

# Peel Infant Feeding Survey

2018 Annual Summary Report

A Region of Peel – Public Health Technical Report

Please use the following citation when referencing this document:

Region of Peel – Public Health. Peel Infant Feeding Survey. 2018 Annual Summary Report. A Peel Health Technical Report. 2022

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## KEY MESSAGES

- Almost all mothers (98%) reported initiating breastfeeding either in hospital or after discharge.
- Approximately half (48%) of mothers reported their infant was given liquids other than breast milk, primarily formula, in the hospital.
- The percentage of mothers exclusively breastfeeding at six months in 2018 was similar to 2017, at 14%.
- Similar to the survey results in 2017, the rates of any breastfeeding gradually declined following hospital discharge with 71% of mothers providing any breast milk at six months.
- Most mothers (88%) who had given their infant a vitamin D supplement reported that they had done so every day or almost every day.
- Similar to the survey results in 2017, 23% of infants continue to be offered solid foods either too early (less than five months) or too late (more than seven months).

## INTRODUCTION

Infant feeding decisions and practices have immediate and lifelong effects on the health of mothers and their infants. In the first six months of life, breast milk is the only food an infant needs for healthy growth and development. A daily vitamin D supplement is also required for breastfed infants and infants who consume formula in smaller amounts.<sup>1</sup>

Breastfeeding provides benefits to both the infant and mother. Infants who are exclusively breastfed are less likely to develop otitis media (middle ear infection), gastrointestinal infections, and lower respiratory infections compared to infants who are partially or never breastfed.<sup>2</sup> Children who were ever breastfed have reduced odds of being overweight or obese compared to children who were never breastfed.<sup>2</sup> Mothers have a lower risk of developing breast cancer when they breastfeed for at least 12 months in their lifetime.<sup>3</sup>

There are risks of discontinuing breastfeeding and introducing solid foods too early. Early introduction of solids limits the benefits of exclusive breastfeeding for the infant.<sup>4</sup>

In May of 2015, Region of Peel – Public Health initiated the Peel Infant Feeding Survey (PIFS). The PIFS is an annual cross-sectional survey designed to support the collection, analysis, and dissemination of information regarding infant feeding practices of Peel mothers. Findings are used to inform public health programming around infant feeding and related community programs in order to support optimal infant feeding practices in Peel region.

## PURPOSE OF THE INFANT FEEDING SURVEY

The data collected through the PIFS will be used for:

1. Informing the Family Health Division's Infant Feeding programs;
2. Actioning population health assessment and surveillance activities, as outlined in the Population Health Assessment and Surveillance Protocol (2018)<sup>5</sup>, to ensure up-to-date local level data on infant feeding in Peel;
3. Planning infant feeding programs and services in the community and with hospital partners.

At the beginning of this project, the maintenance of Region of Peel – Public Health's Baby-Friendly Initiative (BFI) designation was also an objective of data collection. However, in 2019 it was decided not to continue with formal re-designation. As a result, this objective is no longer relevant.

## PURPOSE OF THE REPORT

The purpose of this report is to provide the results of data collected between April 17 and June 13, 2018 through the Peel Infant Feeding Survey with 455 mothers.

## HOW TO READ THIS REPORT

The methods and data limitations are described in the *Methods* section of this report.

In some tables and figures, ninety-five per cent confidence intervals (presented as “95% CI” in the report) are provided for many of the estimates (e.g. percentages). The confidence interval presents a lower and upper range of values, which we are confident, contains the true value of the estimate for the whole population 95% of the time, or 19 times out of 20.

For example, 71% of Peel mothers provided any breastfeeding to their infant at six months with a confidence interval for that estimate of 66% and 75%. This means if we repeated the study twenty times using different samples of the same size from the same population; on nineteen occasions the estimate would be somewhere between 66% and 75%, while on one occasion the estimate would be below 66% or above 75%. We could say that we are 95% sure the actual percentage of any breastfeeding for infants at six months in the population is between 66% and 75% and in this particular study, the sample estimate is 71%.

