5	
	Nabisco Triscuits	**28g**	**PH soybean**	**5**	**1**	**1**	**2**	
	Triscuits trans-free	28g	soybean	4.5	0.5	0	0.5	Kraft Press Release
	Sunshine Soup & Oyster Crackers	**15g**	**PH soybean and/or cottonseed**	**1.5**	**0**	**NA**	**>1.5**	
	Giant Soup & Oyster Crackers	**15g**	**PH soybean and/or cottonseed**	**1.5**	**0**	**NA**	**>1.5**	
	Hain Oyster Crackers	15g	oleic safflower	1	0	0	0	

Adapted from label listing 30g serving.

Product Category	Product	Serving	Oil(s)	Total Fat	Sat. Fat	Trans Fat	Sat. + Trans Fat	Info. Source
Fish Sticks, Frozen	**Van de Kamp's Crunchy Fish Sticks**	**114g**	**PH soybean**	**13**	**2.5**	**NA**	**>2.5**	
	Mrs. Paul's Crunchy Fish Sticks	**95g**	**PH soybean**	**12**	**2.5**	**NA**	**>2.5**	
	Ian's Lightly Breaded Fish Sticks	93g	soybean	6	1	0	1	
French Fries, Frozen	**Ore-Ida Golden Crinkles**	**84g**	**PH soybean, cottonseed**	**3.5**	**1**	**0.5**	**1.5**	**CR 11/2003***
	McCain Crinkle Cut French Fries	85g	canola	4	0	0	0	
French Fries, Restaurant	**Burger King Fries, medium**	**117g**	**PH soybean**	**18**	**5**	**4.5**	**9.5**	
	McDonald's Fries, medium	**138g**	**PH soybean**	**22.5**	**5**	**5**	**10**	**CR 11/2003**
	Ruby Tuesday Fries	117g	canola	18	2	0	2	
Margarine	**Fleischmann's Original Margarine (sticks)**	**1 tbsp.**	**liquid corn oil, PH soybean**	**11**	**2**	**NA**	**>2**	
	I Can't Believe It's Not Butter 70% Vegetable Oil Spread (stick)	**1 tbsp.**	**PH and liquid soybean oils**	**10**	**1.5**	**2**	**3.5**	**CR 3/2003**
	Fleischmann's Margarine (tub)	**1 tbsp.**	**liquid corn oil, PH soybean**	**9**	**1.5**	**NA**	**>1.5**	
	Parkay 60% Vegetable Oil Spread (tub)	**1 tbsp.**	**liquid soybean, PH Soybean**	**8**	**1.5**	**NA**	**>1.5**	
	Shedd's Spread Spreadable (Sticks)	**1 tbsp.**	**PH soybean, liquid soybean**	**8**	**1.5**	**NA**	**>1.5**	
	I Can't Believe It's Not Butter 70% Vegetable Oil Spread (tub)	1 tbsp.	liquid soybean, liquid canola, hydrogenated soybean, PH soybean	10	2	0	2	
	Promise New Promise 60% Vegetable Oil Spread (tub)	1 tbsp	liquid soybean, canola, sunflower, palm oil, palm kernel oil	8	1.5	0	1.5	
Pies, Apple	**Mrs. Smith's Apple Pie**	**131g**	**PH vegetable shortening**	**17**	**3.5**	**4**	**7.5**	**NAH 2002***
	Truly Natural Apple Pie	118g	palm, soybean, canola, olive	13	5	0	5	
Pie Crusts, frozen	**Giant Foods Pie Shell Crust**	**1/8 pie**	**PH soybean and/or cottonseed**	**7**	**1.5**	**NA**	**>1.5**	
	Pillsbury Pet Ritz Pie Crust	**1/8 pie**	**PH lard**	**5**	**2**	**NA**	**>2**	
	Mother Nature's Goodies, Inc., Whole Wheat Pie Shells	25g	canola, soybean	6	1	0	1	

Product Category	Product	Serving	Oil(s)	Total Fat	Sat. Fat	Trans Fat	Sat. + Trans Fat	Info. Source
Pie Crusts, Graham Cracker, shelf-stable	**Nabisco Honey Maid Pie Crust**	**28g**	**PH oil**	**7**	**1.5**	**3**	**4.5**	
	Nabisco Nilla Pie Crust	**28g**	**PH soybean and/or cottonseed**	**7**	**1.5**	**3**	**4.5**	
	Wholly Healthy Truly Natural Graham Cracker Pie Crust	21g	palm	5	2.5	0	2.5	
Shortening	**Crisco**	**1 tbsp.**	**PH soybean and/or cottonseed**	**12**	**3**	**1.5**	**4.5**	
	Crisco All Vegetable Oil (Sticks, shelf-stable)	**12g**	**PH soybean, PH cottonseed**	**12**	**3**	**NA**	**>3**	
	Crisco All Vegetable Shortening Zero Trans	1 tbsp.	soybean oil, hydrogenated soybean oil	12	3	0	3	

NATIONAL RESTAURANT ASSOCIATION®

REPRESENTING THE RESTAURANT INDUSTRY

The Cornerstone of the Economy, Career Opportunities and Community Involvement

National Restaurant Association
Comments presented by Sheila Cohn Weiss, R.D.

Department of Health and Mental Hygiene
New York, New York
October 30, 2006

Good morning. My name is Sheila Weiss. I am a Registered Dietitian, and the Director of Nutrition Policy at the National Restaurant Association.

I would like to thank the New York City Department of Health and Mental Hygiene for this opportunity to testify before you regarding the Notice of Intention to add 81.50 to Article 81 of the Health Code.

Founded in 1919, the National Restaurant Association is the leading business association for the restaurant industry. Together with the National Restaurant Association Educational Foundation, the Association's mission is to represent, educate and promote an industry that is comprised of over 925,000 restaurant and foodservice outlets employing more than 12.5 million people, making us the largest private sector employer in the country. As such, diversity, customer service and high quality foods are top priorities for the ever-growing restaurant industry. Many Association members operate within the City, and the concerns reflected in this comment apply to all restaurant operators. The diversity of our membership and the substantial impact of the Proposal prompts every segment of our broad industry to urge that the Proposal be permanently withdrawn.

We applaud the New York City Health Department in its efforts to address the growing obesity issue affecting Americans. The National Restaurant Association believes that any successful effort to address the obesity issue in the United States today must first address education.

Without education, consumers will not know how to incorporate the foods or the myriad of information available to them into a healthy lifestyle. If they did, the Nutrition Labeling and Education Act (NLEA) of 1990 would have clearly impacted the significant public health issue we are still facing today. For years, the American public has been provided with more choices and more information about all the foods they eat at home and in restaurants. Yet, we have seen an increase in obesity rates. All of this information and all of these healthy choices have not proven to be the answer.

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Understanding these dynamics, members of the restaurant industry are committed to work with the New York City Health Department to develop new and more effective educational messages to consumers in appropriate settings.

The restaurant industry's objective has always been to provide a wide variety of food options to accommodate the needs of diverse consumers. Americans must be informed over and over again that all foods can be part of a healthy lifestyle and a balanced diet. It is important that the New York City Health Department examines its role and responsibilities in addressing the public health problem of obesity, with the understanding that our diverse population needs recommendations that are clear and relevant to modern life. Consistent positive messages that promote healthier thinking and lifestyles have and will continue to be more successful. The restaurant industry has played a valuable role in serving as a point of dissemination for consumer-focused nutrition information in a meaningful way. We have capitalized on the diversity of our industry to reach consumers in varied and innovative ways.

We believe that simply posting calorie information on menus and menu boards will not advance the goals underlying the challenges being taken up by the New York City Health Department, and therefore, is not supported by the National Restaurant Association. If implemented, this program would cover only a very small segment of the entire restaurant industry, severely limiting the program's effectiveness and impact.

The proposal recommends that "for menu items that come in different flavors and varieties but are listed as a single menu item (such as beverages, ice cream, pizza or doughnuts), the median calorie content for all flavors or varieties of that item shall be listed on menu boards for each size offered for sale."

This proposed "solution" will not accomplish the desired goals of the New York City Health Department. It will actually provide a disservice for restaurant guests and prove very difficult for operators to apply and keep current. Take, for example, a coffee chain. Popular cafes typically offer a very broad variety of options for a coffee drink. A customer can order a cafe latte with skim, 2%, whole, or soy milk. The calorie content of this 16 oz beverage can vary from 160 to 260 calories. That 100 calorie difference means a great deal to someone who is watching his/her caloric intake. Small, specific changes in food and physical activity behaviors can have a positive effect on health. Research shows that affecting energy balance by 100 calories per day could prevent weight gain in most of the population.

Our industry has been successful because we have listened to our millions of customers and responded to their needs. For those customers who want information, the restaurant chains affected already provide comprehensive nutrition information (more than just calories) in education oriented formats in brochures, tray liners, posters and websites. Others have crafted unique programs customized to their customers. The proposal's inflexibility constrains the efforts of restaurant chains and others who already lead the way in providing nutrition information and education on healthy diets to our customers.

We are committed to providing nutritious food choices to our customers and to provide them with nutrition information that can understand and use. To this end, we have taken substantive steps to encourage the expansion of menus to offer a variety of options. Restaurants have risen to the growing demands of consumers, including great demand for more nutritious foods, fresh ingredients, and fusion of flavors. We look forward to working with our members and state partners in the future towards our common goal of educating consumers and making nutritious and wholesome food choices available.

We recognize the role of public health officials but believe that this Proposal is the wrong path to follow.

Thank you again for this opportunity. We have submitted complete comments delving into the wisdom and legal merits of both proposals separately.

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NEW YORK COUNTY MEDICAL SOCIETY
TESTIMONY OF
DENNIS GAGE, M.D.
BEFORE THE
BOARD OF HEALTH
OF THE
NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE
MONDAY, OCTOBER 30, 2006

HEARING ON PROPOSAL TO PHASE OUT ARTIFICIAL TRANS FAT
IN ALL RESTAURANTS

Good morning. I am Dennis Gage, MD, member of The New York County Medical Society. My areas of specialization are Internal Medicine, Endocrinology, Metabolism, and Clinical Nutrition. I am affiliated as an Attending Physician at both Lenox Hill Hospital and Beth Israel Medical Center in New York City, and am a Clinical Instructor at NYU Medical School. I am a member of NAASO, The Obesity Society, FACP, National Lipid Association, and Polycystic Ovarian Syndrome Association. I am a researcher in obesity; I have written a number of articles and papers on obesity that have appeared in prominent medical journals, and I am also the author of a book for general readers, *The Thinderella ™ Syndrome: A Practical Guide to Individualized Permanent Weight Loss.*

First, regarding the health issues on trans fats in our city and state: I would like to point out that trans fats (hydrogenated oils) are only part of the bigger issues of cardiometabolic disease, obesity, and the diabetes epidemic in our state.

Trans fats increase LDL cholesterol, and are proven to increase cardiovascular risks and deaths. Trans fats can easily be replaced with palm oil or other healthy fats in food preparation. Several European countries already have gotten rid of trans fats in their food line and restaurants. Here in the U.S. we respect freedom of choice, so that if someone requests a trans fat food, they should be able to still have it available--but at the individual's request. For New York City, I would recommend getting rid of it in restaurants or at least requiring restaurants to let the public know whether there is trans fat in their foods. Legislators in New York State are uncertain as to whether to pass or not pass a law banning trans fat; I would request that a referendum be put to the public on the next election and this could be voted on.

I would especially like to see all trans fat snacks in vending machines removed from the schools and public buildings. I would like to see all sugared beverages removed from our school system. If we do not correct the situation now, the epidemic of obesity, diabetes, and cardiometabolic disease will overwhelm our health system, create early disease and death in our children, and bankrupt the medical care system completely.

To Whom It May Concern:

The content of this testimony should be attributed solely to me.

My name is **Janet Oberndorfer** (OH – BURN- DOOR – FUR). I am a graduate Home Economist and private practice communications consultant. My entire career, now exceeding forty (40) years, has been spent in the American food industry, in the promotion of its products and the understanding of its business by the general public. The study of the attributes of food products for human consumption, together with related continuing education activities has been a centerpiece of my training. I conduct meetings, transact business and enjoy meals in restaurants throughout the boroughs. As a qualified professional, I am very concerned about the state of health of the New York City populace. Of course everyone who lives anywhere within this country and has attained majority has the right to make whatever food choices (s)he wants, however, it has been estimated that 98 million of us (roughly one-third of the current population) has been adjudged to be overweight or obese. In addition, many New Yorkers are subject to various catastrophic health conditions such as cardio-vascular disease (CVD) and clogged arteries among others, to which ***continuous*** poor nutrition contributes. I recognize there may be other contributing factors, yet these conditions do not have to occur. They put the lives of those individuals at risk. These circumstances are expensive for both the individual, and for the New York social structure which must respond.

I firmly believe New Yorkers should revise their food choices. They may make poor choices because they do not have enough nutrition information, or, they may have forgotten the information, or the wisest choices simply are not available. Irrespective of the circumstances, a campaign for healthier eating should start now. If need be, citizens should be protected from themselves by the enactment of legislation such as the Board of Health proposes. I think that better choices need to be both available and consciously offerred. Hopefully, with maturity would come the understanding that occasionally, it ***is*** permissible to make less nutritious menu and food selections, but certainly ***NOT*** continuously, because that's all that's out there.

Addressing the state of New York food choices when eating out in restaurants would not be dramatically different than that circumstance which was experienced, when the tobacco industry was confronted with, and forced to admit to the deleterious effects of smoking on one's health. Who would have ever imagined that the major players in the tobacco industry now would be developing resources portraying the ill advisability of taking up smoking? The very same organizations offerring tobacco products for sale now explain why the use of such products should be avoided. In this writer's estimation this is more than a paradox.

So it is with the food industry. Products which taste good, but are of questionable nutritional value proliferate throughout the country. Food companies and restaurants are virtually free to offer for sale anything they want. But there is no reason in the world for them to do so at the eater's risk -- unless it is the profit motive.

