



DURHAM REGION MATERNAL AND INFANT HEALTH DATA TRACKER TECHNICAL NOTES

Durham Region Health Department

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TECHNICAL NOTES

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HOW TO CITE THE MATERNAL AND INFANT HEALTH DATA TRACKER

Health Analytics and Research Team – Durham Region Health Department. *“Maternal and Infant Health Data Tracker”*. Regional Municipality of Durham. Last updated April 2024. Available from: durham.ca/birthstats. Accessed on Month, DD, YYYY.

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TECHNICAL NOTES

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OVERVIEW

The Durham Region [Maternal and Infant Health Tracker](#) provides data on key maternal and infant health indicators and allows users to view the status of maternal and infant health in Durham Region and its eight municipalities over time.

This Technical Notes document provides information on [how to use the Maternal and Infant Health Tracker](#), the Tracker's [data sources](#), and [how the indicators were calculated](#).

Some information presented on the Tracker has been adapted from:

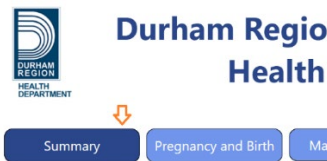
- [Association of Public Health Epidemiologists in Ontario \(APHEO\) Healthy Growth and Development Indicators](#).

HOW TO USE THE MATERNAL AND INFANT HEALTH TRACKER

NAVIGATING THE TRACKER

The Tracker has a Summary page and four indicator pages. The indicator pages – Pregnancy and Birth, Maternal Health, Birth Outcomes, and Breastfeeding – allow users to view groups of indicators for each municipality over time. Buttons at the top of each page enable users to switch across pages.

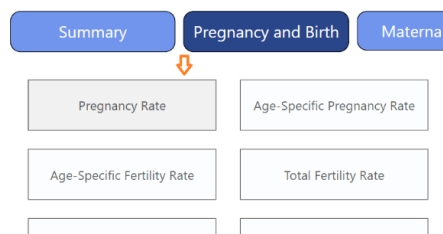
- The landing page of the Maternal and Infant Health Tracker is the Summary page. The Summary page highlights notable data trends in Durham Region.



- Hover over an indicator group to view its description. Then, click on it to navigate to that page. The selected page will have a darker shade than the other pages.



- Click on an indicator to select it. The selected indicator will have a darker shade than the other indicators.



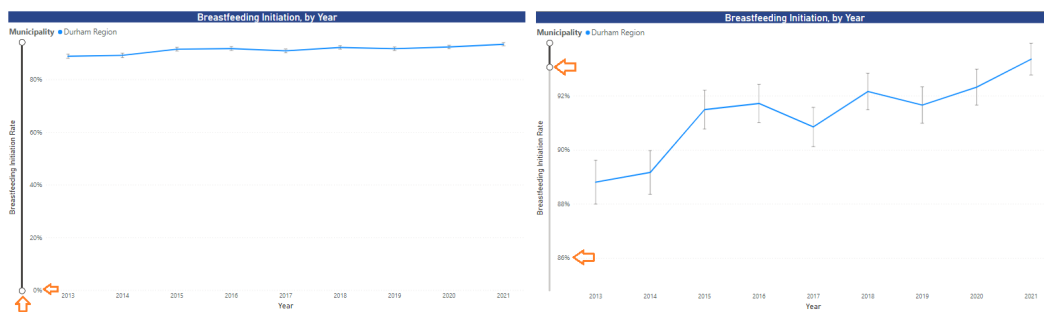
- The Year filter allows users to view trends for a specific year. For some indicators, multiple years have been combined to generate reportable estimates. Select a year or combined year group by clicking on it. The selected year (or year group) will have a darker shade than the other values. Users can only select one year (or year group) at a time.



- Municipality slicers allow users to view trends by municipality. Click on a municipality to select it. Hold down the Ctrl key when you click to view trends for multiple municipalities simultaneously (This feature is only available for some indicators). The selected municipalities will have a darker shade than the others.

Municipality		
Pickering	Oshawa	Uxbridge
Ajax	Clarington	Brock
Whitby	Scugog	Durham Region

- Some visuals on the Tracker have a zoom slider that allows users to adjust the scale of the vertical axis and focus closely on data points. Click the circle on the top or bottom of the slider and drag it up or down.



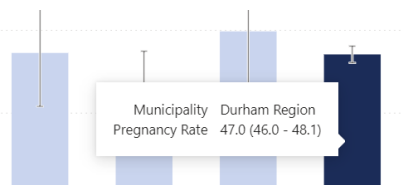
DATA CAVEATS

When using data on the Tracker, it is essential to understand data caveats that may be relevant to some indicators.

- Estimates with cell counts of less than six residents have been suppressed to minimize the risk of re-identification. Missing vertical bars indicate that a data point has been suppressed.
- The Data Notes section details specific data caveats that may be relevant to each indicator.

