

COMMUNITY HEALTH STATUS RESOURCE
12. Births and Early Development

TECHNICAL APPENDIX

June 24, 2019

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Methods Overview

The Births and Early Development topic includes population health indicators spanning birth to early childhood. The indicators are divided into three main sections: 1) birth outcomes, 2) infant feeding, and 3) early development.

The Middlesex-London Infant Feeding Surveillance System (MLIFSS) was launched in mid-2015 to monitor the prevalence of breastfeeding practices in Middlesex-London. The system consists of surveying mothers of infants at three different time points postpartum: 1) 6 months, 2) 12 months, and 3) 18 months, and includes a range of questions about current breastfeeding status, formula use, concerns about feeding their baby, etc. All eligible new mothers will be invited to complete the 6-month survey. Only mothers still breastfeeding at 6 months postpartum will be invited to participate in the 12-month survey. Correspondingly, only mothers still breastfeeding at 12 months postpartum will be invited to participate in the 18-month survey. Mothers can complete the questionnaire(s) online via BFI Online (Ericsson Analytics; North Bay, ON), or by telephone with a Program Assistant from the Middlesex-London Health Unit. The questionnaires have been adapted from the *Infant Feeding Surveillance Pilot Study: Final Results from the LDCP Breastfeeding Project* report released in April 2015.

The Better Outcomes Registry and Network (BORN) is a database that was established in 2009 to collect and disseminate clinical data from all pregnancies and births in Ontario. BORN is funded by the Ontario Ministry of Health and Long-Term Care (MOHLTC) and administered by the Children's Hospital of Eastern Ontario (CHEO). Data for Middlesex-London are available in BORN from April 2012 onward.

12.1. Birth Outcomes

12.1.1. LIVE BIRTH COUNT

Indicator definition:

The number of live births per year.

Data sources:

Discharge Abstract Database (DAD), Date Extracted: Oct 4, 2018, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario.

Methodological notes:

- Excludes stillbirths.
- Include all births, not just those for mothers aged 15–49 years.
- Includes mothers that reside in Ontario and gave birth in Ontario.

Limitations:

- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.

12.1.2. BIRTH RATE

Indicator definition:

The ratio of live births per 1,000 population.¹

$$\text{Crude birth rate} = \frac{\text{Total number of live births}}{\text{Total population}} \times 1,000$$

Data sources:

Discharge Abstract Database (DAD), Date Extracted: Oct 4, 2018 & Population Estimates, Date Extracted: May 11, 2018, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario.

Methodological notes:

Crude birth rate

- Excludes stillbirths.
- Include all births, not just those for mothers aged 15–49 years.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Maternal age groups

- Mother’s age is recorded at time of delivery.
- Age categories: 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49.

Limitations:

- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Sub-Group. *6B Crude Birth Rate* [Internet]. 2013 [cited 2018 Oct 4]. Available from: <http://core.apheo.ca/index.php?pid=135>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.1.3. LOW BIRTH WEIGHT RATE

Indicator definition:

The ratio of live births with a birth weight of less than 2500 grams, per 100 live births.¹

$$\text{Low birth weight rate} = \frac{\text{Total number of live births weighing <2500 gram}}{\text{Total number of live births}} \times 100$$

Data sources:

Inpatient Discharge Data (DAD, CIHI), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: Oct 4, 2018.

Methodological notes:

Low birth weight rate

- Includes live births with birth weights <500 grams.
- Excludes stillbirths.
- Include all births, not just those for mothers aged 15–49 years.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- Excludes births with unknown or missing birth weight.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Maternal age groups

- Mother’s age is recorded at time of delivery.
- Age categories: 15–19, 20–24, 25–29, 30–34, 35–39, 40–49. Age groups 40–44 and 45–49 were combined to produce more stable rates.

Limitations:

- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Sub-Group. *6B Birth Weights* [Internet]. 2014 [cited 2018 Oct 30]. Available from: <http://core.apheo.ca/index.php?pid=142>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.1.4. HIGH BIRTH WEIGHT RATE

Indicator definition:

The ratio of live births with a birth weight of 4500 grams or more, per 100 live births.¹

$$\text{High birth weight rate} = \frac{\text{Total number of live births weighing >4500 grams}}{\text{Total number of live births}} \times 100$$

Data sources:

Inpatient Discharge Data (DAD, CIHI), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: Oct 4, 2018.

Methodological notes:

High birth weight rate

- Denominator includes live births with birth weights <500 grams.
- Excludes stillbirths.
- Include all births, not just those for mothers aged 15–49 years.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- Excludes births with unknown or missing birth weight.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Maternal age groups

- Mother’s age is recorded at time of delivery.
- Age categories: 15–19, 20–24, 25–29, 30–34, 35–39, 40–49. Age groups 40–44 and 45–49 were combined to produce more stable rates.

Limitations:

- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Sub-Group. *6B Birth Weights* [Internet]. 2014 [cited 2018 Oct 30]. Available from: <http://core.apheo.ca/index.php?pid=142>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.1.5. PRETERM BIRTH RATE

Indicator definition:

The ratio of live births with a gestational age at birth of less than 37 completed weeks, per 100 live births.¹

$$\text{Preterm birth rate} = \frac{\text{Total number of live births delivered <37 weeks completed gestation}}{\text{Total number of live births}} \times 100$$

Data sources:

Inpatient Discharge Data (DAD, CIHI), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: Oct 4, 2018.

Methodological notes:

Preterm birth rate

- Includes live births with birth weights <500 grams.
- Excludes stillbirths.
- Include all births, not just those for mothers aged 15–49 years.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- Excludes births with unknown or missing birth weight.
- Excludes births with unknown or missing gestational age.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Maternal age groups

- Mother’s age is recorded at time of delivery.
- Age categories: 15–19, 20–24, 25–29, 30–34, 35–39, 40–49. Age groups 40–44 and 45–49 were combined to produce more stable rates.

Limitations:

- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Sub-Group. *6B Preterm Birth Rate* [Internet]. 2013 [cited 2018 Nov 2]. Available from: <http://core.apheo.ca/index.php?pid=140>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>

3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.1.6. PRETERM BIRTH RATE BY MATERNAL AGE GROUP

Indicator definition:

The ratio of live births with a gestational age at birth of less than 37 completed weeks, per 100 live births in a given maternal age group.¹

$$\text{Preterm birth rate by maternal age group} = \frac{\text{Total number of live births delivered <37 weeks completed gestation to mothers in a given age group}}{\text{Total number of live births in a given maternal age group}} \times 100$$

Data sources:

Inpatient Discharge Data (DAD, CIHI), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: Oct 4, 2018.

Methodological notes:

Preterm birth rate

- Includes live births with birth weights <500 grams from 2013 to 2017.
- Excludes stillbirths.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- Births with unknown or missing birth weight should be excluded from analysis.
- Births with unknown or missing gestational age should be excluded from analysis.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²

Maternal age groups

- Mother's age is recorded at time of delivery.
- Age categories: 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49.

Limitations:

- Excludes infants born to mothers ≤14 years and ≥50 years.
- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Sub-Group. *6B Preterm Birth Rate* [Internet]. 2013 [cited 2018 Nov 2]. Available from: <http://core.apheo.ca/index.php?pid=140>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>

12.1.7. SMALL FOR GESTATIONAL AGE (SGA) RATE

Indicator definition:

The ratio of live births with a birth weight below the 10th percentile of birth weights for their gestational age and sex, per 100 live births.¹

$$\text{SGA rate} = \frac{\text{Total number of singleton live births with weights below the 10th percentile of birth weights for their gestational age and sex}}{\text{Total number of live births}} \times 100$$

Data sources:

Inpatient Discharge Data (DAD, CIHI), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: Oct 4, 2018.