In this report, 95% confidence intervals were used as a conservative method to determine statistical significance regarding differences between groups or years. When the 95% confidence interval of the estimate for one group or year *does not* overlap with that of the estimate for another group or year, the difference between the estimates is considered statistically significant (i.e. unlikely to be due to chance). If the confidence intervals of two estimates *do overlap*, the estimates may still be significantly different. However, an appropriate statistical test would be required to assess whether there is a statistical difference of the two estimates. Unless otherwise indicated, we did not conduct additional tests to determine significance in this report and therefore we acknowledge that some differences between groups may have been missed. However, our intention was to provide general descriptive statistical analyses and not accept or reject specific hypotheses.

The statements ‘more likely or less likely’, ‘higher or lower’ and ‘increased or decreased’ are found throughout the report to describe differences between groups or years. These statements highlight statistically significant differences in percentages (as indicated by the 95% confidence intervals which do not overlap with each other). When there are large differences in percentages that are not considered statistically significant, it is telling you that it is considered similar to the comparison group. This may be due to the percentage being based on either a small number of events, or a small underlying population; so, it could change from year to year and may be higher, similar, or lower than the comparison group the next time it is measured.

## DEFINITION OF TERMS

In this report, **Breastfeeding initiation** is measured by the question “Have you ever tried to feed your baby breast milk?”

**Any breastfeeding** is defined as any self-reported attempt to feed the infant at the breast, or feed breast milk or mother’s milk by cup, tube, or bottle.

**Exclusive breastfeeding** is defined as breastfeeding only, without additional food or liquid (e.g. water, sugar water or formula) excluding vitamins, minerals, or required medication. By this definition, an infant would no longer be classified as exclusively breastfeeding after consuming only a single sip of water or other liquid.

**Eligible mothers** were six to eight months postpartum at the initiation of this survey, residing in one of Peel’s municipalities, and 15 years of age or older. Those who had known involvement with the Children’s Aid Society, or experienced a stillbirth or had a live born infant who died were not eligible to participate. For additional details about eligible mothers, please see *Methods – Survey Sampling*.

## RESULTS

Between April 17 and June 13, 2018, a total of 455 surveys were completed with eligible mothers. Fewer than 10 surveys were completed by teen mothers aged 15 to 19 years. Given the reporting restrictions noted in the *Methods* section, this report cannot provide results according to teen respondents.

### Response Rate

Table 1 presents the call disposition status for the 930 eligible records available in the Peel Infant Feeding Survey (PIFS) database. Not presented in the table are ineligible records (n=270), which includes records that did not meet the eligibility criteria (n=45), not in service records (n=106, which includes business numbers; fax/computer line; moved, with no new number given; not in service numbers; and wrong numbers), invalid telephone numbers (n=2), and records that were sampled but not contacted before the target number of completed surveys was reached (n=117). These records were excluded from the denominator for the purposes of calculating the response rate, as shown below.

**Table 1**  
**Call Disposition Status,**  
**Peel, 2018**

Status	Number	Per cent
Completed survey	455	48.9%
Other call types <sup>†</sup>	49	5.3%
Refused	130	14.0%
Terminated <sup>‡</sup>	296	31.8%
<b>Total</b>	<b>930</b>	

<sup>†</sup>Other call types include answering machine, those who requested a call back, hung up, line busy, no answer, partial complete of survey or language barrier.

<sup>‡</sup>Terminated includes records that were not reached before the maximum number of call attempts.

Source: Peel Infant Feeding Survey 2018, Region of Peel – Public Health.

To calculate the response rate, the total number of completed surveys was divided by the total number of potentially eligible calls. The response rate for the PIFS was 49%.

### Characteristics of Respondents

Table A1 (Appendix) provides a description of the unweighted sample of mothers from the PIFS. Table 2 compares select characteristics among survey respondents to Peel mothers. Compared to Peel mothers, survey respondents are older and more likely to be legally married. However, it should be noted that 6.9% of records were missing for marital status in the comparison data. The proportion of survey respondents who had a vaginal birth and were multiparous is similar to Peel mothers. Comparisons for the proportion of immigrants and post-secondary graduates are not available.