Data Notes
<ul style="list-style-type: none"> - Multiple years were combined to generate reportable estimates. - Estimates with cell counts of less than six residents have been suppressed to minimize the risk of re-identification. Missing data points on the Municipality and Year visuals indicate that the estimate for that year and/or municipality has been suppressed. - Some estimates, especially for rural areas and areas with small populations, are based on a small number of residents and should be interpreted cautiously. The data points for such estimates have long error bars that indicate the estimate's uncertainty. - To honour First Nations Ownership, Control, Access, and Possession (OCAP) principles, all records with census subdivisions belonging to First Nations communities were excluded.

- The Tracker uses error bars to represent the uncertainty of an estimate. Hover over a data point to view the value of an estimate and its associated [upper and lower confidence limits](#).



Two estimates (e.g., for different municipalities or different years) are considered to be significantly different if the confidence intervals of both estimates do not overlap.

DATA SOURCES FOR THE MATERNAL AND INFANT HEALTH DATA TRACKER

The Maternal and Infant Health Data Tracker's data sources are listed below. More specific information about how these data sources were used to calculate indicators can be found in the [Indicator Calculations](#) section.

INPATIENT DISCHARGES

The data source for hospitalizations is the Discharge Abstract Database, accessible through the Inpatient Discharges package in IntelliHEALTH Ontario.

Original source:

Canadian Institute for Health Information. [Discharge Abstract Database metadata \(DAD\)](#).

Data extracted from:

Inpatient Discharges, [IntelliHEALTH Ontario](#). Ontario Ministry of Health.

Data notes:

- Hospitalization data excludes births outside of hospitals.
- To honour First Nations Ownership, Control, Access, and Possession (OCAP) principles, records with census subdivisions belonging to First Nations communities were excluded.

BETTER OUTCOMES REGISTRY & NETWORK (BORN) ONTARIO

The data source for maternal health and some pregnancy, birth and birth outcomes indicators is BORN Ontario's BORN Information System.

Source:

Public Health Unit Analytic Reporting Tool (Cube), BORN Information System, [BORN Ontario](#).

Data notes:

- Data from First Nations communities are not included in the BORN public health data cube. BORN Ontario has removed all records with postal codes linked to First Nations communities to honour First Nations Ownership, Control, Access, and Possession (OCAP) principles.
- In October 2023, the BORN Information System was updated, and clients were reassigned to geographical areas using Statistics Canada's Postal Code Conversion File Plus (PCCF +) version 7D. As a result, indicator values for Durham Region and its eight municipalities may differ from previously reported values, leading to significant changes to data interpretation.

THERAPEUTIC ABORTIONS

Therapeutic abortion (TA) data are accessed through IntelliHEALTH Ontario. These data include TAs performed in hospitals, free-standing abortion clinics, and physician's offices.

Original source:

- Hospital TAs: Canadian Institute for Health Information (CIHI)
- Clinic TAs: Ontario Ministry of Health
- Private Physicians' Office (PPO) TAs: Ontario Ministry of Health

Data extracted from:

Therapeutic Abortion Cube, [IntelliHEALTH Ontario](#). Ontario Ministry of Health.

Data notes:

- TAs have been adjusted for 40-day complications such that TAs within 40 days of a previous TA (likely complications of the first procedure) are not counted.
- To honour First Nations Ownership, Control, Access, and Possession (OCAP) principles, records with census subdivisions belonging to First Nations communities were excluded.

VITAL STATISTICS

Vital Statistics data are accessed through IntelliHEALTH Ontario. These data include records of births and deaths registered with the Government of Ontario.

Original source:

Vital Statistics, Office of the Registrar General of Ontario.

Data extracted from:

- Vital Statistics – Birth, [IntelliHEALTH Ontario](#). Ontario Ministry of Health.
- Vital Statistics – Death, [IntelliHEALTH Ontario](#). Ontario Ministry of Health.

Data notes:

- Records with census subdivisions belonging to First Nations communities were excluded to honour First Nations Ownership, Control, Access, and Possession (OCAP) principles.

POPULATION

The data source for Durham Region and lower-tier municipality population estimates by age and sex is the Ontario Ministry of Health's population estimates.

Original source:

Population Estimates by Age and Sex, Centre for Demography. Statistics Canada.

Data extracted from:

Canadian Community Economic Development Network's [Community Data Program](#)

INDICATOR CALCULATIONS

The Maternal and Infant Health Tracker reports rates, proportions, averages, and in some places, counts. Additionally, confidence intervals for rates, proportions and averages are provided where appropriate. Data used to populate the Tracker can be downloaded from [Durham Region's Open Data Portal](#).

GENERAL CALCULATION NOTES

MISSING VALUES

When calculating rates, records with missing values were excluded from the denominator for all indicators to prevent disproportionate effects on calculated estimates.