Methodological notes:

Small for gestational age (SGA) rate

- Population-based Canadian reference for birth weight for gestational age as calculated in Kramer et al. (2001).²
- Includes singletons with a gestational age between 22 and 43 completed weeks.
- Includes live births with birth weights <500 grams.
- Excludes stillbirths.
- Include all births, not just those for mothers aged 15–49 years.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- Births with unknown or missing birth weight should be excluded from analysis.
- Births with unknown or missing gestational age should be excluded from analysis.
- Excludes multiple births and births with unknown multiplicity.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).³
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.⁴

Limitations:

- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Sub-Group. *6B Birth Weights* [Internet]. 2014 [cited 2018 Oct 4]. Available from: <http://core.apheo.ca/index.php?pid=142>
2. Kramer MS, Platt RW, Wen SW, Joseph KS, Allen A, Abrahamowicz M, Blondel B, Bréart G, for the Fetal/Infant Health Study Group of the Canadian Perinatal Surveillance System. (2001, August). A new and improved population-based Canadian reference for birth weight for gestational age.

- Pediatrics [Internet]. 2001 Aug [cited 2018 Oct 4];108(2):E35. Available from: <http://pediatrics.aappublications.org/content/108/2/e35>. DOI: 10.1542/peds.108.2.e35
3. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
 4. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.1.8. SMALL FOR GESTATIONAL AGE (SGA) RATE BY MATERNAL AGE GROUP

Indicator definition:

The ratio of singleton live births with weights below the 10th percentile of birth weights for their gestational age and sex per total live births in a given maternal age group, per 100 live births in a given maternal age group.¹

$$\text{SGA rate by maternal age group} = \frac{\text{Total number of singleton live births with weights below the 10th percentile of birth weights for their gestational age and sex, born to mothers in a given age group}}{\text{Total number of live births in a given maternal age group}} \times 100$$

Data sources:

Inpatient Discharge Data (DAD, CIHI), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: Oct 4, 2018.

Methodological notes:

Small for gestational age (SGA) rate:

- Population-based Canadian reference for birth weight for gestational age as calculated in Kramer et al. (2001).²
- Includes singletons with a gestational age between 22 and 43 completed weeks.
- Includes live births with birth weights <500 grams.
- Excludes stillbirths.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- Births with unknown or missing birth weight should be excluded from analysis.
- Births with unknown or missing gestational age should be excluded from analysis.
- Excludes multiple births and births with unknown multiplicity.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).³

Maternal age groups

- Mother's age is recorded at time of delivery.
- Age categories: 15–19, 20–24, 25–29, 30–34, 35–39, 40–49. Age groups 40–44 and 45–49 were combined to produce more stable rates.

Limitations:

- Excludes infants born to mothers ≤14 years and ≥50 years.
- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Sub-Group. *6B Birth Weights* [Internet]. 2014 [cited 2018 Oct 4]. Available from: <http://core.apheo.ca/index.php?pid=142>

2. Kramer MS, Platt RW, Wen SW, Joseph KS, Allen A, Abrahamowicz M, Blondel B, Bréart G, for the Fetal/Infant Health Study Group of the Canadian Perinatal Surveillance System. (2001, August). A new and improved population-based Canadian reference for birth weight for gestational age. *Pediatrics* [Internet]. 2001 Aug [cited 2018 Oct 4];108(2):E35. Available from: <http://pediatrics.aappublications.org/content/108/2/e35>. DOI: 10.1542/peds.108.2.e35
3. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>

12.1.9. LARGE FOR GESTATIONAL AGE (LGA) RATE

Indicator definition:

The ratio of singleton live births with weights above the 90th percentile of birth weights for their gestational age and sex, per 100 live births.¹

$$\text{LGA rate} = \frac{\text{Total number of singleton live births with weights above the 90th percentile of birth weights for their gestational age and sex}}{\text{Total number of live births}} \times 100$$

Data sources:

Inpatient Discharge Data (DAD, CIHI), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: Oct 4, 2018.

Methodological notes:

Large for gestational age (LGA) rate

- Population-based Canadian reference for birth weight for gestational age as calculated in Kramer et al. (2001).²
- Includes singletons with a gestational age between 22 and 43 completed weeks.
- Includes live births with birth weights <500 grams.
- Excludes stillbirths.
- Include all births, not just those for mothers aged 15–49 years.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- Births with unknown or missing birth weight should be excluded from analysis.
- Births with unknown or missing gestational age should be excluded from analysis.
- Excludes multiple births and births with unknown multiplicity.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).³
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.⁴

Limitations:

- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Sub-Group. *6B Birth Weights* [Internet]. 2014 [cited 2018 Oct 4]. Available from: <http://core.apheo.ca/index.php?pid=142>
2. Kramer MS, Platt RW, Wen SW, Joseph KS, Allen A, Abrahamowicz M, Blondel B, Bréart G, for the Fetal/Infant Health Study Group of the Canadian Perinatal Surveillance System. (2001, August). A new and improved population-based Canadian reference for birth weight for gestational age.

Pediatrics [Internet]. 2001 Aug [cited 2018 Oct 4];108(2):E35. Available from:
<http://pediatrics.aappublications.org/content/108/2/e35>. DOI: 10.1542/peds.108.2.e35

3. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
4. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.1.10. LARGE FOR GESTATIONAL AGE (LGA) BY MATERNAL AGE GROUP

Indicator definition:

The ratio of singleton live births with weights above the 90th percentile of birth weights for their gestational age and sex per total live births in a given maternal age group, per 100 live births in a given maternal age group.¹

$$\text{LGA rate by maternal age group} = \frac{\text{Total number of singleton live births with weights above the 90th percentile of birth weights for their gestational age and sex, born to mothers in a given age group}}{\text{Total number of live births in a given maternal age group}} \times 100$$

Data sources:

Inpatient Discharge Data (DAD, CIHI), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: MMM DD, YYYY.

Methodological notes:

Large for gestational age (LGA) rate

- Population-based Canadian reference for birth weight for gestational age as calculated in Kramer et al. (2001).²
- Includes singletons with a gestational age between 22 and 43 completed weeks.
- Includes live births with birth weights <500 grams.
- Excludes stillbirths.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- Births with unknown or missing birth weight should be excluded from analysis.
- Births with unknown or missing gestational age should be excluded from analysis.
- Excludes multiple births and births with unknown multiplicity.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).³

Maternal age groups

- Mother's age is recorded at time of delivery.
- Age categories: 15–19, 20–24, 25–29, 30–34, 35–39, 40–49. Age groups 40–44 and 45–49 were combined to produce more stable rates.

Limitations:

- Excludes infants born to mothers ≤14 years and ≥50 years.
- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Sub-Group. *6B Birth Weights* [Internet]. 2014 [cited 2018 Oct 4]. Available from: <http://core.apheo.ca/index.php?pid=142>

2. Kramer MS, Platt RW, Wen SW, Joseph KS, Allen A, Abrahamowicz M, Blondel B, Bréart G, for the Fetal/Infant Health Study Group of the Canadian Perinatal Surveillance System. (2001, August). A new and improved population-based Canadian reference for birth weight for gestational age. *Pediatrics* [Internet]. 2001 Aug [cited 2018 Oct 4];108(2):E35. Available from: <http://pediatrics.aappublications.org/content/108/2/e35>. DOI: 10.1542/peds.108.2.e35
3. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>

12.1.11. SGA, LGA AND PRETERM BIRTH RATES BY MATERNAL AGE GROUP

Indicator definition:

The ratio of live SGA, LGA and preterm births born to mothers in a given age group, per 100 live births in a given maternal age group.¹

$$\text{SGA rate by maternal age group} = \frac{\text{Total number of singleton live births with weights below the 10th percentile of birth weights for their gestational age and sex, born to mothers in a given age group}}{\text{Total number of live births in a given maternal age group}} \times 100$$

$$\text{LGA rate by maternal age group} = \frac{\text{Total number of singleton live births with weights above the 90th percentile of birth weights for their gestational age and sex, born to mothers in a given age group}}{\text{Total number of live births in a given maternal age group}} \times 100$$

$$\text{Preterm birth rate by maternal age group} = \frac{\text{Total number of live births delivered <37 weeks completed gestation to mothers in a given age group}}{\text{Total number of live births in a given maternal age group}} \times 100$$

Data sources:

Inpatient Discharge Data (DAD, CIHI), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: Oct 4, 2018.

