

# NYC MACROSCOPE ELECTRONIC HEALTH RECORD SURVEILLANCE INDICATOR FACT SHEET



## Obesity

### INDICATOR DEFINITION 2013 NYC Macroscopic

**Numerator:** Patients with a body mass index (BMI)  $\geq 30$ , based on most recent documented height and weight in the designated electronic health record (EHR) structured field during 2013

**Denominator:** Patients with height and weight documented in 2013

### 2013-14 NYC Health and Nutrition Examination Survey (HANES)

BMI  $\geq 30$  (based on measured height and weight) *and* reported seeing a doctor or other healthcare professional in the last 12 months for primary care

### 2013 Community Health Survey (CHS)

BMI  $\geq 30$  (based on self-reported height and weight) *and* reported seeing a doctor or other healthcare professional in the last 12 months for primary care

### SUMMARY

The NYC Macroscopic estimate of obesity prevalence was statistically equivalent to the estimate from CHS, but not to the estimate from NYC HANES. There was high sensitivity and high specificity of this indicator when comparing NYC HANES participants' EHRs with their survey responses.

### RECOMMENDATION FOR USE

Recommended

### Prevalence and comparisons by data source

Prevalence estimates of obesity were 27.9% in the NYC Macroscopic, 31.3% in NYC HANES, and 24.7% in CHS. The prevalence estimate from the NYC Macroscopic was statistically equivalent to the estimate from CHS ( $p=0.01$ ), but not to the estimate from NYC HANES ( $p=0.14$ ). The obesity indicator met three out of five a priori criteria for agreement when comparing the NYC Macroscopic with NYC HANES and met four out of five criteria when comparing the NYC Macroscopic with CHS.

### Prevalence of obesity in NYC Macroscopic, NYC HANES, and CHS

	2013 NYC Macroscopic	2013-14 NYC HANES	2013 CHS
Total sample size	N=648,816	N=1,106	N=6,069
Prevalence, % (95% CI)	27.9% (27.7%, 27.9%)	31.3% (28.5%, 34.5%)	24.7% (23.2%, 26.3%)
NYC Macroscopic providers reporting data, n (%)	384 (98%)		
Patients with data reported as missing, n (%)	55,162 (8%)		

Table adapted from McVeigh KH, Newton-Dame R, Chan PY, et al. Can electronic health records be used for population health surveillance? Validating population health metrics against established survey data. eGEMS. 2016;4(1):27. DOI: <http://dx.doi.org/10.13063/2327-9214.1267>.

CI, confidence interval.

### Prevalence comparison statistics for obesity in NYC Macroscopic vs. NYC HANES and CHS

	2013 NYC Macroscopic* vs. 2013-14 NYC HANES	2013 NYC Macroscopic† vs. 2013 CHS
<b>Prevalence comparison statistics (a priori criterion for agreement)</b>	<b>Value (meets criterion?)</b>	<b>Value (meets criterion?)</b>
Absolute difference (<5%)	3.5% (Yes)	3.2% (Yes)
Prevalence ratio (0.85–1.15)	0.89 (Yes)	1.13 (Yes)
Two-tailed t-test (p-value $\geq 0.05$ )	$p=0.02$ (No)	$p<0.01$ (No)
Two one-sided t-tests (p-value <0.05)	$p=0.14$ (No)	$p=0.01$ (Yes)
Spearman's rank correlation of age- and sex-stratified estimates ( $r \geq 0.80$ )	$r=1.00$ (Yes)	$r=0.83$ (Yes)

Table adapted from McVeigh KH, Newton-Dame R, Chan PY, et al. Can electronic health records be used for population health surveillance? Validating population health metrics against established survey data. eGEMS. 2016;4(1):27. DOI: <http://dx.doi.org/10.13063/2327-9214.1267>.

\*NYC Macroscopic estimates were weighted to NYC HANES in-care population.

†NYC Macroscopic estimates were weighted to CHS in-care population.

