

Monitoring health inequities in Ontario: Ontario Marginalization Index updates and products

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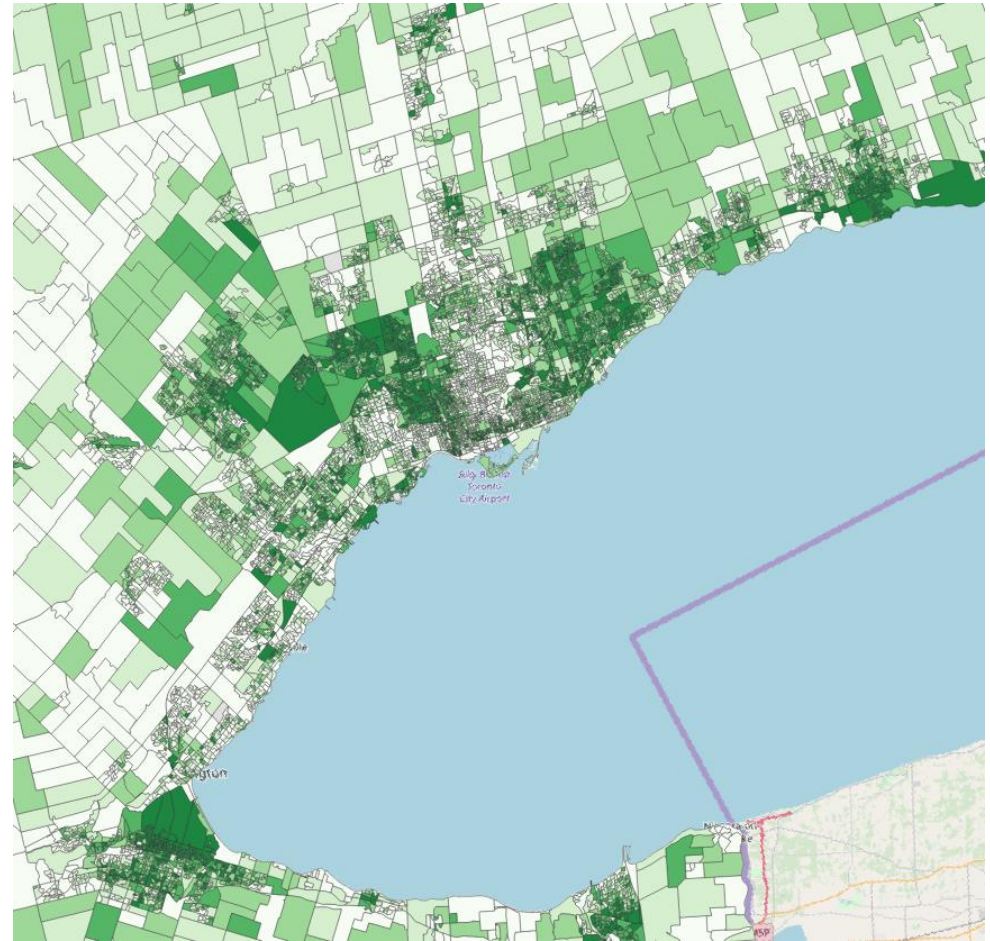
November 27th, 2018

Overview

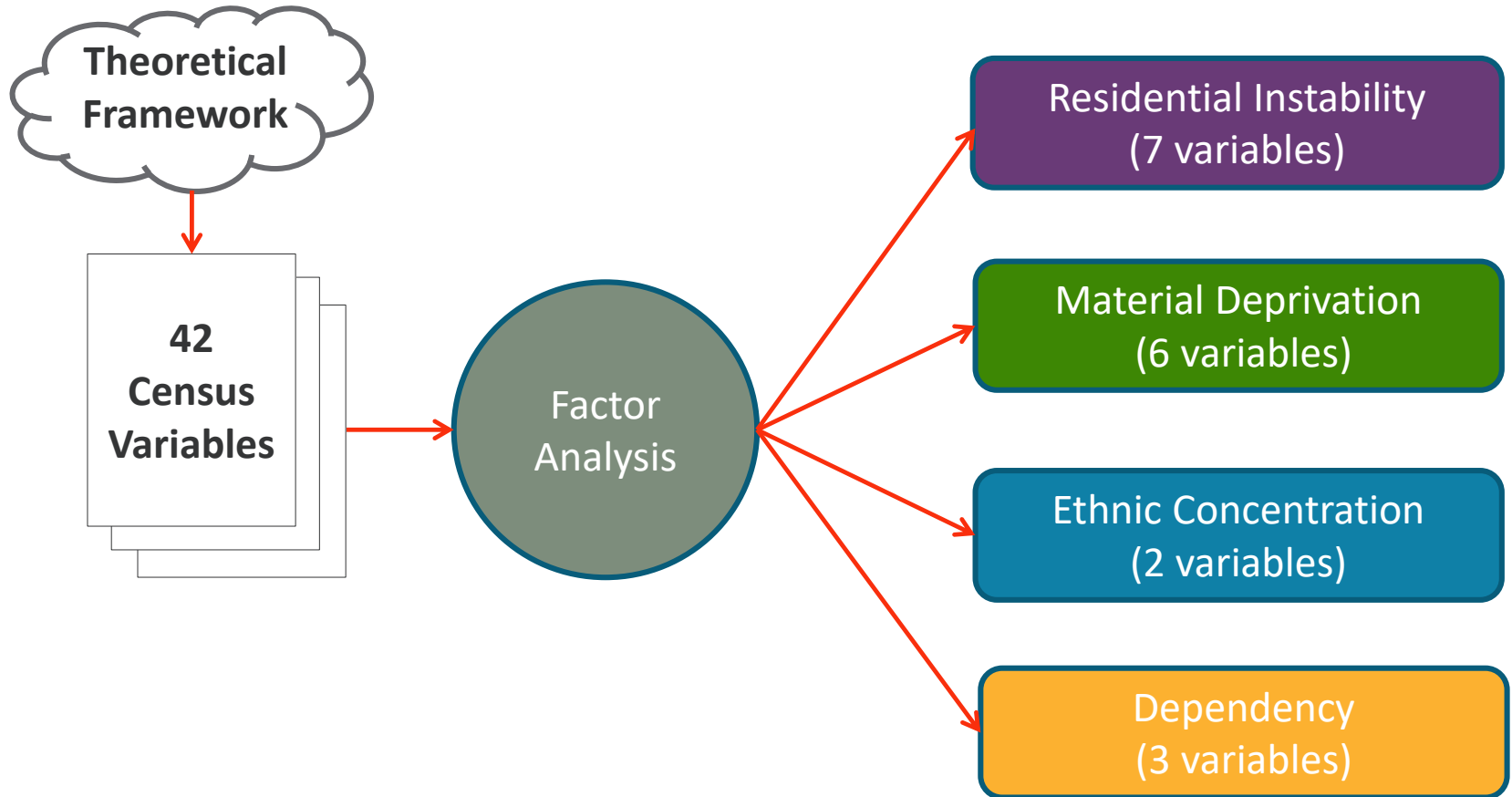
- Background on the Ontario Marginalization Index (ON-Marg)
- Recent updates to ON-Marg
- Interactive health equity tools