Methodological notes:

SGA and LGA rates

- Population-based Canadian reference for birth weight for gestational age as calculated in Kramer et al. (2001).²
- Includes singletons with a gestational age between 22 and 43 completed weeks.
- Includes live births with birth weights <500 grams from 2013 to 2017.
- Excludes stillbirths.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- Births with unknown or missing birth weight should be excluded from analysis.
- Births with unknown or missing gestational age should be excluded from analysis.
- Excludes multiple births and births with unknown multiplicity.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Preterm birth rate

- Includes live births with birth weights <500 grams from 2013 to 2017.
- Excludes stillbirths.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- Births with unknown or missing birth weight should be excluded from analysis.
- Births with unknown or missing gestational age should be excluded from analysis.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).³

Maternal age groups

- Mother's age is recorded at time of delivery.
- Age categories: 15–19, 20–24, 25–29, 30–34, 35–39, 40–49.

Limitations:

- Excludes infants born to mothers ≤ 14 years and ≥ 50 years.
- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Sub-Group. *6B Birth Weights* [Internet]. 2014 [cited 2018 Oct 4]. Available from: <http://core.apheo.ca/index.php?pid=142>
2. Kramer MS, Platt RW, Wen SW, Joseph KS, Allen A, Abrahamowicz M, Blondel B, Bréart G, for the Fetal/Infant Health Study Group of the Canadian Perinatal Surveillance System. (2001, August). A new and improved population-based Canadian reference for birth weight for gestational age. *Pediatrics* [Internet]. 2001 Aug [cited 2018 Oct 4];108(2):E35. Available from: <http://pediatrics.aappublications.org/content/108/2/e35>. DOI: 10.1542/peds.108.2.e35
3. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>

12.1.12. MULTIPLE LIVE BIRTH RATE

Indicator definition:

The ratio of live births following a multiple gestation pregnancy per 100 live births.¹

$$\text{Multiple live birth rate} = \frac{\text{Total number of multiple live births}}{\text{Total number of live births}} \times 100$$

Data sources:

Inpatient Discharge Data (DAD, CIHI), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: Oct 4, 2018.

Methodological notes:

Multiple live birth rate

- Includes live births with birth weights <500 grams.
- Excludes stillbirths.
- Include all births, not just those for mothers aged 15–49 years.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- Births with unknown or missing birth weight should be excluded from analysis.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Maternal age groups

- Mother’s age is recorded at time of delivery.
- Age categories: 15–24, 25–34, 35–49.

Limitations:

- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Sub-Group. *6B Multiple Birth Rate* [Internet]. 2013 [cited 2018 Oct 29]. Available from: <http://core.apheo.ca/index.php?pid=141>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.1.13. STILLBIRTH RATE

Indicator definition:

The ratio of stillborn births per 1,000 births (live or still).¹

$$\text{Stillbirth rate} = \frac{\text{Total number of stillborn births}}{\text{Total number of births (live or still)}} \times 1,000$$

Data sources:

Inpatient Discharge Data (DAD, CIHI), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: Oct 4, 2018.

Methodological notes:

Stillbirth rate

- Includes mothers that reside in Ontario and gave birth in Ontario.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.
- Includes therapeutic abortions of a fetus weighing 500 grams or more, or of 20 or more weeks of gestation.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Limitations:

- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Technical Notes: Maternal Health Snapshot [Internet]. Toronto, ON: Queen’s Printer for Ontario; 2018 [cited 2018 Oct 19]. Available from: <https://www.publichealthontario.ca/en/DataAndAnalytics/Snapshots/Pages/Maternal-health.aspx>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.1.14. SEX RATIO AT BIRTH

Indicator definition:

The ratio of males born alive per 100 females born alive.¹

$$\text{Overall sex ratio at birth} = \frac{\text{Total number of live male births}}{\text{Total number of live female births}} \times 100$$

Data sources:

Inpatient Discharge Data (DAD, CIHI), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: Oct 4, 2018.

Methodological notes:

Sex ratio

- Excludes stillbirths.
- Include all births, not just those for mothers aged 15–49 years.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Limitations:

- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Technical Notes: Maternal Health Snapshot [Internet]. Toronto, ON: Queen’s Printer for Ontario; 2018 [cited 2018 Oct 19]. Available from: <https://www.publichealthontario.ca/en/DataAndAnalytics/Snapshots/Pages/Maternal-health.aspx>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.1.15. AVERAGE AGE OF MOTHER AT BIRTH OF FIRST INFANT

Indicator definition:

The overall average age of mother at birth of first infant.¹

$$\text{Average age of mother at birth of first infant} = \frac{\text{Sum of the age of all women who gave birth to their first infant (live births only)}}{\text{Total number of women who gave birth (live births only)}}$$

Data sources:

Inpatient Discharge Data (DAD, CIHI), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: Oct 4, 2018.

Methodological notes:

- Excludes stillbirths.
- Include all births, not just those for mothers aged 15–49 years.
- Includes mothers that reside in Ontario and gave birth in Ontario.
- Age of mother is recorded at time of event (i.e. birth). A woman who becomes pregnant at 19 but who delivers as age 20, is recorded as a 20-year-old.
- A mother’s residence is recorded at time of event (i.e. birth). An area may have a high pregnancy rate as a result of pregnant women moving to that area to have their babies.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Limitations:

- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- Births to Ontario mothers that occur out-of-province are not included in the data.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Work Group. 6B Age of Parent at Infant’s Birth [Internet]. 2013 [cited 2019 Apr 8]. Available from: <http://core.apheo.ca/index.php?pid=147>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.1.16. CONGENITAL ANOMALIES

Indicator definition:

The ratio of births (live or still) identified as having at one or more confirmed congenital anomalies per 10,000 births (live or still).¹

$$\text{Rate of congenital anomalies} = \frac{\text{Total number of births (live or still) identified as having one or more confirmed congenital anomalies}}{\text{Total number of births (live or still)}} \times 10,000 \text{ births}$$

Data sources:

BORN PHU - Newborn, BORN Information System, BORN Ontario. Information accessed on October 22, 2018.

Methodological notes:

- From the BORN PHU – Newborn standard report:

$$\text{Rate of congenital anomalies} = \frac{\text{"Number of births with confirmed congenital anomalies"}}{(\text{"Total births"}) - (\text{"Missing data"})} \times 100\%$$

- Data from First Nations communities are not included in the BORN public health data cube (to honour First Nations Ownership, Control, Access and Possession (OCAP) principles, BORN Ontario has removed all records from the BORN data cube with postal codes that are linked to First Nations communities).²
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).

