

# Saskatchewan Births

## 2000 to 2014

Release Date: July 2019

**PREPARED BY POPULATION HEALTH BRANCH, SASKATCHEWAN MINISTRY OF HEALTH**

**FOR MORE INFORMATION CONTACT:**

Val Mann, PhD

Chief Population Health Epidemiologist

Population Health Branch, Saskatchewan Ministry of Health

[epidemiology@health.gov.sk.ca](mailto:epidemiology@health.gov.sk.ca)

# EXECUTIVE SUMMARY

## Purpose:

Analyzing fertility and birth rates is important to the development of current and future health care policy because the demographic characteristics of a population influence its health status and health service needs.

## In this issue:

Executive Summary.....	3
Crude Birth Rate .....	4
General Fertility Rate .....	5
Maternal Age .....	6
Age-specific Fertility Rate ..	8
Birth Weight.....	10
High Birth Weight Rate .....	11
Low Birth Weight Rate .....	13
Low Birth Weight Full-Term Singleton Rate.....	15
Very Low Birth Weight Rate .....	16
Extremely Low Birth Weight Rate.....	17
Technical Notes.....	18
Endnotes.....	19

## BACKGROUND

The World Health Organization (WHO) defines a live birth as “a product of conception, irrespective of the duration of pregnancy, which . . . breathes or shows any other evidence of life.”<sup>1</sup> There are, however, differences in the birth registration practices among countries and even the provinces in Canada.<sup>2</sup>

Extremely low birth weight infants are registered in some locations and not in others. Infants under 500 grams at birth have an extremely small chance of survival. For this reason, some jurisdictions have not included these infants in the birth registration process.<sup>3</sup> Those that do include these births will have a higher corresponding infant mortality rate. Saskatchewan registers all live births regardless of birth weight. Live births of all weights have been included in this analysis.

## KEY FINDINGS

### Overall:

In 2014 there were 15,133 babies born in Saskatchewan.

### Crude birth rate:

The number of babies born in Saskatchewan has grown from 11.6 to 13.5 per 1,000 people over the fifteen year period. The highest birth rates were seen in the northern part of the province.

### General fertility rate:

Throughout the 2000s the number of babies born in Saskatchewan increased relative to the number of women of child-bearing age. In 2000, for every 1,000 women between the ages of 15 and 49 years, there were 47 babies born. In 2014, this number grew to 59 babies.

### Maternal age:

From 2000 to 2014, along with the increase in the number of babies born, the average age of mothers has also increased, from 26.8 years to 28.3 years.

Analyzing fertility and birth rates is important to the development of current and future health care policy because the demographic characteristics of a population influence its health status and health service needs.

This report is based on the most recent data available at the time of analysis. The report will be updated to 2019 when those data become available.

### Age-specific fertility rate:

In Saskatchewan, and every former health region except Saskatoon, the largest number of births was to women aged 20 to 29. Mothers aged 30 to 39 had the biggest increase in birth rate in Saskatchewan from 2000 to 2014. Rates for all other age groups remained stable.

### Birth by weight:

Of every hundred babies born in Saskatchewan, six are of low (less than 2,500 g) birth weight, of which one is of very low (less than 1,500 g) or extremely low (less than 1,000 g) birth weight. With its own set of complications, 13 of every hundred babies born in Saskatchewan are of high (greater than 4,000 g) birth weight.

Crude birth rate is the number of live births, for mothers of all ages, divided by the census population for a given year. In Saskatchewan, all birth weights are registered and used in calculation of rates.

Crude birth rates do not account for differences in the population's gender and age structure.

## CRUDE BIRTH RATE

The crude birth rate is one of the most basic and important measures in demography. Birth rates affect public policy in the health, social service, justice and education systems. It is useful in determining required services and in planning preventive and promotional interventions.

- Crude birth rates varied across the former regional health authorities (RHAs) in 2014 with the highest in Keewatin Yatthé (20.7 live births per 1,000 population) and the lowest in Cypress (10 live births per 1,000 population).
- Rates were highest in northern Saskatchewan: Athabasca Health Authority and the former Keewatin Yatthé, Mamawetan Churchill River, Prairie North, Prince Albert Parkland RHAs.

### KEY FINDINGS:

- The provincial crude birth rate increased from 2000 to 2014, from 11.6 to 13.5 live births per 1,000 population.
- In other words, for every 1,000 residents, there were approximately 14 babies born in 2014.
- Rates were stable from 2000 to 2005 at about 11.6 live births per 1,000 population, increased to 13.5 per 1,000 by 2009, then stabilized from 2010 to 2014.

Figure 1: Crude birth rate, 2000-2014

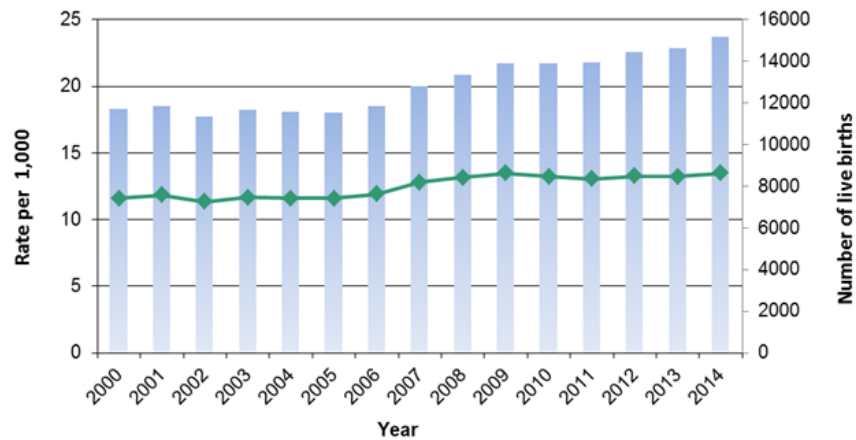
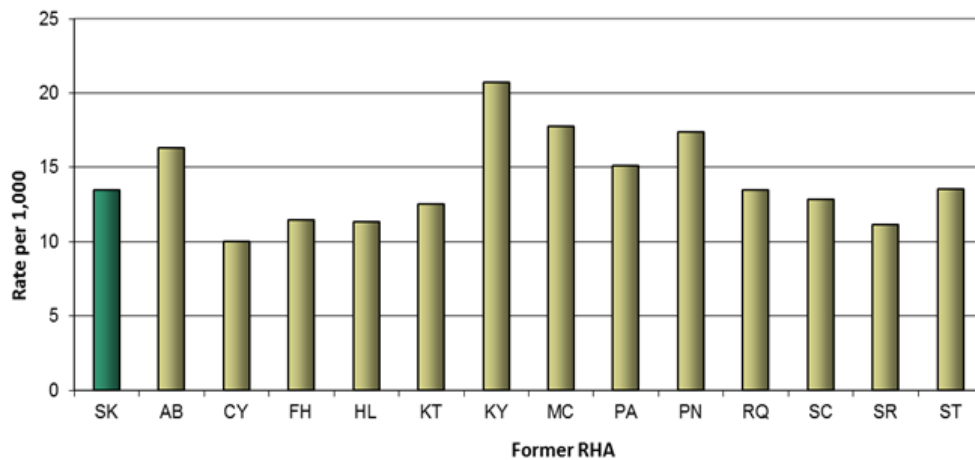


Figure 2: Crude birth rate, by Athabasca Health Authority and former RHA, 2014



## GENERAL FERTILITY RATE

Birth rate affects public policy in the health, social service, justice and education systems. It is useful for determining required services when planning for preventive and promotional interventions. Higher fertility rates often go hand-in-hand with lower economic, physical and psychosocial health of populations and family units.<sup>4</sup> General fertility rate (GFR) has declined in developing countries due to women's improved education, access to birth control and expanding career choices. Increasing rates may be affected by improved health care and increased immigration from populations with differing cultural and religious beliefs.<sup>5</sup>

### KEY FINDINGS:

- The provincial GFR showed a slow steady increase from 47.2 per 1,000 women of reproductive age in 2000 to 59.1 per 1,000 women in 2014.