What is Ontario Marginalization Index?

- Area-level index for showing differences in marginalization between areas.
- Allows users to understand inequities in various measures of *health and social well-being*, either between population groups or between geographical areas



ON-Marg Dimensions



Residential Instability

- This measure refers to area-level concentrations of people who experience high rates of family or housing instability.
- The indicators included in this dimension measure the types and density of residential accommodations, as well as certain family structure characteristics.
- Residential instability is important as it is related to neighborhood quality, cohesiveness and supports.

Material Deprivation

- Material deprivation is closely connected to poverty and refers to the inability for individuals and communities to access and attain basic material needs.
- The indicators included in this dimension measure income, quality of housing, educational attainment, and family structure characteristics.

Dependency

- This measure refers to area-level concentrations of people who don't have income from employment. It includes seniors, children, and adults whose work is not compensated.
- Adults included under this measure may be taking care of households, taking care of people in the community and/or unable to work due to disability.

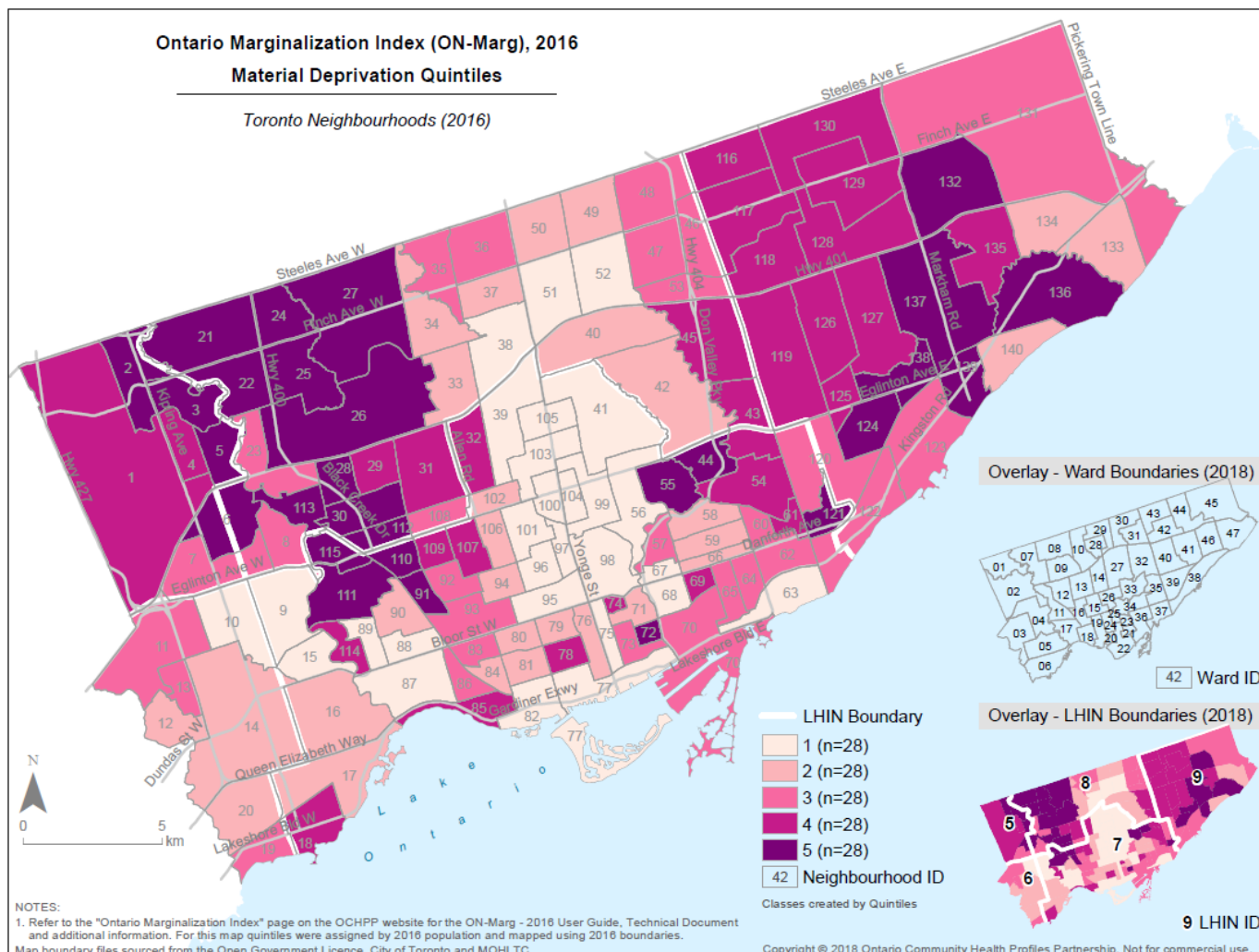
Ethnic Concentration

- High area-level concentrations of recent immigrants and people belonging to ‘visible minority’ group.
- Indigenous status indicators did not load on any factors during factor analysis, and so are not incorporated in the index.
- Newcomers to Canada often have better overall health outcomes, a phenomenon commonly known as the “healthy immigrant effect.”
- At the same time, research is clear that both structural racism and anti-immigrant discrimination have profound impacts on individual, community and population health.