CONFIDENCE INTERVALS

- 95% confidence intervals for rates and proportions were calculated using the formula below, where p is the calculated proportion, n is the denominator used to calculate the proportion, and Z is 1.96.

$$p \pm Z \sqrt{\frac{p(1-p)}{n}}$$

- Proportion confidence intervals that were less than 0 or greater than 1 were rounded to 0 and 1, respectively.
- 95% confidence intervals for means were calculated using the formula below, where μ is the population mean, σ is the population standard deviation, and N is the number of observations used to calculate the mean.

$$\mu \pm \frac{\sigma}{\sqrt{N}}$$

- Statistical significance was determined by comparing the confidence intervals of different groups. Results were deemed significant if confidence intervals did not overlap.

PREGNANCY AND BIRTH INDICATORS

PREGNANCY RATE

The number of pregnancies per 1,000 females of reproductive age (15 to 49). Pregnancies include live births, stillbirths, and therapeutic abortions.

$$\text{Pregnancy Rate} = \frac{\text{Deliveries to females of reproductive age} + \text{therapeutic abortions to females of reproductive age}}{\text{Population of females of reproductive age}}$$

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. Therapeutic Abortion Cube, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. All obstetric deliveries (All Dx starts with Z37). TAs – Number of adjusted therapeutic abortions. Age at admission for delivery or abortion is 15 to 49 years. 	Patient's municipality of residence is Mississaugas of Scugog Island First Nations.
Denominator	<ul style="list-style-type: none"> Population Estimates by Age and Sex, Centre for Demography. Statistics Canada. 	<ul style="list-style-type: none"> Females of reproductive age (15 to 49 years). 	Municipality is Mississaugas of Scugog Island First Nations.

AGE-SPECIFIC PREGNANCY RATE

The number of pregnancies per 1,000 females in a given age group. Pregnancies include live births, stillbirths, and therapeutic abortions.

$$\text{Age – specific pregnancy Rate} = \frac{\begin{array}{c} \text{Deliveries to females in specific age group} \\ + \\ \text{Therapeutic abortions to females in specific age group} \end{array}}{\text{Population of females in that age group}}$$

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. Therapeutic Abortion Cube, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient PHU is Durham Region Health Department. All obstetric deliveries (All Dx starts with Z37). TAs – Number of adjusted therapeutic abortions. Age at admission for delivery or abortion is in a specific age group (i.e., 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49). 	Municipality is Mississaugas of Scugog Island First Nations.
Denominator	<ul style="list-style-type: none"> Population Estimates by Age and Sex, Centre for Demography. Statistics Canada. 	<ul style="list-style-type: none"> Females of reproductive age (i.e., 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49). 	Municipality is Mississaugas of Scugog Island First Nations.

CRUDE BIRTH RATE

The total number of live births per 1,000 population.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Measure: Number of Births – Live		
Denominator	Population Projections by PHU, IntelliHEALTH Ontario . Ontario Ministry of Health.	Males and females of all ages.	Municipality is Mississaugas of Scugog Island First Nations.

GENERAL FERTILITY RATE

The number of live births per 1,000 females of reproductive age (15 to 49 years).

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Dimension: Maternal Age Group• Measure: Number of Births – Live	Maternal age at time of live birth is between 15 and 49 years.	
Denominator	Population Estimates by Age and Sex, Centre for Demography. Statistics Canada.	Females of reproductive age (15 to 49 years).	Municipality is Mississaugas of Scugog Island First Nations.

AGE-SPECIFIC FERTILITY RATE

The number of live births per 1,000 females in a given age group.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Dimension: Maternal Age Group• Measure: Number of Births – Live	Maternal age at live birth is in a specific age group (i.e., 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49).	
Denominator	Population Estimates by Age and Sex, Centre for Demography. Statistics Canada.	Females of reproductive age (i.e., 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49).	Municipality is Mississaugas of Scugog Island First Nations.

TOTAL FERTILITY RATE

The total number of children that would be born to a hypothetical female over the course of their reproductive life if they lived to the end of their childbearing years and experienced the age-specific fertility rates observed in a given calendar year.

$$\text{Total Fertility Rate} = 5 * (\text{sum of age – specific fertility rates for each age group})$$

Note: Do not multiply the age-specific fertility rates by 1,000 before using this formula to calculate the total fertility rate.

BIRTHS, BY AGE OF PARENT

The distribution of live births by age of the gestational parent.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Dimension: Maternal Age Group• Measure: Number of Births – Live	Maternal age at live birth is in a specific age group (i.e., <20, 20-24, 25-29, 30-34, 35-39, 40-44, ≥45).	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Measure: Number of Births – Live		Maternal age group at live birth is missing.

AVERAGE AGE OF PARENT

The average age of gestational parents at the time of live birth.

Data source	Inclusions	Exclusions
BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Dimension: Maternal Age at Still or Live Birth Years• Measure: Number of Births – Live		Maternal age at still or live birth is missing.