- For every 1,000 women aged 15 to 49 years, there were about 59 babies born in 2014.
- The GFR varied across the former RHAs: the lowest rate, 49.8 per 1,000, was in Cypress, while the highest rate, 80.4 per 1,000, was in Keewatin Yatthé.
- The northern former RHAs, Keewatin Yatthé, Mamawetan Churchill River, Prince Albert Parkland and Prairie North, and Athabasca Health Authority had higher GFRs than the southern former RHAs.

The general fertility rate (GFR) is the total number of live births per 1,000 women of reproductive age (15 to 49 years) in a population per year.

GFR is a more refined measure than crude birth rate because the denominator is limited to women of child-bearing age. Crude rate uses the whole population in the denominator which may conceal differences among subgroups of the population. In Saskatchewan, all birth weights are registered and used in calculation of rates.

Figure 3: General fertility rate, women 15 to 49 years, 2000-2014

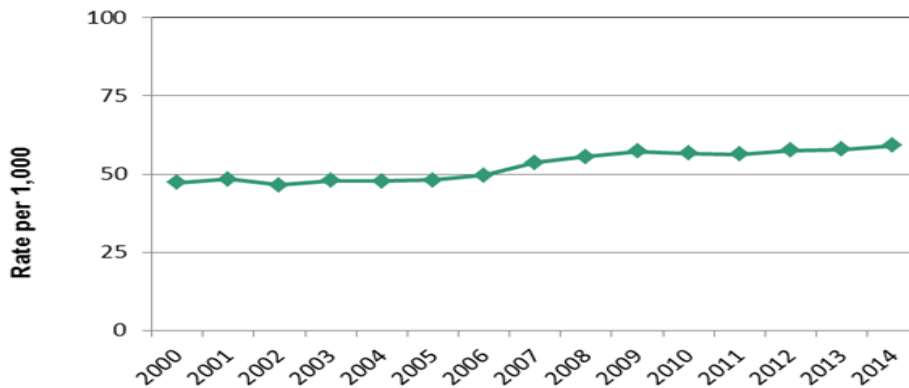


Figure 4: General fertility rate, women 15 to 49 years, by Athabasca Health Authority and former RHA, 2014



Average maternal age at child's birth is the sum of maternal ages divided by total number of infants born. This includes all births in a given year, regardless of whether it is a mother's first or subsequent pregnancy.

## MATERNAL AGE

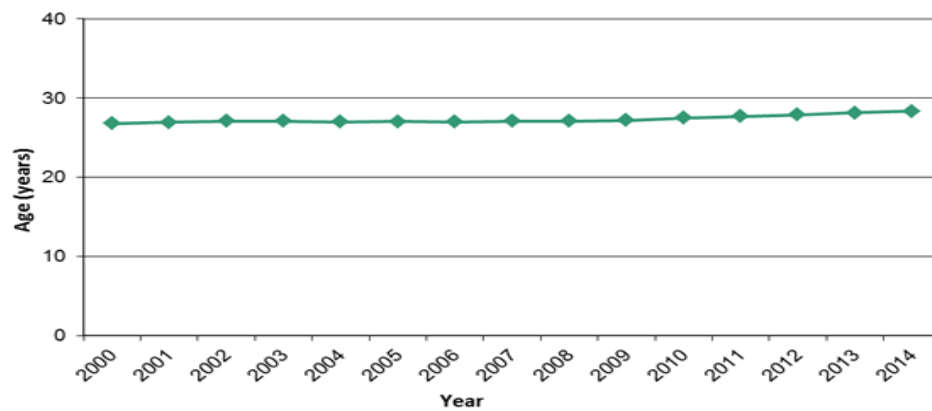
Average maternal age is affected by many socio-economic and demographic factors. There is a complex relationship with factors such as population size, age breakdown of the population, household size, household composition, education, and economic status of the general population. For example, if a population had a much younger average age, the average maternal age would likely be younger than in a population with an older average age. On the other hand, a population with higher rates of education, especially among women, may have an older average maternal age, as women delay having children to complete schooling.

- Looking at maternal age, those 28 years of age report the most number of births compared to all other ages .
- The average maternal age varied across the former RHAs with the lowest in Keewatin Yatthé, 25.5 years, and the highest in Saskatoon, 29.2 years.
- The urban-based former RHAs of Saskatoon and Regina Qu'Appelle had the highest average maternal ages, whereas the north (Athabasca Health Authority and the former Keewatin Yatthé and Mamawetan Churchill River) had the lowest.

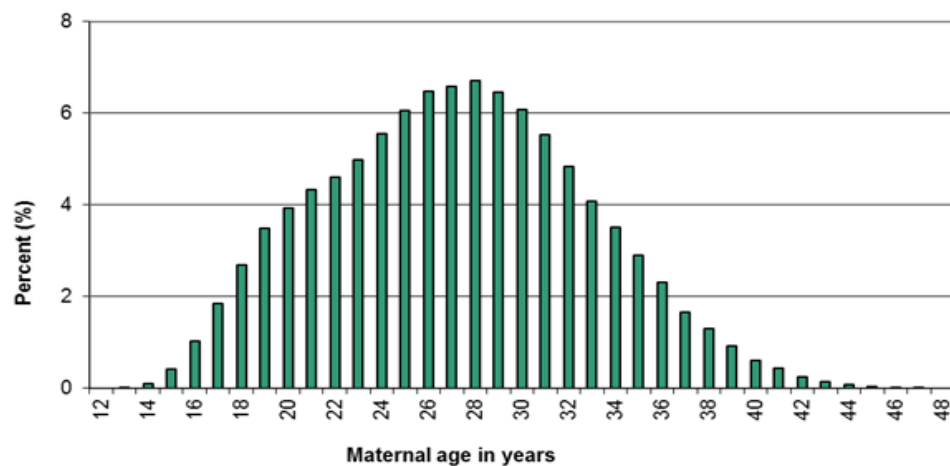
### KEY FINDINGS:

- The provincial average maternal age at childbirth increased from 26.8 years in 2000 to 28.3 years in 2014.

**Figure 5: Average age of mother at child's birth, 2000-2014**

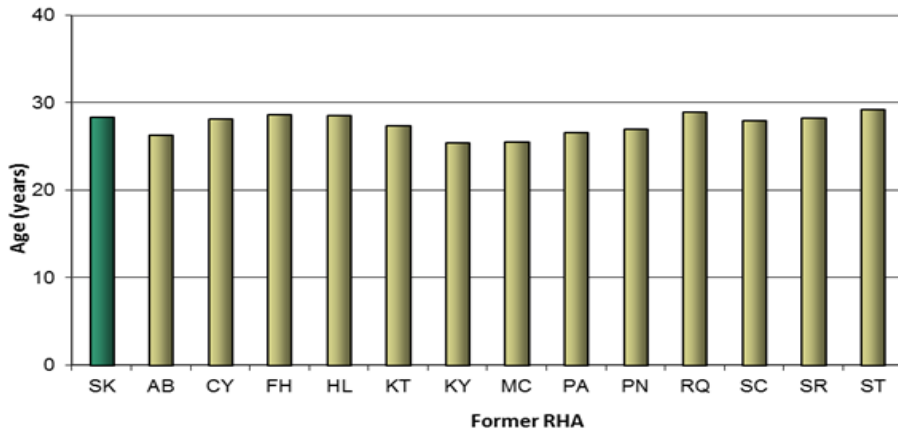


**Figure 6: Percent of live births by maternal age, average 2000-2014**



## MATERNAL AGE

Figure 7: Average age of mother at child's birth, by Athabasca Health Authority and former RHA, 2014



Average maternal age at child's birth is the sum of maternal ages divided by total number of infants born. This includes all births in a given year, regardless of whether it is a mother's first or subsequent pregnancy.

Age-specific fertility rate (ASFR) is the ratio of live births to women in a given age group relative to the number of women in that age group.