Food products offerred for sale should meet standards of high sanitary quality, be nutritionally adequate, and be monetarily valuable. If I could 'wave my wand,' that is what I would want.

In a modern, democratic society I expect a government and its agencies to set up, and do the necessary to protect its citizens by adopting measures on their behalf. Thus I am delighted that the NYC Board of Health has proposed legislation to ban the use of trans fats in the preparation of dishes offerred in restaurants in the City.

There are a number of initiatives the institutional food industry could take to comply with this legislation when, hopefully, it is adopted. I call upon the institutional food industry to mount a ***massive*** marketing and media campaign to the New York public -- its customers, to educate them as to the nutrition of food and menu choices. If the tobacco industry can do it, then surely the institutional food industry can do it! Such a marketing effort can only be regarded as an action of integrity.

America's fascination and romance with food as something more than simply fuel with which to nourish the body, could be better channeled and take its rightful place, if vending machines in schools were filled with healthy choices, if the drive to supersize portions was abandoned, if contests to see who could eat more than two weeks' worth of empty calories in one sitting, were abandoned, and if the institutional food industry was to creatively revise its formulae and ingredients for preparing dishes offerred for sale in retail establishments.

Interest in this opportunity has already triggered well known organizations to 'do the right thing.' Joining other organizations such as Wendy's, Kraft Foods, Ruby Tuesday's California Pizza Kitchen, and others, it was reported on October 16th (***Advertising Age***, internet edition) that the Walt Disney Company will ban trans fats-prepared products in restaurants located in its theme parks. Now it is time for all other organizations to join the campaign and more nutritiously prepare foods offerred for sale in NY City.

If the Advertising Council can sponsor public service advertising to encourage responsible driving, passing up the use of drugs, surely in cooperation with the Ad Council, the institutional food/restaurant industry can mount a campaign teaching both the nutritional value of selected food choices and explaining why substitutions are being adopted. Everyone can get in the act. If private enterprise can reward its employees when they are successful with a stop smoking campaign, I call upon

private enterprise to reward employees when they are successful with a healthier eating/weight loss campaign. The City of New York, indeed the State of New York and even the federal government can offer means to reduce tax indebtedness, or increase refunds when under the supervision of a qualified practitioner, payors can demonstrate success with such a healthier eating/weight loss program.

This is only enlightened self-interest. Those of us who are healthier may be around longer to pay taxes.

In conclusion, this food professional applauds the NY City Board of Health for taking the initiative and proposing the food selections prepared with trans fats be banned for sale in the City of New York. ***As has been demonstrated elsewhere, suitable substitutes have already been identified and can be used.***

If I may be of further assistance, please feel free to contact me. Thank you for your attention.

Respectfully submitted,

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JANET OBERNDORFER

The spirit of independence together with the need to coordinate a professional career with a demanding home life is what lead Janet Oberndorfer to establish **LADY RESOURCEFUL**, an incorporated communications practice.

Conceived to provide marketing, promotion and educational services to the consumer product sector, **LADY RESOURCEFUL** meets the needs of agencies, companies, shops and organizations undertaking communications task as varied as recipe development, product demonstration, merchandise testing, special events, tours, and the writing of cookbooks, newsletters announcements, position papers, editorial comment, package panel copy and traditional media materials.

The latest challenge for Oberndorfer, who has worked as a Home Economist handling recipe development, food photography and styling, product planning, taste-testing, product information and explanation of function and use, **LADY RESOURCEFUL** business is now comprised largely of platform presentations, writing assignments, media relations, and career management consultations. Also an Adjunct Instructor of Communications and Business for the Brooklyn College Adult & Continuing Education program, she has contributed articles to *Advertising Age* and *Working Mother Magazine.*

(more)

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CAPABILITIES STATEMENT

JANET OBERNDORFER is a communications consultant in private practice. With academic preparation in management, economics, nutrition, food, interpersonal relationships, and training to sustain a wholesome and productive life, her career contributes a broad-based knowledge of advertising, marketing, public relations, and sales support. She can articulate methods to influence purchase decisions.

Utilizing a creative/artistic approach, Janet serves as a conduit interpreting business to consumers, and transmitting and explaining consumer needs, perceptions, concerns and perspectives among others, to business organizations.

Assignments, therefore, may be as varied as, *but are not limited to*:

On an institutional level

* Proposal and Project Development

* The preparation of any written materials: speeches, position papers, business plans, media and marketing materials

* Refinement of complex material to make it more 'reader friendly'

* Communications and strategic planning services

* Design, Development and Implementation of Consumer Response Programs

* Information Dissemination through platform presentations, interviews, testimony, and as spokesperson

* Conduct of information/education and training seminars

* Development, writing and distribution of collateral literature and materials

* Explanation of product/merchandise use and application

* Complete Responsibility for Planning and Delivery of Media Relations and Special Events

On an individual level

* The writing or revision of career résumés

* The preparation of cover letters

* Career Management Advisement

Active in professional and trade organizations such as Long Island Communicators Association and the Society for Nutrition Education, for many years she has been a member of Women in Communications and Culinary Historians of New York. She has served in many roles including Program Chair for Home Economists in Business, New York City Group, Secretary, Vice President Cooperative Relations and President (respectively) of the Long Island District, New York State Home Economics Association and two terms as Vice President, Finance, for New York Women in Communications, NY City Professional Chapter.

As a member of the Board of Directors of the NY State Home Economics Association, she earlier directed its Public Relations and Communications activities.

She holds a Bachelor's Degree from the University of Rhode Island, which, in 1983, named her to the Advisory Council to the College of Human Science & Services. An honors graduate of the Advertising & Marketing education program sponsored by Advertising Club of New York, she has pursued further studies at New York University. Listed in consecutive editions of *Who's Who in the East* and *Who's Who of American Women,* articles about her have appeared in *Working Woman, Forecast for the Home Economist, The Women's Record* and *What's New in Home Economics.*

Oberndorfer, a widow to cancers and currently a resident of New Hyde Park, shares a home with a tiger stripe feline, Bentley Taupe Paws.

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Viewpoint: Forum

Counting calories in copy

By Janet Oberndorfer

How much health and nutrition information should make up food advertising copy?

As America's preoccupation with health and nutrition grows, so must the available information and advice be useful and correct. This climate demands that advertising agencies and food companies struggle to accommodate constraints imposed by the federal government while producing creative and artistic campaigns.

Within this arena, the Food & Drug Administration now solicits ways that food labeling could convey health messages. For my money, about the only nutritional notices the public cares about when purchasing food products are sodium levels; fat type and amount, and the calorie count found on the nutrition panels.

The *other information* is largely ignored because many Americans do not know how to interpret or use it. Or don't care. "Low calorie," "low sodium" and "sugar free," for example, are designations which, from the consumer's standpoint, contribute as much confusion as they are meant to remove.

"Why does a 'low calorie' food have *any* sugar?" "Are calories actually removed for a food to be called 'low calorie'?" "Exactly what IS a diet food?" consumers ask. Certainly, agencies and companies have an obligation to provide information about their products; here advertising has a unique opportunity to augment the instruction in food and nutrition principles, which may well be missing from students' schedules, not seeming as chic as foreign languages, computer skills and so forth.

Of all food companies' corporate personnel, those best academically qualified to provide accurate and truthful food and nutrition information are business home economists. (One does not see the job title as frequently in advertising agency personnel rosters.)

Found in 75% of the *Fortune* 500 companies and over 700 of the largest American industrial firms, many, historically, have been employed in test kitchens or in other limited functions. However, today's home economist has many more skills and talents that can be applied to copywriting, media planning, market research and account management, among others, at advertising agencies.

Academic preparation for a business home economist includes technical work in foods and nutrition, (or fashion and design), intense study of families and individuals

(Continued on Page 22)

Ms. Oberndorfer, a home economist, heads Lady Resourceful, Garden City, N.Y., which provides marketing/communications services to the foods and home appliance industries.

Calorie copy

(Continued from Page 20)

(who grow up to be primary consumers), advertising, graphics, journalism, management, marketing, media, public relations, research and strategic planning. Those who do graduate work most frequently earn M.B.A.s.

Home economists are knowledgeable about wise food buying and appropriate preparation; they are experienced in educational materials development and production, photo styling and ingredient interaction. Home economists are specialists in nutrition and food and can distinguish between fact and fraud. Nowhere is a home economist's creative talent in more evidence than in the beautiful and useful recipe development and food photographs for which many are responsible.

Home economists skilled in mass communications and possessing intimate awareness of consumer needs and expectations can recommend appropriate media channels, develop marketing strategies, develop packaging and label copy to foster correct product usage inspiring consumer confidence and creating product loyalty. In short, the home economist is the ideal liaison between business and the consumer, the essential element in food advertising.#

Advertising Age
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I opened my first restaurant in 1991 and it was smoke free. My decision to operate a smoke-free restaurant was easy.

When I put on my chef's jacket in the morning, it symbolizes my commitment to serve safe, healthy food in a safe, healthy environment. And despite my personal commitment to do everything right, I am still regulated by the Building Department, the Fire Department and the Board of Health. And I welcome the oversight. It levels the playing field and makes every food service establishment accountable.

Almost 2 years ago, after reading about the health detriments of trans fat oils, I switched to ASOYIA Trans Fat Free soy oil. I wrote about the switch in the newsletter I produce each month for my guests and the positive reaction was instantaneous. In my quest for better performance, taste and health benefits, this summer I switched to Nutra-ClearNT and received even more positive reaction. I use it in my pancake batters, for sauté and even my carrot cake.

Winning "Best Fried Chicken" in Chicago brought the benefits of this oil to the general public and that dish now generates 28% of my dinner business. Three weeks ago I invited the best chefs in Chicago for a Fried Chicken to introduce them to Trans Fat Free Oil cooking. There are now 12 converts.

The economics are clear. Trans Fat Free oil costs from 10-30% more but the fry life is 75% longer.

The research about the dangers of second hand smoke was not accepted for a long time. Now we have the research about Trans Fat oils with the 'fix' readily accessible and immediate with manufacturers responding quickly by planting more acreage. We need to respond just as quickly and pass legislation. This is an historic opportunity to impact the health and well being of the citizens of this nation.

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Testimony prepared by

Áine Duggan

for the

DEPARTMENT OF HEALTH AND MENTAL HYGIENE
BOARD OF HEALTH
PUBLIC HEARING ON NOTICE OF INTENTION
TO ADD §81.08 TO ARTICLE 81 OF THE NEW YORK CITY HEALTH CODE

on behalf of

Food Bank For New York City

INTRODUCTION

Good morning. I am Áine Duggan, Vice President for Government Relations, Policy and Research with the Food Bank For New York City. The Food Bank appreciates the opportunity to present testimony regarding the proposal to add §81.08 to Article 81 of the New York City Health Code.

First, I would like to acknowledge the Department of Health and Mental Hygiene for highlighting the importance of improving the nutrition of New Yorkers.

The Food Bank For New York City's three-pronged approach to hunger relief – food procurement and distribution; education and technical support for our network of community food programs; and research on food assistance needs within New York City – is fundamental to the Food Bank's ongoing mission "to end hunger by organizing food, information, and support for community survival and dignity."

In my testimony today I wish to provide an overview of the emergency food system in New York City which will help to outline the potential negative impacts of the Health Department's proposal to "partially phase out artificial trans fat in food preparation in all food service establishments" on the city's network of emergency food programs, and the approximately 1.2 million New Yorkers they serve annually.

BACKGROUND

To fully understand the impact of the proposed trans fat ban on the emergency food system it is important to understand how the system is structured: how the system operates; where the food comes from; and the role of the emergency food network in food safety and nutrition.

How the Emergency Food System works in New York City

The Food Bank For New York City is the only food bank in the city and is the hub of the emergency food system throughout the five boroughs. The Food Bank is a member of America's Second Harvest: The Nation's Food Bank Network (a national network of more than 200 food banks, of which Food Bank For New York City is the largest). Founded in 1983, the Food Bank collects, warehouses and distributes food to a network of approximately 1,200 emergency and community food programs citywide, including soup kitchens, food pantries, senior centers, rehabilitation programs, kids cafes and after-school programs. In turn, these emergency and community food programs distribute food (including prepared meals, food pantry bags and snacks) to more than one million New Yorkers at risk of hunger.

Most emergency food programs are small, have few resources and are operated by neighborhood, faith-based organizations. The average annual budget for emergency food programs citywide is $49,445, with half of all programs surviving on annual budgets of $17,500 or less. It is therefore not surprising that 90 percent of all programs rely on volunteers, and that most programs have a limited ability to operate. The majority of programs provide food service only one or two days per week – indeed, less than 6 percent of programs in the network operate seven days a week[1]

Research demonstrates that the city's emergency food program network is serving approximately 1.2 million New Yorkers, approximately half of all city residents at risk of hunger. The population accessing emergency food services is largely comprised of the elderly, the disabled, women with children and the working poor. For these groups, the gap between income and basic living expenses often forces a choice between essential needs – rent, utilities, medical bills – and buying food.[2]

What Is Emergency Food and Where Does It Come From?

As the primary supplier of food to the network of emergency food programs throughout the city, the Food Bank distributes government- and privately-funded emergency food, including:

- USDA funded Emergency Food Assistance Program (TEFAP)
- FEMA funded Emergency Food and Shelter Program (EFSP)
- New York State Department of Health Hunger Prevention and Nutrition Assistance Program (HPNAP)

[1] Hunger Safety Net 2004: Measuring Gaps in Food Assistance in New York City. (2004). Food Bank For New York City/Food Policy Institute, Rutgers University.
[2] Ibid.

- New York City Emergency Food Assistance Program (EFAP), including New York City Council EFAP, administered by the City's Human Resources Administration (HRA)
- Donated and wholesale food

Last year, the Food Bank distributed more than 67 million pounds of food to the network, which helped the programs provide approximately 250,000 meals a day to New Yorkers in need. During the past five years the amount of food distributed by the Food Bank has increased by more than half, indicating the extent of hunger in the city. However, during the same time period government funding for emergency food has largely remained flat or been cut, thus increasing the reliance of the emergency food program network on donated food. For example, in the past year alone food donations to the Food Bank increased by 17 percent from the previous year (from 21.5 million pounds in FY05 to 25.2 million pounds in FY06).

