

HEALTH SURVEILLANCE 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. twin, 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 rate in Toronto has remained stable from 2006 to 2014.
2. Toronto's low birth weight rate was higher than the rest of Ontario.
3. The low birth weight rate varies across Toronto neighbourhoods.
4. The lowest income group had the highest rate of low birth weight in Toronto.

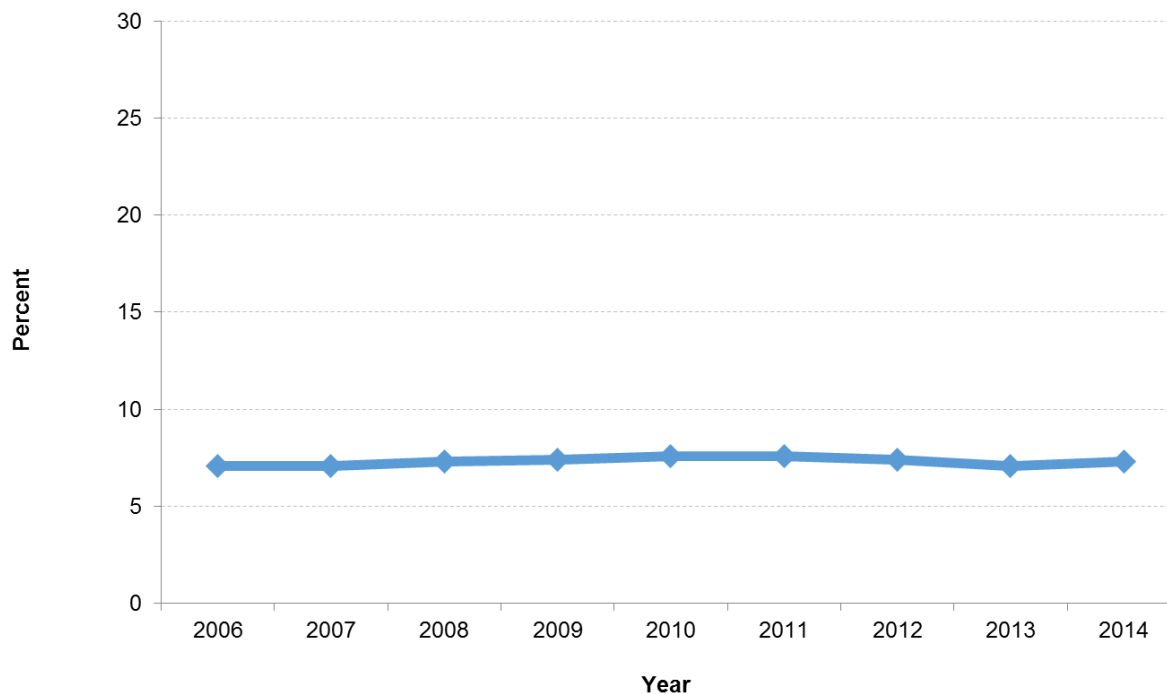
Trends Over Time

The rate of low birth weight in Toronto has remained stable from 2006 to 2014.

Figure 1 below shows the rate of low birth weight (LBW) for all live births for Toronto from 2006 to 2013.

The LBW rate for Toronto has remained stable from 2006 to 2014. In 2006, 7.1% of newborns had LBW and in 2014, 7.3% of newborns had LBW. This represents almost 2100 babies.

Figure 1: Low Birth Weight Rate, Toronto, 2006 to 2014



95% confidence intervals not visible due to their small size relative to the scale of the graph

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

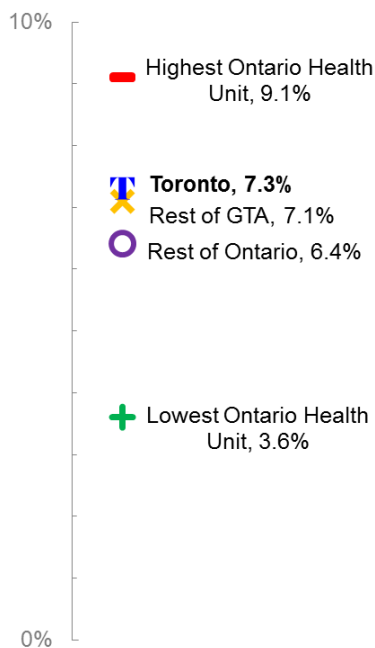
Regional Comparisons

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

Figure 2 below shows the LBW rate for all live births in Toronto in 2014 compared to the rest of Ontario (Ontario excluding Toronto), the rest of the Greater Toronto Area (GTA excluding Toronto), and the health units in Ontario with the highest and lowest results.