## AGE-SPECIFIC FERTILITY RATE

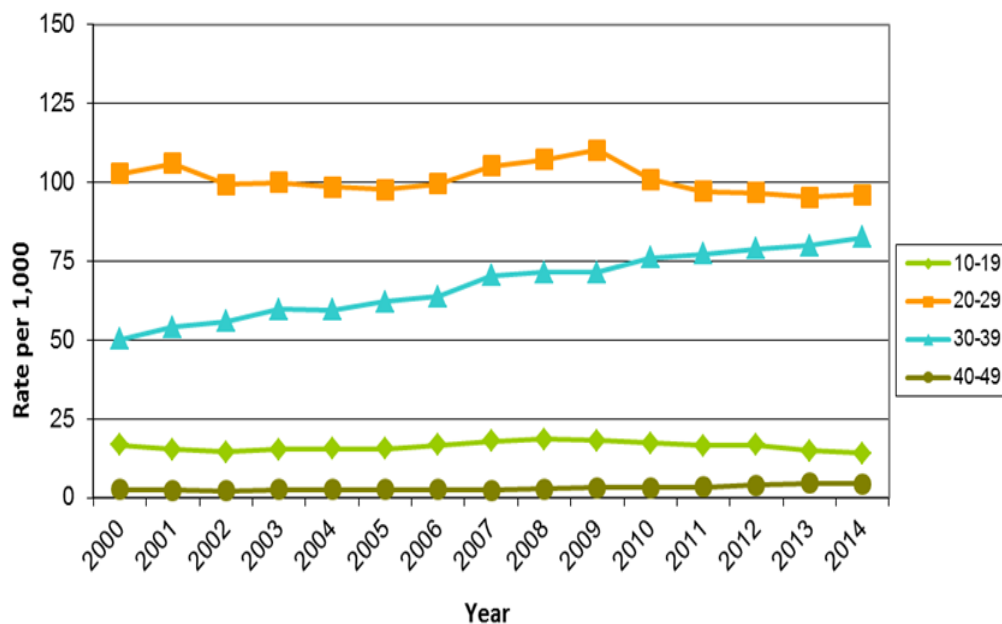
Age-specific fertility rate (ASFR) is a more refined measure than crude birth rate and is useful for comparison between time periods and different geographical areas. It reveals differences among subgroups of the female population of child-bearing age. Mother's age has impacts on the health of both the mother and the infant. Mothers aged 10 to 19 years are at greater risk of eclampsia, peureral endometritis and systemic infections. Infants born to adolescent mothers are at greater risk for low birthweight, preterm delivery and severe neonatal conditions.<sup>6</sup> Older mothers are at risk of conditions such as gestational diabetes and hypertensive disorders. Infants born to older mothers are at higher risk for low birthweight, stillbirth and perinatal mortality and morbidity.<sup>7</sup>

### KEY FINDINGS:

- The provincial ASFR varied from 2000 to 2014 with rates being the highest in the 20 to 29 year group. In 2014, the ASFR for 20 to 29 women was 96.2 live births per 1,000 women.
- For every 1,000 women aged 20 to 29, there were about 96 babies born in 2014.
- For the remaining age groups, 40 to 49 year olds had the lowest rates at 4.5 live births per 1,000 women, followed by the 10 to 19 year olds at 14.2 and 30 to 39 year olds at 82.6 in 2014.

- ASFRs for the 30 to 39 year olds increased from 50.2 to 82.6 live births per 1,000 women over the time period and are thought to be due to higher education and employment levels, along with a delay in child bearing in this age group.<sup>8</sup>
- Rates for the remaining age groups remained stable.
- 2014 ASFRs for most of the former RHAs followed the same age pattern as the province, with the exception of Saskatoon, having the highest rates in the 30 to 39 year age group.
- The urban former health regions of Saskatoon and Regina Qu'Appelle had the lowest ASFRs for 20 to 29 year-old women. Lower fertility rates are found in areas with higher education and employment levels among young adults often associated with larger urban settings.<sup>9</sup>
- Due to small numbers, rates were suppressed for Athabasca Health Authority, the 10 to 19 year age group for the former Heartland, and the 40 to 49-year age group for all former RHAs except Heartland, Regina Qu'Appelle and Saskatoon.

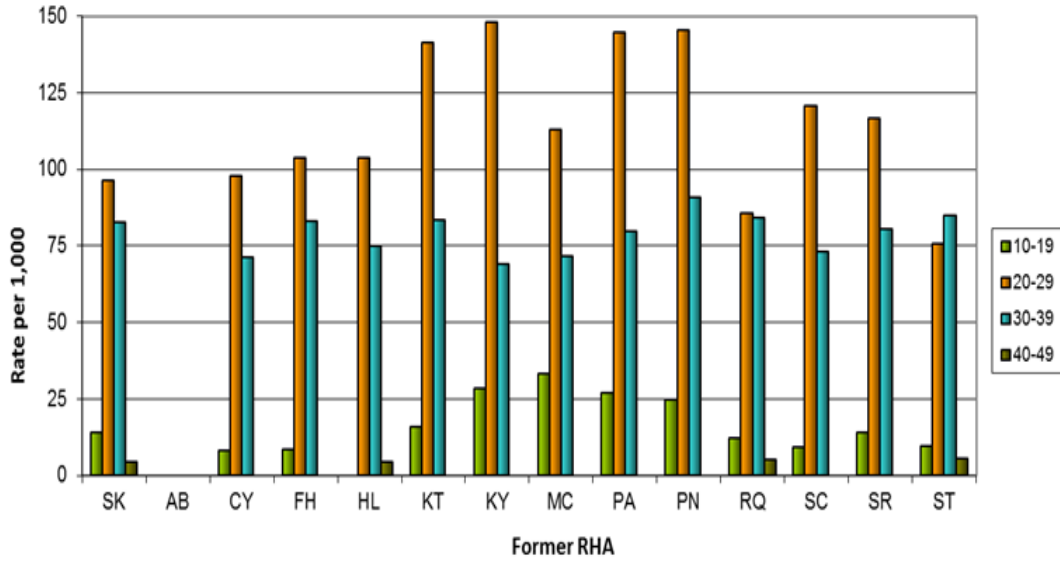
Figure 8: Age-specific fertility rate, 2000-2014





# AGE-SPECIFIC FERTILITY RATE

Figure 9: Age-specific fertility rate, by Athabasca Health Authority and former RHA, 2014



ASFR is the ratio of live births to women in a given age group relative to the number of women in that age group.

## BIRTH WEIGHT

Birth weight rates are calculated for all live births, regardless of mother's age. In Saskatchewan, all birth weights are registered and used in calculation of rates.

High birth weight rate is the number of live births, weighing more than 4,000 grams, divided by the total number of live births for a given year.

Low birth weight (LBW) rate is the number of live births, weighing less than 2,500 grams, divided by the total number of live births for a given year. LBW includes very low birth weight (VLBW) and extremely low birth weight (ELBW).

Very low birth weight rate is the number of live births, weighing less than 1,500 grams, divided by the total number of live births for a given year and includes ELBW.

Extremely low birth weight rate is the number of live births, weighing less than 1,000 grams, divided by the total number of live births for a given year.

Birth weight, outside the normal range, is a main determinant of infant morbidity and mortality.

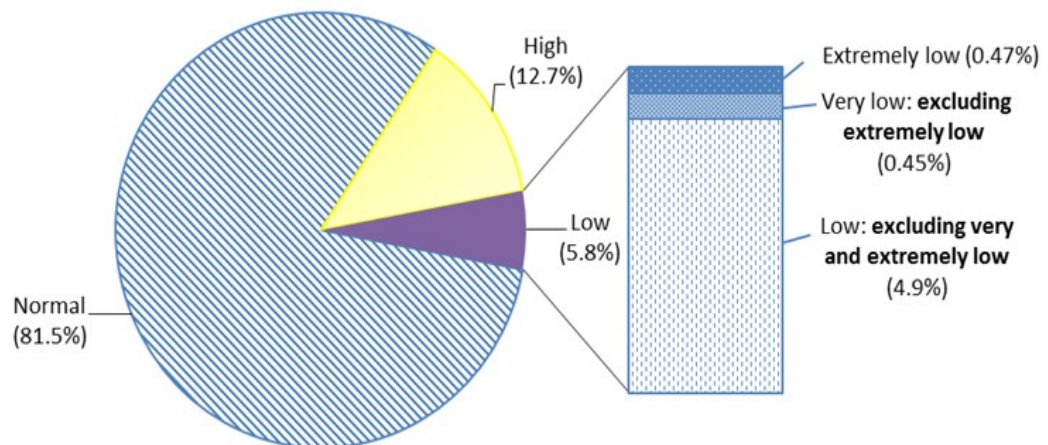
High birth weight babies are more likely to be born to a mother who is overweight, older, has had previous pregnancies, especially those of high birth weight, and suffers health conditions such as diabetes.<sup>10</sup> In comparison, based on the National Longitudinal Survey of Children and Youth: 1994-2001, rates of high birth weight are 13.3% (Canada), 15.2% (Atlantic provinces), 10.6% (Quebec), 13.6% (Ontario), 12.4% (prairie provinces) and 17.4% (British Columbia).<sup>11</sup> The effects of high birth weight can be serious and long lasting. They include long difficult births, which may result in the need for cesarean section or injury to mother or infant, such as broken bones or damaged nerves. High birth weight infants are at a higher risk for birth defects, respiratory difficulties and blood sugar issues.<sup>12</sup>