**Table 2**  
**Selected Demographic Comparison of Survey Respondents to Peel Mothers,**  
**Peel**

Characteristic	Per cent of respondents <sup>A</sup> (95% CI)	Per cent of Peel mothers
Younger than 30 years	26.6% (22.8 – 30.9)	32.6% <sup>B</sup>
Multiparous	57.1% (52.5 – 61.6)	58.3% <sup>B</sup>
Vaginal birth	66.5% (62.0 – 70.7)	69.8% <sup>B</sup>
Legally married	88.3% (85.0 – 90.1)	79.3% <sup>C</sup>
Immigrants	66.6% (62.1 – 70.8)	NA
Post-secondary graduates	77.3 % (73.2 – 81.0)	NA

NA = Not Applicable. No comparison statistic for mothers was available.

Note: Unweighted data

Sources:

<sup>A</sup>Peel Infant Feeding Survey 2018, Region of Peel – Public Health.

<sup>B</sup>Public Health Unit Analytic Reporting Tool (Cube), 2018, BORN Information System (BIS), BORN Ontario. Information accessed on, January 27, 2020 (age) and September 11, 2019 (parity, type of birth).

<sup>C</sup>Ontario Live Birth Database, 2015, Ontario Registrar General. IntelliHEALTH Ontario, Ministry of Health and Long-Term Care.

Additionally, among mothers who responded: 93% who had a previous child had breastfed at least one of their previous children; 44% of primiparous mothers attended a prenatal class (in person or online), whereas 12% of multiparous mothers attended a prenatal class; and 96% delivered an infant born at 37 weeks or more (full-term).

## Characteristics of Non-Respondents

The characteristics of those who completed the Peel Infant Feeding Survey were compared to those who were selected from the Integrated Services for Children Information System (ISCIS) but did not respond to the survey (i.e. non-respondents). Table A2 (Appendix) shows the comparison of respondents and non-respondents (unweighted). Non-respondents included those who were not reached before the maximum number of call attempts, had a not in service or invalid number, declined to participate/consent, were not eligible or were selected from ISCIS but were not contacted because the target number of completed surveys was reached, as well as other reasons listed in Table A2 (Appendix).

Respondents were similar to non-respondents based on municipality of residence, type of birth, feeding method at hospital discharge and method of delivery. Infant sex was not available in ISCIS so no comparison could be made. Survey respondents had a significantly higher mean age than non-respondents, but the difference was very small (32.3 vs. 31.5 years). The proportion of preterm birth was lower among respondents compared to non-respondents (3% vs. 8%). Infants of respondents had a significantly higher mean birth weight than non-respondents, but the difference in mean weight between groups was small (90 grams). This difference is likely related to the higher proportion of preterm births among non-respondents. There was no difference in birth weight between the two groups among full term singletons.

## Intention to Breastfeed

While pregnant, mothers were intending to feed their baby the following during the first four weeks of life:

- Breast milk only (74%)
- Combination of breast milk and formula, only (22%)
- Formula only (2%\*- use estimate with caution)

These results are not comparable to past years' survey results, as the response options were changed in the 2018 survey.

## Breastfeeding Initiation

Almost all mothers (98%) reported initiating breastfeeding either in hospital or after discharge.

Reasons for not breastfeeding included:

- Did not consider breastfeeding or planned to bottle feed/formula feed
- Medical issues for mother or baby
- Milk did not come in enough
- Previous experience breastfeeding other child(ren)

## Feeding While in Hospital

Overall, 92% of mothers reported breastfeeding in the hospital. A small percentage of women who did not breastfeed while in hospital initiated breastfeeding after discharge (7%\* - use estimate with caution). Of those who had a hospital birth and tried to breastfeed, 85% reported receiving help from a health professional while in hospital.

Approximately half (48%) of mothers reported their infant was given liquids other than breast milk in hospital. For these infants, 94% were given formula; other infants received sugar water. A small percentage (8%\* - use estimate with caution) of these infants were given both formula and other liquids such as sugar water. Liquids other than breast milk do not include vitamins or medications that the infant needed.