AVERAGE AGE OF PARENT AT FIRST BIRTH

The average age of gestational parents at the time of first live birth.

Data source	Inclusions	Exclusions
BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Dimension: Maternal Age at Still or Live Birth Years• Measure: Number of Births – Live	Parity is zero.	Maternal age at still or live birth is missing.

Note: By only including gestational parents with a [parity](#) of zero, this indicator excludes parents whose first birth was a stillbirth. This means that the first live birth of a parent with a previous stillbirth is not included in the average. However, the impact of this exclusion is minimal as only 0.5% of first births to Durham Region residents are stillbirths.

C-SECTION RATE

The percentage of deliveries to Durham Region residents that were Caesarean sections (C-sections).

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> Measure: Number of Pregnancies – CS Birth 		
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> Measure: Number of Pregnancies – Women Who Gave Birth 		

HOME BIRTHS

The percentage of births to Durham Region residents that were home births.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> Dimension: Birth Location Type Measure: Number of Births 	Birth location type is home.	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> Measure: Number of Births 		

BIRTHS, BY HOSPITAL

The share of births by hospital where infant was born.

$$\text{Share of births} = \frac{\text{Number of births in a specific hospital}}{\text{Total number of births at any hospital}}$$

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. All hospital live births and stillbirths (Admit Entry Type Code is "N" or "S") Patients born in a specific hospital (or group of hospitals) Patient's admission year (Admit CYear) is of interest. 	Patient's municipality of residence is Mississaugas of Scugog Island First Nations.
Denominator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. All hospital live births and stillbirths (Admit Entry Type Code is "N" or "S") 	Patient's municipality of residence is Mississaugas of Scugog Island First Nations.

MATERNAL HEALTH INDICATORS

ALCOHOL OR DRUG USE

The percentage of gestational parents that reported drug use or consuming alcohol during pregnancy. Drug use refers to the use of street drugs and the inappropriate use of prescription and non-prescription drugs.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Dimension: Any Drug or Alcohol • Measure: Number of Pregnancies – Women Who Gave Birth 	Reported any drug or alcohol use.	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Measure: Number of Pregnancies – Women Who Gave Birth 		Data on any drug or alcohol use is missing.

ALCOHOL USE

The percentage of gestational parents that reported consuming alcohol during pregnancy.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Dimension: Any Alcohol • Measure: Number of Pregnancies – Women Who Gave Birth 	Reported any alcohol use.	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Measure: Number of Pregnancies – Women Who Gave Birth 		Data on any alcohol use is missing.

DRUG USE

The percentage of gestational parents that reported drug use during pregnancy. Drug use refers to the use of street drugs and the inappropriate use of prescription and non-prescription drugs.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Dimension: Any Drug• Measure: Number of Pregnancies – Women Who Gave Birth	Reported any drug use.	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Measure: Number of Pregnancies – Women Who Gave Birth		Data on any drug use is missing.

ANY SMOKING

The percentage of gestational parents that reported any smoking at admission for birth.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Dimension: Any Smoking at Admission• Measure: Number of Pregnancies – Women Who Gave Birth	Reported any smoking at admission.	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Measure: Number of Pregnancies – Women Who Gave Birth		Data on any smoking at admission is missing.

FOLIC ACID USE

The percentage of gestational parents that reported using folic acid before and during their pregnancy.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Dimension: Folic Acid Usage • Measure: Number of Pregnancies – Women Who Gave Birth 	Used folic acid preconception and during pregnancy.	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Measure: Number of Pregnancies – Women Who Gave Birth 		Data on folic acid usage is missing.

MATERNAL MENTAL HEALTH CONCERN

The percentage of gestational parents that reported any mental health concern during pregnancy (i.e., anxiety, depression, history of postpartum depression, addiction, bipolar disorder, schizophrenia, other).

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Dimension: Mental Health Concern • Measure: Number of Pregnancies – Women Who Gave Birth 	Has any mental health concern (i.e., anxiety, depression, history of postpartum depression, addiction, bipolar, schizophrenia, or other).	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Measure: Number of Pregnancies – Women Who Gave Birth 		Data on mental health concerns is missing.

MATERNAL WEIGHT GAIN

The percentage of Durham Region residents who gave birth that gained weight within the gestational weight gain recommendations.

BORN Ontario uses the gestational weight gain recommendations of the Society of Obstetricians and Gynaecologists (2011) for singleton non-obese pregnancies and the Institute of Medicine/Health Canada recommendations (2009) for all other pregnancies.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> Dimension: Maternal Weight Gain Recommended Group Measure: Number of Pregnancies – Women Who Gave Birth 	Maternal weight gain is within the recommended range.	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> Measure: Number of Pregnancies – Women Who Gave Birth 		Data on maternal weight gain is missing.

