



POPULATION HEALTH STATUS INDICATORS: LOW BIRTH WEIGHT

Public Health Relevance

Low birth weight (LBW) is defined as a birth weight less than 2,500 grams (5.5 pounds), regardless of gestational age. LBW has both short and long-term consequences for the health of the newborn at the time of birth and later in life. These include higher risk of childhood illness, delays in motor development, and chronic diseases in adulthood such as diabetes and respiratory disease.

LBW babies include those who have not had adequate time to develop because they are born prematurely, as well as full-term or preterm babies who have weights below the norm for their gestational age because of restricted growth in utero. There are many risk factors for LBW including maternal ages under 20 or over 35, smoking or illicit drug use during pregnancy, low socioeconomic status, and multiple births (e.g., twins, triplets).

Understanding trends, patterns, and characteristics related to LBW provides evidence for planning, evaluating, and modifying public health services and policies intended to promote the healthiest possible outcomes for newborns. A healthy baby is more likely to be grow, learn and thrive, thus setting a foundation for positive health during childhood, adolescence, and adulthood.

Throughout this document, LBW is reported for all births including both singleton and multiples.

Highlights

1. The rate of low birth weight in Toronto remained relatively stable from 2007 to 2016.
2. In 2016, Toronto's low birth weight rate was higher than the rest of Ontario.
3. Neighbourhoods with higher LBW rates were clustered in the northwest and central east areas of the city.
4. Higher rates of low birth weight were found in lower income areas of the city.

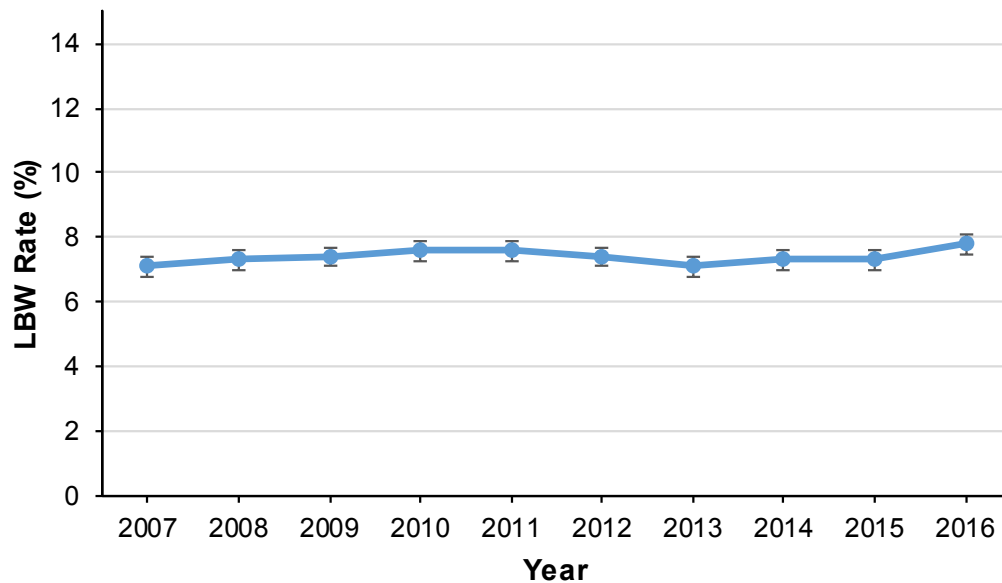
Trends Over Time

The rate of low birth weight in Toronto remained relatively stable from 2007 to 2016.

Figure 1 shows the rate of LBW for all live births for Toronto from 2007 to 2016.

The LBW rate for Toronto remained relatively stable from 2007 to 2016. In 2007, 7.1% of newborns were born LBW and in 2016, 7.8% of newborns were born LBW.

Figure 1: Low Birth Weight Rate, Toronto, 2007 to 2016



Error bars (I) represent 95% confidence intervals.

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

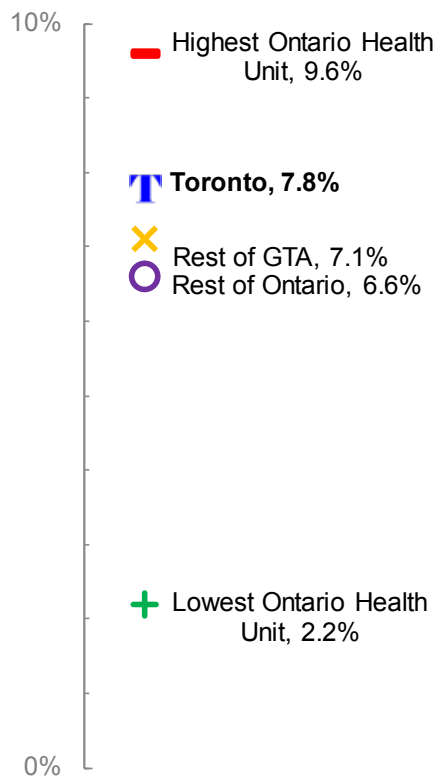
Regional Comparisons

In 2016, Toronto's low birth weight rate was higher than the rest of Ontario.