Toronto's 2014 LBW rate of 7.3% was similar to the rest of the GTA but was significantly higher than the rest of Ontario. Toronto ranked 5th of the 36 health units in Ontario, with the first ranked health unit having the highest rate of LBW.

Figure 2: Low Birth Weight Rate, Selected Regions in Ontario, 2014



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

Toronto Neighbourhood Comparisons

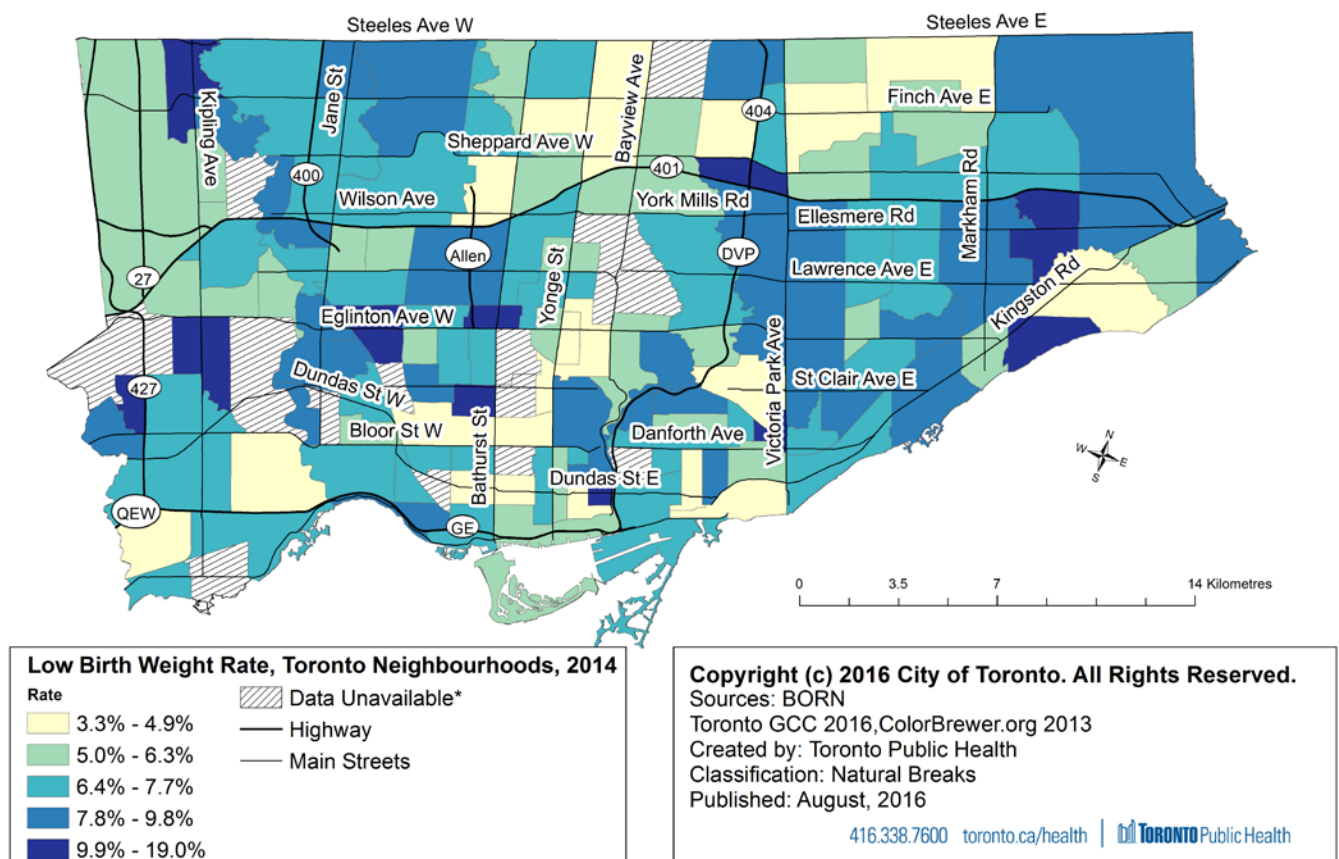
The low birth weight rate varies across Toronto neighbourhoods.