Using ON-Marg

- Each dimension represents a separate index with a standardized factor score for each area
 - E.g. the material deprivation index ranges from a score of -2 (low deprivation) to +6 (high deprivation)
- Each dimension/index is also available in quintiles
 - Q1 represents least deprived and Q5 the most deprived
- ON-Marg is available for public health units, sub-LHINs, LHINs, LHIN sub-regions, census divisions, census sub-divisions, consolidated municipal service manager areas, and Toronto Neighbourhoods (OCHPP)

Custom geographies



Source: Ontario Community Health Profiles Partnership. Toronto neighbourhoods (2016); Ontario marginalization index (ON-Marg), 2016: material deprivation quintiles [Internet]. Toronto, ON: Ontario Community Health Profiles Partnership; c2018 [cited 2018 Oct 17]. Available from: http://torontohealthprofiles.ca/ont/o_documents/TM_allCateg_maps/TM_maps_ONMARG/neighb_LHIN_7/N140_ONMarg_2016_MaterialDeprivation.pdf

Potential Uses of the ON-Marg

1. Planning and needs assessment
2. Monitoring inequities
3. Resource allocation
4. Advocacy
5. Research

Use 2: Monitoring inequities

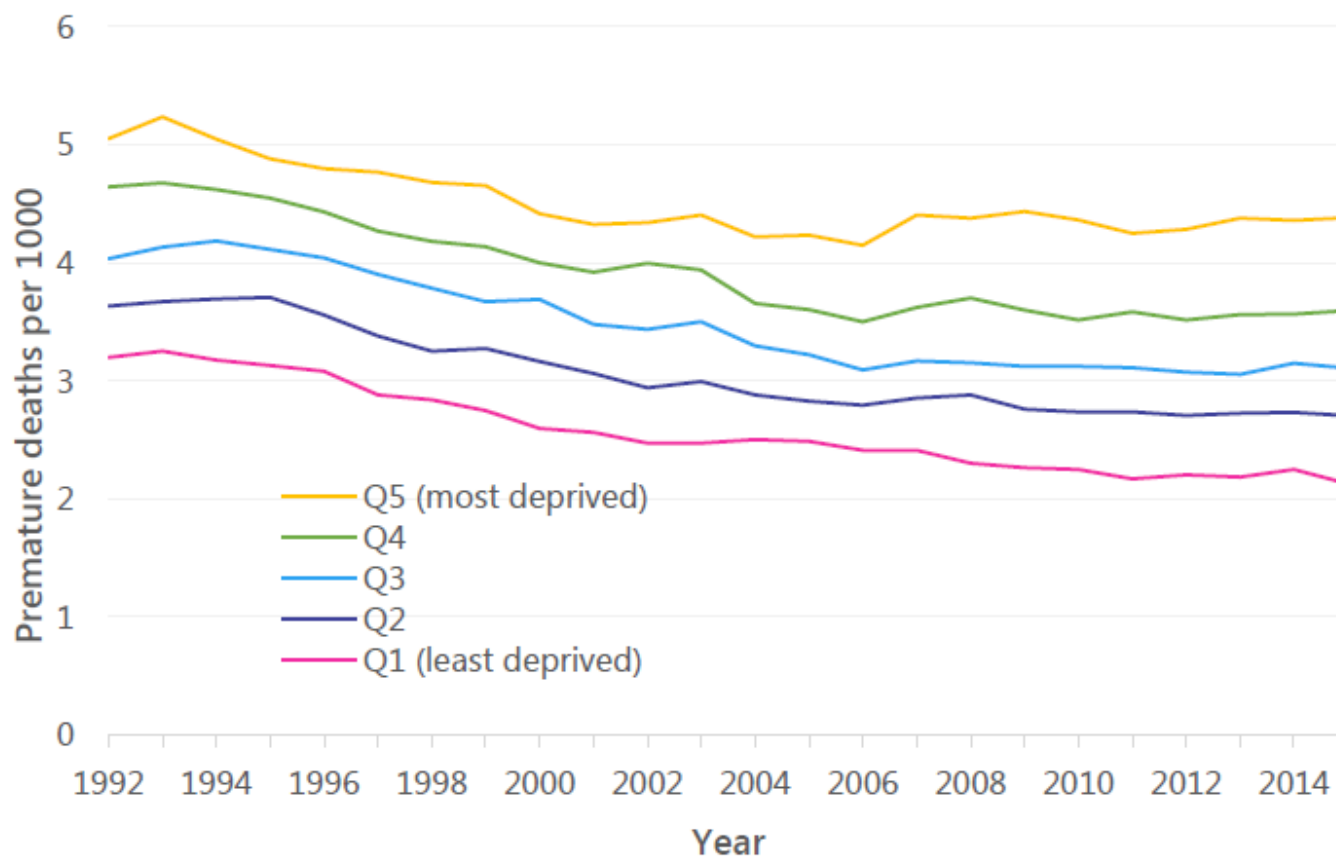


Figure 3.4.1 Premature mortality rates (deaths per 1000) by socioeconomic status quintile, all Ontario, 1992-2015.

Source: Buajitti E, Watson T, Kornas K, Bornbaum C, Henry D, Rosella LC. Ontario atlas of adult mortality, 1992-2015: trends in Local Health Integration Networks: premature mortality rates (deaths per 1000) by socioeconomic status quintile, all Ontario, 1992-2015. Toronto, ON: Population Health Analytics Lab; 2018. Available from: https://pophealthanalytics.com/wp-content/uploads/2018/09/OntarioAtlasofMortality_Feb212018.pdf

Use 3: Resource allocation

“At Peel Public Health, we have used ON-Marg to identify elementary schools in which students are at higher risk for dental caries. This means that in our dental screening program we can use the limited resources to greater effect. As a result, we are finding more children with urgent dental needs and getting them into a treatment program.”

