HEALTH SURVEILLANCE INDICATORS:
SMALL FOR GESTATIONAL AGE

Public Health Relevance

Babies who are small for gestational age (SGA) at birth are at higher risk for neonatal stress, neurodevelopmental delays, and death during infancy. Risk factors for SGA include maternal smoking and drug use, inadequate weight gain during pregnancy, and congenital infections.

SGA refers to babies with birth weights below the 10th percentile of birth weight for babies of the same sex and gestational age. The percentile cut-offs are based on the population-based Canadian reference tables that apply to singleton babies born between 22 and 43 weeks of gestation. For this reason, babies of multiple births, preterm babies less than 22 gestation weeks and post-term babies over 43 gestation weeks are excluded from the majority of the following analyses with the exceptions to the exclusion criteria given in the data notes section at the end of the document.

Highlights

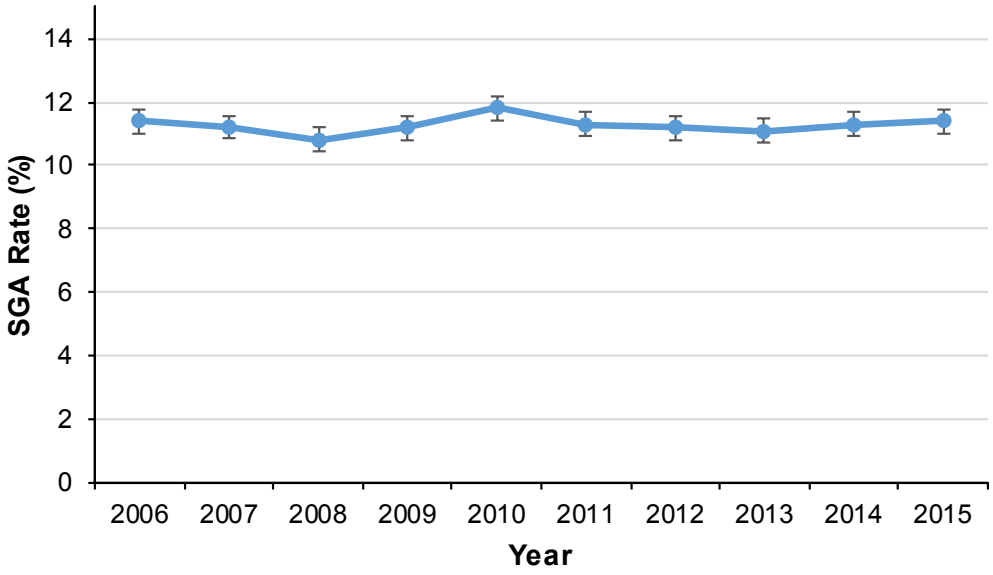
1. In Toronto, the SGA rate remained stable from 2006 to 2015.
2. The SGA rate in Toronto was significantly higher than the rest of Ontario. Toronto had one of the highest rates of SGA in the province.
3. Higher rates of SGA were found in the northwest, northeast, and central east parts of the city.
4. Higher rates of SGA were found among younger mothers, nulliparous women, and in lower income areas of the city.

Trends Over Time

In Toronto, the SGA rate remained stable from 2006 to 2015.

Figure 1 shows the percent of singleton babies in Toronto that were born SGA between 2006 and 2015. The SGA rate remained relatively stable over this ten year period. The SGA was 11.4% in 2015.

Figure 1: Small for Gestational Age Rate, Toronto, 2006 to 2015



Error bars (I) represent the 95% confidence intervals.

Data Sources: Public Health Ontario Snapshot, see Data Notes for details.

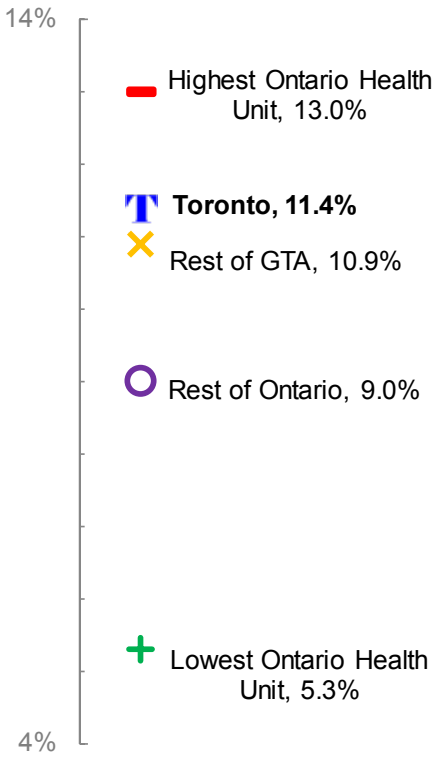
Regional Comparisons

The SGA rate in Toronto was significantly higher than the rest of Ontario. Toronto had one of the highest rates of SGA in the province.