Currently, the government emergency food programs USDA-TEFAP, FEMA-EFSP, NYSDOH-HPNAP and HRA-EFAP constitute 63 percent of the overall food distributed by the Food Bank, down 15 percent from just three years ago. Also, government contracts are essentially a source for shelf-stable, canned, and dry goods, as less than one percent of government product is fresh produce or meat. In addition, the Food Bank only controls food purchasing for the NYSDOH-HPNAP, FEMA-EFSP and City Council food programs which amounts to just 8.5 percent of the total food distributed. The vast majority of the government food is comprised of USDA-TEFAP (39 percent) and HRA-EFAP (19 percent), for which food selection and purchasing is controlled by the respective government agencies. To date, a full analysis of the TEFAP and EFAP food containing trans fat is not available. If the proposed ban is approved it is anticipated that the city-funded EFAP food will be in compliance with the ban. However, EFAP food currently comprises less than one-fifth of the total food within the New York City emergency food system.

As mentioned, the shortfall in government funding for emergency food is partially compensated by donated food that currently comprises more than one-third (34 percent) of the Food Bank's total distribution. The Food Bank secures donations from local donors and nationally via a bid-based ordering system through America's Second Harvest. In addition to addressing quantitative needs, the Food Bank constantly works with vendors and donors to improve the quality of the food entering the emergency food system. For example, last year the Food Bank distributed more fresh food than ever before, including more than 11 million pounds of fresh produce (an increase of 243 percent from 3.2 million pounds just three years ago).

Understanding the nature of how food is donated to the emergency food system is crucial to realizing the negative impact of the proposed trans fat ban on the emergency food program network. The composition of donated food is determined by the donor and is delivered to the Food Bank in mixed assortments. Put simply, donated loads typically contain a mix of healthy, nutritious food with less nutritional food items, the full details of which are only available once the donation has been received. It can be said that a certain percentage of food that is donated to the emergency food system is heavily influenced by market trends and events.

Some emergency food programs use additional sources of food in addition to the Food Bank. If budgets allow, programs may purchase extra food to meet community needs. Similarly, programs accept rescued food as well as local donations from food drives and other sources.

The Role of Nutrition in the Emergency Food System

The Food Bank and its network are very invested in improving the nutrition of New Yorkers at risk of hunger. To this end, Agency Relations is a core function of the Food Bank and includes a diverse range of support services, such as program monitoring (conducted by licensed community nutritionists and community program specialists); education and training, including nutrition and food safety workshops; and a Volunteer Referral Program to support the capacity of the programs to operate.

Examples of current projects that are already improving access to healthy food for low-income New Yorkers include the Kids Café Program – advanced after-school programs in low-income communities which provide nutrition education and exercise curricula to instill healthy eating habits and behavior at a young age; the Fresh Food Initiative – which seeks to increase donations of fresh food; and Benefits Outreach Centers – which help to connect New Yorkers at risk of hunger with benefits for which they are eligible, including food stamps.

CONSIDERATION OF THE TRANS FAT BAN

In keeping with our strong commitment to improving the health and nutrition of New Yorkers at risk of hunger, the Food Bank is pleased to share our concern about the content of emergency food with the Department of Health. The nutritional value of fresh lean meat, poultry, and fish, fruits and vegetables indisputably outweighs that of the processed food that insufficient incomes cause families and individuals at risk of hunger to rely on. Sadly, the cheapest food items available are all too often riddled with a variety of ingredients that pose health risks, such as trans fat, high-fructose corn syrup and salt. The Food Bank seeks to increase access to healthy, fresh food for low-income New Yorkers, and has some concerns that the proposed trans fat ban may inadvertently impede some of this work.

Why Not Turn Away Less Nutritious Food Donations

The Food Bank and the network of programs we serve are not in a position to refuse donations of food. Because of the manner in which donated food is offered in mixed loads (as described in the previous section) it would in fact be irresponsible of the network to turn away food. Firstly, due to insufficient government funding for emergency food, there is not enough food in the emergency food system to meet the existing need, and given the intensification of poverty in the city during the past few years we can only expect this need to grow. Also, as the vast majority of the most nutritious, fresh food in the system comes through the food donation channel, turning away mixed loads of donated food to rid the emergency food system of less nutritious food would also reduce access to fresh, healthy food for the poorest New Yorkers.

It should also be understood that the emergency food programs do not have the capacity to monitor labels in the manner that would be required, due to the heavy reliance on volunteers and the chronic lack of operational funding available for emergency food organizations (as described in the background section). Indeed, given its constraints, it is a miracle that this under-supported system manages to serve 1.2 million of the neediest New Yorkers every year.

Why Trans Fat Should Be Eliminated at the Source

As previously mentioned, a full analysis of the trans fat content of government-funded emergency food is not yet available. A recent onsite analysis of the Food Bank's warehouse revealed very little inventory that contains trans fat, most of which was food supplied by donations. However, until such time as the issue is addressed at the source and a trans fat ban is implemented at the manufacturing and processing end of the food supply chain, it is not possible to assert that trans fat will not be present in future shipments of government or donated food. Rather, given the extent to which the emergency food system is dependent on food that comes from outside New York City and State, coupled with the increasing dependency on donated food, it is very likely that a small percentage of food containing trans fat will continue to find its way into the city's emergency food system. Should future allocations of government food contain food with trans fat, it would be wholly irresponsible and impractical to expect that soup kitchens in New York City would not be permitted to utilize this inventory. As mentioned earlier, the vast majority of the government food is supplied by the federal government, and thus will not necessarily be in compliance with a local ban. In addition, if local or other government agencies opt to purchase alternative food items to ensure compliance with the proposed trans fat ban, a cost analysis should be conducted to ensure that no loss of food is incurred. Increased food costs, without a matching increase in government funding, would result in even less government-funded food entering the emergency food system – at a time when soup kitchens and other emergency food programs do not have sufficient supplies to help the vulnerable New Yorkers standing in line for food – and would further increase reliability on donated food – which typically includes a higher percentage of inventory containing trans fat.

It would be beneficial to further consider that the typical donated food items that contain trans fat items do not constitute the main meals served in soup kitchens. As one would expect trans fat is usually found in donated items such as crackers, cookies and pies – which could be described as the typical luxury foods that no one of us actually needs to eat. However, it may even be counterproductive to cite soup kitchens for the provision of this food and it runs the risk of sending the wrong message. Afterall, who doesn't like to indulge in the occasional edible luxury? In fact, in the context of a soup kitchen providing a plate of cookies as an extra food item can even help to lend an atmosphere of normalcy, creating an environment that is warm, friendly and inviting. We look forward to a day when the manufacturers of all such luxury food items take the care or are required by law to eliminate all ingredients that constitute serious health risks, such as corn syrup and trans fat, but in the meantime it would be regrettable if policies aimed at improving the health of all residents were to inadvertently result in further restricting food access for the poorest among us. We should aim to restrict food processing, not poor people. What we need are sensible policies that aim to increase choice and access to the most nutritious food available, and strong campaigns to ensure that the healthiest type of food is being manufactured for all of us.

Proposed Ban May Increase Amount of Trans Fat Food in Emergency Food System

While the recent changes in the federal labeling law and the proposed trans fat ban are intended to improve the quality of all food, for all populations, over time, it should be noted that these measures run the risk of actually increasing the supply of food containing trans fat into the emergency food program system. As mentioned in the background section, a certain amount of food 'dumping' inspires some food donations. In addition to good quality food items, typical

donations also include food that is not selling well. The proposed trans fat ban will serve to heighten public consciousness about the dangers of trans fat in food, and although a seemingly positive outcome, it will result in more consumer avoidance of food items containing trans fat in establishments outside of restaurants, such as grocery stores, thereby impacting market trends. The emergency food providers share in the collective hope that heightened consumer awareness will encourage manufacturers to voluntarily refrain from using trans fat in food processing, but as the proposed ban is limited to New York City, it is likely that some manufacturers will continue to use trans fat, and a long period of dumping food that no-one else wants into the emergency food system will result. Sadly, it will be the poorest and neediest of New Yorkers who will get the short end of the trans fat stick, simply because they do not have enough money in their pockets to afford to walk into a grocery store and purchase their own food, after they incur the crippling costs of other basic necessities. Further, in keeping with usual trends food dumping of this nature would be most likely to occur at the end of the grace period for other food service establishments, making it twice as difficult for soup kitchens to comply with the proposed ban.

Needed Measures to Address Why Low-Income New Yorkers Eat Less Nutritiously

The greatest danger posed by the proposed trans fat ban, from the emergency food perspective, is that it distracts from the larger health issue that our programs struggle to combat every day – hunger. Of the one in four New Yorkers at risk of hunger, approximately half must rely on emergency food, and the majority lack access to affordable, nutritious food in their local communities. Increasing food choice and accessibility is key to improving the health and well-being of food insecure New Yorkers.

In the near-term it is imperative that sufficient supplies of nutritious food be available to all families and individuals turning to soup kitchens, food pantries and other emergency food programs. To this end, new government funding to increase the supply of fresh food in emergency food programs would be a very welcome measure.

Experience within the emergency food program network shows that people choose the healthiest options, such as fresh produce, whenever this food is available. But with food prices higher in New York City than anywhere else in the country, fresh food can be prohibitively expensive for families struggling to make ends meet. In addition, access to supermarkets and other retail establishments that offer fresh, nutritious food is very limited in low-income communities, forcing the poorest New Yorkers to travel longer distances to purchase healthy food, travel that may be physically or cost-prohibitive for the most vulnerable populations at risk of hunger, including the elderly and the disabled. As a result, at-risk families are often forced to resort to cheaper, less nutritious foods that are often high in fat, salt, sugar and preservatives. This lack of wholesome, nutritious food can lead to obesity and other health problems, such as diabetes and heart disease. A long-term solution that would significantly improve the health of poor New Yorkers is a solid investment in making fresh food available in low-income communities, including increasing the number of green markets and ensuring that markets can accept food stamps, WIC and other food vouchers, developing initiatives to increase the number of supermarkets in poor neighborhoods and making funding available to small local food stores to develop their capacity to sell fresh fruit and vegetables and other healthy foods.

SUMMARY

As part of its mission to supply the food that is distributed by its network of emergency and community food programs to New Yorkers in need the Food Bank supports and promotes the development of improved nutrition for New Yorkers at risk of hunger. Indeed, we view the very issue of hunger to be one of the gravest health concerns faced by New York City residents and would very much welcome the opportunity to spend more time in dialogue about long-term solutions to the problem. In the meantime, I wish to encourage reconsideration of the plan to implement the proposed trans fat ban at soup kitchens, bearing in mind the following concerns:

- Although the Food Bank supplies most of the food to the emergency food system in New York City, it only controls the purchasing for 8.5 percent of the total food distributed. The majority of food in the New York City emergency food system comes from outside of the city and state. While the City's EFAP will likely be in compliance with the ban, it only accounts for less than one-fifth of the total food distributed by the Food Bank. The USDA emergency food program (TEFAP) accounts for most of the government funded food in the system and will not be governed by the proposed ban. Similarly, reliance on donated food, which currently accounts for one-third of total distribution, is increasing and is the likeliest source of food containing trans fat.
- The Food Bank cannot turn away any food donations, as donations are typically provided in mixed allocations, and donated food is both the source of the most nutritious and the least nutritious food entering the emergency food system. Turning away donated food would result in less access to healthy, fresh food for low-income New Yorkers.
- Although soup kitchens provide prepared meals to members of the general public, they are not business ventures. Rather, due to limited operational budgets, they are heavily reliant on volunteers and do not have the capacity and/or control to monitor labels or change their operations in the manner and time period the trans fat ban proposal requires.
- Through network education and training as well as the development of strong relationships with donors the Food Bank has significantly increased the availability of nutritious, fresh food for New Yorkers at risk of hunger. Implementation of the trans fat ban as described by the proposal could result in an increase of food containing trans fat entering the emergency food system, particularly toward the end of the grace period, thereby serving as a set-back to the nutritional education and improvement work currently being conducted within the emergency food program network in the city.
- Further, it is of some concern that the trans fat ban is too small a measure to adequately address the health needs of New Yorkers at risk of hunger and may in fact detract from the numerous pressing health-related matters that should be addressed, not the very least of which are an insufficient supply of emergency food to meet existing demand and lack of access to health, nutritious food in low-income communities. We encourage a broader focus that would address the need to develop government funding to increase the supply of fresh food in the emergency food system and increase the number of green markets and retail establishments providing healthy food choices in low-income neighborhoods.

In closing I again thank you for the opportunity to share this testimony today, and I invite more detailed discussion of the concerns and recommendations therein, and particularly encourage consideration of a mechanism that would allow for the extra hardship incurred by soup kitchens.

Testimony to the
New York City Department of Health and Mental Hygiene
October 30, 2006

Elena Rios MD, MSPH
President and CEO
National Hispanic Medical Association
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Commissioner Frieden and members of the Health Board, I am honored to join you today. I am Dr. Elena Rios, President and CEO, National Hispanic Medical Association (NHMA), a non-profit association representing over 36,000 licensed Hispanic physicians in the United States. The mission of NHMA is to improve the health of Hispanics and other underserved. Our Foundation, the National Hispanic Health Foundation, which directs research and a national Hispanic Health Professional Student Scholarship Program, is affiliated with the Robert G. Wagner Graduate School of Public Service, New York University.

Hispanics are the largest ethnic group in the U.S. and number 40 million people or 14% of the U.S. population. New York Hispanics are a young population with less access to health care services due to being the group with the largest proportion of lacking health insurance, least educational attainment, high poverty rates, living in areas that are medically underserved areas, and having few Hispanics in the health workforce and little information in Spanish or targeted to our communities.