Low birth weight is more common in pregnancies involving multiple births, shorter gestational ages, and mothers who are younger and in poor health.<sup>13</sup> On average, in Saskatchewan between 2000 and 2014, less than three percent of births were multiple and, of those multiple births, 98% were twins. The effects of low birth weight may be severe including infections, problems with the nervous, digestive and respiratory systems, temperature regulation and sudden infant death syndrome (SIDS). Life-long complications may include cerebral palsy, blindness, deafness and developmental delays.<sup>14</sup>

### KEY FINDINGS:

- The majority of births (81.5%) are within the normal birth weight range.
- Of the remaining, 18.5% fall outside the normal range, the majority are due to high birth weight (12.7%)
- Low birth weight (5.8%) is divided into subcategories. Less than 1% of the births are very low or extremely low birth weight.

**Figure 10: Percentage of births, by birth weight, 2014**



## HIGH BIRTH WEIGHT RATE

High birth weight infants are at increased risk for neonatal low blood glucose, birth defects and injuries at birth like shoulder dystocia due to difficult, obstructed labour.

### KEY FINDINGS:

- The provincial percentage of babies born with high birth weight was stable from 2000 to 2006, with a low of 15.2% in 2004 and a high of 15.9% in 2005. The rates fell from 15.3% in 2006 to 12.7% in 2014. While this is a downward trend, 17% over the last eight years, we do not have any data to explain what factors may be contributing to this decrease.
- 12.7% of births were high birth weight babies in 2014 or for every 100 births, there were about 13 high birth weight babies in 2014.
- In 2014, 15.4% of males and 9.9% of females were born with a high birth weight.
- Rates decreased for both males and females over the time period.
- The percentage of babies born with high birth weight declined with increasing maternal age. In 2014, high birth weight rates among mothers aged 10 to 19, 20 to 29, 30 to 39 and 40 to 49 years were 15.8%, 13.0%, 12.1% and 7.4%, respectively.
- The high birth weight rate varied across the former RHAs with the highest in Keewatin Yatthé, 20.9%, and the lowest in Heartland, 8.7%.

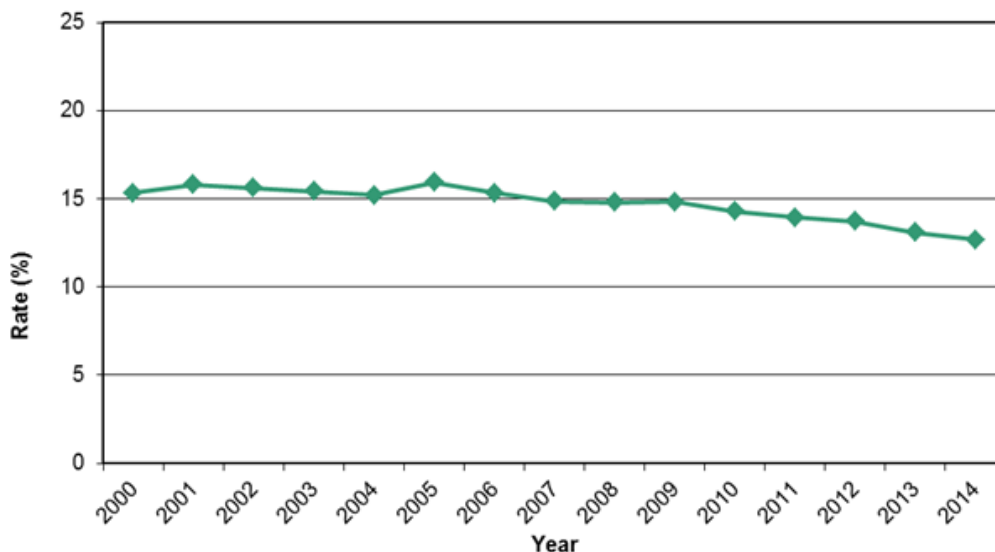
- The former northern RHAs (Keewatin Yatthé and Mamawetan Churchill River) had higher high birth weight rates than the former southern RHAs.
- Due to small numbers, rates were suppressed for Athabasca Health Authority.

High birth weight rate is the number of live births, weighing more than 4,000 grams, divided by the total number of live births for a given year.

Risk factors for high birth weight include male babies, gestational age over 40 weeks, over weight mothers, and large pregnancy weight gain.

Stratification by weeks of gestation is not presented due to low numbers.

Figure 11: High birth weight (>4,000 g) rate, 2000 to 2014



High birth weight rate is the number of live births, weighing more than 4,000 grams, divided by the total number of live births for a given year.

Risk factors for high birth weight include male babies, gestational age over 40 weeks, overweight mothers, and large pregnancy weight gain.

Stratification by weeks of gestation is not presented due to low numbers.