Limitations:

- Peer group A (2015 classification)² data not available since BORN categorizes public health units into Peer Groups as per the 2011 classifications.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Sub-Group. 6B Congenital Anomalies [Internet]. 2014 [cited 2019 Apr 8]. Available from: <http://core.apheo.ca/index.php?pid=143>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>

12.2. Infant Feeding

12.2.1. INTENTION TO BREASTFEED

Indicator definition:

The percentage of women who gave birth who reported intending to breastfeed their child (exclusively or in combination with a breast milk substitute).¹

$$\text{Intention to breastfeed} = \frac{\text{Number of women who gave birth (live or still) who reported intending to breastfeed (exclusively or in combination) their child}}{\text{Number of women who gave birth (live or still)}} \times 100\%$$

Data sources:

Middlesex-London and Ontario data (2013 to 2017)

BORN Public Health Cube, BORN Information System, BORN Ontario. Information accessed on 2019 Feb 25.

Peer group data (2013 to 2017)

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Snapshots: Maternal health Snapshot. Toronto, ON: Queen’s Printer for Ontario; c2018 [updated 2018 Sep 24; cited 2019 Feb 21]. Available from: publichealthontario.ca/en/DataAndAnalytics/Snapshots/Pages/Maternal-health.aspx

Methodological notes:

- In the BORN Public Health Cube:

Cube element	Name	Filters
Measure	# of pregnancies – Women Who Gave Birth	(not applicable)
Dimensions	Newborn DOB Calendar Year	2013, 2014, 2015, 2016, 2017
	Intention to breastfeed	(none)

$$\text{Intention to breastfeed} = \frac{\text{"Intention to breastfeed" = "Yes" + "Yes, intends to exclusively breastfeed" + "Yes, intends to combination feed (use breast milk and breast milk substitute)"}}{(\text{"# of pregnancies – Women Who Gave Birth"}) - (\text{"Missing data"})} \times 100\%$$

- Includes intention to feed breast milk to infant regardless of the actual method of feeding (i.e., at the breast, or expressed breast milk or donor milk).
- Data from First Nations communities are not included in the BORN public health data cube (to honour First Nations Ownership, Control, Access and Possession (OCAP) principles, BORN Ontario has removed all records from the BORN data cube with postal codes that are linked to First Nations communities).²
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.
- Small cell counts (≤5) must be suppressed prior to data reporting and public release.²

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).³
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.⁴

Maternal age groups

- Mother’s age is recorded at time of delivery.
- Age categories: <25, 25–34, 35+.

Limitations:

- Based on self-reported data during pregnancy or at time of birth.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Technical Note: Maternal Health Snapshot [Internet]. Toronto, ON: Queen’s Printer for Ontario. 2018 [Cited 2018 Oct 12]. Available from: <https://www.publichealthontario.ca/en/DataAndAnalytics/Snapshots/Pages/Maternal-health.aspx>
2. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Public Health Working Group. Using BORN Ontario Data for Public Health Surveillance: User Guide for Epidemiologists & Data Analysts – BORN Public Health Analytics Cube [Internet]. Version 1.5. 2017 [Cited 2019 Apr 8]. Available from: <https://www.apheo.ca/upload/membership/document/2017-02/born-user-guide-born-public-health-analytical-cube-final-version-1.5-feb-2017.pdf#upload/membership/document/2017-02/born-user-guide-born-public-health-analytical-cube-final-version-1.5-feb-2017.pdf>
3. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
4. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.2.2. FEEDING AT HOSPITAL OR MIDWIFERY PRACTICE GROUP

Indicator definition:

The percentage of infants fed 1) any breast milk, 2) breast milk only, 3) a combination of breast milk and substitute, or 4) breast milk substitute at the hospital or Midwifery Practice Group (MPG) per the number of live births.¹

$$\text{Infant feeding at hospital or MPG} = \frac{\text{Number of infants fed [type of feeding] in hospital or MPG}}{\text{Number of live births}} \times 100\%$$

Data sources:

Middlesex-London data (2013 to 2017)

BORN Public Health Cube, BORN Information System, BORN Ontario. Information accessed on October 19, 2018.

Ontario data (2013 to 2017)

PHU – Newborn Standard Report, BORN Information System, BORN Ontario. Information accessed on October 24, 2018.

Methodological notes:

- In the BORN Public Health Cube:

Cube element	Name	Filters
Measure	# of Births – Live	(not applicable)
Dimensions	Newborn DOB Calendar Year	2013, 2014, 2015, 2016, 2017
	Feeding at Hospital Or MPG	(none)

$$\text{Any breast milk} = \frac{\text{"Newborn Feeding at Discharge" = "Breast Milk Only" + "Combination of breast milk and breast milk substitute"}}{(\text{"# of Births – Live"}) - (\text{"Missing data"})} \times 100\%$$

$$\text{Breast milk only} = \frac{\text{"Newborn Feeding at Discharge" = "Breast Milk Only"}}{(\text{"# of Births – Live"}) - (\text{"Missing data"})} \times 100\%$$

$$\text{Combination} = \frac{\text{"Newborn Feeding at Discharge" = "Combination of breast milk and breast milk substitute"}}{(\text{"# of Births – Live"}) - (\text{"Missing data"})} \times 100\%$$

$$\text{Substitute only} = \frac{\text{"Newborn Feeding at Discharge" = "Breast milk substitute - Formula only" + "Breast milk substitute - Other"}}{(\text{"# of Births – Live"}) - (\text{"Missing data"})} \times 100\%$$

- Includes breast milk fed at the breast, expressed breast milk or donor milk.
- Data from First Nations communities are not included in the BORN public health data cube (to honour First Nations Ownership, Control, Access and Possession (OCAP) principles, BORN Ontario has removed all records from the BORN data cube with postal codes that are linked to First Nations communities).²
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.
- Small cell counts (≤ 5) must be suppressed prior to data reporting and public release.²

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).³
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.⁴

Maternal age groups

- Mother’s age is recorded at time of delivery.
- Age categories: <25, 25–34, 35+.

Limitations:

- Based on self-reported data during pregnancy or at time of birth.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Reproductive Health Sub-Group. Infant feeding [Internet]. 2016 [cited 2019 Apr 5]. Available from: <https://www.apheo.ca/upload/membership/document/2017-10/alcohol-and-substance-exposure-during-pregnancy-v1.1.pdf>.
2. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Public Health Working Group. Using BORN Ontario Data for Public Health Surveillance: User Guide for Epidemiologists & Data Analysts – BORN Public Health Analytics Cube [Internet]. Version 1.5. 2017 [Cited 2019 Apr 8]. Available from: <https://www.apheo.ca/upload/membership/document/2017-02/born-user-guide-born-public-health-analytical-cube-final-version-1.5-feb-2017.pdf#upload/membership/document/2017-02/born-user-guide-born-public-health-analytical-cube-final-version-1.5-feb-2017.pdf>
3. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
4. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.2.3. BREASTFEEDING DURATION

Indicator definition:

The percentage of infants fed breast milk (in combination and exclusively) at various time points after birth.

$$\text{Any breastfeeding at [time point]} = \frac{\text{Mothers who reported feeding any breast milk to their infant at [time point]}}{\text{Total number of mothers who completed the survey}} \times 100\%$$

$$\text{Exclusive breastfeeding at [time point]} = \frac{\text{Mothers who reported exclusively feeding breast milk to their infant at [time point]}}{\text{Total number of mothers who completed the survey}} \times 100\%$$

Data sources:

Middlesex-London Infant Feeding Surveillance System. BFI Online. Extracted: 2019 Feb 25.