I am here today to support the proposals of the NYC Health Department to phase-out artificial trans fat and to increase calorie information at point of purchase in restaurants in NYC because the NHMA supports policies that will change our environment, encourage the public to make better nutrition decisions, and lead to decreased heart disease and obesity in our society. NHMA has partnered with the U.S. Department of Health and Human Services, the Clinton Foundation, the American Heart Association and the Robert Wood Johnson Foundation in a campaign where NHMA doctors tell students and parents and teachers in our middle schools to change their nutrition habits in New York, California, and Texas – the states with the largest Hispanic populations.

Heart disease is the major cause of death in our country and obesity has been recognized by the Centers for Disease Control and Prevention this year as the disease with the greatest potential to lead to mortality from chronic diseases in our country, surpassing smoking tobacco. There are several societal factors since the 1950s and the start of TV dinners, fast food restaurants, women working, schools purchasing foods and beverage outside of government lunch programs, etc. that have contributed to the rise of obesity as

an epidemic in our current generation. And this is the first generation where parents will be burying their children with chronic diseases seen earlier and earlier.

According to the Journal of the American Medical Association earlier this year:

- Obesity in children and adolescents has doubled since 1970:
  - Obese pre-schoolers (2 – 5 years) jumped from 5% to 10.4%
  - Obese adolescents (12 – 19 years) went from 6.1% to 15.5%
- Statistics for 2003 – 2004 show:
  - 17.1% of US children and adolescents were overweight
  - 32.2% of adults are obese

Not only are Hispanics afflicted with higher rates of obesity than the general population, since they are a younger population, the rates of increase are greater for children and adolescents in our communities. Hispanics and other poor minority populations will become afflicted with greater rates of diabetes, heart disease, cancers, arthritis and joint diseases, disabilities and secondarily, mental health and depression which will all lead to abseentism from the workforce, higher health care costs shifted to our clinics and hospitals, and lowering of quality life and premature death.

In summary, the National Hispanic Medical Association supports the proposals of the New York City Department of Health and Mental Hygiene for restaurants to have 1) Partial Phase-Out of Artificial Trans Fat and 2) the Point of Purchase Calorie Labeling because these efforts will assist in decreasing heart disease and obesity and reversing the trend of premature death for all Americans.

TESTIMONY BY E. CHARLES HUNT, NY STATE RESTAURANT ASSOCIATION AT PUBLIC HEARING BY NYC BOARD OF HEALTH, OCTOBER 30, 2006

Good morning. My name is Chuck Hunt and I am the Executive Vice President of the New York City Chapters of the New York State Restaurant Association.

I am here to discuss efforts that are taking place in New York City's 24,000 food service establishments to eliminate artificial trans fats, and underscore our desire to work with the city on this issue. I am also here to lay out some of our concerns about the Board of Health's proposed ban on trans fat, as well as the menu labeling proposal. Both are measures we think - while well-intentioned - will unfortunately not achieve the health benefits sought by the Board. I am particularly concerned that the lack of education on this issue among the city's restaurants, coupled with significant fines are a recipe for disaster that could be devastating for New York City's restaurants, the city's largest private sector employer of over 200,000 foodservice workers.

I think we can agree that the outcome the Board of Health and the New York State Restaurant Association seeks is the same - to see a move away from trans fat in oils and products consumed in restaurants.

However, the challenges and potential unintended consequences of the proposal to ban trans fat in the timespan of 18 months have not been fully thought out.

Many people may wonder why trans fats are being used in the first place. To briefly explain, several years ago, medical opinion pointed to concerns over saturated fats—like butter and lard—and the need for more healthful alternatives. As a result, many restaurateurs substituted partially hydrogenated vegetable oil and other alternatives containing trans fats in oils, margarines, shortenings, and prepared foods.

Now that science has progressed and the medical community is telling us that trans fat has negative health effects, restaurateurs have been looking for alternatives. But this cannot be accomplished overnight - or even in eighteen months. In fact, the reason all restaurateurs have not switched to trans fat-free options is that there simply aren't enough suitable trans-free products and oils on the market today.

This is truly a farm-to-table issue. It takes time to develop, plant, harvest and process new alternative crops and to test new oils. Because of this supply problem, if an eighteen month timetable were enacted, many of the city's restaurateurs would have no choice but to switch to oils high in unhealthful saturated fats, a move opposed by experts as a backward step for public health. As the Chair of the American Heart Association's Nutrition Committee concluded: "consumers should avoid increasing their intake of saturated fat in an effort to minimize transfat." A ban would mean exactly that for consumers. Many restaurateurs would be forced to use alternatives like palm oil, which is high in saturated fats.

In addition to serving customers, New York's restaurants are customers too: we buy from food manufacturers before preparing many products in our kitchens. But many of the foods we depend upon to serve our customers—from French fries to pastries and baked goods—contain trans fats. And while great strides are being made to provide more transfat-free oils and foods, there simply will not be enough supply available in the next year-and-a-half to supply all of New York City's restaurants.

The Department of Health clearly has not considered the impact to the small businesses of New York City - the small restaurants that are the backbone of many communities within our city. The small and family-owned independent operators who have the fewest resources would be hit the hardest - facing dramatic changes to their menus, their pricing and their business models.

This ban threatens popular dishes and affordable menus—all of which are critical to economic survival in a business where the typical profit margin is around three cents on every dollar spent by their customers.

And the city's ethnic restaurateurs -who provide such an extraordinary range of dishes from around the world - would be particularly impacted. While it is relatively easy to find trans fat-free substitutes for some foods, many classic New York and ethnic dishes are more difficult to prepare in this way, whether it's cannoli, éclairs, egg rolls or fresh-baked cookies.

Ironically, the outreach and education by the Board of Health has been almost nonexistent. In a city where small businesses and tourism are so critically important, it is my understanding that no economic impact study of this proposed ban has been undertaken by the city.

Far from helping restaurateurs figure out how to move away from trans fats, just a letter and a skimpy brochure were mailed out last year—mentioning the voluntary ban which the Department now opposes. And in a survey of my members, only a few reported that they had been contacted by a Department of Health Inspector in any way on this issue.

To my knowledge, nothing has been communicated to New York's restaurateurs in terms of practical advice from any of the city's health inspectors when visiting restaurants. Yet, the Department could now impose hefty fines for restaurateurs found in breach of this ban. I'm here to tell you that a fine is not an educational process. The city needs to get serious about working with, not

against, its restaurateurs to achieve this goal that we share in common. I am here today to ask you to sit down with us and start that conversation.

Moving to the menu labeling issue...I would first like to point out the remarkable efforts that have been made by many of the city's restaurants and chain restaurants in the past few years to provide more nutrition information to consumers - on the web, in brochures, posters, tray liners and in other forms.

The concern with the way the Board's proposal is written is that - again, while well-intentioned - it is set up to hurt the exact restaurants which have been going above and beyond to provide nutrition information to customers. In fact, this proposal truly lends credence to the saying that "no good deed goes unpunished." What is the incentive for restaurants to provide nutrition information if the city's Board of Health is going to punish them for providing it this information?

Research shows that more than 70% of restaurant customers customize their orders. Restaurants provide ample opportunities for consumers to personalize their food orders – whether it's pizza, entrées, beverages or desserts. In some cases, such as New Yorkers' beloved coffee shops and delis, there could be hundreds or even thousands of combinations that consumers could choose from in ordering a coffee drink or sandwich. That is precisely the reason many restaurants have chosen brochures or the web to provide nutrition information to consumers.

Adding caloric information to menu boards and printed menus - with so many combination options - would make those menus extremely cluttered and confusing to customers.

Additionally, there are many unanswered questions raised by the way the proposal is written. What does a 'single menu item" mean for a pizza chain which posts caloric content on-line and therefore would need to adhere to the proposal? Does every conceivable combination of toppings on a pizza need to be listed? Or does there need to be one "median" value listed, which would be meaningless?

Coffee chains serve drinks with different whipped creams, different kinds of milk and other syrups and additives. Take a look at any major coffee chain's website for all of the different possible variations of a cappuccino drink, with a broad range of caloric values. Is that restaurant supposed to list every variation and have a menu boards that is a mile long? Or are they supposed to come up with median values that don't help customers understand very much, and could vary by several hundred calories, depending on the customer's customization?

The proposal states that it seeks to standardize restaurant menus and menu boards, but provides no definition of what "standardization" means for restaurants. If a consumer purchases a packaged product, the nutritional information on that product will be the same in each package. However, a restaurant provides food that is prepared by people. Factors such as available ingredients, substitutions and that the meal is prepared by a human being and not a machine, all support the notion that a "standard" for restaurants sometimes does not exist.

Finally, the proposal does not take into account the cost to restaurants to comply with the proposed regulations on menu board and menu labeling. The costs could certainly pose a disincentive to providing nutrition information for those operators that do not currently offer nutrition information and are not covered by this proposal. The proposal also imposes real costs for restaurateurs for extensive laboratory testing of each menu item – and each time a new item is added or modified.

Instituting regulations that are not flexible or effective will not achieve the intention of providing consumers with access to information. It will hurt restaurants in New York City.

Let me just say –in respect to both of these proposals – While New York's restaurants may be thriving today, they are not indestructible. What happens to our city's restaurants impacts the entire economy of our city, and so we must know and consider the challenges and the costs.

Our industry wants to work with the Board to do what is in the best interests of our customers' health, the city's economy and our restaurants. We look forward to the opportunity to establish an ongoing dialogue with the Board of Health, toward a shared goal of providing restaurant customers with information so that they can make positive nutrition and lifestyle choices.

Thank you for the opportunity to speak on these proposals.

Respectfully submitted,

E. Charles Hunt
Executive Vice President
New York State Restaurant Association.

10-28-06

Health effects of trans fatty acids intake

First, I want to thank the NYC Dept of Health for providing this opportunity to comment on the proposed restriction of trans fatty acids in food served in public eating places.

Our research group at the Harvard School of Public Health has been investigating the health effects of trans fatty acids (TFA) since the late 1970's, when their potential for harm came to our attention. This concern was based on the fact that TFA's are similar to, and thus may compete with, essential fatty acids that play critical roles in cell structure and function, that they are by far the most abundant artificial chemical in our food supply, and that the increase in TFA consumption during the last century has correlated with the rise of coronary heart disease and other major illnesses.

Since 1980, we have examined intake of TFA in relation to incidence of major health outcomes, including coronary heart disease, in several large populations that include over 200,000 men and women. We have found that persons who consume greater amounts of TFA's have higher risks of coronary heart disease, a finding that has been confirmed by other investigators elsewhere. We and others have provided what is now firm evidence that TFA have adverse effects on blood cholesterol fractions and inflammatory factors, and that they had adverse effects on the lining of arteries. Together, these findings have provided compelling evidence that TFA contribute importantly to development of CHD in the US; my colleague Dr. Mozaffarian will describe in detail the number of cases of CHD that can be prevented by reducing intake of TFA. In addition to their effects on CHD, we have found that higher intake of TFA's predict greater risks of type two diabetes, and my colleague Dr. Martha-Claire Morris has found that those who consume more TFA's have a higher risk of Alzheimer's disease; these findings are probably related to the pro-inflammatory effects of TFA. Also, we have seen in several studies that intake of TFA's is related to weight gain more strongly than any other dietary factor; this has been confirmed in a recent 5-year study in monkeys.

In summary, the restrictions on the use of TFA by restaurants proposed by the NYC Dept of Health will have major multiple benefits for the residents of NYC and those of us who visit here. Because this is an issue of food safety, this restriction is absolutely appropriate for a Department of Health, just in the same way that the department would restrict the addition of arsenic to food if it was knowingly being adultered in this way. My colleagues and I applaud the Department for taking this important step forward.

Walter Willett, M.D., M.P.H., Dr.P.H.
Departments of Epidemiology and Nutrition
Harvard School of Public Health

FILE (Transfer HP)
CC: [illegible]
L Silver
R Bryant
CC Dr [illegible]

From: <outgoingagency@customerservice.nyc.gov>
To: <jfreeman@health.nyc.gov>
Date: Mon, Oct 9, 2006 3:45 PM
Subject: City of New York - Correspondence #1-1-267070350 Message to AgencyHead, DOHMH - Other Health Matters

Your City of New York - CRM Correspondence Number is 1-1-267070350
DATE RECEIVED: 10/09/2006 14:38:52
DATE DUE: 10/23/2006 15:41:41
SOURCE: WEB
RELATED SR# OR CASE#: N/A
EMPLOYEE NAME OR ID#: N/A
DATE/TIME OF INCIDENT:
LANGUAGE NEED:

The e-mail message below was submitted to the City of New York via NYC.gov or the 311 Call Center. It is forwarded to your agency by the Mayor's Office of Operations. In accordance with the Citywide Customer Service standard, your response is due in 14 calendar days.

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If this message is to a Commissioner / Agency Head and needs to be re-routed to another agency or cc to another agency, forward the email to outgoingagency@customerservice.nyc.gov. Do not make any changes to the subject line. Include any comments and it will be processed by The Mayor's Office of Operations.

All other web forms are to be handled by the receiving agency.

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-----Original Message-----

From: PortalAdmin@doitt.nyc.gov
Sent: 10/09/2006 14:38:11
To: sbladmp@customerservice.nyc.gov
Subject: < No Subject >

From: gerard@rcn.com (Gerard Lally)
Subject: Message to Commissioner, DOH

Below is the result of your feedback form. It was submitted by
Gerard Lally (gerard@rcn.com) on Monday, October 9, 2006 at 14:38:11

This form resides at
http://www.nyc.gov/html/mail/html/maildoh.html

2006 OCT 10 P 4:52
OFFICE OF GENERAL COUNSEL
RECEIVED

Message Type: Compliment

Topic: Other Health Matters

Contact Info: Yes

M/M: Mr.

First Name: Gerard

Middle Name: H

Last Name: Lally

Street Address: 46-10 61st street

Address Number: 3H

City: Woodside

State: NY

Postal Code: 11377

Country: United States

Email Address: gerard@rcn.com

Message: Thank You for your bold move in opening public hearings on the dangers of trans-fats. My wife and I have been fighting to keep that poision out of our four kids diets. It is only since McDonalds has been sued, have I began to see some support from the main stream establishment on this, although there are mountains of well supported studies to support a ban. Your leadership and Mayor Bloomburg's backing make me hopeful that you will be intelligent an courageous enough to tackle important issues dispite reactionary backlash.