Among mothers who initiated breastfeeding, the reasons for feeding babies liquids other than breast milk while in hospital included (multiple reasons possible):

- Perception of not having enough breast milk (44%)
- Latching concerns (19%)
- Baby had low blood sugar (12%\* - use estimate with caution)
- Baby was hungry (9%\* - use estimate with caution)
- Pain relief after bloodwork, needle or test (6%\* - use estimate with caution)
- Baby was ill (6%\* - use estimate with caution)

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About one in four (22%) mothers reported being given formula to take home with them when they left the hospital, which is similar to the 2017 results (22%).

For mothers who gave birth in hospital, 38% reported being given formula to take home at William Osler Health System – Brampton Civic Hospital and 16%\* (\*use estimate with caution) at Trillium Health Partners – Credit Valley Hospital. The estimate for Trillium Health Partners – Mississauga Hospital was not releasable due to small numbers. For both hospitals, the 2018 estimates were similar to the 2017 estimates.

### Feeding Within First Two Weeks (postpartum)

Ninety-six per cent of mothers were breastfeeding at two weeks after hospital discharge (Table 3), of which 44% introduced formula to their infant during this time. Of these mothers who introduced formula while breastfeeding in the first two weeks, 65% provided breast milk and 27% provided formula for the majority of feedings (more than half of these feedings).

### Breastfeeding Duration

Table 3 and Figure 1 display the rates of any breastfeeding from 2015 to 2018. Overall, 89% of mothers were breastfeeding at two months and 77% were breastfeeding at four months after hospital discharge. By six months, 71% of mothers were breastfeeding.

**Table 3**  
**Any Breastfeeding Duration,**  
**Peel, 2015 – 2018**

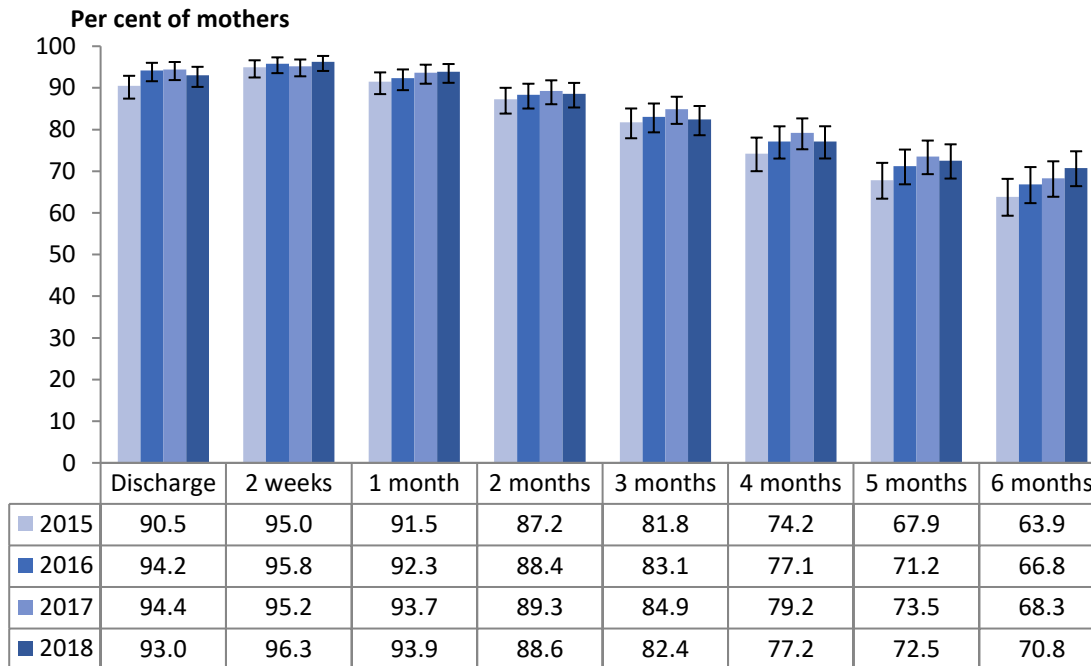
Breastfeeding duration	2015	2016	2017	2018
	Per cent (95% CI)	Per cent (95% CI)	Per cent (95% CI)	Per cent (95% CI)
Two weeks	95.0 (92.5 – 96.6)	95.8 (93.5 – 97.3)	95.2 (92.8 – 96.8)	96.3 (94.1 – 97.7)
1 month	91.5 (88.5 – 93.7)	92.3 (89.5 – 94.4)	93.7 (91.0 – 95.6)	93.9 (91.2 – 95.7)
2 months	87.2 (83.8 – 90.0)	88.4 (85.1 – 91.0)	89.3 (86.1 – 91.8)	88.6 (85.3 – 91.2)
3 months	81.8 (77.9 – 85.1)	83.1 (79.3 – 86.3)	84.9 (81.4 – 87.9)	82.4 (78.6 – 85.7)
4 months	74.2 (70.0 – 78.1)	77.1 (73.0 – 80.8)	79.2 (75.3 – 82.7)	77.2 (73.1 – 80.8)
5 months	67.9 (63.4 – 72.0)	71.2 (66.9 – 75.2)	73.5 (69.3 – 77.4)	72.5 (68.2 – 76.5)
≥ 6 months	63.9 (59.3 – 68.2)	66.8 (62.3 – 71.0)	68.3 (63.9 – 72.4)	70.8 (66.4 – 74.8)