Methodological notes:

- Eligibility criteria for mothers:
 - gave birth at the London Health Sciences Centre (LHSC) or Strathroy Middlesex General Hospital,
 - consented to the HBHC postpartum screen and consented to participate in the Middlesex-London Infant Feeding Surveillance System,
 - currently resides in Middlesex-London,
 - currently resides with the baby,
 - has access to a telephone or the internet, and
 - speaks or understands English well enough to complete the survey by telephone or online.
- Includes breast milk fed at the breast, expressed breast milk or donor milk.
- Each cohort represents the number of babies born in a particular year. For example, the 2016 birth cohort represents babies born between January 1 and December 31, 2016.
- Time points after birth: 2 weeks, 1 month, 2 months, 3 months, 4 months and 6 months

Geographic comparisons

- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.¹

Maternal age groups

- Mother’s age is recorded at time of delivery.
- Age categories: <25, 25–34, 35+.

Limitations:

- Does not include mothers who gave birth outside of a hospital (i.e., home, midwifery practice group).
- The number of surveys completed for the 2016 and 2017 birth cohorts represent 14.7% and 14.5% of all live births in Middlesex-London in 2016 and 2017, respectively.
- Based on self-reported data six (6) months after birth.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References

1. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.3. Early Development

12.3.1. INFANT'S MOTHER IS A SINGLE PARENT

Indicator definition:

The percentage of infants with mothers who identified themselves as sole primary caregiver for infant and is either unmarried, separated, widowed, divorced or in common-law relationship for less than one year.¹

$$\text{Infant's mother is a single parent} = \frac{\text{Infants with a "yes" response to the question "Mother is a single parent?" on the HBHC screen}}{\text{Infants with a "yes" or "no" response to the question "Mother is a single parent?" on the HBHC screen}} \times 100\%$$

Data sources:

Middlesex-London data

Healthy Child Development – Integrated Services for Children Information System (HCD-ISCIS) Version 6.6.0.11 – Dec 17, 2018, ISCIS Reporting Sub-System, Ministry of Children and Youth Services, date extracted 2019 Mar 14.

Ontario and Peer Group data

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Snapshots: Risk Factors for Healthy Child Development Snapshot (2015 to 2017). Toronto, ON: Queen's Printer for Ontario; c2018 [2015 data extracted 29 Feb 2016; 2016 data extracted 17 Aug 2017; 2017 data extracted 27 Aug 2018; cited 2019 Feb 21]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>

Methodological notes:

- Includes infants less than seven weeks of age at the time of the HBHC Screen, except for infants belonging to the Early Childhood entry stage between the ages of six weeks and six weeks, six days.¹
- Infants with multiple screens were only included once. If a “yes” response for an indicator was captured on any of the screens, then the infant was classified to be a “yes” for the indicator.¹
- Exclusion criteria:
 - Screens without a date of birth for the infant.
 - Screens that have no answer to all 36 screening questions.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Limitations:

- Does not include infants who were not reached or whose mother refused to participate in the HBHC screen.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Technical Notes: Risk factors for healthy child development snapshot [Internet]. Toronto, ON: Queen's Printer for Ontario; 2018 [cited 2018 Oct 19]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.3.2. NO DESIGNATED PRIMARY CARE PROVIDER FOR MOTHER AND/OR INFANT

Indicator definition:

The percentage of infants and/or infants with mothers who do not have a designated primary care provider.¹

$$\text{No designated primary care provider} = \frac{\text{Infants with a "yes" response to the question "Mother and/or child do not have a designated care provider?" on the HBHC screen}}{\text{Infants with a "yes" or "no" response to the question "Mother and/or child do not have a designated care provider?" on the HBHC screen}} \times 100\%$$

Data sources:

Middlesex-London data

Healthy Child Development – Integrated Services for Children Information System (HCD-ISCIS) Version 6.6.0.11 – Dec 17, 2018, ISCIS Reporting Sub-System, Ministry of Children and Youth Services, date extracted 2019 Mar 14.

Ontario and Peer Group data

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Snapshots: Risk Factors for Healthy Child Development Snapshot (2015 to 2017). Toronto, ON: Queen’s Printer for Ontario; c2018 [2015 data extracted 29 Feb 2016; 2016 data extracted 17 Aug 2017; 2017 data extracted 27 Aug 2018; cited 2019 Feb 21]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>

Methodological notes:

- Includes infants less than seven weeks of age at the time of the HBHC Screen, except for infants belonging to the Early Childhood entry stage between the ages of six weeks and six weeks, six days.¹
- Infants with multiple screens were only included once. If a “yes” response for an indicator was captured on any of the screens, then the infant was classified to be a “yes” for the indicator.¹
- Exclusion criteria:
 - Screens without a date of birth for the infant.
 - Screens that have no answer to all 36 screening questions.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Limitations:

- Does not include infants who were not reached or whose mother refused to participate in the HBHC screen.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Technical Notes: Risk factors for healthy child development snapshot [Internet]. Toronto, ON: Queen's Printer for Ontario; 2018 [cited 2018 Oct 19]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.3.3. INFANT'S MOTHER DOES NOT HAVE AN ONTARIO HEALTH INSURANCE PLAN (OHIP) NUMBER

Indicator definition:

The percentage of infants with mothers who do not have an Ontario Health Insurance Plan (OHIP) number.¹

$$\text{No OHIP number for mother} = \frac{\text{Infants with a "yes" response to the question "Mother does not have an OHIP number?" on the HBHC screen}}{\text{Infants with a "yes" or "no" response to the question "Mother does not have an OHIP number?" on the HBHC screen}} \times 100\%$$

Data sources:

Middlesex-London data

Healthy Child Development – Integrated Services for Children Information System (HCD-ISCIS) Version 6.6.0.11 – Dec 17, 2018, ISCIS Reporting Sub-System, Ministry of Children and Youth Services, date extracted 2019 Mar 14.

Ontario and Peer Group data

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Snapshots: Risk Factors for Healthy Child Development Snapshot (2015 to 2017). Toronto, ON: Queen's Printer for Ontario; c2018 [2015 data extracted 29 Feb 2016; 2016 data extracted 17 Aug 2017; 2017 data extracted 27 Aug 2018; cited 2019 Feb 21]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>

Methodological notes:

- Includes infants less than seven weeks of age at the time of the HBHC Screen, except for infants belonging to the Early Childhood entry stage between the ages of six weeks and six weeks, six days.¹
- Infants with multiple screens were only included once. If a “yes” response for an indicator was captured on any of the screens, then the infant was classified to be a “yes” for the indicator.¹
- Exclusion criteria:
 - Screens without a date of birth for the infant.
 - Screens that have no answer to all 36 screening questions.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada's *Population Centre and Rural Area Classification 2016*.³

Limitations:

- Does not include infants who were not reached or whose mother refused to participate in the HBHC screen.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Technical Notes: Risk factors for healthy child development snapshot [Internet]. Toronto, ON: Queen's Printer for Ontario; 2018 [cited 2018 Oct 19]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.3.4. INFANTS WITH FAMILIES IN NEED OF NEWCOMER SUPPORT

Indicator definition:

The percentage of infants with families in need of newcomer support (i.e., lack social support or experiencing social isolation). A newcomer is defined as someone living in Canada for less than five years.¹

$$\text{Infant's family in need of newcomer support} = \frac{\text{Infants with a "yes" response to the question "Client or family in need of newcomer support?" on the HBHC screen}}{\text{Infants with a "yes" or "no" response to the question "Client or family in need of newcomer support?" on the HBHC screen}} \times 100\%$$

Data sources:

Middlesex-London data

Healthy Child Development – Integrated Services for Children Information System (HCD-ISCIS) Version 6.6.0.11 – Dec 17, 2018, ISCIS Reporting Sub-System, Ministry of Children and Youth Services, date extracted 2019 Mar 14.