David Mowat, Medical Officer of Health, Peel Region

Source: Toronto Community Health Profiles Partnership. Peel Public Health (PPH) [Internet]. Toronto, ON: Toronto Community Health Profiles Partnership; c2018 [cited 2018 Oct 17]. Available from: http://www.torontohealthprofiles.ca/ont/onmarg/additionalResources/Peel_public_health_and_ON-Marg.pdf

Use 5: Research

Multilevel logistic regression odds ratios of depression by individual and neighborhood characteristics ($N = 56,428$)

Variables	Depression (4+ symptoms)		
	Model 1	Model 2	Model 3
<i>Individual level</i>			
Female	1.87***		1.87***
Age 16-29	2.46***		2.44***
Age 30-39	2.80***		2.81***
Age 40-49	2.78***		2.76***
Age 50-59	2.20***		2.19***
Married	0.49***		0.51***
High school graduation	0.73***		0.74***
Visible minority	0.65***		0.66***
<i>Neighborhood level</i>			
Residential instability		1.12***	1.04*
Material deprivation		1.12***	1.05**
Dependency		0.92***	0.97
Ethnic concentration		0.90***	0.97
Intercept	0.06***	0.11***	0.06***
Intercept Variance Component	1.07***	1.05***	1.06***

Notes: * $p \leq 0.05$; ** $p \leq 0.01$; $p \leq 0.001$.

Source: Matheson FI, Moineddin R, Dunn JR, Creatore MI, Gozdyra P, Glazier RH. Urban neighbourhoods, chronic stress, gender and depression: multilevel logistic regression odds ratios of depression by individual and neighborhood characteristics. *Soc Sci Med.* 2006;63(10):2604-16.

2011 Update (launched Nov 2017)

- 2001 and 2006 ON-Marg used census data.
- Reliability study comparing the 2011 National Household Survey (NHS) to the long-form census (LFC):
 - Found weak agreement between NHS and LFC indicators
 - **Using NHS derived-measures to create ON-Marg could lead to misclassification of DAs because of measurement error**
- Collaborative project between C-UHS and PHO to use **administrative data sources** to replace LFC indicators: Statistics Canada Taxfiler, Immigration, Refugee, Citizenship Canada, and Municipal Property Assessment Corporation data.

2011 ON-Marg Validation

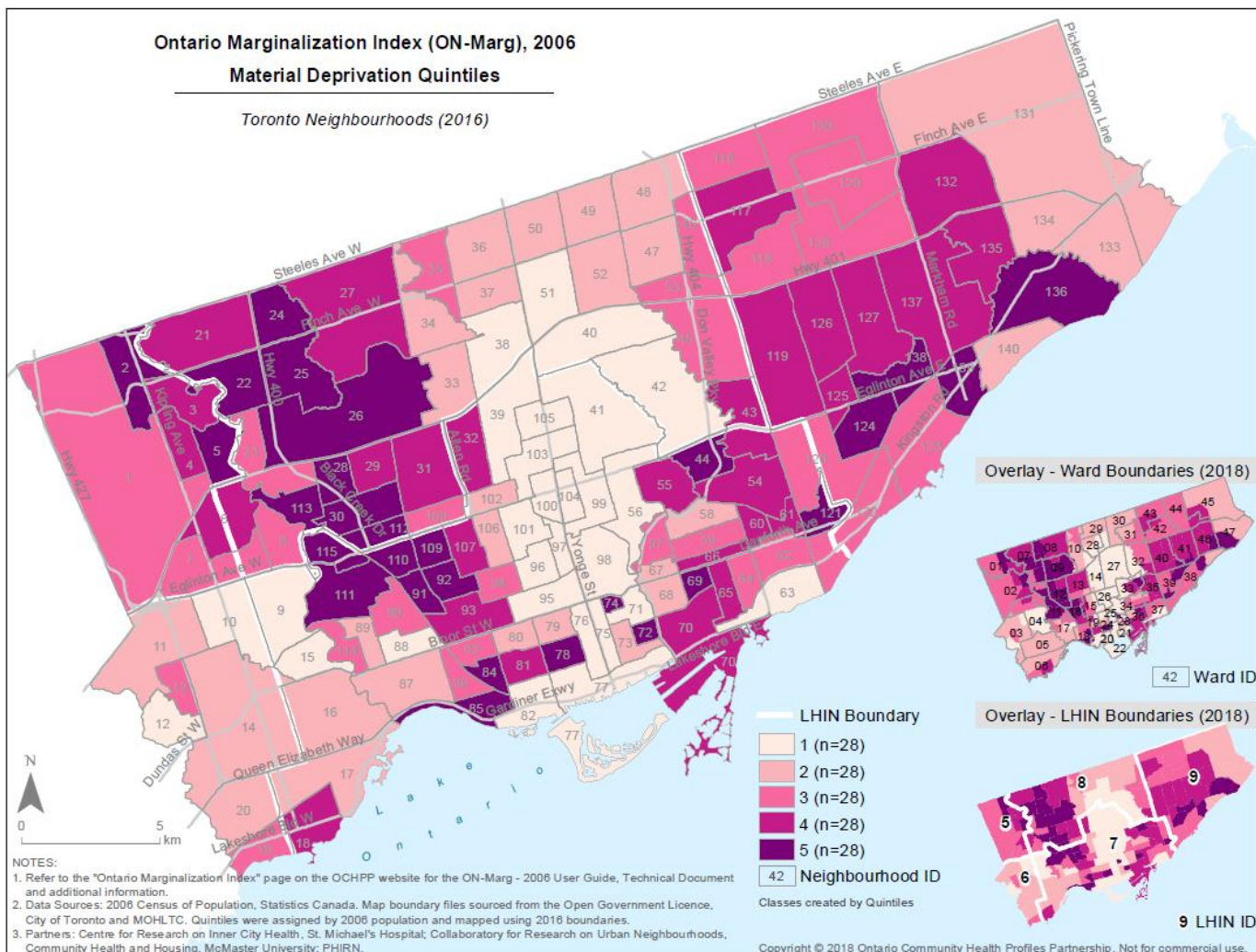
Comparing alternative data sources to 2006 census:

Absolute Difference in Quintiles	Residential Instability	Material Deprivation	Dependency	Ethnic Concentration
0	74.19	51.15	57.32	56.28
1	24.91	39.02	36.55	36.46
2	0.78	8.61	5.49	6.37
3	0.12	1.14	0.55	0.84
4	0	0.08	0.09	0.06
+/- 1 quintile	99.1	90.17	93.87	92.74
Correlation coefficients	0.855	0.968	0.996	0.913

2016 ON-Marg Update

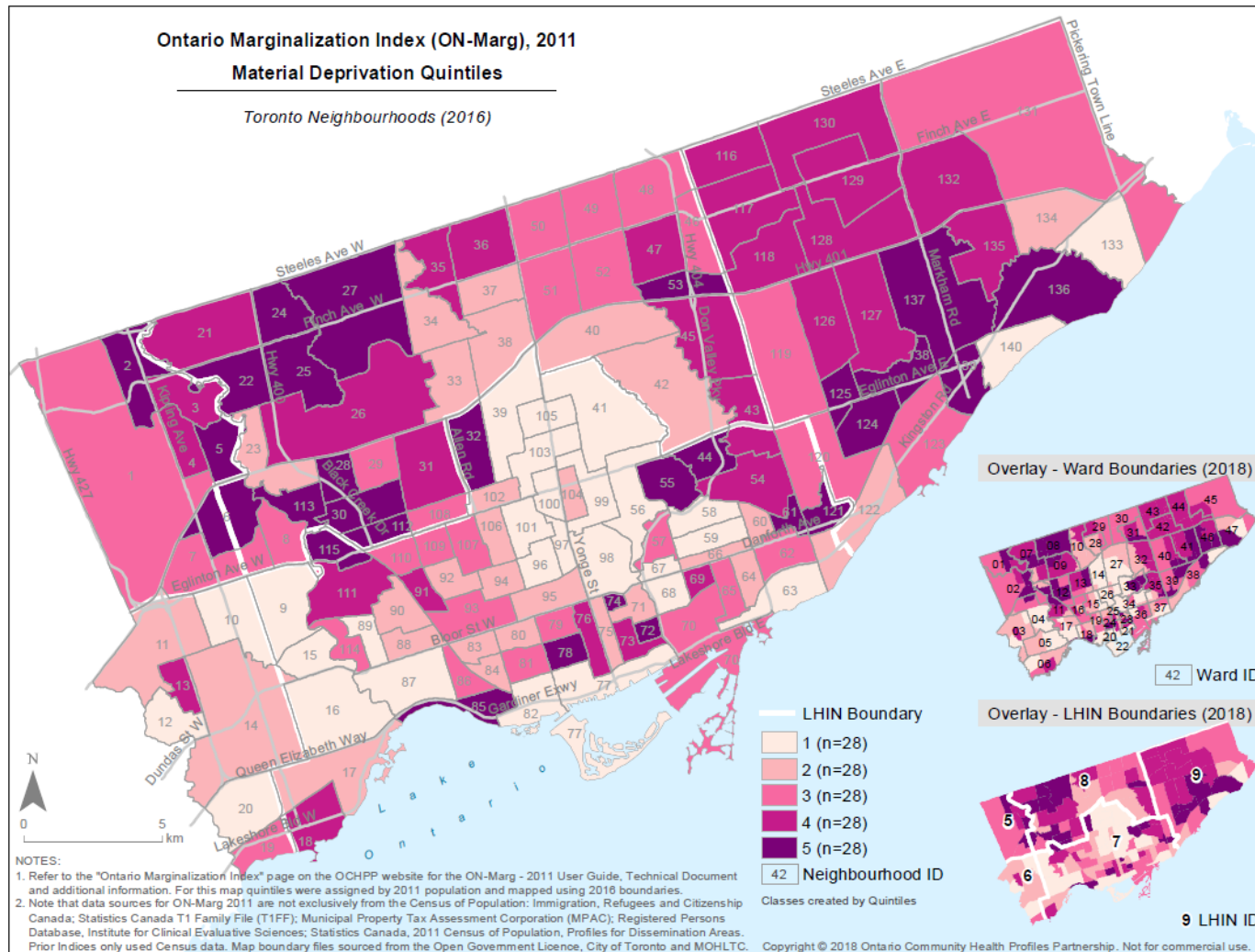
- With return of long-form census in 2016, ON-Marg once again uses only census data.
- **Launched October 9th 2018** on www.publichealthontario.ca and www.ontariohealthprofiles.ca
- New for 2016:
 - Aggregate Dissemination Areas (ADA)
 - User guide now includes dimension description
 - FAQ clarifies ethnic concentration dimension