CI: Confidence Interval

Source: Peel Infant Feeding Survey 2015 – 2018, Region of Peel – Public Health.

Between 2015 and 2018, the rate of any breastfeeding at six months postpartum appeared to increase, although this trend was non-significant (Figure 1).

**Figure 1**  
**Duration of Any Breastfeeding to Six Months Postpartum,**  
**Peel, 2015-2018**



Source: Peel Infant Feeding Survey 2015 – 2018, Region of Peel – Public Health

Rates of any breastfeeding were significantly lower among mothers who received formula to take home from the hospital compared to those who did not receive it, at all time points except for at one-month post-discharge (Table A3, Appendix). Rates of breastfeeding in 2018 among both groups were similar to the 2017 results.

Among mothers who stopped breastfeeding, the most common reasons for stopping were (multiple responses possible):

- Perception of not having enough breast milk (66%)
- Not latching (9%\* - use estimate with caution)
- Baby was hungry (9%\* - use estimate with caution)

## Exclusive Breastfeeding

Although almost all mothers initiated breastfeeding, only 50% reported exclusively breastfeeding at the time of discharge from hospital. As most infants (79%) stay in hospital for less than 72 hours (Table A1, Appendix), this is a significant drop in a short time. However, some of these infants may have been given supplementation due to health concerns. The rates of exclusive breastfeeding from 2015 to 2018 are shown in Table 4 and Figure 2. Fourteen per cent of mothers reported exclusively breastfeeding at six months postpartum.

**Table 4**  
**Exclusive Breastfeeding Duration,**  
**Peel, 2015 – 2018**

Breastfeeding duration	2015	2016	2017	2018
	Per cent (95% CI)	Per cent (95% CI)	Per cent (95% CI)	Per cent (95% CI)
<b>Two weeks</b>	38.2 (33.8 – 42.8)	42.8 (38.3 – 47.4)	43.8 (39.3 – 48.4)	38.4 (34.0 – 42.9)
<b>1 month</b>	33.3 (29.1 – 37.8)	40.6 (36.1 – 45.2)	41.2 (36.7 – 45.8)	35.7 (31.4 – 40.2)
<b>2 months</b>	29.8 (25.8 – 34.2)	36.8 (32.5 – 41.4)	36.5 (32.2 – 41.1)	32.2 (28.1 – 36.6)
<b>3 months</b>	27.1 (23.2 – 31.4)	32.6 (28.4 – 37.1)	33.0 (28.8 – 37.5)	30.0 (26.0 – 34.4)
<b>4 months</b>	22.8 (19.1 – 26.9)	29.7 (25.7 – 34.1)	29.7 (25.6 – 34.0)	27.1 (23.2 – 31.4)
<b>5 months</b>	15.7 (12.6 – 19.4)	23.5 (19.8 – 27.7)	22.3 (18.7 – 26.4)	22.0 (18.4 – 26.1)
<b>≥ 6 months</b>	6.7* (4.7 – 9.4)	14.2 (11.3 – 17.7)	13.0 (10.2 – 16.5)	13.9 (11.0 – 17.4)