Which was why I was surprised to hear you quoted in the press extolling the benefits of flouridation. There are no quality studies to support the continued use of this substance, we now know for a fact that water systems that are flouradeted have a greater occurance of cavaties among the population than non-flouradated systems. Not to mention the unethical manner in which you are dosing us all involuntaraly. Why the inconsistancy in logic?

REMOTE_HOST: 12.182.77.130
HTTP_USER_AGENT: Mozilla/4.0 (compatible; MSIE 5.17; Mac_PowerPC)

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CENTER FOR
Science IN THE
Public Interest
The nonprofit publisher of
Nutrition Action Healthletter

September 2006

Dear Nutrition Action Healthletter Subscriber:

As a resident of New York City, you have an opportunity to help support the New York City Department of Health and Mental Hygiene's efforts to amend the city's health code to: 1) require restaurants that currently provide nutrition information to display that information on menus and menu boards where customers can see and use the information and 2) to limit the sale of foods high in trans fat in restaurants. Please help by signing the enclosed letter and return it to CSPI in the envelope provided.

The proposed changes to the NYC health code would give New Yorkers important new ways to eat well, reduce their risk of heart disease, and maintain their weight. The code would require information that would allow people to make more informed decisions for a significant and growing part of their diet. It also would limit trans fat in restaurants, where foods often contain large amounts of this harmful fat.

We hope you will sign on to the enclosed letter by October 10th and return it promptly to CSPI . We will bundle the letter with letters from other health and nutrition professionals in New York City and deliver them to the New York City Board of Health.

For more information on menu labeling, visit our website at menulabeling.org and for more information on trans fat, visit our website at transfreeamerica.org. If you have any questions, please contact us at mdell@cspinet.org or 202-777-8308.

Sincerely,

Cecile Moss

Margo G. Wootan, D.Sc.
Director, Nutrition Policy

Mia Dell, Esq.
Government Relations Manager

1875 Connecticut Avenue, NW, Suite 300 • Washington, DC 20009-5728 • tel 202 332 9110 • fax 202 265 4954 • www.cspinet.org

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

Three-quarters of adults report using nutrition labels on food packages, and almost half say that the labels have caused them to change their minds about which food products to purchase. Yet half of large chain restaurants do not provide *any* nutrition information to their customers. When information is available, it is usually from websites (requiring a computer and logging onto the Internet before going out), hard-to-find pamphlets, or tray liners that customers do not see until after they order. We do not expect people to make sound choices in supermarkets without nutrition information, and we should not expect them to be able to do so in restaurants.

Since January 2006, almost all packaged foods have been required to list trans fat content on labels, this has lead many manufacturers to reduce or completely eliminate the use of

Sincerely,

MARCIA KULICK, BSN. RN. / MFA

Name

NEUROSCIENCE ASSOC.

Organization

1099 TARGEE ST

Address

ST, NY 10304

City, State zip code

Email address

(718) 448 3210

Phone number

The sooner the better!
People of food industry
are killing
themselves!

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Trans fat increases blood cholesterol and the risk of heart disease, the number-one cause of death in New York and the nation. Nationally, trans fat causes about 50,000 premature deaths each year. The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet." With about 3 percent of the nation's population, New York City may be unnecessarily afflicted with 1,000 to 2,000 heart attack deaths annually.

The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely, Joan Grant

Name Joan Grant

Organization

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City, State zip code NY NY 10009

Email address Joan.Grant@nyu.edu

Phone number 212 982 5865

September 2006

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Sincerely,

Name Patricia Riordan

Organization

Address 741 Manhattan Avenue

City, State zip code Brklyn N.Y. 11222

Email address

Phone number 718-383-5792

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New York, NY 10013

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Sincerely,

Name Eleanor T. Pring

Organization CSPI

Address 2800 Excelsior Ave 2B

City, State zip code Bx NY 10468

Email address

Phone number

Rec'd 10/16/06

September 2006

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Caroline LaVerne

Name Caroline LaVerne

Organization CSPI

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

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Sincerely,

Carol Abbey
Name

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Persis Widermann, R.N.
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

DR. BARRY PANZER

Name

PVT- PRACTICE

Organization

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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

(Mrs) Camie de Gaeta
Name

Organization

1253 - 83 Street
Address

Brooklyn NY 11228
City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Andrea Miller
Name

Organization

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225 West 106 St, #4K
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NYC NY 10025
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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Esther Bhicbers
Name

Organization

Address 1520 York Ave

City, State zip code New York, NY 10028

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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name

Organization

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New York, NY 10021

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Aida Medina, MS, RD, CDE

Name

Maimonides Medical - Women's Primary Care

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September 2006

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New York, NY 10013

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Sincerely,

BERNARD Schwartz — Bernard Schwartz
Name

Retired O.P.A.
Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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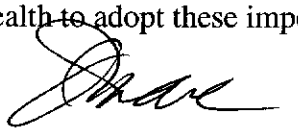

DONALD M. ISRAEL

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September 2006

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New York, NY 10013

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Sincerely,

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Phone number 212-819-6441 days

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Carolyn Holmes

Name

Organization

Address 243 W. 98 St.

City, State zip code New York, NY 10025

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

LAURA RZASA MORGENTHAU
Name

300 CENTRAL PARK WEST, 3B
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Email address

(212) 799-8461
Phone number

Laura Rzasa Morgenthau

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Setsuko Maruhashi
Name

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477 13th St.
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City, State zip code

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Rita E. Hecht

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Organization

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Joan Jacobson
Name

CSPI
Organization

127 E 30th St. -16D
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New York, NY 10016-7381
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Phone number

September 2006

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Cathy Berkman
Name

Organization

11 Riverside Drive #11CW
Address

New York, NY 10023
City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Name Phylicia Kohl

Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Nancy Kimmel Viola
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Name Nancy Kaplan

Organization

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City, State zip code Brooklyn, NY 11217

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Laura A. Landon

Name St. Vincents

Organization 53-11 East 11th St.

Address N.Y. Ny. 10020

City, State zip code

Er ail address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Dr [illegible]

Name

Organization

45 E 89 St 17A

Address

NY NY 10128

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Helene Jaffe
Name

Organization

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City, State zip code

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name

Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Cynthia Floyd RD, CDE
Name

Organization

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Address

Bronx, New York, 10454
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(212) 951-3489
Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Name

Richard Walker
P.O. Box 771060
Woodside, NY 11377-1060

RETIRED

Organization

Address

City, State zip code

Email address

Phone number

Please don't take a year and a day to pass this vital legislation.

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Rita Berger
Name

CSPI
Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Florence Rylsky

Florence Rylsky
Name

Organization

618 Remsen Avenue
Address

Brooklyn NY 11236-1029
City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

JACK GOTLINSKY

Name

Jack Gotlinsky

Organization

Address 100 De Kruif Pl apt 30 J

City, State zip code Bronx N.Y. 10475-2409

Email address

Phone number 718-379-1228

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Susan Mainwaring

Name Diamond Umbrella Foundation

Organization 1112 Park Avenue

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City, State zip code DiamondUmbrella@verizon.net

Email address 212 828 1999

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Dana Minaya

Name DR. DANA MINAYA

Organization

Address 80 LASALLE #14G

City, State zip code NY, NY 10027

Email address ~~dlr~~ dsm2103@columbia.edu

Phone number (212) 222-0281

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Jane Sherman
Maurice Sherman M.D.

Name

~~Organization~~

40 East 88 St

Address

New York, NY 10128

City, State zip code

Email address

Phone number

September 2006

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New York, NY 10013

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Sincerely,

Linda Grossman
Name

Center for Science in the Public Interest
Organization

44 W. 75th #4A
Address

New York, N.Y. 10023
City, State zip code

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Email address

212-724-2590
Phone number

September 2006

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125 Worth Street, CN-31
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Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

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Trans fat increases blood cholesterol and the risk of heart disease, the number-one cause of death in New York and the nation. Nationally, trans fat causes about 50,000 premature deaths each year. The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet." With about 3 percent of the nation's population, New York City may be unnecessarily afflicted with 1,000 to 2,000 heart attack deaths annually.

The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Name Elizabeth Jacobson

Organization

Address 38D Edgewater PK

City, State zip code Bx. NY 10465

Email address H224 at PEFINTERNET.COM

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Toni Grynschlag

Name TONI GRYNSCHLAG

Organization

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

JILL R. BARON, MD

Name

JILL R. BARON, MD PC

Organization

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September 2006

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New York, NY 10013

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Sincerely,

Barry M. Kotel (Barry M. Kotel)

Name

Organization

929 West End Ave Apt 7D

Address

New York, NY 10024

City, State zip code

Email address

212-865-1704

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Whitley Meade
Name
Center for Science in the Public Interest
Organization
245 Echo Place
Address
Bronx,
City, State zip code
New York, 10457
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1-718-299-0771
Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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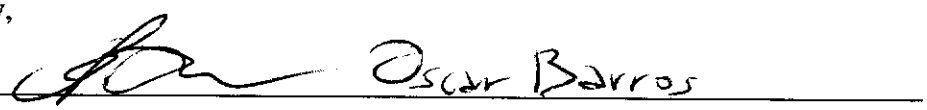

Oscar Barros

Name

Organization

150-75 87 Av. Apt 4E

Address

JAMAICA NY 11432

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name Claudia Smalley

Organization

Address ~~300~~ 4011 Kings Hiway

City, State zip code Brklyn NY 11234

Email address

Phone number 917 880 6440

Sorry I am terribly late
I received this mail
Last week 10/13/06
Sorry - not my fault
Claudia

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Enid Williams

Name

Organization

Address

City, State zip code

Email address

Phone number

September 2006

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Sincerely,

JOELLEN KUNKEL

Name

PRIVATE CITIZEN

Organization

65-24 162 Street

Address

FRESH MEADOWS NY 11365

City, State zip code

N/A

Email address

718 8215870

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Andrew Laderman

Name

L'Homme du Piano

Organization

67-38 108th Street C-53

Address

Forest Hills, NY 11375

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Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Roberta Pruss

Name

Organization

75 Pierrepont St.

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Brooklyn, NY. 11201

City, State zip code

Email address

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name Peter Nelson

Organization Retired

Address 2632 W. 2nd St. (3-D) Bklyn, N.Y. 11223

City, State zip code Bklyn, N.Y. 11223

Email address None

Phone number 1-718-646-8550

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely, Irving Bedrev

Name Irving Bedrev

Organization

Address 2155 82 St. 6L

City, State zip code Brklyn NY 11214

Email address

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Mary Jane DeSantis
Name

Organization

35 Selkin Ave
Address

Staten Island, N.Y. 10314
City, State zip code

Email address

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Name

Organization

Address

City, State zip code

Email address

Phone number

September 2006

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Sincerely,

JANE ABBOTT Jane Abbott

Name

SUBSCRIBER — CENTER FOR SCIENCE IN The Public Interest

Organization

435 OCEAN PARKWAY - 3K

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Email address

718-284-4059

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Jill Berman, Ed.D.
Name

1420 - 86th St
Organization

NYC 10024
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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Name JESSE JOHNSON

Organization RETIRED

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Eugene Kaylan

Name

Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Judy Pardo Judy Pardo

Name

Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Mary Moore

Name Center for Science in the Public Interest

Organization 402 E 65 ST

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City, State zip code

Email address

212.535.7163

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name

Organizati

Ms. Friedlander
165 W End Ave. Apt. 2M
New York, NY 10023

Address

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

STANLEY v RUTH ROSENBERG

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CENTER FOR SCIENCE IN THE PUBLIC INTEREST

Organization

35 EAST 19TH STREET

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

ROSAMOND GANITSOS

Name

Organization

Address 38-25 52ND ST

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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Holly G. Atkinson, MD.

Name

MD.

Organization

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

KATHY YATES

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

JOHN DENBECK

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September 2006

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New York, NY 10013

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Sincerely, Bess Schaeffer

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September 2006

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Karen & Doug Seidman
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Sincerely,

Dr Carole Campana

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September 2006

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New York, NY 10013

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Sincerely,

DR. Ileana Vargas

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September 2006

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September 2006

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Sincerely,

Maurice R. Green M.D.

Name

Organization Clin. Prof. N.Y.U. Med School

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Linda Lastra George Packer

Name Concerned N.Y. residents affiliated with no organization

Organization 166 Waverly Ave.

Address S. I. N.Y. 10310

City, State zip code

Email address

Phone number

September 2006

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New York, NY 10013

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Sincerely,

Name

Organization

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City, State zip code

Email address

212 595-3019

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Judy Rappaport

Name Judy Rappaport

Organization

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City, State zip code NY, NY 10023

Email address

Phone number 212-873.8428

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Jerome Rosinger

Name Jerome Rosinger, DDS

Organization 16 Park Avenue Ste 2A.