GESTATIONAL DIABETES

The percentage of gestational parents that were diagnosed with gestational diabetes.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> Dimension: Gestational Diabetes Measure: Number of Pregnancies – Women Who Gave Birth 	Has gestational diabetes.	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> Measure: Number of Pregnancies – Women Who Gave Birth 		Data on gestational diabetes is missing.

BIRTH OUTCOMES INDICATORS

PRETERM BIRTH RATE

The percentage of live singleton births where the newborn's gestational age was less than 37 weeks.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> Dimension: GA at Birth Group Name 05 Measure: Number of Births – Live Singleton 	Newborn's gestational age is less than 37 weeks.	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> Measure: Number of Births – Live Singleton 		Newborn's gestational age is missing.

MULTIPLE BIRTH RATE

The percentage of live births where the newborn was the result of a multiple gestation pregnancy.

$$\text{Multiple birth rate} = \frac{\text{Number of live births} - \text{Number of live singleton births}}{\text{Number of live births}}$$

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> Measure 1: Number of Births – Live Measure 2: Number of Births – Live Singleton 		
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> Measure: Number of Births – Live 		

LOW BIRTH WEIGHT RATE

The percentage of live singleton births where the newborn weighed less than 2,500 grams. A singleton birth is the birth of only one child during a single delivery.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Dimension: Low Birth Weight • Measure: Number of Births – Live Singleton 	Newborn's birth weight is low (i.e., less than 2,500 grams)	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Measure: Number of Births – Live Singleton 		Data on low birth weight is missing.

Note: Low birth weight rates did not account for maternal ethnicity, though this may strongly influence a newborn's birth weight.

FULL-TERM LOW BIRTH WEIGHT RATE

The percentage of live full-term singleton births where the newborn's gestational age was greater than or equal to 37 weeks, and the newborn's weight was less than 2,500 grams.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Dimension: Low Birth Weight • Measure: Number of Births – Live Singleton 	<ul style="list-style-type: none"> • Newborn's birth weight is low (i.e., less than 2,500 grams). • Newborn's gestational age is ≥ 37 weeks. 	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Measure: Number of Births – Live Singleton 	<ul style="list-style-type: none"> • Newborn's gestational age is ≥ 37 weeks. 	Data on low birth weight is missing.

SMALL FOR GESTATIONAL AGE (SGA)

The percentage of live singleton births where the newborn weighed less than 90% of newborns of the same gestational age. A singleton birth is the birth of only one child during a single delivery. A Canadian reference population from [Kramer et al. \(2001\)](#) is used to determine if a newborn is SGA.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Dimension: SGA 10th Percentile• Measure: Number of Births – Live Singleton	Newborn is small for gestational age.	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Measure: Number of Births – Live Singleton		

Note: Small for gestational age rates did not account for maternal ethnicity, though this may strongly influence a newborn's birth weight.

LARGE FOR GESTATIONAL AGE (LGA)

The percentage of live singleton births where the newborn weighed more than 90% of newborns of the same gestational age. A singleton birth is the birth of only one child during a single delivery. A Canadian reference population from [Kramer et al. \(2001\)](#) is used to determine if a newborn is LGA.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Dimension: LGA 90th Percentile• Measure: Number of Births – Live Singleton	Newborn is large for gestational age.	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Measure: Number of Births – Live Singleton		

Note: Large for gestational age rates did not account for maternal ethnicity, though this may strongly influence an infant's birth weight.

NEONATAL ABSTINENCE SYNDROME RATE

The number of neonates who were hospitalized and received a diagnosis of neonatal abstinence syndrome in the first 28 days of life per 1,000 live births. Neonatal abstinence syndrome (NAS) is a set of withdrawal symptoms observable in a neonate that are consistent with maternal substance use or abuse while pregnant. A neonate is an infant that is 28 days old or younger.

$$\frac{\text{Number of neonates}(\leq 28 \text{ days})\text{hospitalized and diagnosed with NAS}}{\text{Number of liveborn infants}} * 1,000$$

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. Infant age <= 28 days. All diagnoses of Neonatal Withdrawal Symptoms (All Dx starts with P961). A patient with more than one admission is counted only once. Patient's admission year (Admit CYear) is of interest. 	Patient's municipality of residence is Mississaugas of Scugog Island First Nations.
Denominator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. All live births (All Dx starts with Z38) Patient's admission year (Admit CYear) is of interest. 	Patient's municipality of residence is Mississaugas of Scugog Island First Nations.

Note: Live births were captured using the Z38 ICD-10 codes. The Z38 diagnosis codes capture all newborns born in a hospital and those born elsewhere but subsequently admitted to a hospital in the first 24 hours of life. For more information on the classification of live births, please see the *Liveborn infants according to place of birth* section of ICD-10 ([Chapter XX1, Block Z38](#)) or the Canadian Institute for Health Information's [DAD Abstracting Manual](#).

The Neonatal Abstinence Syndrome Rate indicator was adapted from a Public Health Agency of Canada Report: [Neonatal abstinence syndrome in Canada: a descriptive analysis of hospitalization data](#).