### Prevalence by data source, sex, and age group

Among men 60 years of age and older, the NYC Macroscopic estimate of obesity prevalence was significantly lower compared with the NYC HANES estimate (24.8% vs. 35.3%;  $p=0.04$ ).

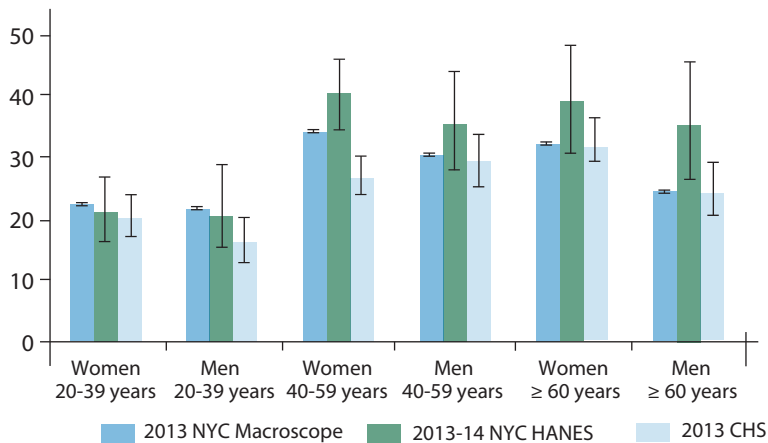
## NYC MACROSCOPE

### ELECTRONIC HEALTH RECORD SURVEILLANCE INDICATOR FACT SHEET

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When comparing NYC Macroscopic and CHS estimates, the prevalence of obesity was significantly higher in the NYC Macroscopic among men 20 to 39 years of age (22.1% vs. 16.6%;  $p < 0.01$ ) and among women 40 to 59 years of age (34.6% vs. 27.4%;  $p < 0.01$ ). No other comparisons of stratified estimates were significantly different.

#### Obesity prevalence in NYC Macroscopic, NYC HANES, and CHS by sex and age group



Error bars represent 95% confidence intervals.

#### Indicator validity

In the sample of NYC Macroscopic practice EHRs (N=44), there was near perfect agreement, high sensitivity, and high specificity. In the sample of non-NYC Macroscopic practice EHRs (N=115), there was near perfect agreement, high sensitivity, and high specificity. When restricting this group to a subsample of practices that attested to Stage 1 Meaningful Use (N=72), there was near perfect agreement, high sensitivity, and high specificity.

#### Validity of obesity indicator in a sample of EHRs from NYC HANES participants

	NYC Macroscopic practice EHRs	Non-NYC Macroscopic practice EHRs	
	N=44	All N=115	Stage 1 Meaningful Use* N=72
Kappa coefficient	0.89	0.85	0.94
Sensitivity (95% CI)	0.92 (0.64, 1.00)	0.91 (0.78, 0.97)	0.96 (0.80, 1.00)
Specificity (95% CI)	0.97 (0.83, 1.00)	0.94 (0.86, 0.98)	0.98 (0.88, 1.00)
Positive predictive value	0.92	0.91	0.96
Negative predictive value	0.97	0.94	0.98
Percent of records missing documentation in structured field	8%	20%	16%

Table adapted from McVeigh KH, Lurie-Moroni E, Chan PY, et al. Generalizability of indicators from the New York City Macroscopic Electronic Health Record Surveillance System to Systems Based on Other EHR Platforms. eGEMS. 2017;5(1):25. DOI:<http://doi.org/10.13063/egems.247> CI, confidence interval; EHRs, electronic health records.

\*Restricted to EHRs from providers or practices attesting to Stage 1 Meaningful Use as of December 31, 2013.

#### ACKNOWLEDGMENTS

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#### SUGGESTED CITATION

NYC Macroscopic team. NYC Macroscopic electronic health record surveillance indicator fact sheet: Obesity. New York City Department of Health and Mental Hygiene; 2017.

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For more information about this project, please visit

<http://www1.nyc.gov/site/doh/data/health-tools/nycmacroscopic.page>

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