## HIGH BIRTH WEIGHT RATE

Figure 12: High birth weight (>4,000 g), rate by sex of baby, 2000-2014

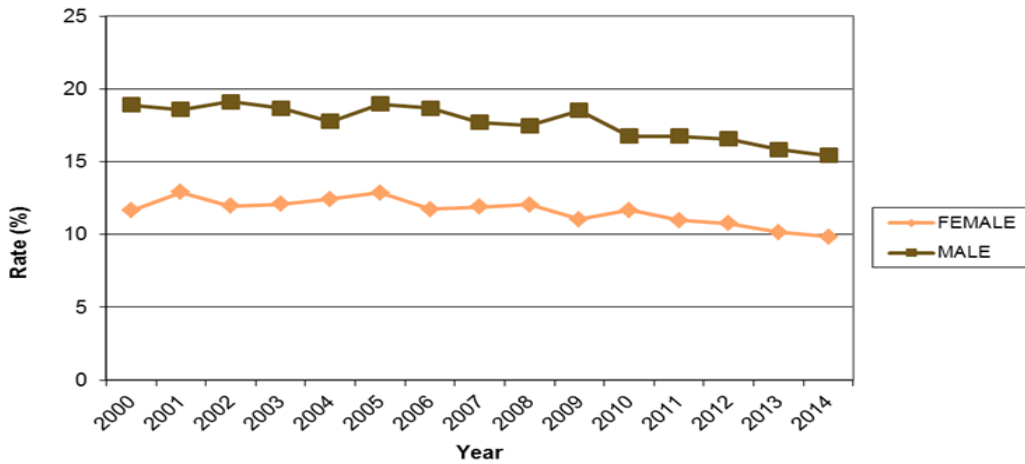


Figure 13: High birth weight (>4,000 g) rate by mother's age, 2014

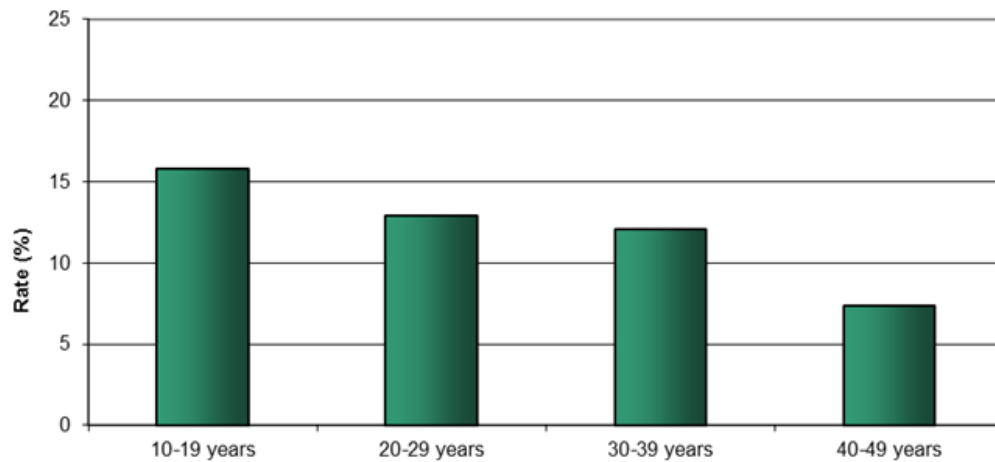
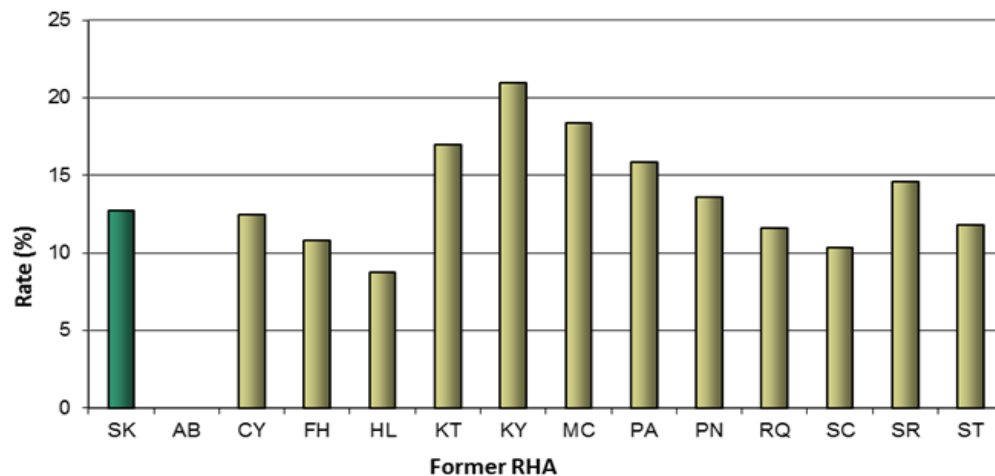


Figure 14: High birth weight (>4,000 g) rate by Athabasca Health Authority and former RHA, 2014



## LOW BIRTH WEIGHT RATE

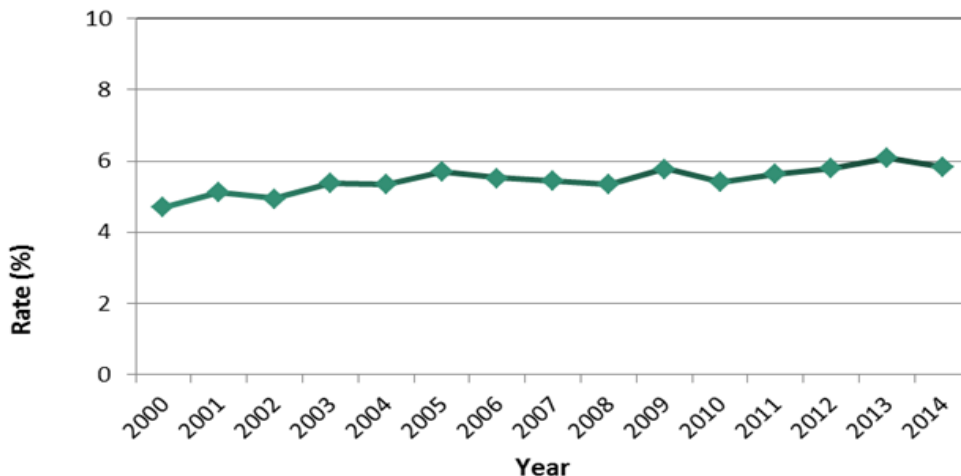
Low birth weight is a main determinant of infant morbidity and mortality. The negative aftereffects of low birth weight may be life-long. The primary factors associated with low birth weight are the mother's age, nutrition, smoking status, and ability to access prenatal care.<sup>15</sup> Low birth weight is higher among women younger than 18 and older than 35 years, as the uterus is healthiest in prime childbearing years, 18 to 35<sup>16</sup>. An adequate supply of nutrients is vital for the growth of a healthy baby. As well, prenatal care is important in supplying nutrition counseling, screening and emotional support for pregnant women. Prenatal smoking is thought to account for close to 30% of cases of low birth weight.

There is a complex relationship between low birth weight and preterm birth. Often the factors affecting one affect the other and it can be difficult to determine whether one causes the other or both are just present at the same time. Preterm birth risk factors include previous preterm birth, periodontal disease, low maternal body-mass index (BMI), and physical properties of the cervix such as short cervical length.<sup>17</sup>

### KEY FINDINGS:

- The low birth weight rate increased from 4.5% to 6.4% for females and 4.9% to 5.3% for males. In every year, except 2000 and 2013, low birth weight rates were higher for females compared with males.
  - In 2014, 408 male and 473 female babies were born of low birth weight.
  - Low birth weight is strongly associated with gestational age, with rates highest for babies at 28 weeks or earlier (90-100%) and lowest for those born at 37 to 41 weeks (2%).
- The provincial low birth weight rate increased gradually from 2000 to 2014 from 4.7 to 5.8 low birth weight infants per 100 live births.
  - In other words, 5.8% of births were low birth weight babies in 2014 or for every 100 births, there were about six low birth weight babies in 2014.
  - Low birth weight rates remained relatively stable over the time period, 2003 to 2014.

**Figure 15: Low birth weight (<2,500 g) rate, 2000-2014**



Low birth weight rate is the number of live births, weighing less than 2,500 grams, divided by the total number of live births for a given year.

Birth weight rates are calculated for all live births, regardless of mother's age. In Saskatchewan, all birth weights are registered and used in calculation of rates.

Low birth weight rate is the number of live births, weighing less than 2,500 grams, divided by the total number of live births for a given year.

Birth weight rates are calculated for all live births, regardless of mother's age. In Saskatchewan, all birth weights are registered and used in calculation of rates.

## LOW BIRTH WEIGHT RATE

Figure 16: Low birth weight (<2,500 g) rate by sex of baby, 2000-2014

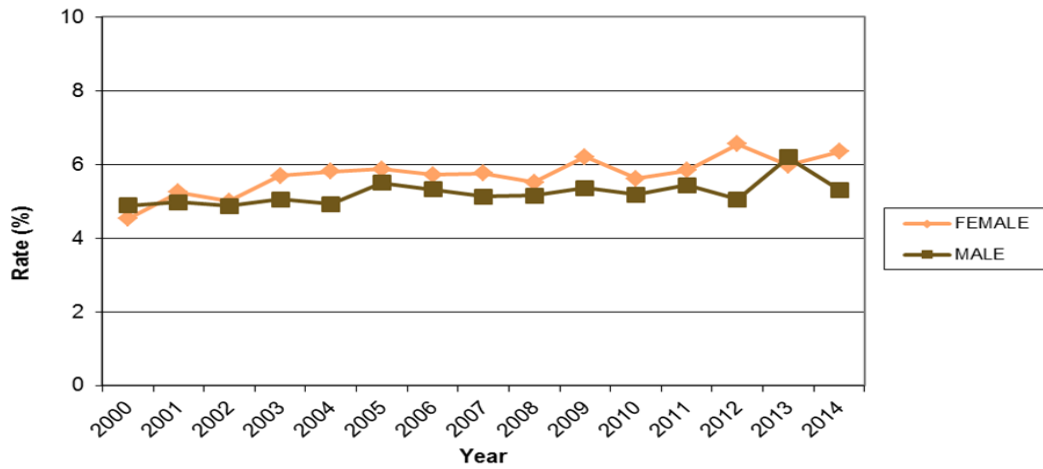


Figure 17: Low birth weight (<2,500 g) rate by Athabasca Health Authority and former RHA, 2014