Address New York, N.Y. 10016

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Email address 212 689.8002

Phone number

September 2006

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New York, NY 10013

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Sincerely,

MRS. BEVERLY WOLFSON
Name

Organization

136 TYSENS LANE
Address

STATEN ISLAND N.Y. 10306
City, State zip code

Email address

718-351-5396
Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

David A Hermann
Name

Organization
354 Castleton Ave
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Staten Island, NY 10301
City, State zip code
dhermann@earthlink.net
Email address
718-273-1543
Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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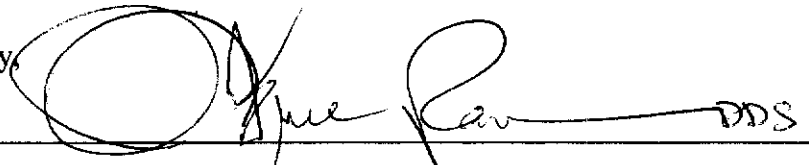
Sincerely,  DDS

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Email address	ifredr@aol.com
Phone number	212 581 9710

September 2006

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Fran Barth

Name

Organization

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Address

BROOKLYN NY 11222

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Deirdre Jurd
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Gerald Korpela
Name

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City, State zip code

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Erika Koschei

Name

Organization

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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name BERTRAM VERMONT

Organization CENTER FOR SCIENCE IN THE PUBLIC INTEREST

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City, State zip code BRONX, N.Y. 10469-5807

Email address

Phone number (718) 547-7934

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name E. RISI

Organization

Address 1041 AUGSLEY AVE 1

City, State zip code BX N.Y. 10472

Email address

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Sondra Olsen
Name
CSPI Sondra Olsen
Organization
Address
201 W. 16 St. Apt 10A
City, State zip code
New York NY 10011
Email address
Phone number 212-243-6548

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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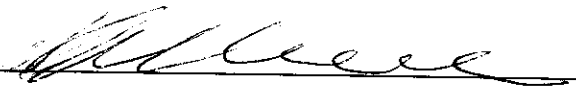

Name Dr. Robert Swee

Organization

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City, State zip code NY NY 10011

Email address

Phone number 212-243-5734

September 2006

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125 Worth Street, CN-31
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Sincerely,

Yvette Calen — MSRD
Name

Organization

Address
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NY. NY. 10014
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YvetteRad@MSN.com
Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Jane Hirsch
Name

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Jean S. Levine

Name

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Irmgard Parker (IRMGARD PARKER

Name

Organization

50 West 96 St (9-C)

Address

New York, NY 10025

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

William Turner

Name

Organization

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City, State zip code Bronx N.Y. 10469

Email address

Phone number 718- 881-3279

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Marcia Goldberg

Name: MARCIA GOLDBERG

~~Organization~~

Address: 2464 BRAGG ST

City, State zip code: BROOKLYN NY 11235

Email address: Mamaheir@AOL.COM

Phone number: 718-769-1965

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Eve Blatt

Name Center for Science in the Public Interest

Organization 755-E-21 St.

Address B'klyn, N.Y. 11210

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Karen Pearce

Name

Organization

157-08 32 St

Address

Howard Beach NY 11414

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718 8480772

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Irwin Feldman

Name

CENTER FOR SCIENCE IN THE PUBLIC INTEREST

Organization

PO Box 747977

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REGO PARK, NY 11374-7977

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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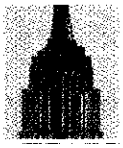
Sincerely,

Name

Organization

Address



Mr. George Mycak
39 Whitson St.
Forest Hills, NY 11375

City, State zip code

Email address

Phone number 718-263-6975

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Roberta Flanagan
Name

Organization

90-60 Union Tpke.
Address

Glendale, N.Y. 11385
City, State zip code

Email address

(718) 441-5914
Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name (Anna M. Hurtubise) Anna M. Hurtubise

Organization

Address 22-28 123 Street

City, State zip code College Point N.Y. 11376

Email address

Phone number 718-886-2481

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Helen Oswald
Name

Organization

1882 Hillcrest Ave.
Address

Ridgewood, N.Y.
City, State zip code

11385
Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Lillian Belmont

Name

Organization

Address

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely, Roni Gurland

Name RONI GURLAND

Organization RETIRED

Address 11 RIVERSIDE DRIVE

City, State zip code NEW YORK, NY 10023

Email address RoniVRG@aol.com

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name

Organization

Address

City, State zip code

Email address

Phone number

Michael Tobin
175 W 93rd St Apt 16E
New York, NY 10025

ACCEPTANCE

ADL

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Ann Salmis

Name

Organization

Address 152 W 96 St.

City, State zip code NY 10025

Email address anniemyc@netscape.net

Phone number

September 2006

New York City Board of Health and Mental Hygiene
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New York, NY 10013

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

MARY GUARRACINI, MD
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Drs. Derek SantAngelo & Lisa Denzin
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Derek SantAngelo Lisa K. Denzin

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Paul S. Rosenblum

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Organization

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Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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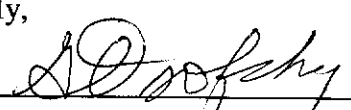

Name Gladys Osofsky

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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Irene Glener

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Goldie Levinson

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Harriet Solomon

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Nutrition HealthLetter, Center for Science in the Public Interest

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Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Esther S. Cohen

Name

Organization

Address
2645 Homecrest Ave Apt 3D, Brooklyn, NY 11230

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Emma Lee Yu
Name
Emma Lee Yu
Organization
Address 50 E. 89 St., Apt. 31B
City, State zip code New York, N.Y., 10128
Email address /
Phone number /

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

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Sincerely,

Marlene J. Bertman

Name

Organization

1241 Brickwall Ave. #5F

Address

Brooklyn, NY 11235

City, State zip code

Email address

7187430444

Phone number

I want to live forever!
How 'bout you?

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Arnold Kiner
Name

—
Organization

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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Orlie Kramer

Name

Organization

186 Bergen Str.

Address

Bklyn NY 11217

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

DR. + MRS. Theodore Laquercia
Name

Organization

35 W. 90TH ST.
Address

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City, State zip code

Email address

212 580-7280
Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely, Selma Newman

Name Selma Newman

Organization Center for Science in the Public Interest

Address 120 Asch Loop Apt. 5F

City, State zip code Bronx, NY 10475

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

LESLIE B. KAHLE

Name

Organization

Address 137 EAST 35TH ST., #2L

City, State zip code NEW YORK, NY 10016

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Dorothy M. Cali

Name DOROTHY M. CALI

Organization

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City, State zip code BROOKLYN, NY 11231

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

JESUS NARIÑO

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BROOKLYN, NY 11238

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Margaret Beels

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September 2006

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New York, NY 10013

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Sincerely,

William J. Shamoun

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September 2006

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New York, NY 10013

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Sincerely,

Elaine Kuo

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September 2006

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Sincerely,

MR & MRS. EPHRAIM NATKINS
Name

Organization

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Jackson Hts NY 11372
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September 2006

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New York, NY 10013

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Sincerely,

SAUL SPICER

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September 2006

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New York, NY 10013

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Sincerely,

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September 2006

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David Unterman, Rosalind Unterman

Name DAVID UNTERMAN ROSALIND UNTERMAN

Organization Center for Science in the Public Interest

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September 2006

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Joseph B. Kruger

Name Joe Kruger

Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Frank Rodriguez Frank Rodriguez

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Nutrition Action Healthletter (subscriber)

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

John W. Carter
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Frances B Heaven
Name

E.C.W. - Diocese of N.Y
Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Allen G. Aaronson
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Name

Organization

Address

City, State zip code

Email address

Phone number

September 2006

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Sincerely,

Beatrice Stanger

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name Jeanne Green

Organization

Address 400 W. 43 St-42H, NY, NY 10036

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

KAREN Neuberg Karen Neuberg
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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

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Name

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Teresa Colon

Name

Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Janice De Nave

Name

United Federation of Teachers

Organization

8 Landing Way

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Bronx N.Y. 10464

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

RICHARD ROSS

Name

Organization CSPI

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Phone number 917-674-4768

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name JOSEPH HRYSZKO

Organization

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City, State zip code MIDDLE VILLAGE, NY 11379

Email address

Phone number

September 2006

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Genevieve Herr

Name MS / Nutrition

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Address Jackson Hts., NY 11372

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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Philomena C. Donnelly
Name

Organization

98-20 Metropolitan Ave
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Email address

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Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Linda VanVolkenburg

Name

Organization

2104 Holland Ave 5F

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City, State zip code

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718-823-6875

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely, Sylvia Moore

Name SYLVIA D. MOORE

Organization C.S.P.I.

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Email address SYLDWN@AOL.COM

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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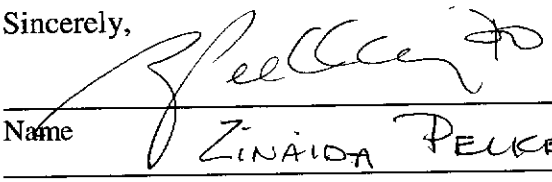

Name ZINAIDA PELKEY, D.O.

Organization

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Laurence J. Iacuzzo

Name LAURENCE J. IACUZZO

Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Rhoda E. Kleiman, Ph.D.
Name

Organization

165 WEST END AVENUE - 12D
Address

NYC NY 10023-5509
City, State zip code

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Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Robert Marantz, M.D.
Name

Organization

175 W. 12th St. (2B)
Address

City, State zip code NY, NY 10011

Email address

Phone number 212-242-7501

September 2006

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Malcolm + Estelle Neuman
Name

Organization

275 W. 96 St. - 32G
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New York, N.Y. 10025
City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Name Ellen H. Manian

Organization

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Email address emanian@msn.com

Phone number 212 255-5834

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Bernadette Katin
Name

Organization
224 Centre St-2nd Fl.
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New York, NY 10013
City, State zip code

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212-966-1911
Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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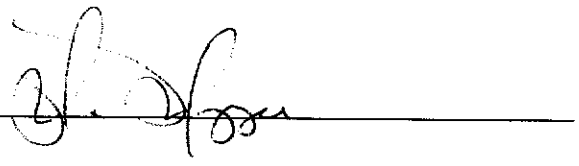

MARIN MAZZIE
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Phone number

September 2006

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New York, NY 10013

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Sincerely,

Elinor T. Fine

Name (Elinor T. Fine)

Organization

Address 235 East 57th St.

City, State zip code New York, N.Y. 10022

Email address ElkyFine@AOL.com

Phone number (212) 755-0723

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Name Anne Fege Inc

Organization P.S. 345

Address 2502 Lorillard Place

City, State zip code Bronx, NY 10452

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Phone number [illegible]

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Donna B Swinson D. Swinson
Name

CSPI
Organization

850 E. 31 St. #F1
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(718) 755-9186
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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

MARY L. SURI
Name

Organization

Address

PO Box 20539
City, State zip code

NY NY 10025
Email address

Phone number

September 2006

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New York, NY 10013

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Morton Kamenshy
Name
Center For Science in the Public Interest
Organization
2925 Matthews ave apt 6J
Address
Bronx N.Y. 10467
City, State zip code

Email address
718 652-6063
Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Helen B Steinlein 10/6/06

Name

Organization retired

Address

City, State zip code

Email address

Phone number 718-639-4067

Ms. Helen B. Steinlein
3553 77th St. Apt. 5G
Jackson Hts, NY 11372

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name Jack Einhorn

Organization

Address 967 Neill Ave.

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Email address

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Dr & Mrs Donald Cohen

Name

Organization

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Email address mushin@mindspring.com

Phone number 917-539-0509

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Susan Kille

Name

Organization

Address 8 Eighth Ave. Apt. 6

City, State zip code Brooklyn, NY 11217

Email address

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Adele & Sam Braude ADELE + SAM BRAUDE

Name

Organization

250 NINTH AVE - APT. 9D, NY NY 10001-5718

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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely, Harry M. Sackel

Name

Organization

Address 160 W 96th St

City, State zip code New York, NY 10025

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Lottie Burger
Name

Organization

Address
70-20 108 St. Apt. 7D
City, State zip code
Forest Hills, NY 11375-4428
Email address

Phone number
718 261 8418

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Christine Georgiou
Name

Organization

3145 Sands Place
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Bronx, NY 10461
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely, Geraldine Lesser

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Barbara Parker
Name

Organization

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Address

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September 2006

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New York, NY 10013

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Sincerely,

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Organization

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City, State zip code Brooklyn NY 11229

Email address

Phone number

September 2006

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New York, NY 10013

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Sincerely,

Helene Yektai
Name

CSPI member
Organization

225 W 86
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ny ny 10024
City, State zip code

Email address

Phone number

September 2006

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New York, NY 10013

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Chani Friedman
Name

Organization

1382 E. 27 Street
Address

Brooklyn NY 11210
City, State zip code

Email address

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Sincerely,

Dr. Robert S. Bressler*

Name

Organization

Address 913 E 27 Street

City, State zip code Brooklyn N.Y. 11210

Email address

Phone number 718 252 7800 ext. 281

*Professor of Anatomy, Mount Sinai School of Medicine
Professor of Anatomy, New York College of Podiatric Medicine
Chairman, Dept. of Biology, Touro College Flatbush Campus

September 2006

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Sincerely,

Stanley Foodim Stanley Foodim

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Organization

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September 2006

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New York, NY 10013

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Sincerely,

Irene H Morgan
Name

retired
Organization

140 - 7th Ave Apt 7H
Address

New York, N.Y. 10011
City, State zip code

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(212) 924-1691
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September 2006

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Dr. Clara Garrett
Name

Organization

2451 Webb Ave. Apt 1d 6
Address

Bronx NY 10468
City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Sylvia Rosenberg
Name
Center for Science in the Public Interest
Organization
245 Henry St.
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Brooklyn N.Y. 11201
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Unlisted
Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

REZA FARZAN Reza Farzan
Name

Organization

201 PROSPECT PARK SW
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Email address

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Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Louise Bergamo

Name

Organization

7101 Colonial Road

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Brooklyn, New York 11209

City, State zip code

Email address

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Mrs Carolyn Hamid
Name

Organization

Address 145 Hicks St
City, State zip code Brooklyn Hghts, N.Y. 11201
Email address HHAmid79, 8@aol.com
Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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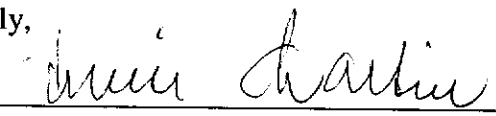

Name Nutrition Action Healthletter

Organization 47-30 59th St. - 10J

Address Woodside, NY 11377

City, State zip code

Email address 718-457-5247

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Evelyn Sucher
Name

Organization

446 E 86 8F
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NY NY 10028
City, State zip code

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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Eli Hochwald
Name

Organization

Address 32 Washington Square

City, State zip code NY NY 10011

Email address

Phone number

September 2006

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New York, NY 10013

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Name Nelson A. Bellizaire

Organization

Address 2191 Valentine Ave.