Ontario and Peer Group data

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Snapshots: Risk Factors for Healthy Child Development Snapshot (2015 to 2017). Toronto, ON: Queen's Printer for Ontario; c2018 [2015 data extracted 29 Feb 2016; 2016 data extracted 17 Aug 2017; 2017 data extracted 27 Aug 2018; cited 2019 Feb 21]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>

Methodological notes:

- Includes infants less than seven weeks of age at the time of the HBHC Screen, except for infants belonging to the Early Childhood entry stage between the ages of six weeks and six weeks, six days.¹
- Infants with multiple screens were only included once. If a “yes” response for an indicator was captured on any of the screens, then the infant was classified to be a “yes” for the indicator.¹
- Exclusion criteria:
 - Screens without a date of birth for the infant.
 - Screens that have no answer to all 36 screening questions.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.
- To protect the privacy and identity of individuals, small cell counts (≤ 4) were suppressed prior to data reporting and public release.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Limitations:

- Does not include infants who were not reached or whose mother refused to participate in the HBHC screen.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Technical Notes: Risk factors for healthy child development snapshot [Internet]. Toronto, ON: Queen's Printer for Ontario; 2018 [cited 2018 Oct 19]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.3.5. INFANTS WITH FAMILIES WHO HAVE CONCERNS ABOUT MONEY

Indicator definition:

The percentage of infants with families who have concerns about money to pay for housing/rent and family's food, clothing, utilities and other basic necessities.¹

$$\text{Infant's family has concerns about money} = \frac{\text{Infants with a "yes" response to the question "Client has concerns about money?" on the HBHC screen}}{\text{Infants with a "yes" or "no" response to the question "Client has concerns about money?" on the HBHC screen}} \times 100\%$$

Data sources:

Middlesex-London data

Healthy Child Development – Integrated Services for Children Information System (HCD-ISCIS) Version 6.6.0.11 – Dec 17, 2018, ISCIS Reporting Sub-System, Ministry of Children and Youth Services, date extracted 2019 Mar 14.

Ontario and Peer Group data

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Snapshots: Risk Factors for Healthy Child Development Snapshot (2015 to 2017). Toronto, ON: Queen's Printer for Ontario; c2018 [2015 data extracted 29 Feb 2016; 2016 data extracted 17 Aug 2017; 2017 data extracted 27 Aug 2018; cited 2019 Feb 21]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>

Methodological notes:

- Includes infants less than seven weeks of age at the time of the HBHC Screen, except for infants belonging to the Early Childhood entry stage between the ages of six weeks and six weeks, six days.¹
- Infants with multiple screens were only included once. If a “yes” response for an indicator was captured on any of the screens, then the infant was classified to be a “yes” for the indicator.¹
- Exclusion criteria:
 - Screens without a date of birth for the infant.
 - Screens that have no answer to all 36 screening questions.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Limitations:

- Does not include infants who were not reached or whose mother refused to participate in the HBHC screen.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Technical Notes: Risk factors for healthy child development snapshot [Internet]. Toronto, ON: Queen's Printer for Ontario; 2018 [cited 2018 Oct 19]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.3.6. PARENT OR PARTNER WITH A HISTORY OF MENTAL ILLNESS

Indicator definition:

The percentage of infants with parents or parenting partners with history of depression, anxiety, or other mental illness.¹

$$\text{Infant's mother is a single parent} = \frac{\text{Infants with a "yes" response to the question "Mother is a single parent?" on the HBHC screen}}{\text{Infants with a "yes" or "no" response to the question "Mother is a single parent?" on the HBHC screen}} \times 100\%$$

Data sources:

Middlesex-London data

Healthy Child Development – Integrated Services for Children Information System (HCD-ISCIS) Version 6.6.0.11 – Dec 17, 2018, ISCIS Reporting Sub-System, Ministry of Children and Youth Services, date extracted 2019 Mar 14.

Ontario and Peer Group data

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Snapshots: Risk Factors for Healthy Child Development Snapshot (2015 to 2017). Toronto, ON: Queen's Printer for Ontario; c2018 [2015 data extracted 29 Feb 2016; 2016 data extracted 17 Aug 2017; 2017 data extracted 27 Aug 2018; cited 2019 Feb 21]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>

Methodological notes:

- Includes infants less than seven weeks of age at the time of the HBHC Screen, except for infants belonging to the Early Childhood entry stage between the ages of six weeks and six weeks, six days.¹
- Infants with multiple screens were only included once. If a “yes” response for an indicator was captured on any of the screens, then the infant was classified to be a “yes” for the indicator.¹
- Exclusion criteria:
 - Screens without a date of birth for the infant.
 - Screens that have no answer to all 36 screening questions.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Limitations:

- Does not include infants who were not reached or whose mother refused to participate in the HBHC screen.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Technical Notes: Risk factors for healthy child development snapshot [Internet]. Toronto, ON: Queen's Printer for Ontario; 2018 [cited 2018 Oct 19]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.3.7. PARENT OR PARTNER HAS A DISABILITY THAT MAY IMPACT PARENTING

Indicator definition:

The percentage of infants with parents or parenting partners with disability (mental or physical challenge) that may impact parenting.¹

$$\text{Infant's mother is a single parent} = \frac{\text{Infants with a "yes" response to the question "Mother is a single parent?" on the HBHC screen}}{\text{Infants with a "yes" or "no" response to the question "Mother is a single parent?" on the HBHC screen}} \times 100\%$$

Data sources:

Middlesex-London data

Healthy Child Development – Integrated Services for Children Information System (HCD-ISCIS) Version 6.6.0.11 – Dec 17, 2018, ISCIS Reporting Sub-System, Ministry of Children and Youth Services, date extracted 2019 Mar 14.

Ontario and Peer Group data

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Snapshots: Risk Factors for Healthy Child Development Snapshot (2015 to 2017). Toronto, ON: Queen’s Printer for Ontario; c2018 [2015 data extracted 29 Feb 2016; 2016 data extracted 17 Aug 2017; 2017 data extracted 27 Aug 2018; cited 2019 Feb 21]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>

Methodological notes:

- Includes infants less than seven weeks of age at the time of the HBHC Screen, except for infants belonging to the Early Childhood entry stage between the ages of six weeks and six weeks, six days.¹
- Infants with multiple screens were only included once. If a “yes” response for an indicator was captured on any of the screens, then the infant was classified to be a “yes” for the indicator.¹
- Exclusion criteria:
 - Screens without a date of birth for the infant.
 - Screens that have no answer to all 36 screening questions.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.
- To protect the privacy and identity of individuals, small cell counts (≤ 4) were suppressed prior to data reporting and public release.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Limitations:

- Does not include infants who were not reached or whose mother refused to participate in the HBHC screen.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Technical Notes: Risk factors for healthy child development snapshot [Internet]. Toronto, ON: Queen's Printer for Ontario; 2018 [cited 2018 Oct 19]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.3.8. INFANTS WITH FAMILY INVOLVED WITH CHILD PROTECTION SERVICES

Indicator definition:

The percentage of infants with parents or parenting partners who have been involved with Child Protection Services (CPS) as a parent.¹

$$\text{Infant's mother is a single parent} = \frac{\text{Infants with a "yes" response to the question "Mother is a single parent?" on the HBHC screen}}{\text{Infants with a "yes" or "no" response to the question "Mother is a single parent?" on the HBHC screen}} \times 100\%$$

Data sources:

Middlesex-London data

Healthy Child Development – Integrated Services for Children Information System (HCD-ISCIS) Version 6.6.0.11 – Dec 17, 2018, ISCIS Reporting Sub-System, Ministry of Children and Youth Services, date extracted 2019 Mar 14.