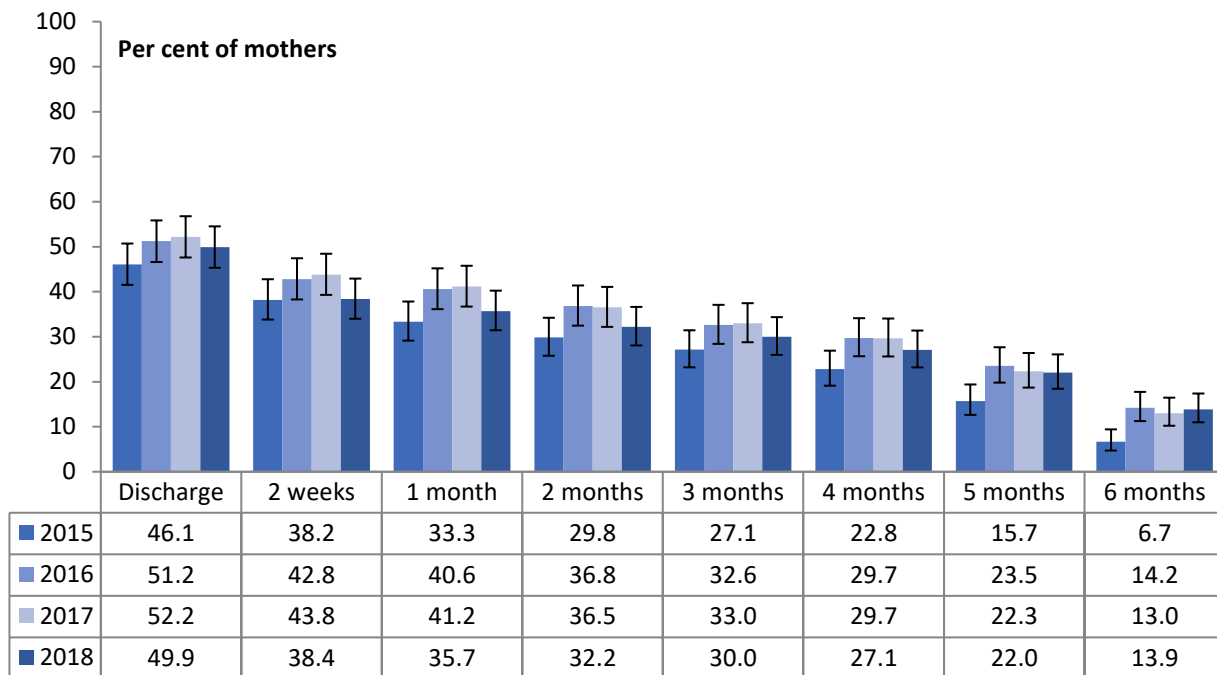
\*Use estimate with caution

CI: Confidence Interval

Source: Peel Infant Feeding Survey 2015 – 2018, Region of Peel – Public Health.

The proportion of mothers who were exclusively breastfeeding at six months in 2018 is significantly higher than in 2015. This increase was maintained from 2016 and 2017, as the proportion of mothers exclusively breastfeeding was also higher in both these years compared to 2015.