City, State zip code Bronx NY 10457

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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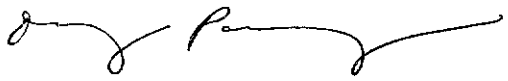

DOUG POMEROY

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Mildred Hirschman

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Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Beatrice McGuire R.N MA

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nyc Bd of Ed nursing teacher

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735 W 172 apt 34A

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new york city ny 10032

City, State zip code

Email address

Phone number

2129277720

RN registered nurse
MA Master Arts
TC Columbia
University

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Robert Palmer PhD

Name

Lic Psychologist

Organization

24A Sidney Place

Address

Brooklyn NY 11201

City, State zip code

Email address

718 624 4318

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

ELLEN SHUGRUE
Name

Organization

Address 80-48 CORNISH AVE

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Email address

Phone number 718-565-8273

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Charles P Edwards

Name

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Email address

Phone number

September 2006

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Sincerely,

Phyllis Ersner

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Eleanor P Clark

Name

Organization

Address 29 Sterling Place

City, State zip code Brooklyn, NY 11217

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Sylvia + Irving Kwellan

Name

Retired

Organization

67-76 Booth St. #4A

Address

Forest Hills NY 11375

City, State zip code

Email address

718-275-7333

Phone number

September 2006

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New York, NY 10013

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Sincerely,

Kenny West
Name

Organization

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Email address

Phone number

September 2006

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New York, NY 10013

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Sincerely,

Cora Brossard

Name Cora Brossard

Organization Retired MSW

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Email address

Phone number 212-534-6778

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Sheila + David Newman
Name

Organization

Address 1478 E. 46 St.

City, State zip code B'KLYN, NY 11234

Email address davhn77@gmail.com

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Estelle Keilson

Name Center for Science in the Public Interest

Organization 1542 E 59 St

Address Brooklyn NY 11234

City, State zip code

Email address

Phone number

September 2006

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New York, NY 10013

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Sincerely,

Name Jan M Pankowski

Organization

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September 2006

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New York, NY 10013

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Sincerely,

Rochelle Eckstein
Name

Organization

2611 Avenue L
Address

Brooklyn N.Y. 11210
City, State zip code

Email address

(718) 253-4315
Phone number

September 2006

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Name Mrs. Ann Crook

Organization CSPI - NAH

Address 1862 Matthews Ave

City, State zip code Bronx, NY 10462

Email address none

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Name Lynn Greenspan

Organization

Address 843 Travis Ave.

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Email address Izthewiz44@hotmail.com

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Elaine Ellsworth

Name

Organization

Address

City, State, zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Nancy Pittorino

Name Retired

Organization

Address 7511 Fifth Ave, Brooklyn, N.Y.

City, State zip code Brooklyn, N.Y. 11209

Email address

Phone number 718-748-4504

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name

Carole Karakurt
1213 Avenue Z Apt B22
Brooklyn, NY 11235-4368

Organization

Address

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Dr Steven Goldstein

Name

Chiropractor

Organization

4241 Hylan Blvd

Address

Staten Is NY 10312

City, State zip code

soundst417@AOL.com

Email address

718 967-2225

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Rita Ropas
Name
Queens College
Organization
Address 118-17 Union Tpke Apt 11K Forest Hills NY 11375
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ROPAS@NYC.RR.COM
Email address
718-268-6653
Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

WALTER KERUT
Name

Organization

62-49-80TH ROAD
Address

GLENDALE, NEW YORK 11385-6827
City, State zip code

WALTERGOSMAG@AOL.COM
Email address

718-821-3805
Phone number

September 2006

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New York, NY 10013

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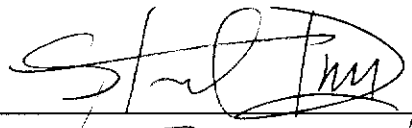

Name	STUART DIM
Organization	N/A
Address	430 Clinton St
City, State zip code	BKLYN NY 11231
Email address	
Phone number	718-488-7063

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Ms. Patricia Fitzsimmons

Name

Organization

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Email address

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely, Regina M Sweeney

REGINA M. SWEENEY

Name

Organization

1654 E 13 ST #1E

Address

B'KLYN, NY 11229

City, State zip code

Email address

(718) 375-0055

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name

Organization

Address 33-26 85 St.

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Email address BARCW@EARTHLINK.NET

Phone number 718/335-7323

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name BRYAN J. NEWSHAM

Organization

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City, State zip code Queens NY 11385

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Eileen B Weiss

Name

B-R-E-A-T-H-E (+ Jews against Genocide)

Organization

PO Box 723, Cathedral Station

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NYC, NY 10025-3079

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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

SIDNEY EDISON, STEVEN NLADIS
Name

Organization

151 CENTRAL PARK WEST #8N
Address

NEW YORK, NY 10023-1514
City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

D. R. Lavelle
Name

Organization

Address

25-81 45 STREET, ASTORIA, NY 11103
City, State zip code

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718-726-7730
Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Lola Becker (Lola Becker)

Name

Organization

455 N. End Ave, Apt 907

Address

New York, NY 10282

City, State zip code

Email address

917-522-1369

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Cynthia Reynolds

Name Alexander teacher NYU and New School for Drama

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Paula Grande – Paula Grande
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September 2006

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New York, NY 10013

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Sincerely,

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September 2006

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New York, NY 10013

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Sincerely,

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

E. May

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Arnold J. Golub
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Retired
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

CONWAY A. BURBANK Conway A. Burbank

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September 2006

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New York, NY 10013

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Sincerely, Norma Lee Charloff

Norma Lee Charloff
Name

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Phone number 718·398·4378

September 2006

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New York, NY 10013

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Sincerely,

LYNDA RODOLITZ

Name

CSPI

Organization

155 W 68 ST

Address

NYC 10023

City, State zip code

Email address

212 712 9191

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Name Anita Sabarese

Organization —

Address 140 DEKRUIF PLACE 24F

City, State zip code BRONX N.Y 10475-2224

Email address — none

Phone number (718) 379-3148

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Ms. Donna Sanders
Name

Organization

814 Ritter Place
Address

Bx NY 10455
City, State zip code

sanders814@aol.net
Email address

7185895491
Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Eugene A. Rourke
Name
Center for Science in the Public Interest
Organization
8908 Colonial Rd.
Address
Brooklyn, N.Y. 11209-5510
City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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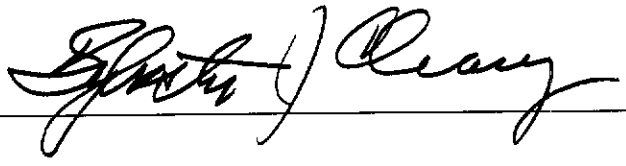

Name

Mr. Sylvester J. Cleary
10 Holder Pl. Apt. 3e
Forest Hills, NY 11375-5217

City, State zip code

Email address

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name Lila Russo

Organization Lila Russo, RD, CDN

Address 7817 10th Avenue

City, State zip code Brooklyn NY 11228-2607

Email address

(718) 745-1757

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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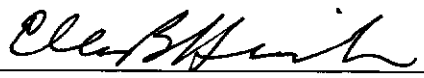

Name

Ellen B. Hirsch

Organization

1 Cove Ln Apt 3

Brooklyn, NY 11234

Address

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name

Organization

Address VICTOR ALONSO, M.D.
229 Smith Street

City, State zip code Brooklyn, NY 11231

Email address

Phone number

September 2006

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New York, NY 10013

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Sincerely,

Name Dr CHARLOTTE S. RUBIN

Organization CENTER FOR SCIENCE IN THE PUBLIC INTEREST

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Email address

Phone number 718, 252-4850

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Name Aaron Schneider

Organization HEALTH & HAPPINESS RAW FOOD GROUP

Address

City, State zip code

Mr. Aaron Schneider
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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Edward Katz

Name

Organization

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(718) 332-9331

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Anthony Lentini
Name

Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Amanda Aaron
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Organization

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City, State zip code

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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Judith A. Karpilow
Name

Organization

107 Sullivan St., #29
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New York, NY 10012
City, State zip code

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(212) 431-9564
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Chris Moreland

Name CHRIS MORELAND

Organization CENTER FOR SCIENCE IN THE PUBLIC INTEREST

Address 100 DEBS PL APT 17B

City, State zip code BX NY 10475-2512

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

JOHN J COYLE John J Coyle

Name

—

Organization

340 WEST 28TH STREET APT 15E

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NEW YORK NY 10001

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Phone number

Oct 10, 2006

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Dr. Ruth Y. Davis, NMD

Name

Dr. Ruth Y. Davis, NMD

Organization

375 South-End Ave #30-D

Address

New York, NY 10280-1082

City, State zip code

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Email address

Phone number

September 2006

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Sincerely, Walter J. Matuszchak, Ph.D.

WALTER J. MATUSZCHAK PH.D.

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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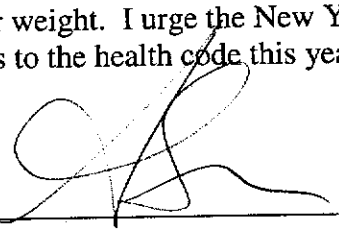

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September 2006

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New York, NY 10013

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September 2006

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Jenny Walker, MD
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Mount Sinai School of Medicine
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September 2006

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New York, NY 10013

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Katherine Ervin MA '82
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September 2006

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Sincerely,

Anita Martin

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September 2006

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Dena L. Moss

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Ms. Dena L Moss
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Staten Island, NY 10312

September 2006

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Geraldine Alston

Name

Organization

95 West 95 St. #25F

Address

New York NY 10025

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Name: Lauri F. Roth

Organization:

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Phone number:

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Sheila Spalter

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CSPT

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

ROGER DEAKINS
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Penn South
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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely, Eric Larsen

Name ERIC LARSEN

Organization TEACHERS COLLEGE, COLUMBIA UNIV

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Phone number 212 569-3935

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Katina Eagle - Whittaker
Name

N/A
Organization

P.O. Box 524507
Address

Bronx, NY 10452
City, State zip code

Email address

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Florence Preminger

Name

2-

Organization Center For Science in the Public Interest

Address 2222 Avenue O

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Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Barbara H. Landreth, M.D.
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Sam
Organization

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

JOHN R DONAGHY
Name
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Name H. M. Clarke

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Edward I Koch

Name

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Ali Crawford, RD

Name

St. Vincent's Midtown Hospital

Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Madalyn Friedberg

Name

Madalyn Friedberg

Organization

225 W 57 St #3DD

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NY NY 10019

City, State zip code

Madalyn@friedberg.org

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Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Holly Pollitzer

Name

Organization

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Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Mary Levine
Name

Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Name Elizabeth K. Wynn

Organization Dept. Health - retired

Address 160 West 116 St.

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Email address

Phone number 917 493-6762

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Lillian Galletta

Name Lillian Galletta

Organization UFT

Address 137-44 71st Ave

City, State zip code Flushing NY 11367

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Phone number 1-718 263-3457

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

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Trans fat increases blood cholesterol and the risk of heart disease, the number-one cause of death in New York and the nation. Nationally, trans fat causes about 50,000 premature deaths each year. The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet." With about 3 percent of the nation's population, New York City may be unnecessarily afflicted with 1,000 to 2,000 heart attack deaths annually.

The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Vanessa Troise

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Vanessa L Troise, PC, PC

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September 2006

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Sincerely,

Myron Kloster

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September 2006

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Sincerely,

GILDA PERVIN

Name

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September 2006

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New York, NY 10013

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Sincerely,

Mary Pat Klein Mary Pat Klein

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Sincerely, Monika Wrzolek

Name MONIKA WRZOLEK

Organization

Address 174 MORRISON AVE

City, State zip code STATEN ISLAND, NY 10310

Email address

Phone number

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Sincerely,

Suzanne P. Sachs
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September 2006

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Sincerely,

Lisa Bauer MS, RD, CDN

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JOY BAUER NUTRITION

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September 2006

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Sincerely,

POOJA MEHTA
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September 2006

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Sara P. Rosen

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Bernadette Desmond

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NCSPI

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Fran Libowitz

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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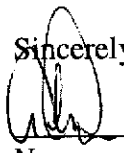

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

BARRY STERN
Name

Organization 601-A SURF AVE., #4C
Address BROOKLYN, N.Y. 11224
City, State zip code

Email address (718) 372-4221
Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Laura Liu & Steve Johnson
Name

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Allison Topilow, MS, RD, CDN
Name

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September 2006

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New York, NY 10013

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Sincerely,

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Phone number 718-542-4991

September 2006

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New York, NY 10013

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Saul Trabman

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Katherine Snelson

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Gary A Chanowitz

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Roberta DeVaso

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Retired Educator

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Esther Tobach

Name ESTHER TOBACH

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

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September 2006

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New York, NY 10013

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Sincerely,

Gabriel Miller

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Gabriel Miller

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Phone number 917 212 352 4220

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

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Three-quarters of adults report using nutrition labels on food packages, and almost half say that the labels have caused them to change their minds about which food products to purchase. Yet half of large chain restaurants do not provide *any* nutrition information to their customers. When information is available, it is usually from websites (requiring a computer and logging onto the Internet before going out), hard-to-find pamphlets, or tray liners that customers do not see until after they order. We do not expect people to make sound choices in supermarkets without nutrition information, and we should not expect them to be able to do so in restaurants.

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Trans fat increases blood cholesterol and the risk of heart disease, the number-one cause of death in New York and the nation. Nationally, trans fat causes about 50,000 premature deaths each year. The National Academies' Institute of Medicine (IOM) concluded that: "Because they are not essential and provide no known health benefit, there is no safe level of trans fatty acids and people should eat as little of them as possible while consuming a nutritionally adequate diet." With about 3 percent of the nation's population, New York City may be unnecessarily afflicted with 1,000 to 2,000 heart attack deaths annually.