Comparisons over time – Toronto 2006



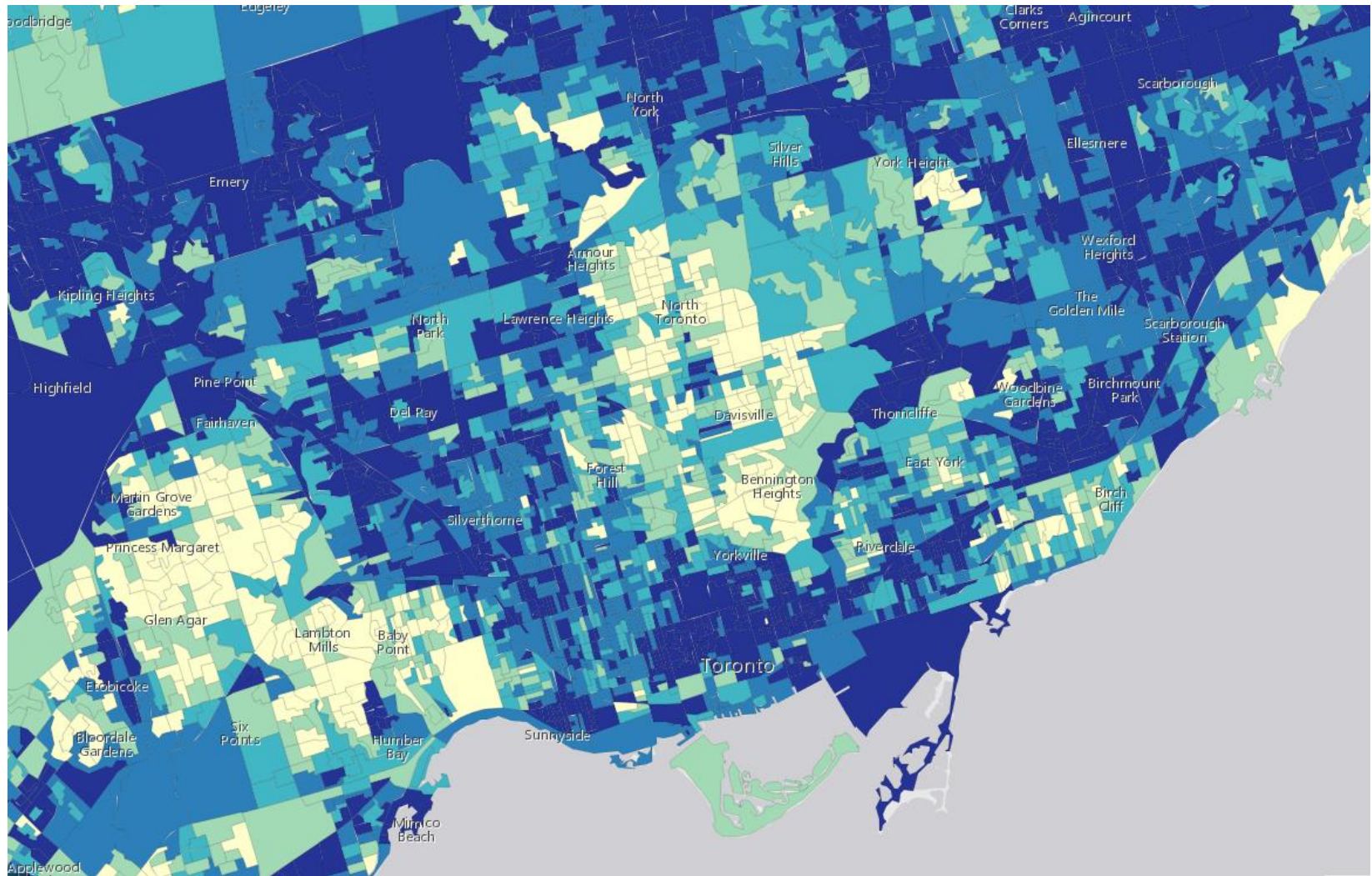
Source: Ontario Community Health Profiles Partnership. Toronto neighbourhoods (2016); Ontario marginalization index (ON-Marg), 2016: material deprivation quintiles [Internet]. Toronto, ON: Ontario Community Health Profiles Partnership; c2018 [cited 2018 Oct 17]. Available from: http://torontohealthprofiles.ca/ont/o_documents/TM_allCateg_maps/TM_maps_ONMARG/neighb_LHIN_7/N140_ONMarg_2016_MaterialDeprivation.pdf

Comparisons over time – Toronto 2011



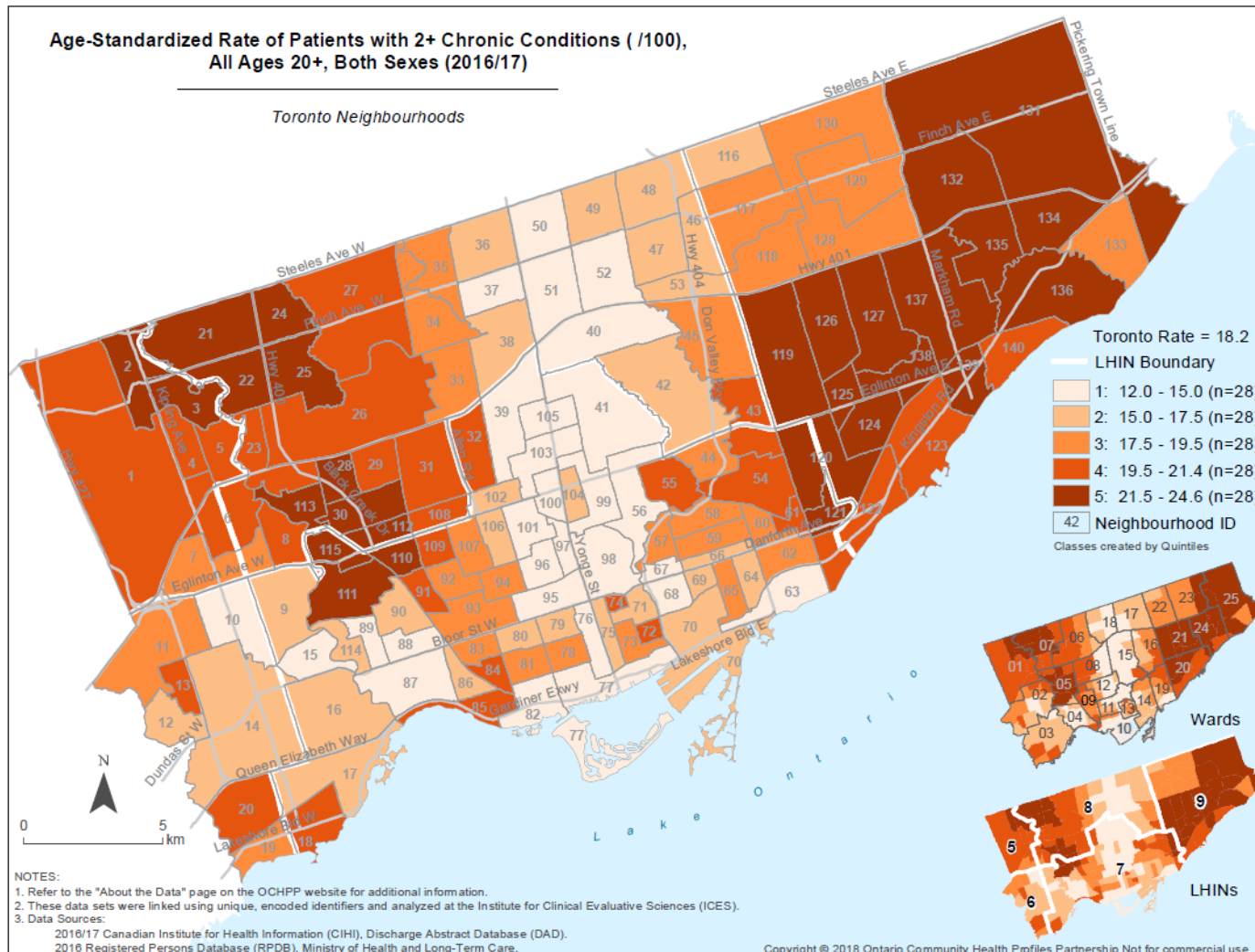
Source: Ontario Community Health Profiles Partnership. Toronto neighbourhoods (2016); Ontario marginalization index (ON-Marg), 2011: material deprivation quintiles [Internet]. Toronto, ON: Ontario Community Health Profiles Partnership; c2018 [cited 2018 Oct 17]. Available from: http://torontohealthprofiles.ca/ont/o_documents/TM_allCateg_maps/TM_maps_ONMARG/neighb_LHIN_7/N140_ONMarg_2011_MaterialDeprivation.pdf