Map 1 shows low birth weight rates for 140 Toronto neighbourhoods, for 2014. The LBW rate varied across Toronto neighbourhoods, with the lowest neighbourhood having 3.3% of babies with LBW and the highest neighbourhood having 19.0% of babies with LBW.

Neighbourhoods with significantly higher LBW rates were scattered across the city and included:

- Princess-Rosethorn
- Crescent Town
- Etobicoke West Mall
- Henry Farm
- Regent Park
- Forest Hill North

Map 1: Low Birth Weight Rate by Neighbourhood, Toronto, 2014



* Data Unavailable: Neighbourhoods with count of less than 5 are suppressed.

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

Socio-demographics

The lowest income group had the highest rate of low birth weight in Toronto.

In 2014, almost 2,100 Toronto babies weighed less than 2,500 grams at birth, thus having low birth weight.

Table 1 shows the distribution of these LBW babies by birth characteristics. Over half of LBW babies were females (54%). The majority were born preterm (65%), were singleton births (73%) and were of moderately low birth weight (86%).

Table 1: Low Birth Weight Births by Birth Characteristics, Toronto, 2014

Sex	Number of Births	Percent of Total
Male	928	45.6
Female	1,097	53.9
Gestational Age	Number of Births	Percent of Total
Full-term	705	34.7
Preterm	1,329	65.3
Birth Type	Number of Births	Percent of Total
Singleton	1,487	73.1
Multiple	547	26.9
Birth Weight Categories	Number of Births	Percent of Total
1 to 999 grams (extremely low)	135	6.6
1,000 to 1,499 grams (very low)	152	7.5
1,500 to 2,499 grams (moderately)	1,747	85.9
Toronto	2,034	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 2 shows the 2014 LBW rate for Toronto by income quintile. Quintile 1 includes areas in Toronto with the highest percent of people living below the low income measure (LIM) making it the quintile with the lowest income. Quintile 5 includes areas in Toronto with the lowest percent of people living below the LIM making it the quintile with the highest income.

The lowest income group (Quintile 1) had significantly higher rates of LBW compared to the higher income group (Quintile 5).

Table 2: Low Birth Weight Rate by Income Quintile, Toronto, 2014

Income Level	Percent Low Birth Weight
Quintile 1 (Lower income)	7.7 H
Quintile 2	6.3
Quintile 3	6.7
Quintile 4	6.8
Quintile 5 (Higher income)	5.8

H Significantly higher than Quintile 5, the higher income group, indicating a health inequality and a less favourable result for that group.

L Significantly lower than Quintile 5, the higher income group, indicating a health inequality and a more favourable result for that 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 ($\alpha \sim < 0.01$) 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.
- 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.
- 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.
- For comparisons of smaller geographic areas, any person who could not be linked to a valid Toronto postal code was excluded from the total.
- 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.
- Low birth weight rates were for all babies and not limited to just singletons.

Definitions

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).

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 2012 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. Income Level is based on the ratio of each survey respondent's annual household income to the low income cut-off corresponding to their household size, divided by the highest such ratio in Toronto. The lower level is the lowest 30% of income ratios, the middle level is the 31st to 70th percent, and the higher level is the top 30%. Approximately 15% of survey respondents included in this analysis had their income level imputed based on other socio-demographic characteristics.

Live birth is defined as the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life such as heartbeat, umbilical cord pulsation, or

definite movement of voluntary muscles, whether the umbilical cord has been cut or the placenta is attached. A live birth is not necessarily a viable birth.

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

Multiple birth occurs when a pregnancy results in the development of two or more fetuses.

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.

Singleton birth occurs when a pregnancy results in the development of one fetus.

Sources

PHO Snapshot: Public Health Ontario. Snapshots: Toronto Public Health: Crude low birth rate, 2006-2014. Toronto, ON: Ontario Agency for Health Protection and Promotion; 2016 Mar 3 [cited 2016 JUN 27]. Available from: <http://www.publichealthontario.ca/en/DataAndAnalytics/Snapshots/Pages/Maternal-health.aspx> Used in:

- Figures 1 and 2

BORN Information System: BORN Ontario. Public Health Unit Analytic Reporting Cube (2014 calendar year). Information accessed on July 15, 2016. Note: BORN PHU data are reported using submitted records from the Business 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 and 2
- Map 1

Income Quintiles: Income Estimates for Census Families and Individuals (T1 Family File), Table F-18, Statistics Canada, 2009-2013. Used in:

- Table 2

Health Surveillance Indicator: Low Birth Weight

Category: Reproductive Health

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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