The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Name Myra Rosenberg

Organization

Address 185 Prospect Pk. SW #203

City, State zip code Brklyn, N.Y. 11218

Email address

Phone number 718-435-8890

September 2006

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New York, NY 10013

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Sincerely,

Name ZACHARY LEVY

Organization

Address 89-35 155 AVE. — 2F

City, State zip code HOWARD BEACH, NY 11414

Email address

Phone number

September 2006

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New York, NY 10013

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Sincerely,

NORMAN HANDELMAN
Name

—
Organization

525 WEST END AVE
Address

NYC 10024
City, State zip code

Email address

Phone number

September 2006

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New York, NY 10013

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Sincerely,

James H. Cone

Name JAMES H. CONE

Organization Union Seminary

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City, State zip code NYC 10027

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Phone number 212-662-9402

September 2006

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Sincerely,

Edith Samuels
Name

CSCT
Organization

1511 Albemarle Rd
Address

Brooklyn, NY 11226
City, State zip code

Email address

Phone number

September 2006

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New York, NY 10013

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Sincerely,

LAWRENCE SIMMS + ALISON HO

Name

Organization

200 EAST 32ND ST.

Address

NY 10016

City, State zip code

L.SIMMS@USA.NET

Email address

212-779-0338

Phone number

September 2006

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New York, NY 10013

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Sincerely,

Elizabeth Goodall.

Name ELIZABETH GOODALL

Organization

Address 28 BEDFORD ST #4A

City, State zip code N.Y. N.Y. 10014

Email address

Phone number

September 2006

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New York, NY 10013

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Sincerely,

Ellen Baumwoll

Name Ellen Baumwoll

Organization

Address 144 W. 96th St. - 11A

City, State zip code NY, NY 10024

Email address

Phone number 212-777-1304

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Diane Rothman Diane Rothman
Name

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Michael Steinberg DDS

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Organization Your Favorite Dentist

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ADA FOUNDATION
Dr. Michael L. Steinberg
2614 Avenue U
Brooklyn NY 11229

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Carol Carson

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Organization

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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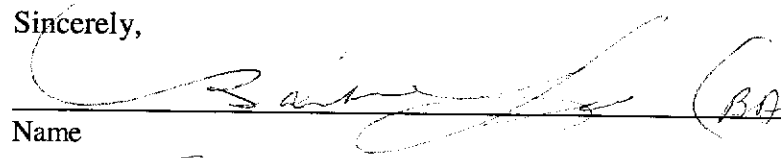

Name BARBARA LEE

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Phone number (718) 852-4298

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Barbara Adelman
Name

Organization 133 Garfield Place
Address

Bklyn NY 11215
City, State zip code

Email address

Phone number

September 2006

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New York, NY 10013

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Sincerely,

Gerald Lepp
Name

Organization

75 Livingston Street / Apt. 16B
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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Joe R. Wise
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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Vicki Wolf
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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Name

Organization

Address 463 West Street Apt 402

City, State zip code NYC, NY 10014

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely, Dean K. Brown

Names Jean P. Brown

Organization ———

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Phone number 718-351-9056

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

EUGEN E WOLKOW

Name Eugene Wolkow

Organization

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(718) 680-8465

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

ELAINE KEIM

Name

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City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Charles Vegliante
Name

Organization

1575 Haight Ave
Address

Bronx NY 10461
City, State zip code

Email address

(718) 597-7654
Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

David Shuler

Name

Organization

215 West 92 St. Apt 2E

Address

City, State zip code NY NY 10025

Email address dshuler@stluke in the fields.org

Phone number 212.724.4877

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

John C Hillgardner

JOHN E HILLGARDNER
Name

CENTER FOR SCIENCE IN THE PUBLIC INTEREST
Organization

34-43 60th ST APT 3D
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Terri Ezratty

Name

Organization

135-10 14th Avenue

Address

College Point, NY 11356

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718-767-4704

Phone number

September 2006

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New York, NY 10013

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Sincerely,

Herbert Bravin (HERBERT BRAVIN)

Name

self

Organization

335 EAST 105th ST ~~NYC 10029~~ - APT #10F

Address

N.Y. NY 10029

City, State zip code

~~N~~

Email address

212 — 426 - 0260

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

Without nutrition information, it can be difficult to compare options and make informed decisions at restaurants. For example, a large chocolate shake at McDonald's has more calories than a meal of a hamburger, small fries, and a Coke. A tuna salad sandwich from a typical deli has 50 percent more calories and twice as much saturated fat as a roast beef sandwich with mustard. At Starbucks, ordering a venti Caffe Mocha with whole milk instead of a grande Caffe Latte with skim milk more than triples the calories and adds three-quarters of a day's worth of saturated fat.

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Louise Alpert

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Yvonne Olsen

Name

CSI Memphis

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Donnie Rotkin Donnie Rotkin
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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

DOREEN VANCANEGHEM
Name

CSPI
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September 2006

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New York, NY 10013

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Sincerely,

Arnold Walker Arnold Walker
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Organization

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City, State zip code

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Judith Tolkan

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Hector Ruggiero

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Organization Private Citizen (ex Hotelier)

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Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Mrs Sophie H. Minkoff
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Retired
Organization

32-20 89 St #6H
Address

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City, State zip code

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Phone number

September 2006

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Name John Naughton

Organization

Address 3034 Waterbury Ave

City, State zip code Bx NYC 10469

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Address

City, State zip code

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Sincerely,

JOSEPH M. SELLERS
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely, Lorraine Sirota

Lorraine Sirota, EdD, RD, CDN, FADA

Name

Brooklyn College - CUNY

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Steven Cook
Name

Organization

67 S. Oxford Street
Address

Brooklyn, NY 11217
City, State zip code

Email address

718 624 6524
Phone number

September 2006

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New York, NY 10013

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Sincerely,

Name Jaherda H. King

Organization NA

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City, State zip code Brooklyn NY 11234

Email address

Phone number 917-572-6949

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Patrice Donnell

Name Patrice Donnell

Organization

Address 186 Grand St. #4

City, State zip code NYC NY 10013

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Phone number

September 2006

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Sincerely,

Suzanne Farrell, RD, MS, CDN

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St. Vincents Medical Center of Richmond

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September 2006

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125 Worth Street, CN-31
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Sincerely,

Roseanne Schnoll PhD, RD, CDN
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Norma R. Allen

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

WILLIAM F SEEGRABER

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Organization

506 1ST ST

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Margaret Kelly, csj
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

CAROL TABASCO

Name CSPI

Organization 68-44 BURNS ST

Address FOREST HILLS NY 11375

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Gail Nishcoff Gail Nishcoff
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Earl Smith, MD. PhD.
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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Helen Weinstein

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MRS E Weinstein

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1419 E 35th St.

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BKLYN NY. 11234

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely, Barbara Baker

Name

Organization

Address 225 West 71st N.Y.C. N.Y. 10023

City, State zip code

Email address

Phone number 212.873.2510

September 2006

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125 Worth Street, CN-31
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Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

One contributor to Americans' poor diets and excessive caloric and trans fat intake is eating out. Americans eat out twice as much as in 1970 and both adults and children eat, on average, one-third of their calories from restaurants and other food-service establishments. Studies show that when Americans eat out, they consume more calories and saturated fat and fewer nutrients, such as calcium and fiber, than when they eat at home. For example, children eat almost twice as many calories when they eat a meal at a restaurant compared to a meal at home. Women who eat out more often consume almost 300 more calories each day than women who eat out less often.

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Harriet Ruschmeyer
Name

Organization

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Email address

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

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Name

Ø
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September 2006

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New York, NY 10013

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Sincerely,

Milton M. Berger M.D.
Name

Organization Physician - Psychiatrist

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September 2006

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New York, NY 10013

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Sincerely,

Glen L. Cashin

Name

Organization

Address

City, State zip code

Email address

Phone number

September 2006

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New York, NY 10013

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Sincerely,

Mark N Jacobson, DDS

Name

Midtown Dental Services

Organization

211 East 43rd St Suite 1304

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

(Sabina Wolf) Sabina Wolf

Name

Organization

Address 7 West 96th St. #17A

City, State zip code

Email address

Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Laura Henry
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September 2006

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New York, NY 10013

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Sincerely,

Neal Last

Name

(Neal Last)

Organization

2119 BAY AVENUE

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September 2006

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Lorraine Beale

Name

Organization

Address 617-57 Street

City, State zip code Brooklyn, New York 11220

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely, Sylvia B. Anker

Name Sylvia B. Anker

Organization Retired Bureau of Educ NYC

Address 1215 Ave M #1A

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

ALAN HYDE

Name

Organization

Address 761 GREENWICH ST

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Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Norma M Brown MD

Name

St Luke's - Roosevelt Hospital Cntr

Organization

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NBrown@chpnet.org

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Phone number

September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name

Organization

Address

City, State zip code

Email address

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September 2006

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Sincerely,

MARINA ANBARLIAN

Name N/A

Organization 400 EAST 56th St Apt 19-R

Address New York 10022

City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Antoinette Sciarelli
Name

Organization

9921 - 4th Ave
Address

Brooklyn, NY, 11209
City, State zip code

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Name SONIA AYALA

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Phone number 1-718-639-4727

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Dorothy Greynheim
Name

Organization

2743 Whitman Drive
Address

Bellmore, N.Y. 11234
City, State zip code

NONE
Email address

Phone number

September 2006

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125 Worth Street, CN-31
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I am writing to you as a resident of New York City regarding the proposed changes to the city's health code with regard to restaurant food. I urge you to require that restaurants that presently have nutrition information make it available on menus and menu boards so that customers can use that information at the point of decision. I also urge you to limit trans fat in restaurant foods to help reduce the intake of heart-damaging fat and reduce heart disease in New York City.

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Rivka Langer MS RD
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Anita Abraham-Inz

Name

Nutrition Consultant

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September 2006

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New York, NY 10013

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Sincerely,

Norman Wasserman

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September 2006

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New York, NY 10013

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Sincerely,

Barbara Trulling
Name

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Beulah Rudner Beulah Rudner

Name

Organization

Address

City, State zip code

Email address

Phone number

September 2006

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Sincerely,

Sharon Nicolo

Name

Organization

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City, State zip code

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

J Cass

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

Renee Scaggin Renee Scaggin
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Bronx, NY 10460
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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

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The proposed changes to the city health code would help reduce heart disease in New York City and give New Yorkers important new tools in their efforts to eat healthfully, protect their heart and arteries, and maintain their weight. I urge the New York City Board of Health to adopt these important changes to the health code this year.

Sincerely,

Name Gertrude Edyard

Organization Center for Science in the Public Interest

Address 2285 Ocean Ave 4E

City, State zip code Brooklyn, NY 11229

Email address —

Phone number —

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

Dear Members of the Board of Health:

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Sincerely,

Joanna Pappalo
Name

Organization

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely,

GILDA BRODSKY
Name

Organization

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September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

/Beatrice Levy

Name

Subscriber to Center for Science in Public Interest

Organization

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Email address —0—

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely, J. Lumpkin

Name Jill Lumpkin

Organization Tech designer

Address 97 Devoe St.

City, State zip code Brooklyn, NY

Email address jilllumpkin@yahoo.com

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Mary McClellan
Name

Organization

Address 831 Bushwick Ave
City, State zip code Brooklyn NY 11221
Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely, Nancy F. McKenzie PhD

Name Nancy F. McKenzie, PhD

Organization

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Phone number 718 623 3582

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely, Gloria Cancel

Gloria Cancel
Name

Organization 2727 Olesfon AVE
Address Bronx NY. 10468
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Email address ~~CANCEL~~ 646-633-3735
Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Linda F. Dietz
Name

Organization

40 East 83rd St
Address

New York NY 10028
City, State zip code

Email address

Phone number

September 2006

New York City Board of Health and Mental Hygiene
125 Worth Street, CN-31
New York, NY 10013

Re: Amend New York City's Health Code to Require Menu Labeling and Limit Trans Fat in Restaurants

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Sincerely,

Rose Tosco

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September 2006

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125 Worth Street, CN-31
New York, NY 10013

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Sincerely, Flavia Grimm

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September 2006

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New York, NY 10013

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Sincerely,

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September 2006

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Patricia H. Fells PATRICIA H. FELLS

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CHRISTINE LAMBECK

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September 2006

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Sincerely,

Dr. [illegible]

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ACC Supports Regulation of Trans Fats

By Roger S. Blumenthal, MD, FACC, M. Dominique Ashen, PhD, CRNP and Howard S. Weintraub, MD, FACC on behalf of the A.C.C. Prevention Committee

The proposal by New York City Department of Health and Mental Hygiene to restrict service of foods containing artificial trans fats in all New York City restaurants may prove to be an important step to the prevention of the leading cause of death in New York City and throughout the country – coronary heart disease (CHD). The American College of Cardiology (ACC) applauds this proposal as it supports measures to inform and advocate for healthy food choices.

CHD is the leading cause of death in the United States and claims more lives each year than the 4 leading causes of death combined. CHD is also the leading cause of death in those individuals with diabetes. There is clear scientific evidence for the association between the intake of trans fats and the risk of CHD through elevating LDL ("bad") and lowering HDL ("good") cholesterol. In fact we now believe that trans fats may be even more dangerous than saturated fats. Further, replacement of trans fats with heart healthy alternatives appears to reduce CHD events.

Many more people are eating out as evidenced by the daily food dollars spent and total calories consumed in restaurants. Americans appear to consume at least one third of their total calories from food not prepared in the home. As a result, there are more opportunities to make food choices in situations where food is not personally prepared with heart health in mind. In addition, more people are becoming concerned about the content of their foods as evidenced by the increased sales of food that contain "no trans fats".

Since replacement of trans fats with healthier alternatives, such as poly- and monounsaturated fats known to lower LDL cholesterol and raise HDL cholesterol, can be easily accomplished without negative effects on food taste or quality, we should provide food containing no or minimal trans fats to the public. At the same time, we can take a step toward the goal of preventing chronic diseases such as CHD through approaches that address personal choices.

There has also been increasing awareness on the rising epidemic of obesity in our country, as this too can contribute to increased risks from cardiovascular disease and diabetes. A suggestion has been made to encourage restaurants

that already offer nutritional information to make this important data more easily accessible to their patrons. Many people have said that they look for calorie content on the foods they purchase and that this may influence what they actually eat. While this may only apply to a small number of establishments we must take every step possible to encourage caloric restriction. For the many overweight patients we see each day in our offices cutting out as little as 100 calories a day can result in significant long term weight loss with dramatic benefits on their cardiovascular status.