

NYC MACROSCOPE ELECTRONIC HEALTH RECORD SURVEILLANCE INDICATOR FACT SHEET



INDICATOR DEFINITION 2013 NYC Macroscope

Numerator: Patients with a CVX, CPT, or ICD-9 code indicating having received an influenza vaccination during 2013

Denominator: Patients with a visit in 2013

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

Self-reported to have received an influenza vaccine within the past 12 months *and* reported seeing a doctor or other healthcare professional in the last 12 months for primary care

SUMMARY

The NYC Macroscope estimate of influenza vaccination prevalence was not statistically equivalent to estimates from NYC HANES or CHS. There was low sensitivity and high specificity of this indicator when comparing NYC HANES participants' EHRs with their survey responses.

RECOMMENDATION FOR USE

Not recommended

Influenza vaccination

Prevalence and comparisons by data source

Prevalence estimates of influenza vaccination were 20.9% in the NYC Macroscope, 47.6% in NYC HANES, and 47.3% in CHS. The prevalence estimate from the NYC Macroscope was not statistically equivalent to estimates from NYC HANES or CHS ($p > 0.99$ for both comparisons). The influenza vaccination indicator met one out of five a priori criteria for agreement when comparing the NYC Macroscope with NYC HANES and CHS.

Prevalence of influenza vaccination in NYC Macroscope, NYC HANES, and CHS

	2013 NYC Macroscope	2013-14 NYC HANES	2013 CHS
Total sample size	N=712,043	N=1,133	N=6,136
Prevalence, % (95% CI)	20.9% (20.8%, 21.0%)	47.6% (44.0%, 51.3%)	47.3% (45.5%, 49.0%)
NYC Macroscope providers reporting data, n (%)	391 (99%)		
NYC Macroscope patients with missing data, n (%)	NA*		

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; NA, not applicable.

*Not applicable because lack of a documented influenza vaccination was defined as "no influenza vaccination."

Prevalence comparison of influenza vaccination for 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%)	26.7% (No)	27.3% (No)
Prevalence ratio (0.85–1.15)	0.44 (No)	0.44 (No)
Two-tailed t-test (p-value ≥ 0.05)	$p < 0.01$ (No)	$p < 0.01$ (No)
Two one-sided t-tests (p-value <0.05)	$p > 0.99$ (No)	$p > 0.99$ (No)
Spearman's rank correlation of age- and sex-stratified estimates ($r \geq 0.80$)	$r = 1.00$ (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

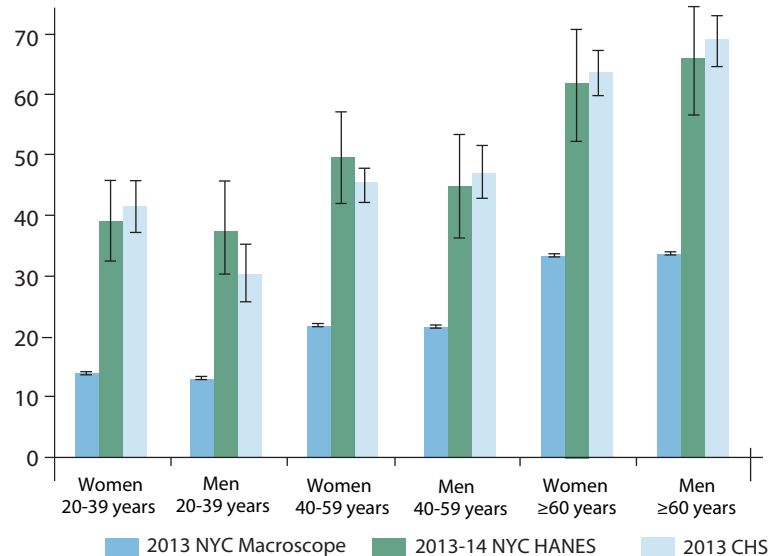
Among all sex and age groups, NYC Macroscope estimates of influenza vaccine prevalence were significantly lower compared with NYC HANES estimates and CHS estimates ($p < 0.01$ for all comparisons).

NYC MACROSCOPE

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Influenza vaccination

Influenza vaccination 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=48), there was substantial agreement, low sensitivity, and high specificity. In the sample of non-NYC Macroscopic practice EHRs (N=141), there was fair agreement, low sensitivity, and high specificity. When restricting this group to a subsample of practices that attested to Stage 1 Meaningful Use (N=86), there was moderate agreement, low sensitivity, and high specificity.

Validity of influenza vaccination in a sample of EHRs from NYC HANES participants

	NYC Macroscopic practice EHRs N=48	Non-NYC Macroscopic practice EHRs N=141	
		All N=141	Stage 1 Meaningful Use* N=86
Kappa coefficient	0.61	0.34	0.41
Sensitivity (95% CI)	0.64	0.45	0.54
Specificity (95% CI)	0.96	0.93	0.94
Positive predictive value	0.93	0.90	0.94
Negative predictive value	0.76	0.54	0.55
Percent of records missing documentation in structured field	0%	1%	0%

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: Influenza vaccination. New York City Department of Health and Mental Hygiene; 2017.

NYC MACROSCOPE TEAM

Pui Ying Chan, Claudia Chernov, Laura Jacobson, Sungwoo Lim, Elizabeth Lurie-Moroni, Katharine H. McVeigh, Remle Newton-Dame, Sharon E. Perlman, Matthew L. Romo, Lauren Schreiberstein, Sarah Shih, Elisabeth Snell, Kathleen Tatem, Lorna E. Thorpe

For more information about this project, please visit

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

or email us at

nycmacroscopic@health.nyc.gov.