Figure 2 shows the LBW rate for live births in Toronto in 2016, 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.

Toronto's 2016 LBW rate of 7.8% was higher than the rest of Ontario and higher than the rest of the GTA. Toronto had the fourth highest LBW rate of the 36 health units in Ontario.

Figure 2: Low Birth Weight Rate, Toronto Compared to Other Selected Regions in Ontario, 2016



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

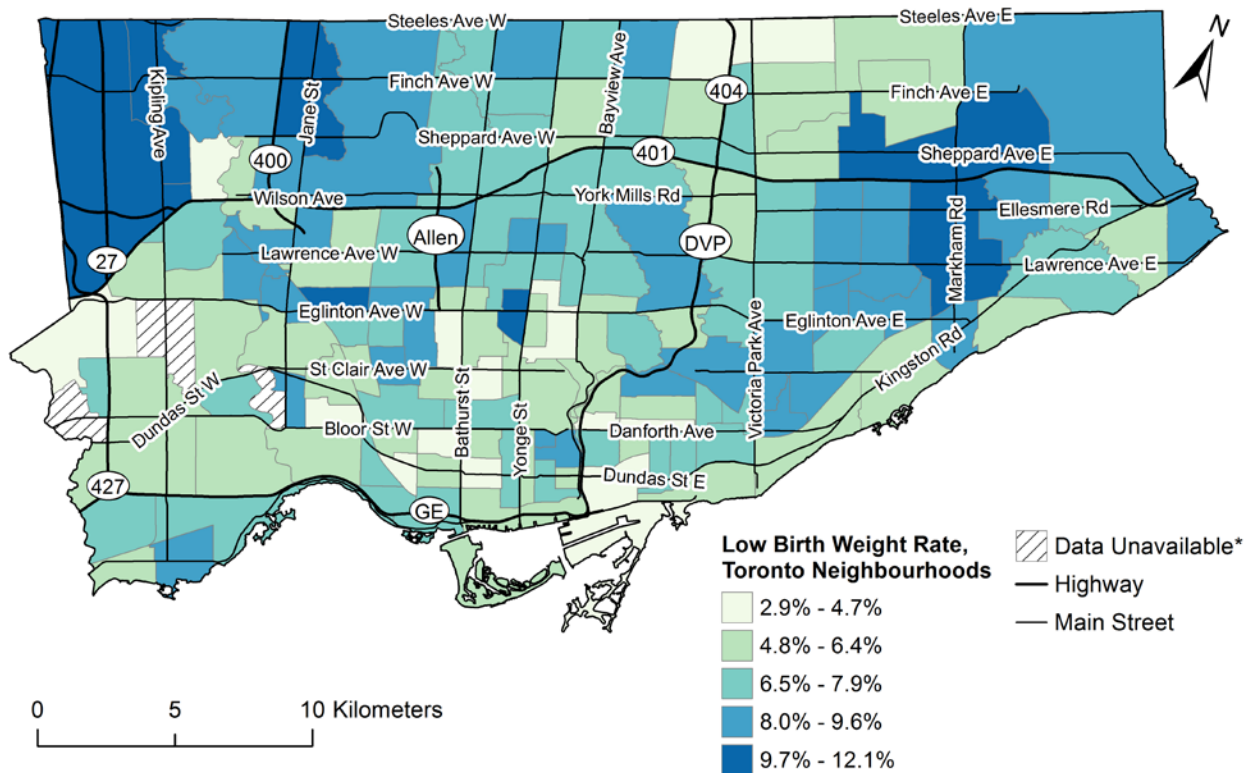
Toronto Neighbourhood Comparisons

Neighbourhoods with higher LBW rates were clustered in the northwest and central east areas of the city.

Map 1 shows the LBW rate for 2015 and 2016 combined by Toronto neighbourhood. The LBW rate ranged from 2.9% to 12.1% across the 140 neighbourhoods in Toronto. Neighbourhoods with higher LBW rates were clustered in the northwest and central east areas of the city and included:

- Black Creek
- Glenfield-Jane Heights
- Malvern
- Mount Olive-Silverstone-Jamestown
- Rexdale-Kipling
- West Humber-Clairville
- Woburn

Map 1: Low Birth Weight Rate, by Neighbourhood, Toronto, 2015 and 2016 Combined



* Neighbourhoods with counts of fewer than six are suppressed.
 Copyright © 2018. City of Toronto. All Rights Reserved.