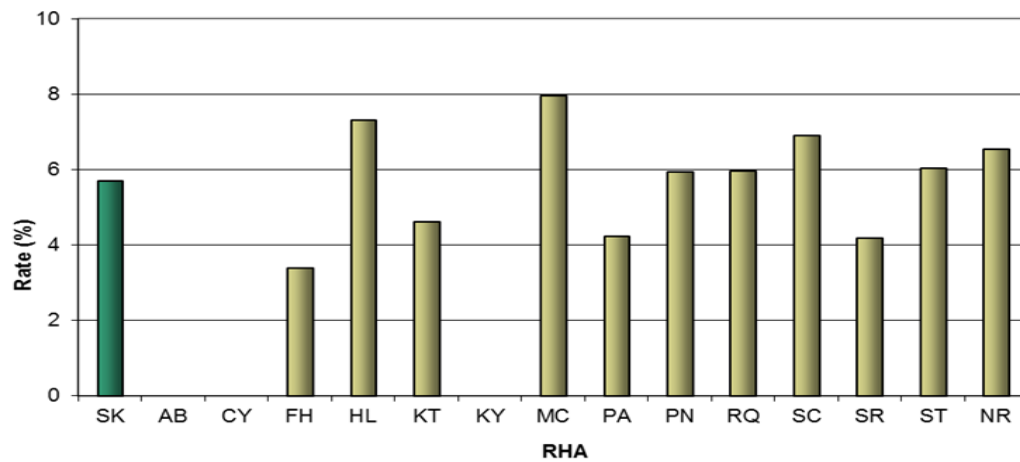
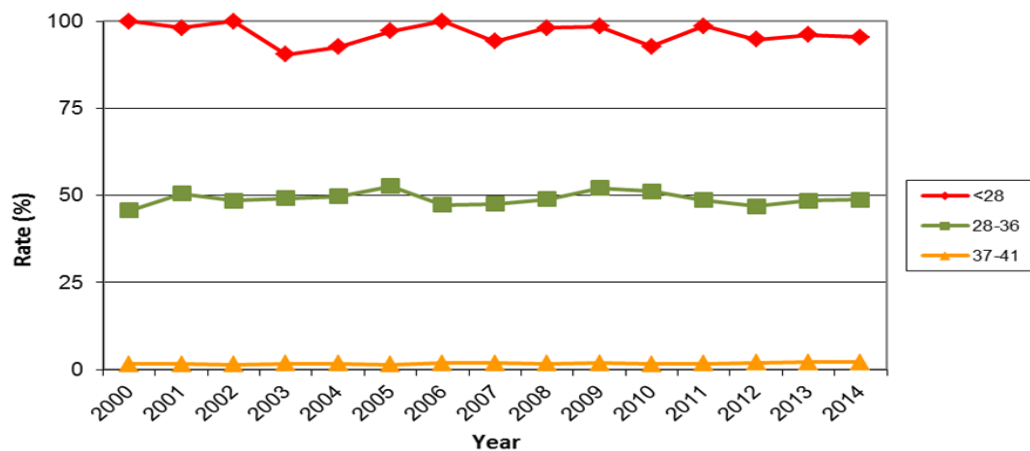


Figure 18: Low birth weight (<2,500 g) rate by weeks of gestation, 2000-2014



## LOW BIRTH WEIGHT FULL-TERM SINGLETON RATE

Low birth weight in full-term singletons should be considered a different condition from low birth weight babies of multiple or preterm births. Maternal risk factors for small for gestational age (SGA) include, but are not limited to, mother's short stature, low BMI, nulliparity, cigarette smoking and drug use. Mother's medical history including mother born SGA, chronic hypertension, renal disease, and gestational hypertension are also factors.

### KEY FINDINGS:

- The rate of low birth weight for full-term singletons increased gradually from 1.3% to 1.8% between 2000 and 2014.

- The rate of low birth weight for full term singleton live births increased from 1.4% to 2.2% for females and 1.3% to 1.8% for males. In every year, low birth weight rates were higher for full term singleton females, compared with males.
- The annual number full-term singletons of low birth weight in Saskatchewan is small. Rates based on small numbers can be unstable and should be interpreted with caution.

Low birth weight rate for full term (37 or more weeks of gestation) singletons is the number of live full term singleton births, weighing less than 2,500 grams, divided by the total number of live full term singleton births for a given year.

Birth weight rates are calculated for all live births, regardless of mother's age. In Saskatchewan, all birth weights are registered and used in calculation of rates.

Figure 19: Low birth weight (<2,500 g) rate, full-term singleton, 2000-2014

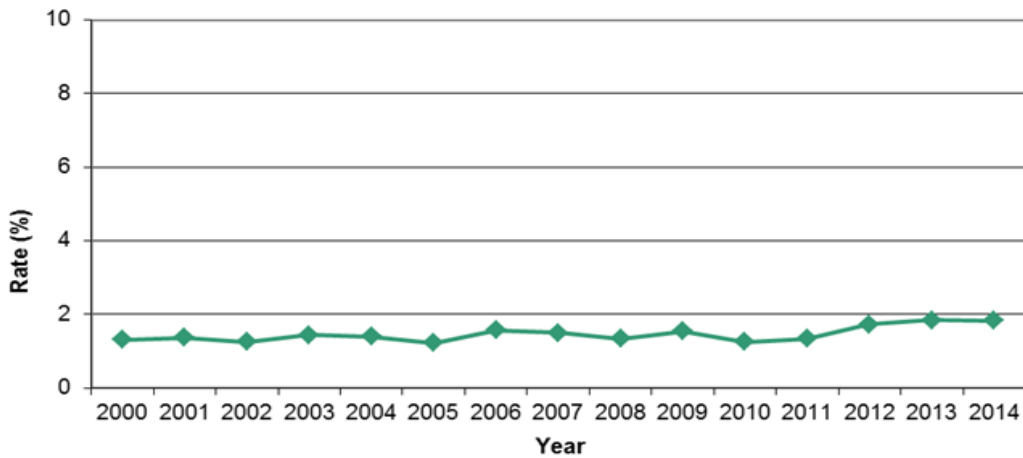
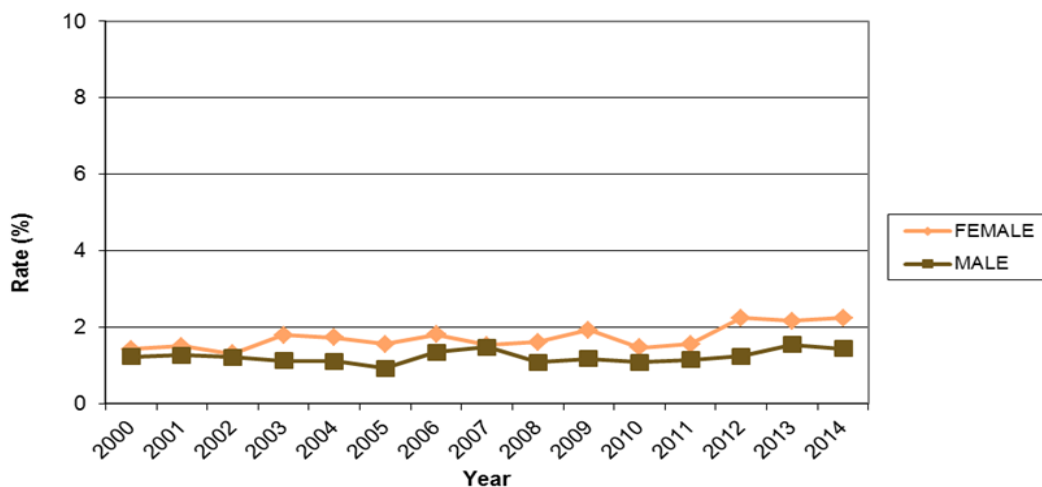


Figure 20. Low birth weight (<2500 g) rate, full-term singleton, by sex of baby, 2000-2014



Very low birth weight rate is the number of live births, weighing less than 1,500 grams, divided by the total number of live births for a given year. Low birth weight is a main determinant of infant morbidity and mortality. The sequelae of low birth weight may be life-long.

Birth weight rates are calculated for all live births, regardless of mother's age. In Saskatchewan, all birth weights are registered and used in calculation of rates.

