

**SOCIO-ECONOMIC CONDITIONS
AND
TUBERCULOSIS PREVALENCE
NEW YORK CITY**

♦

**By
ANTHONY M. LOWELL**

♦

**NEW YORK TUBERCULOSIS
AND HEALTH ASSOCIATION
1956**



SOCIO-ECONOMIC CONDITIONS AND TUBERCULOSIS PREVALENCE

NEW YORK CITY

1949-1951

*

By

ANTHONY M. LOWELL

*

NEW YORK TUBERCULOSIS
AND HEALTH ASSOCIATION

1956

ACKNOWLEDGMENTS

The author wishes to express sincere thanks to:

Officials of the Bureau of Tuberculosis and the Bureau of Records and Statistics, Department of Health, City of New York, for their cordial assistance in making available the basic statistics on tuberculosis prevalence;

Staff members of the New York Tuberculosis and Health Association, Mr. Godias J. Drolet and Mrs. K.Z. Whipple for invaluable advice and suggestions, Mr. Thomas H. Darling and Mr. Philip Patchen for preparing the charts and graphs, Mrs. Lydia Kavalenko for compiling the thousands of statistical units and computing rates, Miss Jean MacGregor for her careful typing of text and tables, and Mrs. Claire Turtz for expert reproduction of the mimeographed report;

Dr. Herbert R. Edwards, Yale University, former Executive Director of the Association, for the original suggestion that this study be undertaken;

Miss Jane Hoey, Director, Social Research Division, National Tuberculosis Association, for arranging financial assistance, and Miss Regina Loewenstein, Associate, for consultation on technical problems;

Dr. J. Burns Amberson, Director, and Mr. Irving Mushlin, Associate Director, New York Tuberculosis and Health Association, for their constant support and encouragement.

July, 1956

A. M. Lowell

SOCIO-ECONOMIC CONDITIONS AND TUBERCULOSIS PREVALENCE

IN NEW YORK CITY, 1949-1951

Social and economic elements of daily environment are important determinants in health and welfare especially in our congested large cities. Differences in economic status, housing, sanitation, overcrowding, medical care, occupation, and other factors, are measurably associated with and related to the disease rates of a community. It is axiomatic that improvement of a community's environment must be the will of the people and it depends in great measure upon the degree of enlightenment of public opinion.

Over a half century ago Biggs 1/ wrote that -- "It may be said, within certain limitations, that the inhabitants of every city have it largely within their power to determine what the death-rate of their city shall be. The presence of much sickness and of a high death-rate in any urban population are largely due to the existence of unsanitary conditions in the occupations, habitations, food, and water supply of the inhabitants -- all factors which lie to a great extent within their control."

As the organized campaign against tuberculosis gained momentum in New York City both the public and private health and welfare agencies gave serious attention to the difficult problems connected with raising the standard of living and improving the environmental conditions of those who contracted tuberculosis. 2/

In speaking of "environment" something more than physical surroundings is implied. Krause 3/ gave the following definition thirty-five years ago: "..... The long and short of it is that environment comprises all and everything that enters into the experience of a human being; and that, as regards tuberculosis, any experience that may modify in any way the origin and development of infection is an environmental influence."

Frost 4/ stressed the weight of environment when he said: "It is probable that one of the most important factors in the decline of tuberculosis has been progressively increasing human resistance, due to the influence of selective mortality and to environmental improvements such as better nutrition and relief from physical stress, tending to raise what may be called non-specific resistance. Probably nothing has

1/Biggs, Hermann M.: Tuberculosis--Its Causation and Prevention, Appendix 6, A Handbook on the Prevention of Tuberculosis, The Charity Organization Society, New York City, 1903.

2/Drolet, G.J., Lowell, A.M.: A Half Century's Progress Against Tuberculosis in New York City, 1900-1950, New York Tuberculosis and Health Association, 1952.

3/Krause, Allen K.: Environmental Factors in Tuberculosis, Amer. Rev. Tuberc., Vol. IV, No. 9, Nov. 1920, page 713.

4/Frost, Wade H.: How Much Control of Tuberculosis? Amer. Journal of Public Health, Aug. 1937, Vol. 27, No. 8.

been more influential in bringing about the decline of tuberculosis than progressive improvement in the social order as a whole; and nothing, perhaps, is more essential to the further effective control of the disease than to hold up, and so far as possible to improve, the standards of living of the lower economic strata. Obviously, the tuberculosis control program cannot expand to include the whole scheme of social betterment; but it can, and I think it should be concerned with raising the standards of living of those groups who are in most imminent danger of tuberculosis, beginning with the families of the tuberculous, and extending thence as far as practicable."

Since tuberculosis is a disease that responds, in the long run, to changes in social factors, such as improvement in housing, bettering of income and other selected social conditions which bring about community-wide benefits, as is evident from the record, it becomes increasingly hard to contend that progressive steps in these matters be delayed until more is known as to the precise modus operandi. This does not preclude, of course, a systematic and intensive search, when time and money are available, into the origins and causes underlying the problem.

An opportunity was provided through a grant from the National Tuberculosis Association 1/ to gather for New York City tuberculosis prevalence data by health areas and to compile a few of the more common socioeconomic indices. Additional work to unravel details and relationships of various factors, in an attempt to explain the high or low prevalence of tuberculosis by neighborhoods in New York, could be undertaken but such an analysis for health areas was beyond the scope of the present study.

We have tried to bring to public attention only a small portion of the valuable published and unpublished records in the statistical archives of the New York City Department of Health, to which agency and its representatives, we express deep appreciation for the many courtesies extended to us in preparing the data on tuberculosis prevalence by health areas. It is hoped that this study may make some small addition to the pool of contemporary experience, stimulate the social conscience and public awareness to the need of remedies, and uphold the efforts of those in our community who daily must implement words with deeds.

* * *

1/Financial aid and assistance for this investigation was given by the National Tuberculosis Association.

A FEW CONSIDERATIONS

Inquiry into the relationship of tuberculosis and socio-economic conditions is a matter which does not lend itself to an easy or ready solution and the problem must be reexamined in many ways. The present investigation, based on the type of data available for many communities, is a demonstration of one such approach.^{1/} Similar studies in other communities would be of value not only for local program planning but might reveal different types of relationships of tuberculosis and socio-economic indices.

In the past inadequate or incomplete reporting of causes of illness, on a community-wide basis, required students of the social sciences to utilize mainly mortality statistics which were then considered to be more completely reported. On a limited scale studies were made of the prevalence of illness.

In 1916, Guilfooy and Wynne ^{2/} of the New York City Department of Health voiced the need for better health indices: "The time has come when the death rate can no longer be accepted as a standard by which to judge the healthfulness of a community or the efficiency of its health department. Rather has the amount of illness come to be the measure of community healthfulness and health department efficiency. Illness must be prevented not only by attacking disease and its immediate causes, but also by correcting the social and economic conditions that we have come to know play so important a part in the propagation of illness. No longer can the scope of health work be limited to the narrow confines of sanitation; on the contrary it must be extended to include within its activities, sociology and economics."

It is almost anachronistic, and an interesting commentary on our conservatism in respect to an obviously progressive measure, that as recently as 1950 Edwards and Drolet ^{3/} still had to point out that "The death rate from tuberculosis is a limited and inadequate index of the prevalence of the disease in the community. . . . The number of known, active cases is the proper basis for estimating required facilities. Hospital beds are needed for those stricken and not for the dead."

During recent years, and particularly in our urban centers, tuberculosis cases have been reported to health departments more fully and in many instances are classified in some detail by age, sex, race, place of residence, type of care, and so forth. This type of information provides a basis for useful analyses especially when details on the demographic characteristics of a population are at hand at the time of the decennial Federal Census. Attempts are also being made in the United States to develop other sources of morbidity data for purposes of planning programs in medical care and public health.^{4/}

^{1/}Sheps, Cecil G., Taylor, Eugene E.: Needed Research in Health and Medical Care, A Bio-social Approach, University of North Carolina Press, Chapel Hill, 1954.