Data Source: BORN Ontario, see Data Notes for details.

Table 1 shows the LBW rate by Toronto Public Health's Child Health and Development Service Delivery Areas (SDAs). In 2016, The East SDA had a higher LBW rate than the rate for Toronto as a whole. None of the SDAs had a significantly lower rate than Toronto overall.

Table 1: Low Birth Weight Rate, by Service Delivery Area*, Toronto, 2016

Service Delivery Area	Low Birth Weight Rate
West	7.1%
Northwest	8.3%
Southwest	6.9%
Northeast	6.6%
Southeast	6.7%
East	9.2% ^H

^H Significantly higher than the Toronto total.

* Toronto Public Health's service delivery areas for Child Health and Development.

Data Source: see Data Notes.

Socio-demographics

Higher rates of low birth weight were found in lower income areas of the city.

In 2016, 2,250 Toronto babies were born LBW. Table 2 shows the distribution of these LBW babies by select birth characteristics for Toronto in 2016. Over half of LBW babies were female (51.1%). The majority were born preterm (65.9%), were singleton births (76.2%), and were of moderately low birth weight (84.2%).

Table 2: Distribution of Low Birth Weight Births by Birth Characteristics, Toronto, 2016

Newborn Sex	Number of Births	Percent of Total
Female	1,149	51.1
Male	1,099	48.9

Gestational Age	Number of Births	Percent of Total
Full-term	768	34.1
Preterm	1,482	65.9

Singleton vs Multiple	Number of Births	Percent of Total
Singleton	1,715	76.2
Multiple	535	23.8

Birth Weight Categories	Number of Births	Percent of Total
1 to 999 grams (extremely low)	165	7.3
1,000 to 1,499 grams (very low)	190	8.4
1,500 to 2,499 grams (moderately low)	1,895	84.2
Toronto	2,250	100.0

Data Source: BORN Ontario, see Data Notes for details.

Totals within each category may not sum to overall total because analysis excluded birth records with missing information.

Table 3 shows the LBW rate by income quintile for Toronto in 2016. 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.

A socio-economic gradient was observed, with lower income areas of the city experiencing higher rates of LBW babies. The LBW was significantly higher in the three lower income quintiles (Quintiles 1 to 3) compared to the highest income quintile (Quintile 5).

Table 3: Low Birth Weight Rate by Income Quintile, Toronto, 2016

Income Level	Low Birth Weight Rate
Quintile 1 (Lower income)	8.8% ^H
Quintile 2	8.1% ^H
Quintile 3	7.7% ^H
Quintile 4	6.6%
Quintile 5 (Higher income)	5.9%

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

Data Source: BORN Ontario and Income Quintiles, see Data Notes for details.

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. 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.
- Toronto is compared to 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.
- Map 1 is based on two years of data combined in order to obtain a sample size large enough to analyze at smaller geographic levels. By combining years of data, changes over time in and between geographic areas may be hidden.
- Totals in Table 2 may not match the overall total because analyses excluded birth records with missing information. Similarly, Table 3 and Map 1 excluded birth records that could not be linked to 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.
- For Map 1, the Natural Breaks (Jenks) classification was used.
- Low birth weight rates were for all babies and not limited to just singletons.
- 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 LBW rates for the same time period. See Sources section for more data information.

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). Preterm Birth is defined as a live birth that occurs at less than 37 completed weeks of gestation.

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 2015 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 family income in Canada in a given year, adjusted for household size.

Low Birth Weight (LBW) is defined as weighing less than 2,500 grams or 5 pounds 8 ounces at birth.

Low Birth Weight (LBW) Rate is the number of LWB live births per 100 live births.

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 (2015 to 2016 calendar years). Accessed on January 22, 2018. 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:

- Tables 1, 2, and 3
- Map 1

Income Quintiles: Statistics Canada – Table F-18 annual income estimates for census families and individuals (T1 Family File), 2015. Used in:

- Table 3

PHO Snapshot: Public Health Ontario. Snapshots: Toronto Public Health: Crude low birth weight rate, 2007 to 2016. Toronto, ON: Ontario Agency for Health Protection and Promotion; 2017 Dec 29 [cited 2018 Jan 22]. Available from:

<http://www.publichealthontario.ca/en/DataAndAnalytics/Snapshots/Pages/Reproductive-Health.aspx> Used in:

- Figures 1 and 2

Population Health Status Indicator: Low Birth Weight

Category: Reproductive Health

Prepared: April, 2018

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