Social Determinants of Health Map



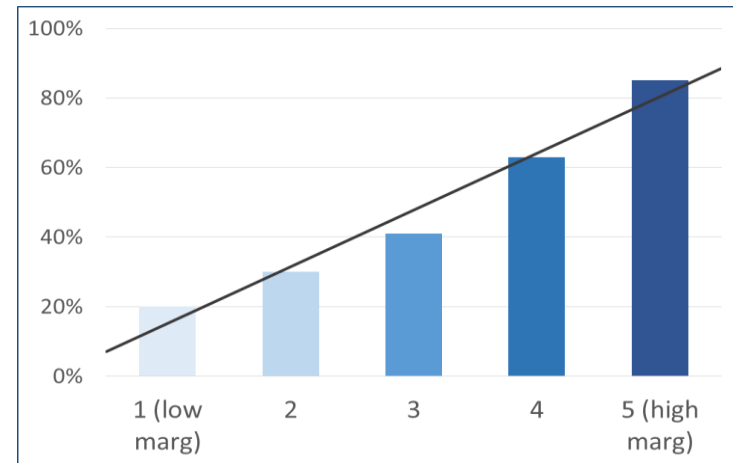
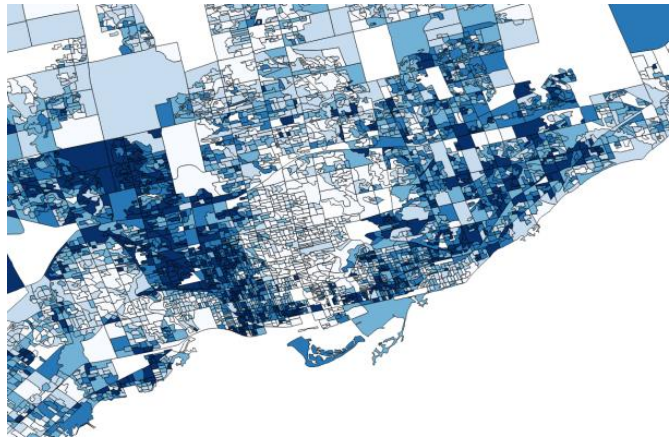
Source: Ontario Agency for Health Protection and Promotion (Public Health Ontario). Social determinants of health map [Internet]. Toronto, ON: Queen's Printer for Ontario; c2018 [updated 2018 Oct 9; cited 2018 Oct 17].

Health Equity Analysis with ON-Marg



Source: Ontario Community Health Profiles Partnership. Toronto neighbourhoods; age standardized rate of patients with 2+ chronic conditions (/100), all ages 20+, both sexes (2016/17) [Internet]. Toronto, ON: Ontario Community Health Profiles Partnership; c2018 [cited 2018 Oct 17].

Health Equity Analysis with ON-Marg



Summary Measure of Inequality

Rate Difference:

2011
51.2%

Rate Ratio:

3.6

Slope Index of Inequality:

55.7%

Relative Index of Inequality:

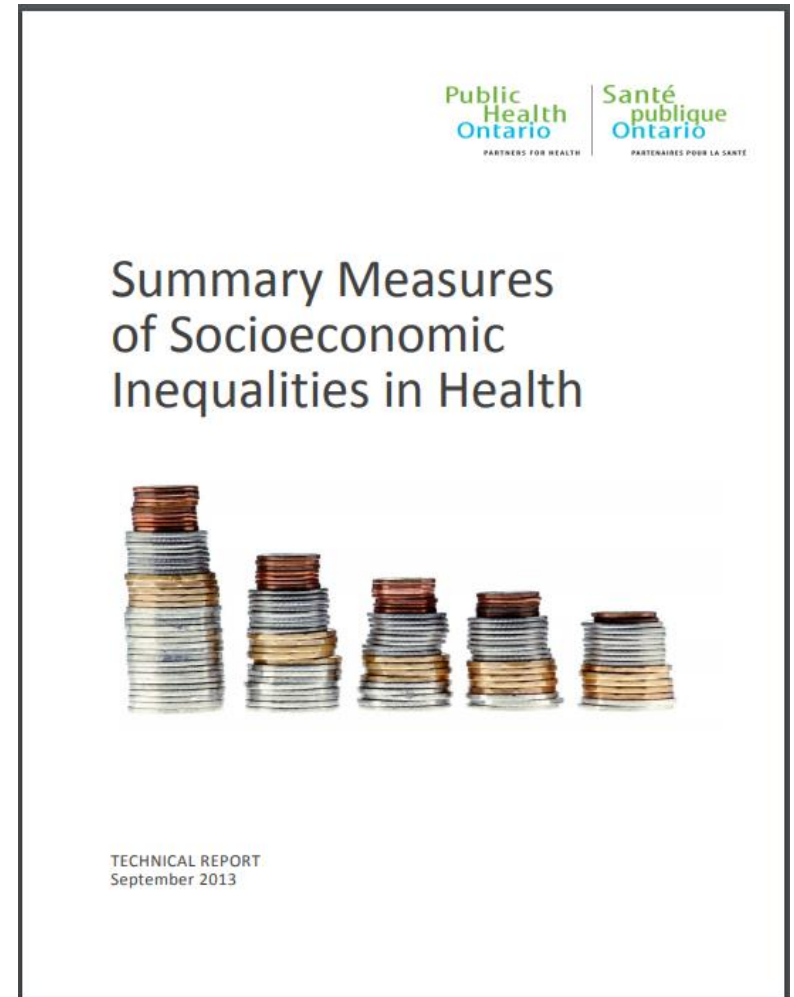
4.1



“Premature Mortality rates are 3.6 times higher in the most marginalized quintile compared to the least marginalized quintile.”

Summary Measures Report

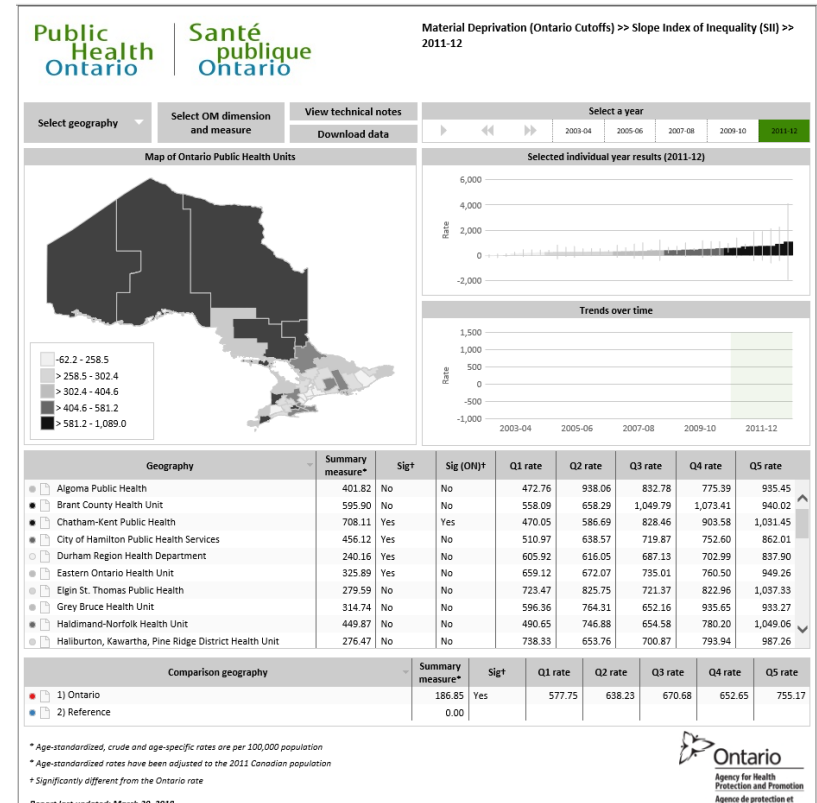
- Scientific and technical approach to measuring socioeconomic inequalities in health.
- Summary measures of inequality are described in this report:
 - Range
 - Population attributable fraction
 - Slope index of inequality
 - Relative index of inequality
 - Health concentration index



Ontario Agency for Health Protection and Promotion (Public Health Ontario). Summary measures of socioeconomic inequalities in health. Toronto, ON: Queen's Printer for Ontario; 2013.

Health Equity Snapshots

- Health Equity analysis using ON-Marg
- Multiple health indicators:
 - Potentially Avoidable Mortality
 - Alcohol-Attributable Hospitalization
 - Mental Health Emergency Department Visits
 - Singleton Low Birth Weight



Ontario Agency for Health Protection and Promotion (Public Health Ontario). Snapshots [Internet]. Toronto, ON: Queen's Printer for Ontario; c2018 [updated 2018 Oct 12; cited 2018 Oct 17].

Acknowledgements

We wish to express their sincere thanks to our colleagues at Public Health Ontario, the Centre for Urban Health Solutions and St. Michael's Hospital, and the Ontario Community Health Profiles Partnership for their contributions. A special thanks to Gary Moloney for his work on the 2016 index and maps.

Appendix: ON-Marg Indicators

Indicator	'01 '06 '16 Source	2011 Alternative Source
Residential stability		
% living alone	Short Form Census	N/A
% youth population aged 5-15	Short Form Census	N/A
Average number persons per dwelling	Short Form Census	N/A
% married/common-law	Short Form Census	N/A
% multi-unit housing	Long Form Census	MPAC
% dwellings owned	Long Form Census	MPAC
% residential mobility	Long Form Census	RPDB
Material deprivation		
% lone-parent families	Short Form Census	N/A
% aged 25-64 without certificate, degree, diploma	Long Form Census	None identified
% receiving government transfer payments	Long Form Census	Taxfiler
% unemployed aged 15+ *	Long Form Census	Taxfiler
% below Low income cut off (LICO) †	Long Form Census	Taxfiler
% houses needing major repair ‡	Long Form Census	MPAC
Dependency		
% seniors (65+)	Short Form Census	N/A
Dependency ratio (15-64/0-14, 65+)	Short Form Census	N/A
Labor force participation (aged 15+)	Long Form Census	Taxfiler
Ethnic concentration		
% recent immigrants (within past 5 year)	Long Form Census	IRCC
% visible minority §	Long Form Census	IRCC

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