^{2/}Guilfooy, William H., Wynne, Shirley W.: An Analysis of Mortality Returns of the Sanitary Areas of the Borough of Manhattan for the Year 1915, Department of Health, City of New York, Monograph Series, No. 15, August 1916.

^{3/}Edwards, Herbert R., Drolet, Godias J.: The Implications of Changing Morbidity and Mortality Rates from Tuberculosis, Amer. Rev. of Tuberc., Vol. 61, No. 1, Jan. 1950.

^{4/}Fraenkel, Marta, Erhardt, Carl L.: Morbidity in the Municipal Hospitals of the City of New York, Russell Sage Foundation, New York, 1955.

Socio-economic environment alone does not necessarily determine the degree of tuberculosis prevalence among those exposed to it. There exists, as is well recognized, a complex of interrelated causes that can obscure and often make difficult the interpretation of an apparent association between illness and selected socio-economic characteristics of a stated population.

However, a responsible public health official in his day-to-day activities must make practical decisions upon, and the best use of, the information he has readily at hand. It cannot be overlooked that most communities normally have access to only a few vital statistics and population indices, compiled more or less routinely, upon which to base decisions for action. Refinements made possible through costly investigations which require specialized personnel may be beyond the means of the local health budget.

* * *

EARLIER STUDIES

The association of tuberculosis and environment, social, economic and physical, has been recognized and to some degree recorded in New York City for almost a century. The various observations and investigations in the years prior to the registration of tuberculosis cases, started by Biggs in 1894 ^{1/}, were based mainly, as mentioned earlier, on mortality data for large units of population. At first the statistical units for which mortality statistics were compiled were either boroughs or wards, the existing political units, and in time data were analyzed by areas known as sanitary districts.

In those days, because of the very high tuberculosis death rates in certain parts of New York City, by observing the general environmental conditions prevailing therein (poverty, inadequate sanitation, slum conditions, substandard housing and malnutrition), an association with tuberculosis was inferred. Although deplored, tuberculosis was considered to be an inevitable scourge of urban life. Stephen Smith ^{2/}, Commissioner of the Metropolitan Board of Health (1868-70) and the Board of Health of New York (1870-75), in his classic description of health conditions at that time, observed that the "White Plague" or consumption was the common inheritance of the poor and rich alike.

Beginning with the first annual report (year 1866) of the Board of Health of the Metropolitan Sanitary District of the State of New York ^{3/}, tuberculosis ("phthisis", "pulmonary consumption") mortality in New York City was classified by wards and "sanitary divisions". Some consideration

^{1/}Adoption by Board of Health, December 13, 1893, and further elaborated, February 13, 1894, of plan prepared by Dr. Hermann M. Biggs giving the basis for a local program for the control of tuberculosis and establishing policies of free sputum examinations, compulsory reporting and registration of cases by public institutions (and request of reporting from private practitioners), official supervision of isolation, terminal disinfection, provision of hospital facilities and instructions to the public in regard to the care of the disease. Reporting of tuberculosis in 1897 required by Sanitary Code of all medical practitioners (in addition to 1894 requirement concerning institutions).

^{2/}Smith, Stephen: The City That Was, pub. F. Allaben, New York, 1911.

^{3/}Annual Report of the Metropolitan Board of Health, 1866 (New York, 1867).

was given to the geographical and social distribution of the population and attempts were made to explain the underlying reasons for the differences in mortality rates.

In 1894 the Census Office of the United States Department of the Interior published records for New York City, during the late 1880's, giving the health conditions by wards and sanitary districts. The report, prepared under the direction of Dr. John S. Billings 1/ of the U.S. Army, an expert special agent of the Census Office, was a detailed study of the population, general living conditions, and the vital statistics of different parts of New York, then including the Boroughs of Manhattan and the Bronx -- and of Brooklyn, which at that time was not yet incorporated into the Greater City of New York.

Billings commented on the physical environment and referred to the prevalence of high tuberculosis mortality rates in the crowded areas of New York. He noted that in the Second Ward of New York, in downtown Manhattan above Maiden Lane, the mortality rate from consumption was 776 per 100,000 population. The people in the area suffered the highest mortality rates from nearly all the common causes of death. As a contrast, in the upper section of the West Side of New York City, Ward 22, District K, located between West 68th and 77th Streets, the death rate for consumption was only 49 per 100,000 population, or one-sixteenth that in Ward 2, and the area was described as "a beautiful residence section containing handsome residences and apartment houses."

The Committee on the Prevention of Tuberculosis of the Charity Organization Society of the City of New York in its annual report 2/, reviewing the first year of activity, 1902-1903, included a chapter on "The Social Aspects of Tuberculosis" and the monograph by Ernest Poole, "The Plague in Its Stronghold--Tuberculosis in the New York Tenement". The evils of "the lung block" were portrayed dramatically.

During the first fifty years of the twentieth century, since the organization of the voluntary anti-tuberculosis movement, many other revealing reports and studies 3/ were prepared, by public and private agencies, on health conditions in New York City and special attention was given to tuberculosis. * * *

1/Billings, John S.: Vital Statistics of New York City and Brooklyn, Six Years ending May 31, 1890, Census Office, Department of the Interior, Washington, D.C. 1894.

2/A Handbook on the Prevention of Tuberculosis, first annual report of the Committee on the Prevention of Tuberculosis, the Charity Organization Society, New York City, 1903.

3/SELECTED REFERENCES (in addition to those mentioned elsewhere in this report)

- (a) Winslow, C.-E.A., Zimand, Savel: Health under the "E1", the Story of the Bellevue Yorkville Health Demonstration in Midtown N.Y., Harper & Bros., 1937.
- (b) Bellevue-Yorkville Health Demonstration Dist., N.Y.C., Statistical Reports, beginning 1926.
- (c) Charity Organization Society, Annual Reports 1900-1919.
- (d) Assn of TB Clinics of the City of N.Y., Annual Reports, 1910-1917.
- (e) Bulletins, N.Y. TB Assn, 1920-1926.
- (f) East Harlem Health Center Demonstration, A Report of the First Three Years' Work (under auspices of the American Red Cross, N.Y. County Chapter), 1925.
- (g) Committee on Neighborhood Health Development, Dept. of Health, City of N.Y., Statistical Reports, four editions, 1930, 1931, 1935, 1944.
- (h) Tuberculosis Reference Statistical Yearbook, for years 1931-1948, N.Y. TB & Health Assn, 1932-1949.
- (i) Drolet, G.J.: Tuberculosis-Year 1950, 1951, N.Y. TB and Health Assn, 1951, 1952.
- (j) Lowell, A.M.: Tuberculosis in N.Y. City, for years 1952-1954, New York Tuberculosis and Health Association, 1953-1955.

NEW YORK CITY -- CHARACTERISTICS

New York City has at present slightly over eight million residents. Because so large a population is concentrated in a comparatively small land area, a brief orientation is advisable to give the reader at least a minimum of background data as to the distribution of its people. In the last few years there have been material shifts in the migration of population and marked physical changes are altering the man-made topography of New York.1/

The City of New York covers 315.5 square miles, exclusive of inland waters, and it is divided into five boroughs which comprise the five political units or divisions. In addition, for administrative purposes so far as health matters are concerned, each borough is divided into health center districts with the exception of the Borough of Richmond which is considered as one health center district. There are thirty such districts in the city. For statistical purposes, a further subdivision of each health center district is made into health areas. A variety of data relating to vital statistics, population, and social conditions are available for these health areas.

According to the Federal Census, on April 1, 1950 there were 7,891,957 persons living in New York City; 6,889,760 were white, 727,981 were Negro, 246,309 Puerto Rican 2/ and 27,908 listed as being of other races. The Borough of Brooklyn had the largest number of residents, 2,738,175, Manhattan had 1,960,101, Queens 1,550,849, the Bronx 1,451,277, and Richmond 191,555.