CONGENITAL ANOMALY RATE

The number of infants who were hospitalized and received a diagnosis of any congenital anomaly in the first 365 days of life per 1,000 births.

$$\frac{\text{Number of infants } (\leq 365 \text{ days}) \text{ hospitalized and diagnosed with any congenital anomaly}}{\text{Number of live and stillborn infants}} * 1,000$$

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. Infant age <= 365 days. Infants diagnosed with any congenital anomaly (All Dx starts with Q). Infants with multiple congenital anomalies are counted only once. Patient's admission year (Admit CYear) is of interest. 	Patient's municipality of residence is Mississaugas of Scugog Island First Nations.
Denominator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. All hospital live births and stillbirths (Admit Entry Type Code is "N" or "S") Patient's admission year (Admit CYear) is of interest. 	Patient's municipality of residence is Mississaugas of Scugog Island First Nations.

For more information on the classification of congenital anomalies, see the *Congenital malformations, deformations, and chromosomal abnormalities* section of ICD-10 ([Chapter XVII](#)).

CONGENITAL HEART DEFECTS

The number of infants hospitalized and diagnosed with any congenital malformations of the cardiovascular system in the first 365 days of life per 1,000 births.

$$\frac{\text{Number of infants } (\leq 365 \text{ days}) \text{ hospitalized and diagnosed with any congenital malformations of the cardiovascular system}}{\text{Number of live and stillborn infants}} * 1,000$$

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. Infant age <= 365 days. Infants diagnosed with any congenital malformations of the cardiovascular system (All Dx starts with Q20, Q21, Q22, Q23, Q24, Q25, Q26, Q27, or Q28). Infants with multiple congenital heart defects are counted only once. Patient's admission year (Admit CYear) is of interest. 	Patient's municipality of residence is Mississaugas of Scugog Island First Nations.
Denominator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. All hospital live births and stillbirths (Admit Entry Type Code is "N" or "S") Patient's admission year (Admit CYear) is of interest. 	Patient's municipality of residence is Mississaugas of Scugog Island First Nations.

For more information on the classification of congenital heart defects, see the *Congenital malformations of the circulatory system* section of ICD-10 ([Chapter XVII, Blocks Q20-Q28](#)).

OROFACIAL CLEFTS

The number of infants hospitalized and diagnosed with cleft lip or cleft palate (i.e., orofacial clefts) in the first 365 days of life per 1,000 births.

$$\frac{\text{Number of infants } (\leq 365 \text{ days}) \text{ hospitalized and diagnosed with orofacial clefts}}{\text{Number of live and stillborn infants}} * 1,000$$

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. Infant age <= 365 days. Infants diagnosed with any orofacial clefts (All Dx starts with Q35, Q36, or Q37). Infants with multiple orofacial clefts are counted only once. Patient's admission year (Admit CYear) is of interest. 	<ul style="list-style-type: none"> Patient's municipality of residence is Mississaugas of Scugog Island First Nations. All Dx starts with Q357
Denominator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. All hospital live births and stillbirths (Admit Entry Type Code is "N" or "S") Patient's admission year (Admit CYear) is of interest. 	Patient's municipality of residence is Mississaugas of Scugog Island First Nations.

The Orofacial Clefts indicator was adapted from a Public Health Agency of Canada Report: [Congenital Anomalies in Canada](#).

For more information on the classification of orofacial clefts, see the *Cleft lip and cleft palate* section of ICD-10 (i.e., [Chapter XVII, Blocks Q35-Q37](#)).

MUSCULOSKELETAL ANOMALIES

The number of infants hospitalized and diagnosed with musculoskeletal anomalies in the first 365 days of life per 1,000 births.

$$\frac{\text{Number of infants } (\leq 365 \text{ days}) \text{ hospitalized and diagnosed with musculoskeletal anomalies}}{\text{Number of live and stillborn infants}} * 1,000$$

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. Infant age \leq 365 days. Infants diagnosed with any congenital malformations and deformations of the musculoskeletal system (All Dx starts with Q65. Q66. Q67. Q68. Q69. Q70, Q71, Q72, Q73, Q74, Q75, Q76, Q77, Q78, or Q79). Infants with multiple musculoskeletal anomalies are counted only once. Patient's admission year (Admit CYear) is of interest. 	<ul style="list-style-type: none"> Patient's municipality of residence is Mississaugas of Scugog Island First Nations.
Denominator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. All hospital live births and stillbirths (Admit Entry Type Code is "N" or "S") Patient's admission year (Admit CYear) is of interest. 	Patient's municipality of residence is Mississaugas of Scugog Island First Nations.

For more information on the classification of musculoskeletal anomalies, see the *Congenital malformations and deformations of the musculoskeletal system* section of ICD-10 ([Chapter XVII, Blocks Q65-Q79](#)).