## VERY LOW BIRTH WEIGHT RATE

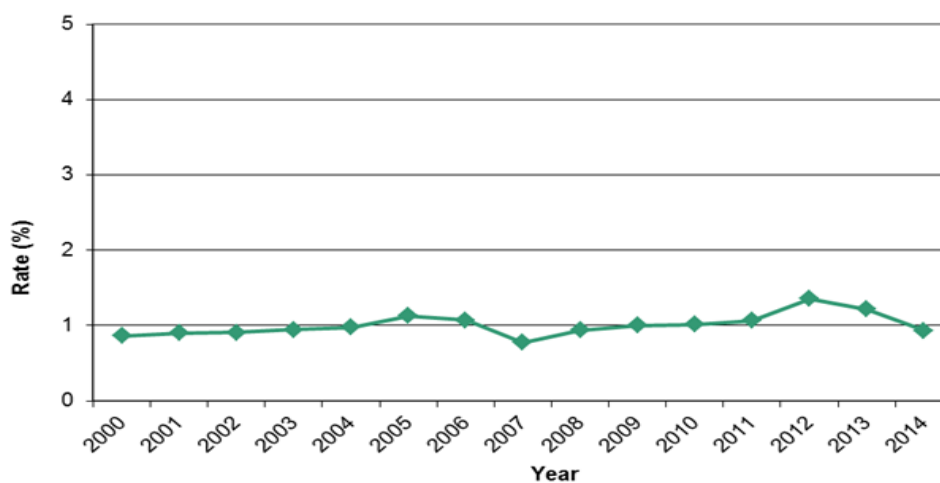
Infants with very low birth weights account for 16% of low birth weight births and about one percent of all births. Primary causes of very low and extremely low birth weight include premature birth, issues related to maternal health and birth defects.<sup>18</sup>

- Sex-specific very low birth weight rates were similar for both males and females. In 2014, the percentage of babies born with very low birth weight was 0.9% for females and 1% for males.

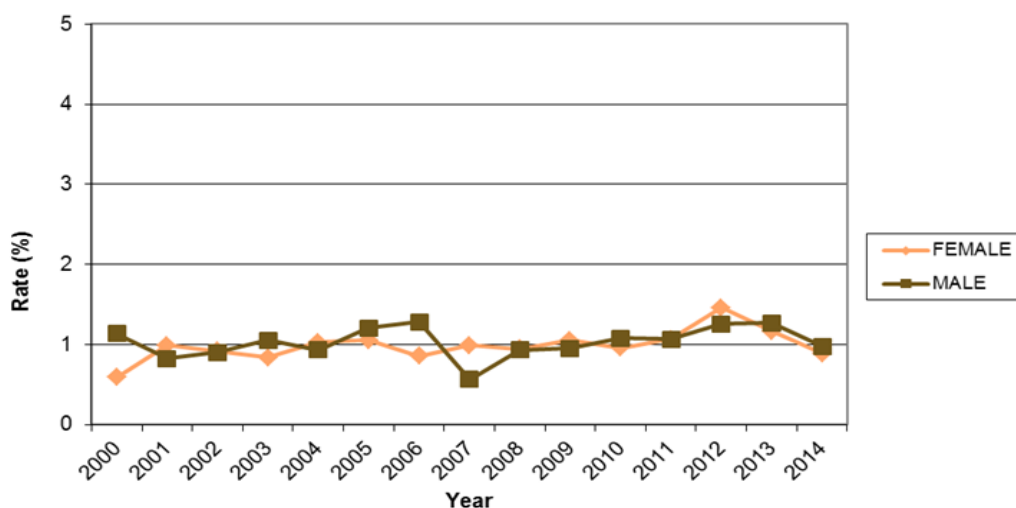
### KEY FINDINGS:

- The provincial percentage of babies born at very low birth weight was low and stable over the period 2000 to 2014. In 2014, the rate was one percent of all live births.

**Figure 21: Very low birth weight (<1,500 g) rate, 2000-2014**



**Figure 22: Very low birth weight (<1,500 g) rate by sex of baby, 2000-2014**





## EXTREMELY LOW BIRTH WEIGHT RATE

Infants with extremely low birth weight account for eight percent of low birth weight births and less than one percent of all births. Tracking of all low birth weight in infants is crucial to program planning and policy development due to the neonatal complications present with these births, such as respiratory problems, hypoglycemia, anemia, nutritional issues, heart and circulatory conditions, infections as well as the emotional and physical well-being of the parents.<sup>19</sup>

- Between 2000 and 2014, sex-specific extremely low birth weight rates were similar for both sexes. In 2014, the percentage of babies born with extremely low birth weight was 0.4% for females and 0.6% for males.

### KEY FINDINGS:

- The provincial percentage of babies born with extremely low birth weight was low and stable over the period 2000 to 2014. In 2014, the rate was 0.5% of all live births, or one infant in 200 was born with extremely low birth weight.

Extremely low birth weight rate is the number of live births, weighing less than 1,000 grams, divided by the total number of live births for a given year.

Stratification by weeks of gestation is not presented due to low numbers.

Figure 23: Extremely low birth weight (<1,000 g) rate, 2000-2014

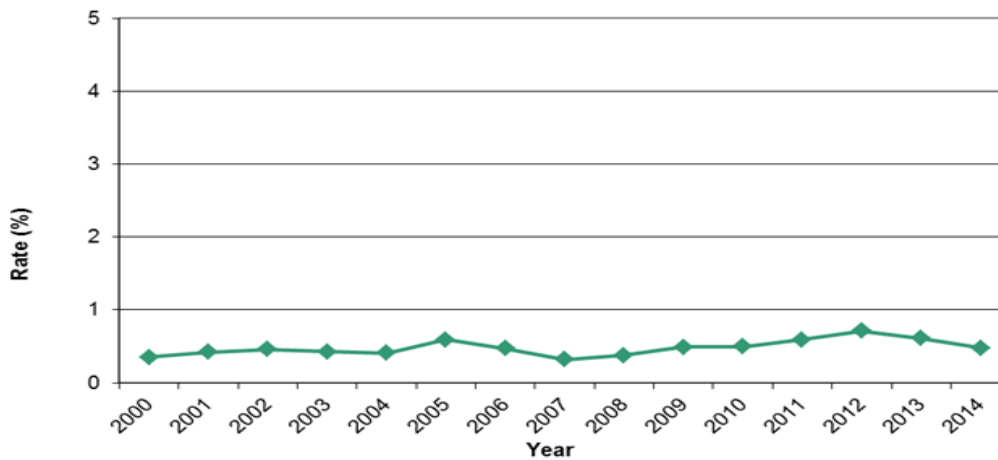
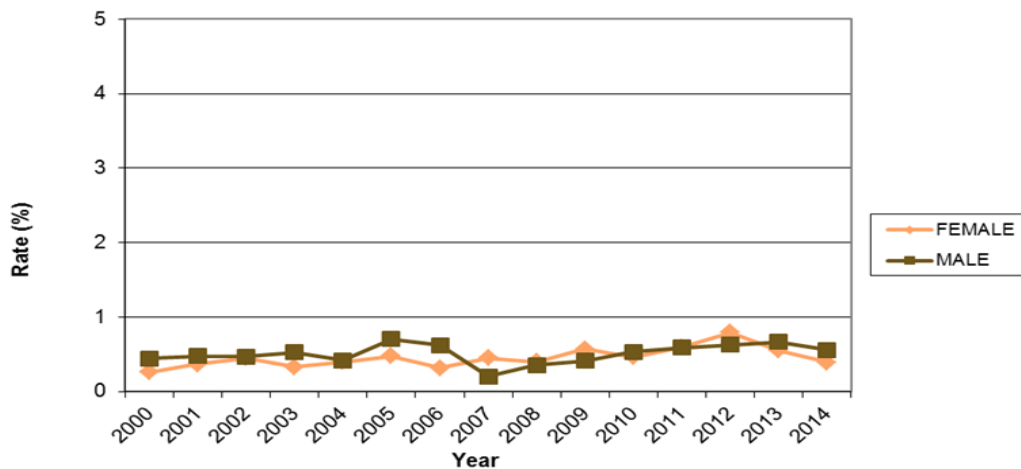


Figure 24: Extremely low birth weight (<1,000 g) rate by sex of baby, 2000-2014



## TECHNICAL NOTES

### Method:

Data on births were obtained from eHealth Saskatchewan for the years 2000 to 2014. Live births occurring within Saskatchewan, that Saskatchewan residents were used for calculations. Data were analyzed using descriptive statistics including frequency and cross tabulations and are displayed in graph form.