Since 1950 several hundred thousand residents of Puerto Rico have come to New York. It should be mentioned that, although the nonwhite population and the Puerto Ricans tended at first to concentrate in certain neighborhoods, as has been the experience of newcomers in the past, they are beginning to be distributed generally throughout the city. Also there has been some migration of the city's population to nearby counties in upstate New York, Long Island and New Jersey.

In 1950 the native white residents comprised 5,332,235 of the total population and foreign-born white 1,784,206. The foreign-born nonwhite population amounted to 70,731 (included in "Negro" and/or "other races"). Although it is somewhat difficult to ascertain with any degree of precision the ethnic stock from which these many peoples have derived, it can be said that most of the major races of the world are represented. The leading nationality groups among the foreign-born white population, by country of birth, were: Italy (344,115), U.S.S.R. (308,306) and Ukraine (6,297), Germany (185,467), Poland (179,878), Fire (141,723), Austria (124,256), United Kingdom (England and Wales 53,614, Scotland 26,405, Northern Ireland 3,085), Hungary (51,968), Canada (35,860), Asia (31,977), Czechoslovakia (30,130), Greece (29,815), Rumania (29,409), Norway (25,552), Sweden (20,424) and the remainder from other countries, Mexico (3,234), other foreign countries in America (38,295).

1/The New York Times: Our Changing City, 1955.

2/Puerto Rican as used here denotes persons who were born in Puerto Rico, or whose parents were born there.

There were more females than males in New York City in 1950 and this proportion of females over males prevailed for both the white and the nonwhite population.

Although the median family income in New York, as reported for 1949 at the time of 1950 Federal Census, amounted to \$3,526, there were 98,905 families with incomes of more than \$10,000 and 562,485 with incomes of less than \$2,500. The median income for unrelated individuals was \$1,482.

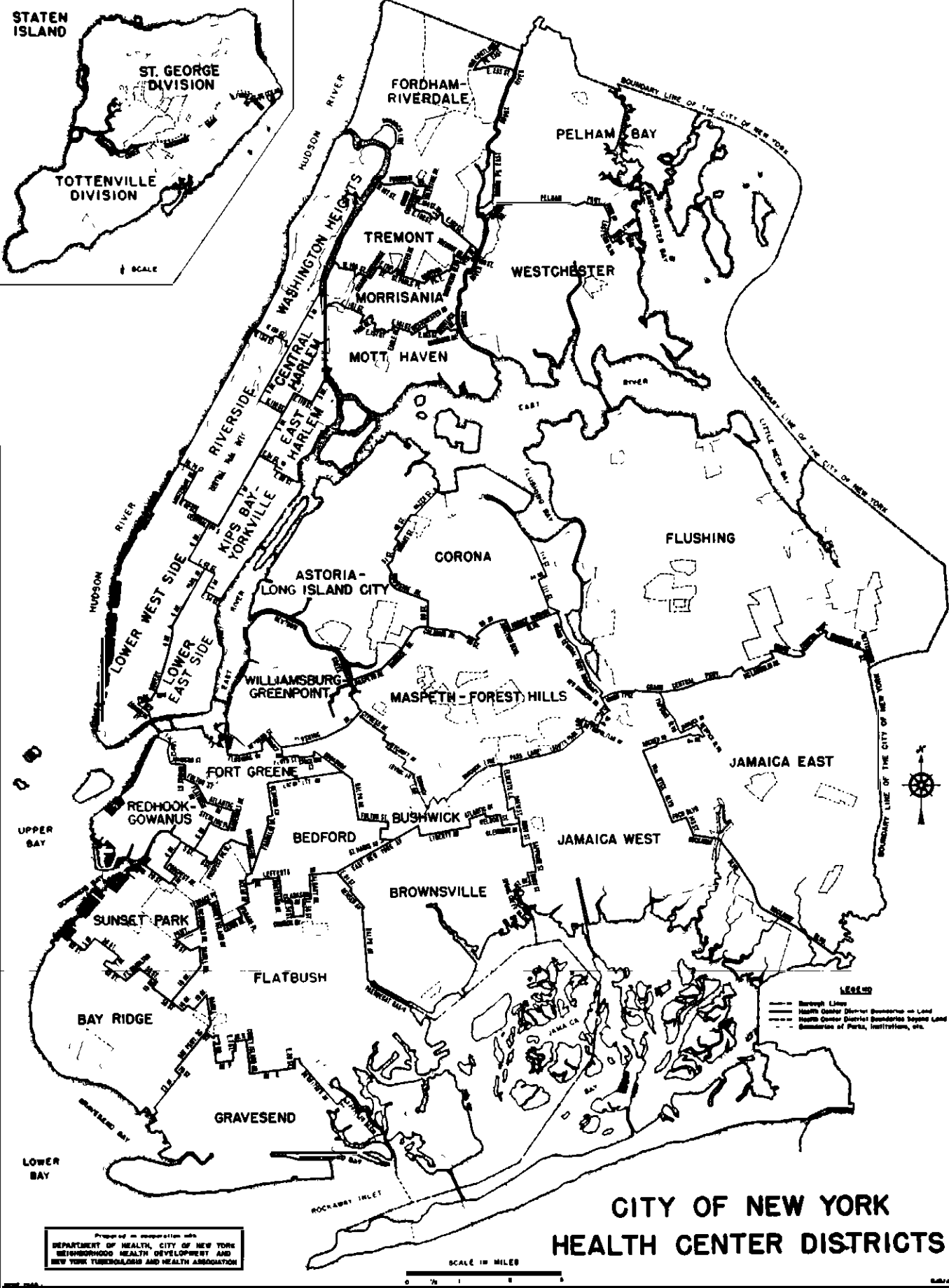
Annually the death rate (residents) for all causes averaged 9.5 per 1,000 population (white = 9.5, Nonwhite = 9.1) for the three-year period 1949-1951. The birth rate was 18.9 per 1,000 population (White = 17.9, Nonwhite = 28.9), infant mortality rate was 24.4 per 1,000 live births (White = 22.0, Nonwhite = 38.1), maternal mortality rate was 0.76 per 1,000 live births (White = 0.58, Nonwhite = 1.77) and the tuberculosis death rate was 27 per 100,000 population (White = 20, Nonwhite = 91). On an average, there were 7,956 new active cases of tuberculosis reported and 29,150 total known cases during the year.

Daily movement of the population is difficult to measure. However, the Department of City Planning reports 1/ that 46 percent of all wage and salary workers in the city work in a small area of about 500 city blocks in midtown and downtown Manhattan. Each working day nearly 400,000 commuters come to the central part of the city and additional thousands are here as visitors.

New York City has tuberculosis rates that exceed those for the rest of New York State and because of its size the City contributes more new cases and deaths each year than any other American community. Parkhurst 2/, reviewing in 1933 the mortality from tuberculosis in urban and rural New York State, concluded that: "The causative factors in the higher urban mortality from tuberculosis are very likely environmental, since the excess over rural mortality remains when correction is made for the unlike sex, age, color, and native composition of the population.

* * *

1/Bulletin, Department of City Planning, City of New York, December 1955.
2/Parkhurst, Elizabeth: Resident mortality from tuberculosis in urban and rural New York according to age, sex, color, and general nativity, Amer. Jl. of Public Health, Vol. XXIII, No. 9, pp. 901-909, Sept. 1933.