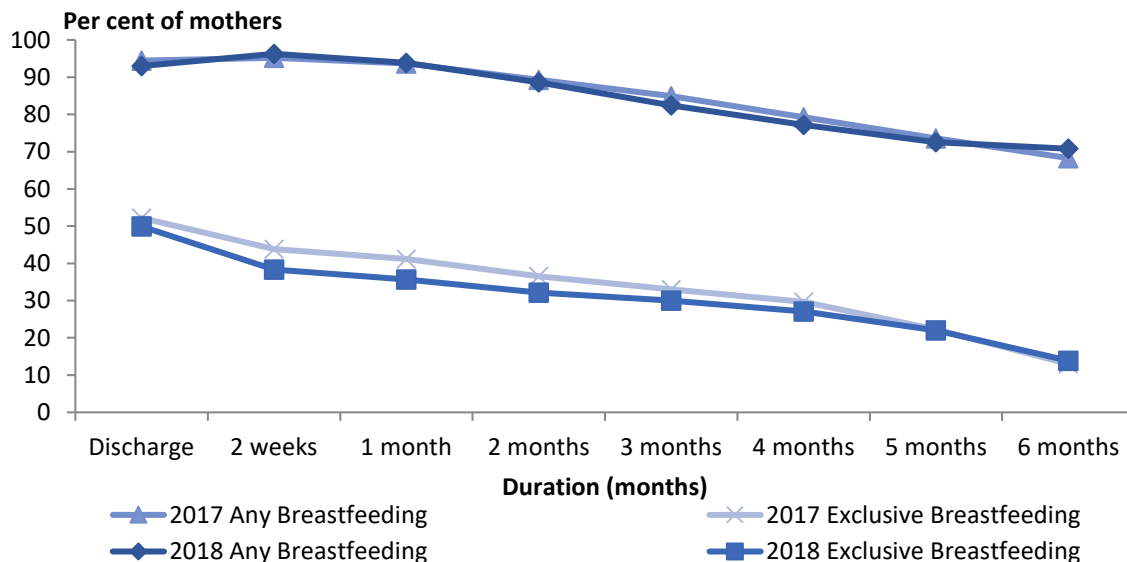
**Figure 2**  
**Duration of Exclusive Breastfeeding to Six Months Postpartum,**  
**Peel, 2015-2018**



Source: Peel Infant Feeding Survey 2015 – 2018, Region of Peel – Public Health

Figure 3 displays the rates of both any and exclusive breastfeeding for 2018 and 2017. For both years, rates of both types of breastfeeding decreased over time. For exclusive breastfeeding, in 2018 the largest decreases were between discharge from hospital and two weeks, and five months and six months; the rates between these time points were significantly different, respectively. This also occurred in 2017, although the rates of exclusive breastfeeding between these time points were not significantly different. The decrease in any breastfeeding was more gradual over time. In 2018, the proportion of mothers both any and exclusively breastfeeding was similar to 2017, at all time points.

**Figure 3**  
**Duration of Any and Exclusive Breastfeeding to Six Months Postpartum,**  
**Peel, 2017-2018**



Source: Peel Infant Feeding Survey 2017 – 2018, Region of Peel – Public Health

## Breastfeeding Support and Concerns

Of mothers who ever breastfed, 44% experienced difficulties or concerns with breastfeeding. The most common concerns with breastfeeding included (multiple responses possible):

- Not latching (45%)
- Perception of not having enough breast milk (37%)
- Sore nipples (12%\* - use estimate with caution)
- Sore breasts/mastitis, engorgement (12%\* - use estimate with caution)
- Difficulty breastfeeding due to baby’s physical health (6%\* - use estimate with caution)

The most common concerns with breastfeeding are similar to the 2017 results, except nipple anatomy (flat or large nipples) was the fifth most common reason instead of difficulty breastfeeding due to baby’s physical health.

After being discharged from the hospital, 45% of mothers who attempted to breastfeed reported a time when they would have benefited from a breastfeeding program or service. Of these women, 19% were not able to use a breastfeeding program or service. The reasons for not being able to use a breastfeeding program or service were not releasable due to small numbers.

After leaving the hospital, 44% of all mothers used a breastfeeding program or service. Of these mothers, 83% reported needing breastfeeding assistance. The most common supports mothers received with breastfeeding were (multiple responses possible):

- Breastfeeding clinic (59%)
- Home visit by any professional (35%)
- At the hospital (26%)
- Telephone support (11%\* - use estimate with caution)
- Doctor's office (11%\* - use estimate with caution)
- Internet resource (10%\* - use estimate with caution)

The most common supports mothers received were similar to the results of the 2017 survey.

### Vitamin D

While breastfeeding, 86% of mothers said they had given their infant a vitamin D supplement at least once. Among mothers who had given their infant a vitamin D supplement, 88% had done so either every day (62%) or almost every day (26%). Based on the recommendations of the Institute of Medicine (2011)<sup>1</sup>, Peel's Family Health Division recommends that all exclusively breastfed infants or infants receiving less than 500mL of formula daily receive a daily vitamin D supplement of 400 IU (10 µg). This should begin in the first week of life and continue until the infant's diet includes at least 400 IU (10 µg) per day of vitamin D from other dietary sources. Infants who consume between 500mL and 1000mL of infant formula each day should receive a vitamin D supplement of 200 IU (5 µg) daily or 400 IU (10 µg) every other day. Infants who receive more than 1000mL of infant formula do not require vitamin D supplementation.