NEURAL TUBE DEFECTS

The number of infants hospitalized and diagnosed with neural tube defects in the first 365 days of life per 1,000 births.

$$\frac{\text{Number of infants } (\leq 365 \text{ days}) \text{ hospitalized and diagnosed with neural tube defects}}{\text{Number of live and stillborn infants}} * 1,000$$

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. Infant age <= 365 days. Infants diagnosed with neural tube defects (All Dx starts with Q00, Q01, or Q05). Infants with multiple neural tube defects are counted only once. Patient's admission year (Admit CYear) is of interest. 	<ul style="list-style-type: none"> Patient's municipality of residence is Mississaugas of Scugog Island First Nations.
Denominator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. All hospital live births and stillbirths (Admit Entry Type Code is "N" or "S") Patient's admission year (Admit CYear) is of interest. 	<ul style="list-style-type: none"> Patient's municipality of residence is Mississaugas of Scugog Island First Nations.

The Neural Tube Defects indicator was adapted from a Public Health Agency of Canada Report: [Congenital Anomalies in Canada](#).

For more information on the classification of neural tube defects, see the *Congenital malformations of the nervous system* section of ICD-10 (i.e., [Chapter XVII, Blocks Q00-Q07](#)).

SELECTED CHROMOSOMAL ABNORMALITIES

The number of infants hospitalized and diagnosed with a selected group of chromosomal abnormalities in the first 365 days of life per 1,000 births.

$$\frac{\text{Number of infants } (\leq 365 \text{ days}) \text{ hospitalized and diagnosed with a selected group of chromosomal abnormalities}}{\text{Number of live and stillborn infants}} * 1,000$$

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. Infant age <= 365 days. Infants diagnosed with a selected group of chromosomal abnormalities (All Dx starts with Q90, Q91, or Q96). Infants with multiple chromosomal abnormalities are counted only once. Patient's admission year (Admit CYear) is of interest. 	<ul style="list-style-type: none"> Patient's municipality of residence is Mississaugas of Scugog Island First Nations.
Denominator	<ul style="list-style-type: none"> Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Patient's Public Health Unit is Durham Region Health Department. All hospital live births and stillbirths (Admit Entry Type Code is "N" or "S") Patient's admission year (Admit CYear) is of interest. 	Patient's municipality of residence is Mississaugas of Scugog Island First Nations.

Note: Selected Chromosomal Abnormalities include Down Syndrome, Trisomy 13, Trisomy 18, and Turner Syndrome. These chromosomal abnormalities may differ in their characteristics, severity, and prognoses.

The Selected Chromosomal Abnormalities indicator was adapted from a Public Health Agency of Canada Report: [Congenital Anomalies in Canada](#).

For more information on the classification of chromosomal abnormalities, see the *Chromosomal abnormalities* section of ICD-10 (i.e., [Chapter XVII, Blocks Q90-Q99](#)).

STILLBIRTH RATE

The number of stillborn births per 1,000 births to Durham Region residents.

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none">Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health.	<ul style="list-style-type: none">All hospital births (Admit Entry Type Code = "S")	
Denominator	<ul style="list-style-type: none">Inpatient Discharges, IntelliHEALTH Ontario. Ontario Ministry of Health.	<ul style="list-style-type: none">Patient's Public Health Unit is Durham Region Health Department.All hospital births (Admit Entry Type Code = "N" or "S")Patient's admission year (Admit CYear) is of interest.	Patient's municipality of residence is Mississaugas of Scugog Island First Nations.

INFANT MORTALITY RATES

INFANT MORTALITY RATE

Infant Mortality Rate (IMR) is the number of deaths among infants (aged 364 days or younger) per 1,000 live births.

$$\frac{\text{Number of deaths among infants aged 364 days or younger}}{\text{Number of live births}} * 1,000$$

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none"> Vital Statistics – Death, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Infant Mortality Rate: Infant age is less than 365 days. 	The municipality of the deceased infant is “Mississaugas of Scugog Island First Nations.”
Denominator	<ul style="list-style-type: none"> Vital Statistics – Births, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Mother’s Public Health Unit is Durham Region Health Department. All live births Infant’s birth year is of interest. 	Mother’s municipality of residence is Mississaugas of Scugog Island First Nations.

NEONATAL MORTALITY RATE

Neonatal Mortality Rate is the number of deaths among infants aged 27 days or younger per 1,000 live births.

$$\frac{\text{Number of deaths among infants aged 27 days or younger}}{\text{Number of live births}} * 1,000$$

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none"> Vital Statistics – Death, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Neonatal Mortality Rate: Infant age is less than 28 days. 	The municipality of the deceased infant is “Mississaugas of Scugog Island First Nations.”
Denominator	<ul style="list-style-type: none"> Vital Statistics – Births, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Mother’s Public Health Unit is Durham Region Health Department. All live births Infant’s birth year is of interest. 	Mother’s municipality of residence is Mississaugas of Scugog Island First Nations.