STATEN ISLAND

ST. GEORGE DIVISION

TOTTENVILLE DIVISION

SCALE

FORDHAM RIVERDALE

PELHAM BAY

TREMONT

WESTCHESTER

MORRISANIA

MOTT HAVEN

LOWER WEST SIDE

LOWER EAST SIDE

KIPS BAY

YORKVILLE

ASTORIA - LONG ISLAND CITY

CORONA

FLUSHING

WILLIAMSBURG GREENPOINT

MASPETH - FOREST HILLS

FORT GREENE

JAMAICA EAST

REDHOOK-GOWANUS

BEDFORD

BUSHWICK

JAMAICA WEST

SUNSET PARK

BROWNSVILLE

FLATBUSH

BAY RIDGE

GRAVESEND

**CITY OF NEW YORK
HEALTH CENTER DISTRICTS**

Prepared in cooperation with
DEPARTMENT OF HEALTH, CITY OF NEW YORK
NEIGHBORHOOD HEALTH DEVELOPMENT AND
NEW YORK TUBERCULOSIS AND HEALTH ASSOCIATION

SCALE IN MILES



TUBERCULOSIS RATES, POPULATION BY RACE, BIRTH AND DEATH RATES
Health Center Districts, New York City

Health Center DISTRICT	Tuberculosis, 1949-1951 Annual Average†					Population Percentage Distribution by Race 1950				Birth Rate‡ Live Births 1949-51			Death Rate‡ All Causes 1949-51		
	Total Prevalence Rate	New Case Rate	Death Rate			Wh.	Neg-ro	P. R.	Oth-er	Wh.	Non-Wh.	To-tal	Wh.	Non-Wh.	To-tal
			Wh.	Non-Wh.	To-tal										
Gen. Harlem.	1255	389	128	118	119	3.9	92.8	3.1	0.2	31.7	25.7	26.0	18.6	10.8	11.3
E. Harlem ..	753	226	34	82	42	58.8	13.1	27.6	0.5	22.1	30.9	23.6	9.2	8.6	9.1
Kips Bay-Y.	353	84	25	35	25	98.2	0.8	0.7	0.3	11.4	14.7	11.4	11.5	11.1	11.5
Lower E.S..	865	272	58	201	64	90.4	2.0	5.5	2.0	22.4	42.6	23.2	12.2	10.4	12.1
Lower W.S..	736	230	54	210	61	90.7	2.5	5.0	1.8	14.7	29.1	15.3	12.2	13.8	12.2
Riverside .	449	144	23	91	34	76.7	14.8	7.4	1.0	13.5	25.6	15.4	11.5	9.1	11.1
Wash. Hgts..	404	113	15	62	27	71.3	24.2	4.1	0.4	14.4	20.3	15.9	10.3	8.1	9.8
MANHATTAN:	665	202	37	106	51	73.0	18.9	7.1	1.0	16.3	25.7	18.3	11.4	10.0	11.1
Ford 'm-Riv.	206	44	13	26	13	99.2	0.4	0.3	0.1	15.2	24.5	15.2	9.5	9.2	9.5
Morrisania.	411	107	16	73	29	70.7	22.4	6.7	0.2	16.3	28.8	19.2	9.9	7.3	9.3
Mott Haven.	480	125	29	60	32	77.0	7.0	15.8	0.2	19.2	31.3	20.2	9.0	7.3	8.9
Pelham Bay.	185	40	9	30	10	97.4	2.2	0.3	0.1	16.4	22.7	16.5	7.7	10.0	7.7
Tremont ...	215	52	12	38	13	96.5	2.2	1.2	0.1	14.5	39.3	15.1	9.4	9.1	9.4
Westchester	189	40	9	34	9	98.7	0.7	0.5	0.1	17.3	75.4	17.8	7.6	9.5	7.7
BRONX:	288	70	15	65	18	89.1	6.5	4.3	0.1	16.4	30.7	17.3	9.0	7.6	8.9
Bay Ridge .	198	38	12	104	12	99.5	0.2	0.2	0.1	18.7	29.2	18.7	8.2	11.1	8.2
Bedford ...	389	128	19	73	40	59.6	39.9	0.4	0.1	15.9	31.1	22.0	11.0	8.0	9.8
Brownsville	233	56	10	103	16	93.0	6.4	0.4	0.1	18.6	40.3	20.1	9.3	8.2	9.2
Bushwick ..	302	76	20	72	21	94.8	3.2	1.9	0.1	18.9	37.1	19.5	10.3	8.4	10.2
Flatbush ..	161	33	9	63	10	99.2	0.5	0.2	0.1	17.5	28.7	17.5	8.9	12.3	8.9
Ft. Greene .	441	138	25	94	38	78.1	17.8	3.7	0.4	20.6	36.1	23.5	10.5	9.1	10.2
Gravesend .	132	31	7	162	8	98.9	0.8	0.2	0.1	19.3	34.9	19.4	7.8	12.2	7.8
Red Hook-G.	494	139	37	108	40	90.3	3.2	6.0	0.5	21.2	38.1	22.0	10.5	8.9	10.5
Sunset Fk..	302	69	21	51	21	98.8	0.2	0.9	0.1	18.2	28.2	18.2	9.2	11.3	9.2
Wms.-Greenpt	356	89	27	149	31	92.0	2.7	5.1	0.2	20.1	41.8	20.8	9.4	9.2	9.4
BROOKLYN:	278	73	17	84	22	90.8	7.5	1.5	0.2	18.7	33.7	19.9	9.3	8.4	9.2
Astoria, LIC	279	61	18	47	18	98.8	0.7	0.4	0.1	18.7	51.2	18.9	8.0	8.4	8.0
Corona	277	63	15	60	17	94.0	5.4	0.4	0.1	19.7	33.2	20.4	8.4	7.6	8.3
Flushing ..	209	46	11	83	12	98.1	1.4	0.2	0.3	22.5	24.6	22.5	7.3	10.5	7.4
Jamaica E..	274	66	13	45	17	88.1	11.4	0.4	0.1	17.4	28.6	18.7	8.5	8.0	8.5
Jamaica W..	246	56	16	126	18	98.3	1.4	0.2	0.1	18.7	37.2	18.9	9.8	9.7	9.8
Maspeth-F.H.	236	54	17	115	17	99.5	0.2	0.2	0.1	16.9	31.4	16.9	8.5	3.8	8.5
QUEENS:	252	57	15	59	16	96.2	3.3	0.3	0.1	19.0	30.8	19.4	8.4	8.2	8.4
RICHMOND:	222	56	20	53	21	96.7	2.8	0.4	0.1	20.6	24.3	20.8	9.9	9.1	9.8
NEW YORK CITY	369	101	20	91	27	87.3	9.2	3.1	0.4	17.9	28.9	18.9	9.5	9.1	9.5

†Per 100,000 population. ‡Per 1,000 population. Birth and death rates annual average 1949-1951.

Based on reports of Department of Health, City of New York and U.S. Bureau of the Census. Compiled by Statistical Division, New York Tuberculosis and Health Association.

SOURCES OF DATA

New York City today is the largest urban community in the United States. It is, in a sense, a social laboratory where within certain limits it is possible to select and study areas with different levels of tuberculosis prevalence and environmental conditions present therein. The city is divided into statistical units known as health areas 1/ for which basic statistics on population, morbidity and mortality have been collected systematically for over two decades.2/ The health areas created prior to the 1930 Census were to form population units of about 25,000 persons. Health areas are aggregations of contiguous census tracts and therefore census tract data of the Federal Census can be combined to form the larger health areas. In 1950 there were 2,463 census tracts in 352 health areas or on an average seven census tracts per health area.

The Department of Health of the City of New York publishes yearly 3/ for each health area the number of tuberculosis deaths (white, Nonwhite) and new tuberculosis cases reported as well as similar data for other causes of death and selected reportable communicable diseases. It has in addition unpublished details on new cases of tuberculosis reported during the year and cases on the Tuberculosis Register as of December 31st of each year.