Ontario and Peer Group data

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Snapshots: Risk Factors for Healthy Child Development Snapshot (2015 to 2017). Toronto, ON: Queen’s Printer for Ontario; c2018 [2015 data extracted 29 Feb 2016; 2016 data extracted 17 Aug 2017; 2017 data extracted 27 Aug 2018; cited 2019 Feb 21]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>

Methodological notes:

- Includes infants less than seven weeks of age at the time of the HBHC Screen, except for infants belonging to the Early Childhood entry stage between the ages of six weeks and six weeks, six days.¹
- Infants with multiple screens were only included once. If a “yes” response for an indicator was captured on any of the screens, then the infant was classified to be a “yes” for the indicator.¹
- Exclusion criteria:
 - Screens without a date of birth for the infant.
 - Screens that have no answer to all 36 screening questions.
- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.
- To protect the privacy and identity of individuals, small cell counts (≤ 4) were suppressed prior to data reporting and public release.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²
- The Middlesex-London population was classified as “urban” or “rural” using Statistics Canada’s *Population Centre and Rural Area Classification 2016*.³

Limitations:

- Does not include infants who were not reached or whose mother refused to participate in the HBHC screen.
- For Middlesex-London, the urban and rural subpopulations may not add to 100% due to missing postal code data.

References:

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Technical Notes: Risk factors for healthy child development snapshot [Internet]. Toronto, ON: Queen's Printer for Ontario; 2018 [cited 2018 Oct 19]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/reproductive-and-child-health/healthy-child-development>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>
3. Statistics Canada. Population Centre and Rural Area Classification 2016 [Internet]. 2017 [cited 2019 Apr 11]. Available from: <https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction>

12.3.9. ENHANCED 18-MONTH WELL BABY VISIT

Indicator definition:

The percentage of children with visits to family physicians or paediatricians for services identified as fee-for-service Ontario Health Insurance Plan (OHIP) claims for Enhanced Well-Baby Visits (EWBV).¹

$$\text{Proportion of children with OHIP claims for EWBV} = \frac{\text{Number of patients with fee-for-service OHIP claims for A002 (18 month well baby check - GP/FP) and A268 (18 month well baby check - PAEDS)}}{\text{Population of children aged 12 to 24 months}} \times 100\%$$

Data sources:

Medical Services Data (CHDB), Ministry of Health and Long-Term Care (MOHLTC), IntelliHEALTH ONTARIO, extracted Mar 5, 2019.

Methodological notes:

- 95% confidence interval calculated using a Poisson approximation of the binomial distribution.

Geographic comparisons

- Ontario (includes Middlesex-London).
- Peer Group A (includes Middlesex-London).²

Limitations:

- 2017 population estimates are based on the 2016 estimates.

References:

1. Association of Public Health Epidemiologists in Ontario (APHEO) BORN Core Indicators Work Group. 6C Enhanced well-baby visits [Internet]. 2017 [cited 2019 Apr 8]. Available from: <https://www.apheo.ca/upload/membership/document/2017-10/6-4enhanced-well-baby-visits-final-v2.pdf>
2. Statistics Canada. 82-402-X Table 6 Health regions 2015 by peer group [Internet]. 2015 [cited 2018 Dec 19]. Available from: <https://www150.statcan.gc.ca/n1/pub/82-402-x/2015002/app-ann/ap-antbl08-eng.htm>

12.3.10. VULNERABLE ON THE PHYSICAL HEALTH AND WELL-BEING DOMAIN

Indicator definition:

The percentage of kindergarten children who are considered vulnerable in the Physical Health and Well-being Domain at school entry, as measured by the Early Development Instrument (EDI).¹

$$\text{Vulnerable on Physical Health and Well-being domain} = \frac{\text{Total number of senior kindergarten children scoring below the 10th percentile cut-off on the Physical Health and Well-being domain}}{\text{Total number of senior kindergarten children with valid EDI scores}} \times 100\%$$

Data sources:

Middlesex-London data

Government of Ontario. Early Development Instrument (EDI). Toronto, ON: Queen's Printer for Ontario. [Updated: 29 Jun 2015; cited: 29 Jan 2019. Available from: <https://www.ontario.ca/data/early-development-among-children>

Ontario data

Offord Centre for Child Studies. (2018) EDI in Ontario: Over time report. Hamilton, ON: McMaster University. [cited: 21 Feb 2019]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>

Methodological notes:

- Confidence intervals are not reported since the data are from an entire population of children, not a random sample.²
- Does not include students identified as special needs.

Geographic comparisons

- Ontario (includes Middlesex-London).

Limitations:

- Each child's assessment is based on a teacher's knowledge of the child's development and well-being after the first half of the school year.
- The EDI provides a snapshot of child development and readiness for school at specific points in time, and therefore cannot be used to determine causal associations.

References:

1. Offord Centre for Child Studies. EDI In Ontario Over Time: Report [Internet]. Hamilton, ON: McMaster University; 2018 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>
2. Offord Centre for Child Studies. Researchers FAQ [Internet]. Hamilton, ON: McMaster University; 2014 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/researchers/faq/>

12.3.11. VULNERABLE ON THE EMOTIONAL MATURITY DOMAIN

Indicator definition:

The percentage of kindergarten children who are considered vulnerable in the Emotional Maturity Domain at school entry, as measured by the Early Development Instrument (EDI).¹

$$\text{Vulnerable on Emotional Maturity domain} = \frac{\text{Total number of senior kindergarten children scoring below the 10th percentile cut-off on the Emotional Maturity domain}}{\text{Total number of senior kindergarten children with valid EDI scores}} \times 100\%$$

Data sources:

Middlesex-London data

Government of Ontario. Early Development Instrument (EDI). Toronto, ON: Queen's Printer for Ontario. [Updated: 29 Jun 2015; cited: 29 Jan 2019. Available from: <https://www.ontario.ca/data/early-development-among-children>

Ontario data

Offord Centre for Child Studies. (2018) EDI in Ontario: Over time report. Hamilton, ON: McMaster University. [cited: 21 Feb 2019]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>

Methodological notes:

- Confidence intervals are not reported since the data are from an entire population of children, not a random sample.²

Geographic comparisons

- Ontario (includes Middlesex-London).

Limitations:

- Each child's assessment is based on a teacher's knowledge of the child's development and well-being after the first half of the school year.
- The EDI provides a snapshot of child development and readiness for school at specific points in time, and therefore cannot be used to determine causal associations.

References:

1. Offord Centre for Child Studies. EDI In Ontario Over Time: Report [Internet]. Hamilton, ON: McMaster University; 2018 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>
2. Offord Centre for Child Studies. Researchers FAQ [Internet]. Hamilton, ON: McMaster University; 2014 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/researchers/fag/>

12.3.12. VULNERABLE ON THE COMMUNICATION SKILLS AND GENERAL KNOWLEDGE DOMAIN

Indicator definition:

The percentage of kindergarten children who are considered vulnerable on the Communication Skills and General Knowledge Domain at school entry, as measured by the Early Development Instrument (EDI).¹

$$\text{Vulnerable on Communication Skills \& General Knowledge domain} = \frac{\text{Total number of senior kindergarten children scoring below the 10th percentile cut-off on the Communication Skills and General Knowledge domain}}{\text{Total number of senior kindergarten children with valid EDI scores}} \times 100\%$$

Data sources:

Middlesex-London data

Government of Ontario. Early Development Instrument (EDI). Toronto, ON: Queen's Printer for Ontario. [Updated: 29 Jun 2015; cited: 29 Jan 2019. Available from: <https://www.ontario.ca/data/early-development-among-children>

Ontario data

Offord Centre for Child Studies. (2018) EDI in Ontario: Over time report. Hamilton, ON: McMaster University. [cited: 21 Feb 2019]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>

Methodological notes:

- Confidence intervals are not reported since the data are from an entire population of children, not a random sample.²

Geographic comparisons

- Ontario (includes Middlesex-London).