POST-NEONATAL MORTALITY RATE

Post-Neonatal Mortality Rate is the number of deaths among infants aged 28 to 364 days per 1,000 live births.

$$\frac{\text{Number of deaths among infants aged 28 to 364 days}}{\text{Number of live births}} * 1,000$$

	Data source	Inclusions	Exclusions
Numerator	<ul style="list-style-type: none"> Vital Statistics – Death, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Post-Neonatal Mortality Rate: Infant age is between 28 and 364 days (inclusive) 	The municipality of the deceased infant is “Mississaugas of Scugog Island First Nations.”
Denominator	<ul style="list-style-type: none"> Vital Statistics – Births, IntelliHEALTH Ontario. Ontario Ministry of Health. 	<ul style="list-style-type: none"> Mother’s Public Health Unit is Durham Region Health Department. All live births Infant’s birth year is of interest. 	Mother’s municipality of residence is Mississaugas of Scugog Island First Nations.

BREASTFEEDING INDICATORS

INTENTION TO BREASTFEED

The percentage of gestational parents that intend to breastfeed their newborn(s).

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Dimension: Intention to Breastfeed • Measure: Number of Pregnancies – Women Who Gave Birth 	Intention to breastfeed falls within a specific category (i.e., intends to breastfeed exclusively, intends to combination feed, does not intend to breastfeed, or unsure).	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Measure: Number of Pregnancies – Women Who Gave Birth 		Data on Intention to Breastfeed is missing.

Note: Data for this indicator became available in 2015.

BREASTFEEDING INITIATION RATE

The percentage of newborns that had been fed breast milk at discharge from birth location or three days after a home birth.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Dimension: Feeding at Hospital or MPG • Measure: Number of Births – Live 	Newborn was fed breast milk only or a combination of breast milk and breast milk substitute.	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none"> • Measure: Number of Births – Live 		Data on breastfeeding is missing.

EXCLUSIVE BREASTFEEDING RATE

The percentage of newborns that were exclusively fed breast milk at discharge from birth location or three days after a home birth.

	Data source	Inclusions	Exclusions
Numerator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Dimension: Feeding at Hospital or MPG• Measure: Number of Births – Live	Newborn was fed breast milk only.	
Denominator	BORN Information System, BORN Ontario . <ul style="list-style-type: none">• Measure: Number of Births – Live		Data on breastfeeding is missing.

APPENDIX A: EXTRACTING HOSPITAL DELIVERIES AND BIRTHS FROM INTELLIHEALTH

The methodology used to extract hospital deliveries and births from [Inpatient Discharges](#) is detailed below.

Classification	How to Extract	Data Notes
Obstetric deliveries	All Dx code starts with Z37	A patient receives only one Z37 code even if there are multiple births from the same pregnancy.
Live births	All Dx code starts with Z38	This will capture all live hospital births and live births outside a hospital where the newborn was subsequently admitted to a hospital in the first 24 hours of life.
Stillbirths	Admit Entry Type Code = "S"	This will only include stillbirths in a hospital facility.
All hospital births (live births and stillbirths)	Admit Entry Type Code = "N" or "S"	This will only include births in a hospital facility and exclude some live births captured with Z38 diagnosis codes.

For more information on extracting these data, see:

- The *Persons encountering health services in circumstances related to reproduction* section of ICD-10 (i.e., [Chapter XXI, Blocks Z30-Z39](#)).
- The Canadian Institute for Health Information's [Discharge Abstract Database Abstracting Manual](#).

APPENDIX B: GLOSSARY OF TERMS

Definition of terms used on the Maternal and Infant Health Data Tracker and in the Technical Notes.

Term	Definition
Congenital anomaly	A congenital anomaly is a structural or functional malformation that occurs before a child is born.
Female	A female is a person that was assigned the female sex at birth.
Gestational parent	A gestational parent is an individual who becomes pregnant and ultimately gives birth. This individual could be a biological parent who intends to raise the child, a biological parent who does not intend to raise the child, or a surrogate.
Live birth	A product of conception with any signs of life (breathing, beating of the heart or voluntary muscle movement), regardless of gestational age or birthweight.
Neonate	A neonate is a newborn infant younger than 28 days (4 weeks) old.
Parity	Parity describes the number of deliveries where the pregnancy had reached a viable gestational age (in this case, 20 weeks), regardless of the outcome of that pregnancy (i.e., live birth or stillbirth). A female with a parity of zero (0) has never given birth to an infant with a gestational age of 20 weeks or more.
Stillbirth	A stillbirth is the death of a fetus before birth. A birth is classified as a stillbirth if the fetus shows no signs of life and has a gestational age of 20 weeks or more.
Therapeutic abortion	A therapeutic abortion is the deliberate termination of a pregnancy. Therapeutic abortions are also known as induced abortions and are different from miscarriages and ectopic pregnancies.