Demographic data on the characteristics of population (race, age, sex, family income, etc.) by health areas are based on reports compiled by the Welfare and Health Council of the City of New York 4/ and the U.S. Bureau of the Census.5/

Housing statistics were abstracted from the reports on housing of the U.S. Bureau of the Census.6/

Juvenile delinquency rates shown are those published by the Youth Board of the City of New York.7/

1/1950 revision of health area map, copyrighted 1951, New York Tuberculosis and Health Association, Inc. (Health areas: 1950 = 352, 1940 = 348).

2/Organization of Local Health Area Statistics in New York City, Drolet, Godias J., Guilfooy, William E., Amer.Jl. Pub. Health, XX:4 (Apr.) 1930.

3/Vital Statistics by Health Areas and Health Center Districts, City of New York (for each year since 1929), Dept. of Health, City of New York.

4/Characteristics of the Population by Health Areas, New York City: 1950, Part I and Part II (Manhattan, Bronx, Brooklyn, Queens, Richmond), Research Bureau, Welfare and Health Council of New York City, 1953. Population of Puerto Rican Birth or Parentage, New York City: 1950, Data for Boroughs, Health Areas and Census Tracts, Research Bureau, Welfare and Health Council of New York City, 1952.

5/U.S. Bureau of the Census. U.S. Census of Population: 1950, Vol. III, Census Tract Statistics, Chapter 37 (New York City), U.S. Government Printing Office, Washington, D.C., 1952.

6/U.S. Bureau of the Census. U.S. Census of Housing: 1950, Vol. V, Block Statistics, Parts 126-130 (New York City), U.S. Government Printing Office, Washington, D.C., 1952.

7/Juvenile Delinquency Rates: 1953, New York City, Research Department, New York City Youth Board, 1954. (Juvenile Delinquency Rates for 1954 by Health Areas and Age were published in March 1955).

Limited use was made of unpublished data on density of population by health areas provided by courtesy of the City Planning Commission of the City of New York.

Information on Public Assistance was abstracted from reports of the Department of Welfare of the City of New York. The data were available only on a Welfare District basis.^{1/}

The official Health Area base maps (1940 and 1950 revisions) were originally prepared by the Statistical Division of the New York Tuberculosis and Health Association in cooperation with the Department of Health, City of New York, Welfare and Health Council of New York City, and the New York Metropolitan Chapter, American Statistical Association.

* * *

INDICES: TUBERCULOSIS, SOCIO-ECONOMIC

The more significant index used in this study is the total annual TUBERCULOSIS PREVALENCE RATE -- in contradistinction to the commonly used new case rate.

The prevalence rate, for the three-year period 1949-1951, here represents the yearly average for the three years 1949, 1950 and 1951 of the known tuberculosis cases, namely active cases already known on the first day of the year, the new cases reported during the year, plus the smaller number of former cases resumed -- exclusive therefore of the arrested or inactive cases. The rate is expressed as the number of active cases known during the year per 100,000 population.

In interpreting the data and correlations presented the reader should constantly bear in mind the utilization of this total tuberculosis "prevalence" during the year as defined above. It differs from "incidence" which is the rate at which new cases of a disease develop in a given number of the population over a specified period of time, usually a year. Known prevalence on a specific day of the year is still another index limited to a particular day.

MEDIAN FAMILY INCOME, as of 1949, is the combined incomes of all members of each family as defined in the 1950 Federal Census and does not include unrelated individuals whose income is given separately. The "median" is the value which divides the distribution into two equal parts, half the families falling below the value and half exceeding it. In the tables "individual" median income refers to unrelated individuals.

HOUSING. The important aspect selected here refers to the percentage of "poor" housing or dwelling units in dilapidated condition or with inadequate plumbing facilities. Data, expressed as a percent, on condition of a dwelling unit are shown in combination with data for selected plumbing facilities and, therefore, limited to units for which both condition of dwelling units and plumbing facilities were reported. Plumbing facilities include water supply, toilet and bathing facilities. Dwelling units with private toilet and bath, and only cold water were not included. (See addenda for detailed definition.)

^{1/}Monthly Statistical Reports, Years 1949-1954, Dept. of Welfare, City of N.Y.

CROWDING. Dwelling units with 1.51 or more persons per room were used as a measure of overcrowding. This was expressed as the percentage of dwelling units reporting 1.51 or more persons per room.

UNEMPLOYMENT. Percentage of civilians unemployed as reported in the 1950 Federal Census.

JUVENILE DELINQUENCY RATES (1953) are based on an analysis of 80,000 records, over a two-year period, by the New York City Youth Board and are expressed as a ratio per 1,000 youths in the age group 5-20 years.

- - - - -

For some of the above indices it was necessary to abstract details for 2,463 census tracts (1950 Federal Census) and to compile these units for 348 health areas (1940 health area map), thirty health center districts and five boroughs. The 1950 revision of the health area map has a total of 352 areas.

In order to utilize the information provided through the April 1, 1950 Federal Census, when enumeration of the population gave details not available for intercensal years, the main indices were centered around the three-year period 1949-1951. The 1940 revision of the health area map served as a base since vital statistics (New York City) according to the 1950 health area revision were first published for the year 1952.

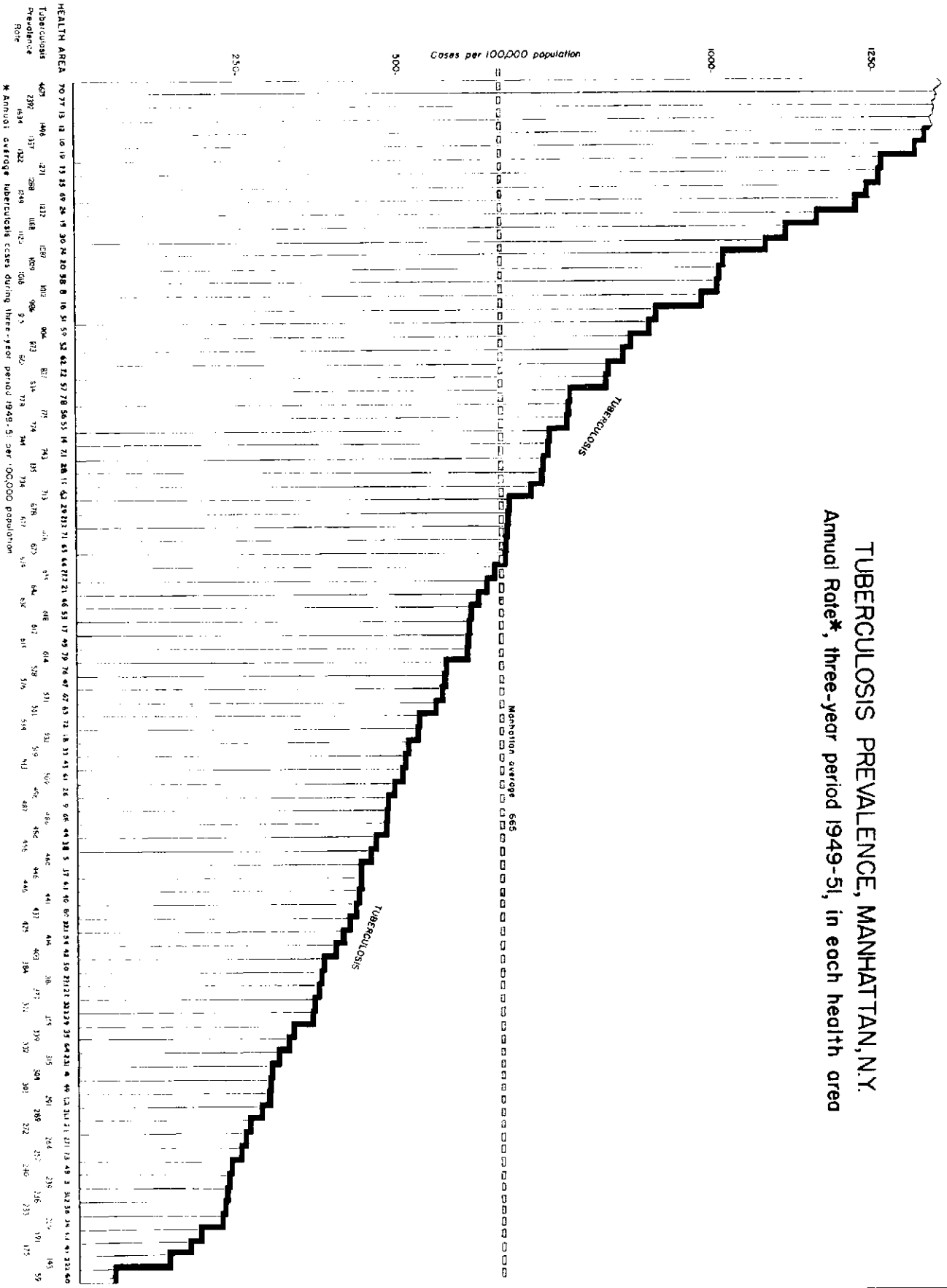
Although this study concerns itself primarily with tuberculosis and its association with housing and income a few other vital statistics such as juvenile delinquency rates, birth rates, general death rates, race, etc., were included in the tabulations for those interested in background data for local planning in various parts of the city.