Limitations:

- Each child's assessment is based on a teacher's knowledge of the child's development and well-being after the first half of the school year.
- The EDI provides a snapshot of child development and readiness for school at specific points in time, and therefore cannot be used to determine causal associations.

References:

1. Offord Centre for Child Studies. EDI In Ontario Over Time: Report [Internet]. Hamilton, ON: McMaster University; 2018 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>
2. Offord Centre for Child Studies. Researchers FAQ [Internet]. Hamilton, ON: McMaster University; 2014 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/researchers/faq/>

12.3.13. VULNERABLE ON THE LANGUAGE AND COGNITIVE DEVELOPMENT DOMAIN

Indicator definition:

The percentage of kindergarten children who are considered vulnerable on the Communication Skills and General Knowledge Domain at school entry, as measured by the Early Development Instrument (EDI).¹

$$\text{Vulnerable on Language and Cognitive Development domain} = \frac{\text{Total number of senior kindergarten children scoring below the 10th percentile cut-off on the Language and Cognitive Development domain}}{\text{Total number of senior kindergarten children with valid EDI scores}} \times 100\%$$

Data sources:

Middlesex-London data

Government of Ontario. Early Development Instrument (EDI). Toronto, ON: Queen's Printer for Ontario. [Updated: 29 Jun 2015; cited: 29 Jan 2019. Available from: <https://www.ontario.ca/data/early-development-among-children>

Ontario data

Offord Centre for Child Studies. (2018) EDI in Ontario: Over time report. Hamilton, ON: McMaster University. [cited: 21 Feb 2019]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>

Methodological notes:

- Confidence intervals are not reported since the data are from an entire population of children, not a random sample.²

Geographic comparisons

- Ontario (includes Middlesex-London).

Limitations:

- Each child's assessment is based on a teacher's knowledge of the child's development and well-being after the first half of the school year.
- The EDI provides a snapshot of child development and readiness for school at specific points in time, and therefore cannot be used to determine causal associations.

References:

1. Offord Centre for Child Studies. EDI In Ontario Over Time: Report [Internet]. Hamilton, ON: McMaster University; 2018 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>
2. Offord Centre for Child Studies. Researchers FAQ [Internet]. Hamilton, ON: McMaster University; 2014 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/researchers/fag/>

12.3.14. VULNERABLE ON THE SOCIAL COMPETENCE DOMAIN

Indicator definition:

The percentage of kindergarten children who are considered vulnerable on the Social Competence Domain at school entry, as measured by the Early Development Instrument (EDI).¹

$$\text{Vulnerable on Social Competence domain} = \frac{\text{Total number of senior kindergarten children scoring below the 10th percentile cut-off on the Social Competence domain}}{\text{Total number of senior kindergarten children with valid EDI scores}} \times 100\%$$

Data sources:

Middlesex-London data

Government of Ontario. Early Development Instrument (EDI). Toronto, ON: Queen's Printer for Ontario. [Updated: 29 Jun 2015; cited: 29 Jan 2019. Available from: <https://www.ontario.ca/data/early-development-among-children>

Ontario data

Offord Centre for Child Studies. (2018) EDI in Ontario: Over time report. Hamilton, ON: McMaster University. [cited: 21 Feb 2019]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>

Methodological notes:

- Confidence intervals are not reported since the data are from an entire population of children, not a random sample.²

Geographic comparisons

- Ontario (includes Middlesex-London).

Limitations:

- Each child's assessment is based on a teacher's knowledge of the child's development and well-being after the first half of the school year.
- The EDI provides a snapshot of child development and readiness for school at specific points in time, and therefore cannot be used to determine causal associations.

References:

1. Offord Centre for Child Studies. EDI In Ontario Over Time: Report [Internet]. Hamilton, ON: McMaster University; 2018 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>
2. Offord Centre for Child Studies. Researchers FAQ [Internet]. Hamilton, ON: McMaster University; 2014 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/researchers/faq/>

12.3.15. VULNERABLE ON AT LEAST ONE EDI DOMAIN

Indicator definition:

The percentage of senior kindergarten children who are considered vulnerable in at least one the five development domains at school entry, as measured by the Early Development Instrument (EDI).¹

$$\text{Vulnerable on Physical Health and Well-being domain} = \frac{\text{Total number of senior kindergarten children scoring below the 10th percentile cut-off on the Physical Health and Well-being domain}}{\text{Total number of senior kindergarten children with valid EDI scores}} \times 100\%$$

Data sources:

Middlesex-London data

Government of Ontario. Early Development Instrument (EDI). Toronto, ON: Queen's Printer for Ontario. [Updated: 29 Jun 2015; cited: 29 Jan 2019. Available from: <https://www.ontario.ca/data/early-development-among-children>

Ontario data

Offord Centre for Child Studies. (2018) EDI in Ontario: Over time report. Hamilton, ON: McMaster University. [cited: 21 Feb 2019]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>

City of London data

Middlesex County data

Methodological notes:

- Confidence intervals are not reported since the data are from an entire population of children, not a random sample.²

Geographic comparisons

- Ontario (includes Middlesex-London).
- City of London
- Middlesex County

Limitations:

- Each child's assessment is based on a teacher's knowledge of the child's development and well-being after the first half of the school year.
- The EDI provides a snapshot of child development and readiness for school at specific points in time, and therefore cannot be used to determine causal associations.

References:

1. Offord Centre for Child Studies. EDI In Ontario Over Time: Report [Internet]. Hamilton, ON: McMaster University; 2018 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>

2. Offord Centre for Child Studies. Researchers FAQ [Internet]. Hamilton, ON: McMaster University; 2014 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/researchers/faq/>

12.3.16. MULTIPLE CHALLENGES INDEX

Indicator definition:

The percentage of children considered to have multiple challenges (i.e., who score below expectations on nine or more of the 16 subdomains of the Development Instrument (EDI)).¹

$$\text{Children with multiple challenges} = \frac{\text{Total number of senior kindergarten children with scores below expectations on nine or more of the 16 subdomains of the EDI}}{\text{Total number of senior kindergarten children with valid EDI scores}} \times 100\%$$

Data sources:

Middlesex-London data

Government of Ontario. Early Development Instrument (EDI). Toronto, ON: Queen's Printer for Ontario. [Updated: 29 Jun 2015; cited: 29 Jan 2019. Available from: <https://www.ontario.ca/data/early-development-among-children>

Ontario data

Offord Centre for Child Studies. (2018) EDI in Ontario: Over time report. Hamilton, ON: McMaster University. [cited: 21 Feb 2019]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>

Methodological notes:

- Confidence intervals are not reported since the data are from an entire population of children, not a random sample.²

Geographic comparisons

- Ontario (includes Middlesex-London).

Limitations:

- Each child's assessment is based on a teacher's knowledge of the child's development and well-being after the first half of the school year.
- The EDI provides a snapshot of child development and readiness for school at specific points in time, and therefore cannot be used to determine causal associations.

References:

1. Offord Centre for Child Studies. EDI In Ontario Over Time: Report [Internet]. Hamilton, ON: McMaster University; 2018 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/wp/wp-content/uploads/2018/02/EDI-in-Ontario-full-print-report-English.pdf>
2. Offord Centre for Child Studies. Researchers FAQ [Internet]. Hamilton, ON: McMaster University; 2014 [cited 2019 Apr 4]. Available from: <https://edi.offordcentre.com/researchers/faq/>