Figure 2 shows the percent of singleton babies that were born SGA for Toronto in 2015, compared to the rest of Ontario (Ontario excluding Toronto), the rest of the Greater Toronto Area (GTA excluding Toronto), and the Ontario health units with the highest and lowest rates.

The SGA rate in Toronto was significantly higher than the rest of Ontario and similar to the rest of the GTA. Toronto had the second highest rate of all Ontario health units.

Figure 2: Small for Gestational Age Rate, Toronto Compared to Other Selected Regions in Ontario, 2015



Data Sources: Public Health Ontario Snapshot, see Data Notes for details.

Toronto Neighbourhood Comparisons

Higher rates of SGA were found in the northwest, northeast, and central east parts of the city.

Map 1 shows the SGA rate by Toronto neighbourhood for 2014 to 2016 combined.

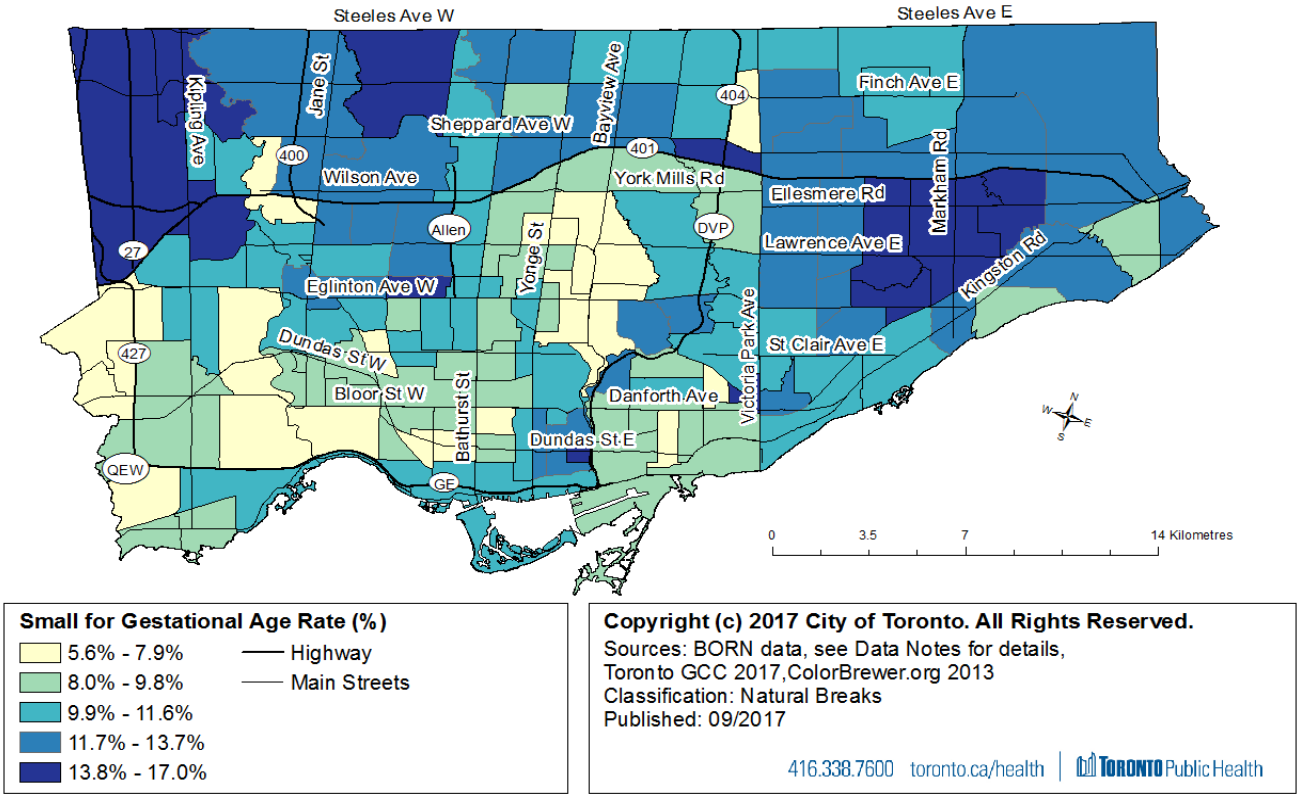
Areas in north Etobicoke and Scarborough had clusters of neighbourhoods with higher SGA rates than the city overall. Some neighbourhoods with significantly higher rates than the city overall included:

- Bendale
- Crescent Town
- Morningside
- Mount Olive-Silverstone-Jamestown
- West Humber-Clairville
- Woburn

Ares in central and south Etobicoke, midtown Toronto and East York had clusters of neighbourhoods with lower SGA rates than the city overall. Some neighbourhoods with significantly lower SGA rates than the city overall included:

- Alderwood
- Edenbridge-Humber Valley
- High Park-Swansea
- Kingsway South
- Leaside-Bennington
- Markland Woods
- Pelmo Park-Humberlea
- Pleasant View
- Trinity-Bellwoods
- University

Map 1: Small for Gestational Age Rate by Neighbourhood, Toronto, 2014 to 2016 Combined



Sources: BORN data, see Data Notes for details,
Toronto GCC 2017,ColorBrewer.org 2013
Classification: Natural Breaks
Published: 09/2017

416.338.7600 toronto.ca/health | Toronto Public Health

Socio-demographics

Higher rates of SGA were found among younger mothers, nulliparous women, and in lower income areas of the city.

Tables 1, 2 and 3 show the count and rate of SGA by selected birth and maternal characteristics in Toronto in 2015.

Just over 3,200 singleton babies born to Toronto residents in 2015 were SGA. There were no significant differences in SGA rates by sex. The SGA rate was significantly higher in the younger maternal age groups compared to the oldest age group. The SGA rate was significantly higher in babies born to women giving birth for the first time (i.e., nulliparous) compared to women who had given birth before (i.e., parous).

Table 1: Distribution of Small for Gestational Age Births and Rate by Sex, Toronto, 2015

Newborn Sex	SGA Births	Total Births	SGA Rate
Female	1,499	14,107	10.6%
Male	1,729	15,210	11.4%

Data Source: BORN Ontario, see Data Notes.

Table 2: Distribution of Small for Gestational Age Births and Rate by Mother's Age Group, Toronto, 2015

Mother's Age Group	SGA Births	Total Births	SGA Rate
<20	52	358	14.5% H
20 to 34	2,272	19,884	11.4% H
35+	904	9,133	9.9%

H Significantly higher than the SGA rate for babies born to women 35 years of age and older.

Data Source: BORN Ontario, see Data Notes.

Table 3: Distribution of Small for Gestational Age Births and Rate by Parity, Toronto, 2015

Parity	SGA Births	Total Births	SGA Rate
Nulliparous	1,843	13,596	13.6% H
Parous	1,321	15,176	8.7%

H Significantly higher than the SGA rate for babies born to parous women.

Data Source: BORN Ontario, see Data Notes.

Table 4 shows the SGA rate by income quintile for 2014 to 2016 combined. Quintile 1 contains the areas in Toronto with the highest percent of people living below the low income measure (LIM), making it the lowest income quintile. Quintile 5 contains the areas in Toronto with the lowest percent of people living below the LIM, making it the highest income quintile.

SGA rates increased as income decreased, with lower income areas of the city experiencing higher rates of SGA babies. The SGA rate was significantly higher in the four lower income quintiles (Quintiles 1 to 4) compared to the highest income quintile (Quintile 5).

Table 4: Small for Gestational Age Rate by Income Quintile, Toronto, 2014 to 2016 Combined

Income Quintile	SGA Rate
Quintile 1 (Lower income)	13.1% H
Quintile 2	11.8% H
Quintile 3	11.5% H
Quintile 4	10.0% H
Quintile 5 (Higher income)	8.9%

H Significantly higher than Quintile 5, the highest income group.

Data Sources: BORN Ontario and Income Quintiles, see Data Notes.