Since 1951 there has been some redevelopment in several neighborhoods with consequent improvement in housing, etc. These recent changes should be taken into account when appraising the present status of any given health area which may be of current interest. It is probable that today (1956) the level of the indices differs from the 1949-51 period. However, it is reasonable to assume that the interrelationship of these indices has remained substantially the same.

* * *

Fig. 2

TUBERCULOSIS PREVALENCE, MANHATTAN, N.Y. Annual Rate*, three-year period 1949-51, in each health area



Based on reports of Bureau of Records and Statistics,
Department of Health, City of New York

Department of Health, City of New York
Bureau of Records and Statistics
100 South Street, New York 5, N.Y.

Prepared by Statistical Division
New York Tuberculosis and Health Association

TUBERCULOSIS PREVALENCE IN HEALTH AREAS WITH HIGH AND LOW RATES

The summary table on page 13 presents the range of indices in ten health areas with the highest and ten health areas with the lowest tuberculosis prevalence rates in each borough and the City. The determining item for inclusion of the health areas was the tuberculosis prevalence rate. Those ten health areas at the top and bottom of the list were studied, for which all indices were available, and the indices shown are the low and high within each group of ten areas.

First, in New York City, tuberculosis rates in ten health areas with highest tuberculosis prevalence rates, located in the Borough of Manhattan, ranged from 1087 to 2392 per 100,000 population and the family income from \$1,778 to \$2,637. Dwelling units reported as dilapidated or with inadequate plumbing rose from 19.1 percent in one health area to 57.5 percent in another. The index of crowding, that is, dwelling units having 1.51 or more persons per room, rose from 5.8 percent to 17.5 percent. Unemployed civilians reached 9.3 percent to 16.7 percent in these areas, with an average of 11.48 percent for the ten areas combined. Juvenile delinquency ratios were 30.3 to 84.0 per 1,000 youths (5-20 years) and the white population range was 0.3 percent to 92.1 percent.

At the other end of the scale, in ten health areas with the lowest tuberculosis prevalence rates, located in the Borough of Brooklyn, the tuberculosis rates ranged from 59 to 113 per 100,000 population. It will be noted that the range of family income was substantially higher (\$3,701-\$4,798) than that found in the ten health areas with the high tuberculosis rates. For "poor" housing, as expressed by dilapidation and inadequate plumbing, the percentages (0.8%-2.4%) were substantially lower than the average for the City. The index of crowding ranged in nine of the areas from 2.4 to 4.2 percent. The tenth health area (91.20), located in the Sheepshead Bay District, had an index of 15.7 percent. The unemployment percentages, a maximum of 5.9 and minimum of 3.8, or an average of 5.03 percent for the ten areas, were lower than the City average. The juvenile delinquency rates in these areas were relatively low (6.5-15.1), and white residents made up 99 percent of the total population.

The age distribution in the above two groups of ten health areas shows some small differences; in the high tuberculosis rate group, 26 percent of the population was under 25 years of age and 9 percent 60 years or older, and in the low rate group the percentages were 29 and 11 for the corresponding age groups.

MAJOR OCCUPATION GROUPS OF THE POPULATION
In the Ten Health Areas with High and Low TB Rates

Occupation Group*	Percentage of Population by Occupation	
	High TB Areas †	Low TB Areas ‡
Professional, technical, Managers, officials	7.6%	32.1%
Clerical and sales workers	11.9%	32.0%
Craftsmen, foremen, operatives, kindred workers..	37.9%	28.6%
Private household workers, service workers, laborers ...	42.6%	7.3%

*As classified in 1950 Federal Census. Health Areas: †Manhattan (10,12,13, 15,19,24,25,30,74,77). ‡Brooklyn (71,2,72,2,73,2,74,2,83,85,1,85,22,87,1 87,22,91,2).

RANGE OF INDICES IN TEN HEALTH AREAS
WITH HIGHEST OR LOWEST TUBERCULOSIS PREVALENCE RATES
NEW YORK CITY

Borough	Tuberculosis Prevalence Rate†	Family Income 1949 (Median)	Dwelling Units Percent Dilep- tated or Inade- quate Plumbing 1950‡	1.51 or More Persons per Room Percent of Dwell. Units 1950	Unemployed (Civilian) Percent 1950	Population Percent White† 1950	Juvenile Delinquency Rate 1953*
Manhattan	High TB rate Borough average .. Low TB rate 1087-2392 (665) 143-264	\$1778-\$2637 (\$3073) \$2545-\$10000+	19.1% (18.5%) 0.4% 57.5% 18.3%	5.8% (6.7%) 1.7% 17.5% 11.0%	9.3% (8.4%) 2.5% 16.7% 10.6%	0.3% (73.0%) 77.6% 92.1% 99.5%	30.3-84.0 (35.4) 3.6-39.7
Bronx	High TB rate Borough average .. Low TB rate 497-827 (288) 117-166	\$2335-\$3368 (\$3612) \$3676-\$5247	1.7% (4.7%) 0.5% 4.6% 3.9%	4.9% (4.9%) 2.5% 8.2% 6.6%	7.6% (7.1%) 2.3% 12.6% 7.9%	7.5% (89.1%) 92.9% 93.7% 99.8%	28.9-80.3 (25.2) 6.1-25.9
Brooklyn	High TB rate Borough average .. Low TB rate 539-1295 (278) 59-113	\$2338-\$3700 (\$3447) \$3701-\$4798	10.6% (8.4%) 0.8% 49.9% 2.4%	6.0% (4.4%) 2.4% 14.6% 15.7%	6.2% (7.1%) 3.8% 16.1% 5.9%	11.5% (90.8%) 98.8% 88.5% 99.7%	15.5-64.3 (20.9) 6.5-15.1
Queens	High TB rate Borough average .. Low TB rate 332-547 (252) 127-187	\$2951-\$3955 (\$4121) \$3422-\$5999	1.8% (4.7%) 0.8% 13.7% 10.7%	0.7% (2.4%) 0.3% 5.1% 4.4%	3.4% (4.3%) 1.7% 8.9% 5.7%	47.8% (96.2%) 96.6% 99.8% 99.7%	8.6-44.3 (16.3) 7.4-31.1
Richmond	High TB rate Borough average .. Low TB rate 376 (222) 39	\$4211 (\$3845) \$3447	18.0% (9.2%) 3.1%	9.5% (2.7%) 0.9%	9.6% (7.3%) 5.0%	99.6% (96.7%) 94.2%	37.4 (20.1) 5.7
New York City	High TB rate City average Low TB rate 1087-2392 (369) 59-113	\$1778-\$2637 (\$3526) \$3701-\$4798	19.1% (9.6%) 0.8% 57.5% 2.4%	5.8% (4.6%) 2.4% 17.5% 15.7%	9.3% (6.9%) 3.8% 16.7% 5.9%	0.3% (87.3%) 98.8% 92.1% 99.7%	30.3-84.0 (23.6) 6.5-15.1

† Annual average tuberculosis cases during three-year period 1949-51 per 100,000 population. #Percentage of dwelling units reporting = dilepidated or no running water; or no private bath, with running water, not dilepidated. *Per 1,000 youths in age group 5-20 years. †Inclusive of white Puerto Ricans. #Range for 9 areas = 2.4% - 4.2%.

