

# NYC MACROSCOPE ELECTRONIC HEALTH RECORD SURVEILLANCE INDICATOR FACT SHEET



## INDICATOR DEFINITION 2013 NYC Macroscope

**Numerator:** Patients with a diabetes ICD-9 code in the electronic health record (EHR) problem list or assessment section during or prior to 2013, or most recent glycated hemoglobin (A1c)  $\geq 6.5$  in 2013 or year prior

**Denominator:** Patients with a visit in 2013

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

Participants who reported being told by a doctor or other healthcare professional that they had diabetes or measured A1c  $\geq 6.5$ , and reported seeing a doctor or other healthcare professional in the last 12 months for primary care

## SUMMARY

The NYC Macroscope estimate of diabetes prevalence using the augmented indicator was statistically equivalent to the NYC HANES estimate. 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

# Diabetes (augmented)

## Prevalence and comparisons by data source

Prevalence estimates of diabetes using the augmented indicator were 15.3% for the NYC Macroscope and 17.8% for NYC HANES. These estimates were statistically equivalent ( $p=0.03$ ). The augmented diabetes indicator met four out of five a priori criteria for agreement when comparing the NYC Macroscope with NYC HANES.

## Prevalence of diabetes (augmented) in NYC Macroscope and NYC HANES

	2013 NYC Macroscope	2013-14 NYC HANES
Total sample size	N=633,028	N=918
Prevalence, %	15.3%	17.8%
(95% CI)	(15.2%, 15.3%)	(15.5%, 20.4%)
NYC Macroscope providers reporting data, n (%)	330 (93%)	
NYC Macroscope patients with missing data, n (%)	NA*	

Table adapted from Thorpe LE, McVeigh KH, Perlman SE, et al. Monitoring prevalence, treatment, and control of metabolic conditions in New York City adults using 2013 primary care electronic health records: A surveillance validation study. eGEMS. 2016;4(1):28. DOI: <http://dx.doi.org/10.13063/2327-9214.1266>.

CI, confidence interval; NA, not applicable.

\*Not applicable because lack of an ICD-9 code for diabetes, no medication to treat diabetes, or below range A1c were defined as "no diabetes."

## Prevalence comparison of diabetes (augmented) for NYC Macroscope vs. NYC HANES

Prevalence comparison statistics (a priori criterion for agreement)	2013 NYC Macroscope* vs. 2013-14 NYC HANES
	Value (meets criterion?)
Absolute difference (<5%)	2.6% (Yes)
Prevalence ratio (0.85-1.15)	0.86 (Yes)
Two one-sided t-tests (p-value <0.05)	$p=0.03$ (Yes)
Two-tailed t-test (p-value $\geq 0.05$ )	$p=0.04$ (No)
Spearman's rank correlation of age- and sex-stratified estimates ( $r \geq 0.80$ )	$r=0.89$ (Yes)

Table adapted from Thorpe LE, McVeigh KH, Perlman SE, et al. Monitoring prevalence, treatment, and control of metabolic conditions in New York City adults using 2013 primary care electronic health records: A surveillance validation study. eGEMS. 2016;4(1):28. DOI: <http://dx.doi.org/10.13063/2327-9214.1266>.

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

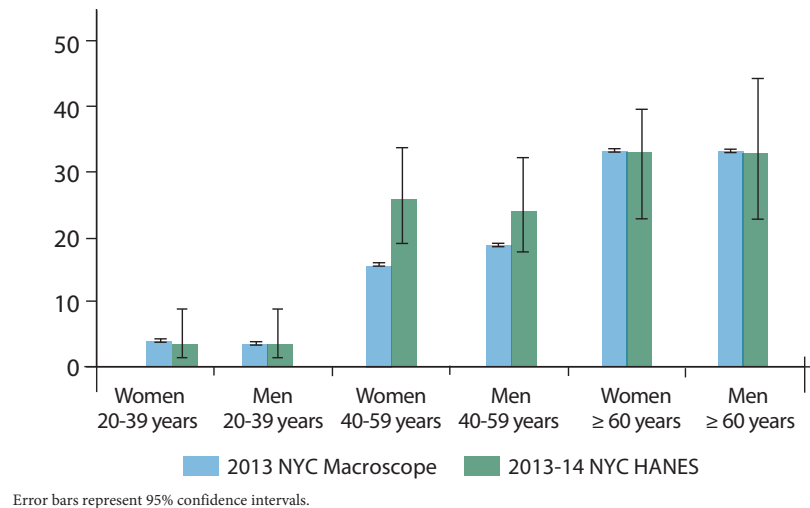
## Prevalence by data source, sex, and age group

Among women 40 to 59 years of age, the NYC Macroscope estimate of diabetes prevalence using the augmented indicator was significantly lower compared with the NYC HANES estimate (15.8% vs. 25.9%;  $p<0.01$ ). No other comparisons of stratified estimates were significantly different.

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## Diabetes (augmented)

Diabetes (augmented) prevalence in NYC Macroscopic, NYC HANES, and CHS by sex and age group



### Indicator validity

In the sample of NYC Macroscopic practice EHRs (N=45), there was near perfect agreement, high sensitivity, and high specificity. In the sample of non-NYC Macroscopic practice EHRs (N=133), there was substantial agreement, high sensitivity, and high specificity. When restricting this group to a subsample of practices that attested to Stage 1 Meaningful Use (N=82), there was near perfect agreement, moderate sensitivity, and high specificity.

### Validity of diabetes (augmented) indicator in a sample of EHRs from NYC HANES participants\*

	NYC Macroscopic practice EHRs	Non-NYC Macroscopic practice EHRs	
	N=45	All N=133	Stage 1 Meaningful Use† N=82
Kappa coefficient	0.94	0.89	0.87
Sensitivity (95% CI)	1.00 (0.69-1.00)	0.91 (0.72-0.99)	0.86 (0.57-0.98)
Specificity (95% CI)	0.97 (0.92-1.00)	0.98 (0.94-1.00)	0.99 (0.92-1.00)
Positive predictive value	0.91	0.91	0.92
Negative predictive value	1.00	0.98	0.97

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.

\*Data were restricted to providers who received electronically transmitted laboratory results for at least 10 patients.

†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: Diabetes (augmented). New York City Department of Health and Mental Hygiene; 2017.

### NYC MACROSCOPE TEAM

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For more information about this project, please visit

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