

NYC MACROSCOPE ELECTRONIC HEALTH RECORD SURVEILLANCE INDICATOR FACT SHEET



Smoking

INDICATOR DEFINITION 2013 NYC MacroScope

Numerator: Patients with current smoking indicated in the electronic health record (EHR) structured field in 2013

Denominator: Patients with a smoking screening in 2013

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

Self-reported having smoked at least 100 cigarettes in lifetime and currently smoke, *and* reported seeing a doctor or other healthcare professional in the last 12 months for primary care

SUMMARY

The NYC MacroScope estimate of smoking prevalence was statistically equivalent to estimates from NYC HANES and CHS. There was moderate to 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 smoking were 15.2% in the NYC MacroScope, 17.8% in NYC HANES, and 14.9% in CHS. The prevalence estimate from the NYC MacroScope was statistically equivalent to the estimates from NYC HANES ($p=0.04$) and CHS ($p<0.01$). The smoking indicator met all five a priori criteria for agreement when comparing the NYC MacroScope with NYC HANES and CHS.

Prevalence of smoking in NYC MacroScope, NYC HANES, and CHS

	2013 NYC MacroScope	2013-14 NYC HANES	2013 CHS
Total sample size	N=468,219	N=1,132	N=6,138
Prevalence, % (95% CI)	15.2% (15.1%, 15.3%)	17.8% (15.1%, 20.8%)	14.9% (13.6%, 16.3%)
NYC MacroScope providers reporting data, n (%)	382 (97%)		
Patients with data reported as missing, n (%)	221,330 (32%)		

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 smoking in NYC MacroScope vs. NYC HANES and CHS

	2013 NYC MacroScope* vs. 2013-14 NYC HANES	2013 NYC MacroScope† vs. 2013 CHS
Prevalence comparison statistics (a priori criterion for agreement)	Value (meets criterion?)	Value (meets criterion?)
Absolute difference (<5%)	2.6% (Yes)	0.1% (Yes)
Prevalence ratio (0.85–1.15)	0.86 (Yes)	1.01 (Yes)
Two-tailed t-test (p-value ≥ 0.05)	$p=0.08$ (Yes)	$p=0.85$ (Yes)
Two one-sided t-tests (p-value <0.05)	$p=0.04$ (Yes)	$p<0.01$ (Yes)
Spearman's rank correlation of age- and sex-stratified estimates ($r \geq 0.80$)	$r=0.83$ (Yes)	$r=0.94$ (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 MacroScope estimates were weighted to NYC HANES in-care population.

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

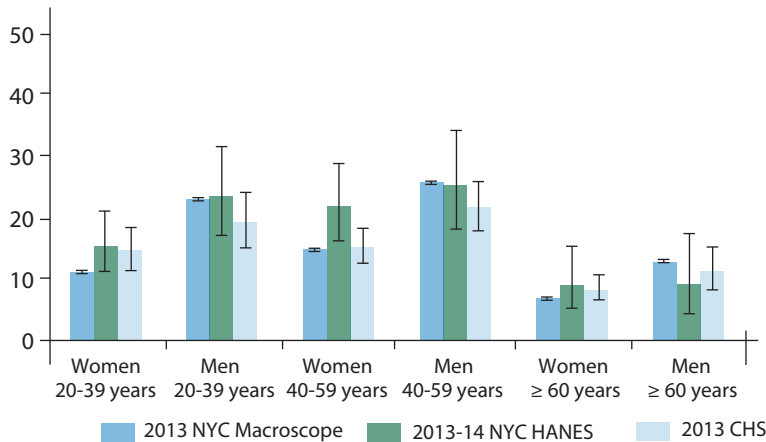
Prevalence by data source, sex, and age group

Among women 40 to 59 years of age, the NYC MacroScope estimate of smoking prevalence was significantly lower compared with the NYC HANES estimate (14.0% vs. 21.3%; $p=0.01$). No other comparisons of stratified estimates were significantly different.

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Smoking prevalence in NYC MacroScope, NYC HANES, and CHS by sex and age group



Error bars represent 95% confidence intervals.

Indicator validity

In the sample of NYC MacroScope practice EHRs (N=43), there was near perfect agreement, high sensitivity, and high specificity. In the sample of non-NYC MacroScope practice EHRs (N=108), there was substantial agreement, moderate sensitivity, and high specificity. When restricting this group to a subsample of practices that attested to Stage 1 Meaningful Use (N=66), there was near perfect agreement, high sensitivity, and high specificity.

Validity of smoking indicator in a sample of EHRs from NYC HANES participants

	NYC MacroScope practice EHRs	Non-NYC MacroScope practice EHRs	
	N=43	All N=108	Stage 1 Meaningful Use* N=66
Kappa coefficient	1.00	0.79	0.83
Sensitivity (95% CI)	1.00 (0.54, 1.00)	0.78 (0.52, 0.94)	0.90 (0.56, 1.00)
Specificity (95% CI)	1.00 (0.91, 1.00)	0.98 (0.92, 1.00)	0.96 (0.88, 1.00)
Positive predictive value	1.00	0.88	0.82
Negative predictive value	1.00	0.96	0.98
Percent of records missing documentation in structured field	8%	27%	23%

Table adapted from McVeigh KH, Lurie-Moroni E, Chan PY, et al. Generalizability of indicators from the New York City MacroScope 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

The NYC MacroScope is part of a larger project, Innovations in Monitoring Population Health, conducted by the NYC Department of Health and Mental Hygiene and the CUNY School of Public Health in partnership with the Fund for Public Health in New York and the Research Foundation of the City University of New York. Support for the larger project was primarily provided by the de Beaumont Foundation with additional support from the Robert Wood Johnson Foundation, including its National Coordinating Center for Public Health Services and Systems Research, the Robin Hood Foundation, the New York State Health Foundation, the Doris Duke Charitable Foundation, and the National Center for Environmental Health, US Centers for Disease Control and Prevention (U28EH000939).

SUGGESTED CITATION

NYC MacroScope team. NYC MacroScope electronic health record surveillance indicator fact sheet: Smoking. 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/nycmacroscope.page>

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