A similar comparison of health areas with high and low tuberculosis prevalence rates within each borough brought out similar interrelationships. Health areas with high tuberculosis prevalence rates generally had lower family incomes, a higher percentage of dwelling units in a dilapidated condition, proportionately more crowding, and higher percentage of persons who were unemployed than was found in health areas with the low tuberculosis rates. As to population according to race, a greater number of health areas with high tuberculosis prevalence rates had proportionately a higher percentage of Nonwhite population than was the case in areas with low tuberculosis prevalence. Nevertheless, even in the high tuberculosis health areas there was some variation in this respect, for example, in Manhattan among the ten high tuberculosis prevalence rate areas there was one area with 0.3 percent white population and at the other extreme one with 92.1 percent. It was not possible in the present investigation to study separately the white and Nonwhite tuberculosis prevalence rates and socio-economic status by race and health areas.

* * *

TUBERCULOSIS PREVALENCE BY BOROUGHS

Inspection of the tuberculosis rates in the five boroughs, for the period 1949-1951, brings out that within each borough there are health areas with relatively high prevalence rates as compared to the city average. The tuberculosis total known prevalence rate for the City is 369 per 100,000 population. The Borough of Manhattan leads with a rate of 665, not quite twice the City average, for the Bronx the rate is 288, Brooklyn 278, Queens 252, and Richmond 222. The starting level of tuberculosis prevalence rates in each of the boroughs is also different. In Manhattan we find sixteen health areas with rates over 1000, the highest rates in the City. In Brooklyn, the highest rate of 1295 is found in Health Area 10, the Bronx 827 in Health Area 35, Queens 547 in Health Area 34, and in Richmond a rate of 376 in Health Area 6. For location of health areas see maps in addenda.

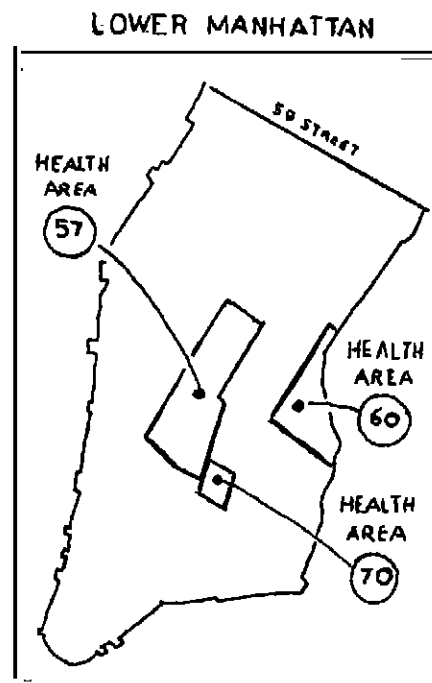
Even though health areas are relatively small in acreage and population 1/, as compared to health center districts and boroughs, and are useful statistical units for general purposes, there are a few areas where a more detailed examination is necessary in order to clarify what appear to be inconsistencies.

Pertaining to tuberculosis prevalence, for example, a special condition prevails in Health Area 60 2/ on the lower east side of Manhattan. The area includes two large housing developments 3/, Stuyvesant Town and Cooper Village. Located in the northern part of this health area is a segment occupied by the New York University-Bellevue Medical Center as well as a few blocks with older type houses. At the time of 1950 Federal Census 98.5 percent of the population was listed as white. The median family income was reported at \$5,722 whereas the median income for unrelated individuals was one of the lowest in the city, or \$492. Because of the comparatively new housing developments, mentioned above, only 0.2 percent of the dwelling units in the whole area were listed as dilapidated or with inadequate plumbing. The juvenile delinquency rate in 1953 was 4.8, the second

1/Average population for 352 health areas in 1950 was 22,420, acreage 573.
2/Located between First Ave. and East River, and East 34th St. and 14th St.
3/Peter Cooper Village, 2495 units, Stuyvesant Town, 8755 units (Metropolitan Life Insurance Company, 1947-1949).

lowest of any health area in Manhattan. Therefore, the high tuberculosis prevalence rate of 790 annual average for the three-year period 1949-1951 seemed to contradict the general experience in other high socio-economic level areas. Investigation of details, in so far as they were available, brought out that the majority of the tuberculosis cases were "residents" of the upper part of the area where special chest X-ray surveys of homeless persons had been conducted during the last few years.

For the three-year period 1949-1951, 216 new cases of tuberculosis were reported for Health Area 60 and of this total only 18 were in the part occupied by the housing developments. Of the 50 new cases with active tuberculosis found in the whole area in 1954, Stuyvesant Town contributed five and Cooper Village added one. Of the 166 cases on the tuberculosis register as of December 31, 1950, one person resided in Peter Cooper Village and another in Stuyvesant Town. The remaining 164 cases were assigned to the rest of the district. In 1951, of the 148 cases on the register, four and nine respectively were found in the above mentioned housing developments whereas the remaining portion of the health area accounted for 135 of the cases. It was quite obvious that some adjustment would have to be made in order to reflect the true tuberculosis prevalence rate exclusive of the area covered by the Bellevue Hospital neighborhood where many persons with no permanent home address were assigned. Taking these facts into consideration an adjustment was made and the tuberculosis prevalence rate for Health Area 60, exclusive of the Bellevue Hospital sector, was therefore estimated to be around 59 per 100,000.



Health Area 57 1/ in Manhattan is another instance where it would appear that the high tuberculosis prevalence rate of 834 per 100,000 population was associated with a high family income of \$4,791 and an income of \$2,457 for unrelated persons. For the area as a whole the percentage of dwelling units reported as dilapidated or with inadequate plumbing amounted to 15.1 percent as compared with 18.5 for the Borough of Manhattan. In the southeast of Health Area 57 we find a few lodging houses or hotels where the so-called "homeless" men are housed. X-ray surveys conducted by the Department of Health during recent years have uncovered a substantial number of "unattached" men with active tuberculosis who were added to the new cases assigned to the district. In this instance it was not possible to make an adjustment in the tuberculosis rates since sufficient details were not available.

Health Area 70,2/ adjoining the lower right corner of Health Area 57, had the highest tuberculosis rates in the City, 93 percent of both the known cases and the new cases reported during the three years 1949-1951 were in the

1/ Located between 6th Avenue (Ave. of the Americas) and 4th Avenue (Park Ave.); and 28th Street and Houston Street.

2/ Located between Bowery and Allen Street; and 3rd Street and Irvington Street (1940 Health Area map).

moderately advanced or far advanced stages of tuberculosis. In 1950, the population of this health area was 10,461; 6,949 of the total were men. The over-all median family income was given as \$1,302. Interestingly enough, of the group for whom "family status" was given (6,105), it was indicated that there were 4,185 unrelated individuals and 1,920 families. An analysis of the men, according to age, brought out that 24 percent in this area were sixty years or over as compared with 14 percent for the Borough of Manhattan. Too, of the men who reported marital status, 59.5 percent stated that they were either single, widowed or divorced as compared with 39.7 percent for the Borough of Manhattan. Since nowadays tuberculosis is concentrating itself more among the men, particularly those in the older age groups, an interpretation of high prevalence rates in parts of the city, such as the "Bowery", must take this factor into consideration and specific rates by age and sex computed.