### Calculations:

All calculations are listed in the sidebar beside the corresponding charts. Where census data are used, the denominator does not include homeless people or people living on reserve that have chosen not to participate in the census. Census data are used as the denominator for the calculation of general fertility, age-specific fertility and crude birth rates. Numerators for general fertility rate,

maternal age, age-specific fertility rates, crude birth rates, and birth weight rates are from eHealth Saskatchewan. Denominators for rates were population estimates obtained from Statistics Canada, Vital Statistics, Birth and Death Databases and Demography Division.

### Limitations:

All of the indicators depend on the completeness and accuracy of birth registration data.

### Abbreviations:

#### Jurisdiction Abbreviations

AB – Athabasca Health Authority  
CY – former Cypress Health Region  
FH – former Five Hills Health Region  
HL – former Heartland Health Region  
KT – former Kelsey Trail Health Region  
KY – former Keewatin Yatthé Health Region  
MC – former Mamawetan Churchill River Health Region  
PN – former Prairie North Health Region  
PA – former Prince Albert Parkland Health Region  
RQ – former Regina Qu'Appelle Health Region  
SK – Saskatchewan  
ST – former Saskatoon Health Region  
SC – former Sun Country Health Region  
SR – former Sunrise Health Region  
NR – Northern regions

#### Other Abbreviations

CBR – crude birth rate  
GFR – general fertility rate  
ASFR – age-specific fertility rate  
HBW – high birth weight  
HBWR – high birth weight rate  
LBW – low birth weight  
LBWR – low birth weight rate  
VLBW – very low birth weight  
VLBWR – very low birth weight rate  
ELBW – extremely low birth weight  
ELBWR – extremely low birth weight rate

### Sources:

The following sources were used as background reference for the compilation of this report.

Statistics Canada. Cansim Table 102-4317. Birth-related indicators (low and high birth weight, small and large for gestational age, pre-term births), by sex, three-year average, Canada, provinces, territories, health regions and peer groups. [Cited 2018 April 25]. Available from: <http://www5.statcan.gc.ca/cansim/a05?lang=eng&id=01024317>

Statistics Canada. Cansim Table 102-4318. Birth-related indicators (low and high birth weight, small and large for gestational age, pre-term births), by sex, three-year average, Canada, provinces, territories, census metropolitan areas and metropolitan influence zones. [Cited 2018 April 25]. Available from: <http://www5.statcan.gc.ca/cansim/a05?lang=eng&id=01024318>

Statistics Canada. Health Indicators: Health Status definitions. [Cited 2018 April 25]. Available from: [http://www.statcan.gc.ca/pub/82-221-x/2017003/hs-es-eng.htm#hs2\\_12](http://www.statcan.gc.ca/pub/82-221-x/2017003/hs-es-eng.htm#hs2_12)

Statistics Canada. Health Fact Sheets. [Cited 2018 April 25]. Available from: <https://www.statcan.gc.ca/pub/82-625-x/2016001/article/14674-eng.htm>

Health Encyclopedia. University of Rochester. [Internet] Available from: <https://www.urmc.rochester.edu/encyclopedia/content.aspx?contenttypeid=90&contentid=P02382>

Association of Public Health Epidemiologists in Ontario (APHEO) Core Indicators. [Internet] Available from: <http://core.apheo.ca/index.php?pid=135>

## ENDNOTES

- <sup>1</sup> World Health Organization. (1994) International statistical classification of diseases and related health problems, 10th rev. Geneva: World Health Organization., Vol. 2. Instruction manual., Geneva: WHO, 1993: 129-34.
- <sup>2</sup> Health Canada. Canadian Perinatal Health Report, 2003. Ottawa: Minister of Public Works and Government Services Canada, 2003.
- <sup>3</sup> Howell ME, Blondel B. International infant mortality rates: Bias from reporting differences. *American Journal of Public Health*, 1994;84:850-2.
- <sup>4</sup> Mausner JS and Kramer S. Mausner & Bahn Epidemiology: An introductory text. 2<sup>nd</sup> edition. Philadelphia: WB Saunders Company, 1985.
- <sup>5</sup> Norville C, Gomez R and Brown RL. Some Causes of Fertility Rates Movements. University of Waterloo, Research Institute. 2003.
- <sup>6</sup> Adolescent Pregnancy. World Health Organization. [Internet] <http://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy>.
- <sup>7</sup> Franz M, Husslein P. Obstetrical management of the older gravida. 2010 May. *Women's Health* (London) 2010 May, 6(3):463-8.
- <sup>8</sup> Namkee A and Mira P. A note on the changing relationship between fertility and female employment rates in developed countries, FEDEA, 1998.
- <sup>9</sup> Pradhan E. Female Education and Childbearing: A Closer Look at the Data [Internet] 2015. The World Bank [cited 2018 April 25]. Available from: [worldbank.org/health/female-education-and-childbearing-closer-look-data](http://worldbank.org/health/female-education-and-childbearing-closer-look-data).
- <sup>10</sup> Gynkol C. Risk factors associated with high birth weight deliveries. (Gynekologicko-porodnická klinika LF UP a FN, Olomouc. [vetrm@fnol.cz](mailto:vetrm@fnol.cz)). 2005 Sep;70(5):347-54. [Internet] Available from: <https://www.ncbi.nlm.nih.gov/pubmed/16180794>.
- <sup>11</sup> Dubois L, Girard M and Tatone-Tokuda F. Determinants of high birth weight by geographic region in Canada. [Internet] *Chronic Disease Canada*, vol 28, No 1-2, 2007. Available from: [https://www.canada.ca/content/dam/phac-aspc/migration/phac-aspc/publicat/hpcdp-pspmc/28-1/pdf/cdic281-2\\_7\\_e.pdf](https://www.canada.ca/content/dam/phac-aspc/migration/phac-aspc/publicat/hpcdp-pspmc/28-1/pdf/cdic281-2_7_e.pdf).
- <sup>12</sup> Health Encyclopedia. University of Rochester. [Internet] Available from: <https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=90&ContentID=P02383>.
- <sup>13</sup> Baghianimoghadam MH, Baghianimoghadam B, Ardian N, Alizadeh E. Risk factors of low birth weight and effect of them on growth pattern of children up to sixth months of life: A cross-sectional study. *Journal of Education and Health Promotion*. 2015;4:40. doi:10.4103/2277-9531.157226.
- <sup>14</sup> Health Encyclopedia. University of Rochester. [Internet] Available from: <https://www.urmc.rochester.edu/encyclopedia/content.aspx?contenttypeid=90&contentid=P02382>.
- <sup>15</sup> Stanford University. Primary determining factors of low birth weight. [Analysis in brief on internet]. Stanford. [Cited on 2018 April 25]. Available from: <https://web.stanford.edu/group/virus/herpes/2000/primaryf.htm>.
- <sup>16</sup> American Congress of Obstetricians and Gynecologists. Frequently Asked Questions. [Analysis in brief on internet] ACOG [Cited on 2018 April 25] Available from: <https://www.acog.org/Patients/FAQs/Having-a-Baby-After-Age-35>.
- <sup>17</sup> Goldenberg R, Culhane J, Iams H, Romero R. Epidemiology and causes of preterm birth. *The Lancet*, Vol 371, p 75-84. January 5, 2008.
- <sup>18</sup> Intensive care nursery house staff manual, UCSF Medical Centre, The Regents of the University of California. Available from: [https://www.ucsfbenioffchildrens.org/pdf/manuals/20\\_VLBW\\_ELBW.pdf](https://www.ucsfbenioffchildrens.org/pdf/manuals/20_VLBW_ELBW.pdf).
- <sup>19</sup> Siva Subramanian KN, Suna Choi Seo, Barton AM, and Montazami S. Extremely low birth weight infant. *Pediatrics: Cardiac disease and critical care medicine*. MedScape, December 17, 2014. Available from: <http://emedicine.medscape.com/article/979717-overview#a13>.