Data Notes

Notes

- Significant differences were estimated using overlapping confidence intervals. Although this method is conservative ($\alpha < 0.01$) and most appropriate when comparing mutually exclusive groups, it was chosen as an objective means of making conclusions on population-based data. Also note that multiple comparisons performed in the analysis were not taken into consideration when choosing the level of significance to test.
- Data used for the regional comparisons normally shows the rates for the Ontario health units with the highest and the lowest rates. The purpose of these comparisons is to show the rate for Toronto relative to other areas in Ontario.
- Map 1 and Table 4 are based on three years of data combined in order to obtain a sample size large enough to analyze at smaller geographic levels or income groups. By combining years of data, changes over time in and between geographic areas may be hidden.
- Toronto is compared Ontario excluding Toronto and to the Greater Toronto Area (GTA) excluding Toronto rather than to Ontario and the GTA including Toronto because Toronto comprises such a large proportion of these two areas. Excluding Toronto therefore results in more meaningful comparisons.
- Totals from Tables 1, 2, and 3 may not match the overall total because analyses excluded birth records with missing information. Similarly, Table 4 and Map 1 excluded birth records that did not have available dissemination area information and could not be linked a Toronto census tract or neighbourhood.
- Neighbourhoods identified as having significantly higher or lower rates than Toronto as a whole do not necessarily represent all such neighbourhoods. Cut-offs are arbitrary.
- Two different data sources were used to compile this document. PHO Snapshot data included only hospital births while BORN data included both hospital and home births. The two data sources had slightly different inclusion criteria for data analysis. These differences resulted in slightly different estimates of the SGA rates for the same time period. See Sources section for more data information.
- Due to technicalities of the data source, babies born outside of the 22 to 43 weeks of gestation were not removed from the analysis using BORN data (Map 1 and Tables 1 to 4). This would have limited impact on the outcome of the analysis as very few babies (less than 0.3%) were born outside of this period.
- Multiple birth babies were included in the denominator of the analysis using Public Health Ontario Snapshots (Figures 1 and 2) and excluded in the denominator of the BORN data.

Definitions

95% Confidence Interval is the range within which the true value lies, 19 times out of 20.

Gestational Age calculated as the interval between the date of delivery of the fetus or newborn and the first day of the mother's last normal menstrual period. Full-term pregnancies average about 40 weeks (37 completed weeks to 42 completed weeks).

GTA excluding Toronto means the Greater Toronto Area (GTA) with Toronto removed from the GTA data.

Income Quintiles are five groups, each containing approximately 20% of the population. They were created by ranking Toronto's census tracts based on the percent of residents living below the Statistics Canada after-tax Low Income Measure (LIM), using the 2014 income tax filer data. Quintile 1 includes the census tracts with the highest percent of people living below the LIM and is therefore the lowest income quintile. Quintile 5 includes the census tracts with the lowest percent of people living below the LIM, making it the highest income quintile. LIM is an income level set at 50% of the median income in Canada in a given year, adjusted for household size.

Small for Gestational Age (SGA) refers to babies with a birth weight below the 10th percentile of birth weights for babies of the same sex and same gestational age in weeks. The percentile cut-offs are based on the population-based Canadian reference tables developed by Kramer et al. in 2001; the tables can be found at http://www.phac-aspc.gc.ca/rhs-ssg/bwga-pnag/pdf/bwga-pnag_e.pdf. The reference tables apply only to singleton births of gestational ages 22 to 43 completed weeks. This limits the analysis to singleton babies born between 22 and 43 weeks of gestation.

Small for Gestational Age Rate is the number of SGA singleton live births per 100 singleton live births.

Ontario excluding Toronto means Ontario with Toronto removed from the Ontario data.

Parity refers to the number of times a woman has been pregnant and carried the pregnancy to a viable gestational age of 24 weeks or more and includes both live born and stillborn. In this document there are two categories. **Parous** refers to having been pregnant for at least 24 weeks one or more times before and **nulliparous** means never having been pregnant for at least 24 weeks, regardless of the outcome of the pregnancy.

Sex defines people based on their biological characteristics, whereas gender is a socially constructed concept. From a social determinants of health perspective, certain health conditions can be associated with gender, and from a biological perspective, health conditions can be associated with sex. Although reporting based on both concepts would be preferable, the data source used here only collects information on sex, and not gender.

Sources

BORN Information System: BORN Ontario. Public Health Cube (2014 to 2016 calendar year). Accessed on September 22, 2017. Note: BORN PHU data are reported using submitted records from the BORN Information System, which may or may not be acknowledged by the submitting hospital. This may lead to potential fluctuations in recent data as hospital sites submit additional records or update existing records prior to the close of each fiscal year. Used in:

- Map 1
- Tables 1, 2, 3, and 4

Income data: Statistics Canada – Table F-18 annual income estimates for census families and individuals (T1 Family File), 2014. Used in:

- Table 4

PHO Snapshot: Public Health Ontario. Snapshots: Toronto Public Health: Crude Small for Gestational Age Rate, 2006 to 2015. Toronto, ON: Ontario Agency for Health Protection and Promotion; 2017 Mar 3 [cited 2017 Sept 19]. Available from: http://www.publichealthontario.ca/en/DataAndAnalytics/Snapshots/Pages/Reproductive-Health.aspx Used in:

- Figures 1 and 2

Health Surveillance Indicator: Small For Gestational Age

Category: Reproductive Health

Prepared: September, 2017

This indicator report is part of a series that informs the ongoing assessment of Toronto's health status. For a full list of the indicators, please go to: www.toronto.ca/health