Yerushalmy and Silverman 1/ called attention to the problem, especially in large cities, when they noted that "the tuberculosis mortality rate among males in practically all age groups shows a consistent relationship to size of community. The rate in large cities is considerably higher than in the intermediate-sized cities and the rate in the latter is in turn higher than that of the rural areas. The differences in rates are more pronounced for Nonwhites than for whites."

* * *

HOUSING AND TUBERCULOSIS

New York City, since the Second World War, has undertaken on a broader scale than formerly the Herculean task of providing for its citizens more good and adequate housing. Obviously in so large a community this is no easy task that can be completed in a short time. The Mayor's Committee for Better Housing 2/ estimated that even if the program for public housing construction, which is now proceeding at a rate of 8,000 dwelling units per year, were to be increased to 11,000, and if all such new housing were made available to the occupants now in the old-law tenements, it would take at least 38 years or until about the year 1990 to eliminate the existing tenements. About 1,500,000 people are said to live in 53,000 of these buildings constructed before 1901. 3/

Stebbins 4/, Director of the School of Hygiene and Public Health of the Johns Hopkins University, stated that: "The relationship between housing and health has been generally recognized but is admittedly extremely difficult of measurement in any precise sense. Health surveys have repeatedly demonstrated higher death rates from the infectious diseases, particularly tuberculosis, in areas of substandard housing. There are undoubtedly many other factors associated with poor housing that have a direct bearing upon

1/Yerushalmy, Jacob, Silverman, Charlotte: Tuberculosis Mortality in Communities of Different Size, Amer. Rev. of Tuberc., Vol. 51, No. 5, May 1945, pp. 413-431.

2/The Mayor's Committee for Better Housing, Final Report, New York City, September 1955.

3/Citizens' Housing News, Vol. 14, Nos. 4,5, Dec. 1955, Jan. 1956.

4/Public Health News, New Jersey State Department of Health, Vol. 35, No.1, January 1954, pp. 5-6.

the occurrence of disease and disability, but the inevitable problem of crowding and environmental sanitation associated with slums has without doubt an important bearing on general health."

Wilner 1/ describing a five-year study recently undertaken on some of the effects of housing quality on health and family life in Baltimore, Maryland, commented that "In a number of studies, it has been repeatedly observed that disease rates are higher among persons who are poorly housed than among those who are better housed. There are very few studies reporting the reverse relationship. The common inference is that components of bad housing environment, that is, inadequate sanitary facilities, crowding, the presence of vermin, and the like, are responsible for the higher disease rates. This is of course not the only interpretation possible. Another, for example, suggests that it is not the housing environment itself that encourages the incidence of disease. Rather, the hypothesis is advanced that the population living in a poor housing environment has certain characteristics which -- aside from housing -- result in a high observed prevalence of disease. These characteristics are: low income, little education, poor diet and health habits and a lessened proneness to seek out medical attention when needed. Thus, the issue may be people rather than housing, or at the very least some complex interaction between the two, and the relationship between housing and health, while repeatedly observable, may simply not have the causal direction that is popularly accepted."

Forty years ago Lawrence Veiller 2/, in commenting on the futility of returning a patient from a sanatorium to what he described as "vile slum to live under unsanitary and degrading conditions", pointed out that "so long as there are bad housing conditions existent in any of our cities, so long will people live under conditions which make for the breaking down of the physical system and the weakening of the capacity of the human body to resist the attacks of tuberculosis and other germ diseases." This warning is timely today when so many New Yorkers are receiving treatment for tuberculosis while under "care at home".

Studying the correlation of housing and tuberculosis in Cleveland, Ohio, covering the period 1928-1931, Green 3/ reported that the white tuberculosis death rate of 19 per 100,000 population prevailed where the highest rents were paid; whereas it was 127 in the area where the lowest rents were paid. He noted the same ratio among the colored in that the tuberculosis death rate increased in this group as the rent paid came down.

In another Ohio city Allen 4/ states: "Upon analyzing all these mortality data (1949-1951) on tuberculosis in Cincinnati, it seems clear to us that after many years of control efforts the problem with this disease still is to a large degree in an unfit living environment. Recent death rates were relatively low in the more outlying sections of Cincinnati. They indicate that tuberculosis no longer presents any real problem there. The

1/Wilner, Daniel M., Walkley, Rosabelle P., Taback, Matthew: How Does the Quality of Housing Affect Health and Family Adjustment? Presented at Annual Meeting, Amer. Public Health Assn, Kansas City, Mo., Nov. 17, 1955.

2/Veiller, Lawrence: Housing and Tuberculosis, Transactions of the Eleventh Annual Meeting, The National Association for the Study and Prevention of Tuberculosis, 1915.

3/Green, Howard Whipple: Tuberculosis and Economic Strata, Cleveland's Five-City Area, 1928-1931, Anti-Tuberculosis League of Cleveland, 1932.

4/Allen, Floyd P.: People of the Shadows, Studies of Mortality in Cincinnati, Public Health Federation, 1954.

challenge to controlling tuberculosis is in the slums of the Basin where death rates have been excessively high. As stated in the preceding part of this brochure, it is recognized that there are factors other than poor housing involved in the high death rates from preventable causes, including tuberculosis, which prevail in the Basin area. Among these are low income, a relatively low level of education, lack of early medical care and an apathetic and sometimes resistant attitude toward preventive health measures. Whatever the relative influence of these factors may be, there appears to be a correlation between bad housing and unfavorable death rates that cannot be discounted. This is particularly true when we find such a striking reduction of deaths from tuberculosis in an area where slums have been replaced by better housing, despite the fact that this area, in census tract 3, is surrounded by slums. It is true that to a large degree the same people have not been rehoused, but it is also true that all of them have come from the Basin area or from bad housing elsewhere in the city and that all of them are definitely in the low income group."

Horwood 1/, in 1924, observed most carefully in three Philadelphia wards, inhabited by large numbers of foreign-born whites, predominately Jewish and Italian, living under pronounced slum conditions and overcrowding, that in these neighborhoods tuberculosis mortality rates were comparatively low. He cautioned that "Facts such as these make it evident that in studying the relationship of overcrowding to tuberculosis, it is necessary to consider simultaneously such factors as the racial composition, economic status and personal habits of the people, as well as many other factors."

Drolet 2/ made the following comments on conditions in New York City of two decades ago: "With tuberculosis mortality generally greatest at present in the large cities, it also stands to reason that housing conditions should be considered to have weight in affecting mortality. However, there is the difficulty, in appraising this factor singly, that it is only part of a picture largely ruled by the economic conditions of the family, which itself may greatly influence other things like quantity and quality of food available, work and rest hours, as well as opportunity or lack of ability to get early and adequate medical or institutional care, so important in such a disease. But the similarity of findings as to a greater prevalence or a higher mortality rate in parts of large cities where housing conditions are obviously inferior demand recognition in tuberculosis. that generally speaking the areas with highest mortality were usually found to be where the housing was poorest."

"In New York City, there is difficulty in appraising the weight of housing between different sections if the predominating racial groups are not the same, but an interesting measure of perhaps just and only the housing factor was found by the writer (Drolet) in a study made in 1922 of pulmonary tuberculosis death rates in three different Jewish sections. In the older Gouverneur District downtown, the pulmonary tuberculosis death rate that year was 83 per 100,000; in the Mt. Sinai District in upper Manhattan, where housing was comparatively better and of more recent construction, the death rate the same year was 65; again, for that same group, mainly Jewish, it was found in Tremont, in the Bronx, where new housing had been erected a few years previously, following new subway transportation extensions, at that time the

1/Horwood, Murray P.: A Tuberculosis Survey of Philadelphia, Amer. Journal of Public Health, Jan.-Feb., 1924.

2/Drolet, Godias J.: Epidemiology of Tuberculosis, Chapter I, Clinical Tuberculosis, edited by Benjamin Goldberg, Philadelphia, 1944.