### Introduction of Liquids

Among mothers who breastfed their infant, 86% had ever introduced another liquid. Among these infants, 52% received formula and no other liquids, 23% received liquids other than formula, and 26% received both formula and other liquids. These results are similar to what was reported in 2017.

Mothers who breastfed their infant were asked when their infant was first given formula. In total, 70% of breastfed infants who received formula and no other liquids were given it before the age of two weeks (Table 5).



**Table 5**  
Introduction of Formula and No Other Liquids Among Breastfeeding Mothers, Peel, 2018

Timing of Liquids	Per cent	95% Confidence interval
Less than 2 weeks	70.4	63.6–76.3
2 weeks to less than 1 month	NR	NR
1 to less than 2 months	5.5*	3.1–9.8
2 to less than 3 months	5.0*	2.7–9.1
3 to less than 4 months	NR	NR
4 to less than 5 months	NR	NR
5 to less than 6 months	NR	NR
More than 6 months old	NR	NR

\*Use estimate with caution

N = 199

NR = Not releasable due to small numbers

Note: Mothers introduced formula at least once and may or may not be continuing to formula feed.

Source: Peel Infant Feeding Survey 2018, Region of Peel – Public Health.

Additionally, mothers who breastfed their infant were asked when their infant was first given liquids other than formula, such as water, honey, sugar water, juice, tea or gripe water. For breastfed infants who received liquids other than formula, 83% were not introduced to other liquids until they were at least four months old (Table 6).

**Table 6**  
Introduction of Liquids Other than Formula Among Breastfeeding Mothers, Peel, 2018

Timing of Liquids	Per cent	95% Confidence interval
Less than 2 weeks	NR	NR
2 weeks to less than 1 month	NR	NR
1 to less than 2 months	NR	NR
2 to less than 3 months	NR	NR
3 to less than 4 months	NR	NR
4 to less than 5 months	12.3*	6.9–21.1
5 to less than 6 months	12.3*	6.9–21.1
More than 6 months old	58.3	47.8–68.1

\*Use estimate with caution

N = 88

NR = Not releasable due to small numbers

Note: Mothers introduced liquids other than formula at least once and may or may not be continuing to feed these liquids.

Source: Peel Infant Feeding Survey 2018, Region of Peel – Public Health.

Finally, among breastfed infants who were introduced to both formula and other liquids, 52% were given formula and liquids other than breast milk before the age of two weeks (Table 7). For additional details about liquids introduced in hospital, please see the *Feeding While in Hospital* section.

**Table 7**  
**Introduction of Formula and Other Liquids Among Breastfeeding Mothers, Peel, 2018**

Timing of Liquids	Per cent	95% Confidence interval
Less than 2 weeks	51.6	41.5–61.5
2 weeks to less than 1 month	10.3*	5.6–18.3
1 to less than 2 months	NR	NR
2 to less than 3 months	NR	NR
3 to less than 4 months	NR	NR
4 to less than 5 months	NR	NR
5 to less than 6 months	NR	NR
More than 6 months old	NR	NR

\*Use estimate with caution

N = 97

NR = Not releasable due to small numbers

Note: Mothers introduced formula and other liquids at least once and may or may not be continuing to feed these liquids.

Source: Peel Infant Feeding Survey 2018, Region of Peel – Public Health.

Among mothers who introduced other liquids to their breastfed infant, 77% had introduced formula to their infant after being discharged from hospital or midwifery care. Other common liquids introduced after being discharged were (multiple responses possible):

- Water (45%)
- Juice (11%)

The most common reasons among breastfeeding mothers for introducing formula and no other liquids to babies included (multiple responses possible):

- Perception of not having enough breast milk (52%)
- Not latching (13%\* - use estimate with caution)
- Baby was hungry (11%\* - use estimate with caution)
- Baby's weight concerns (6%\* - use estimate with caution)
- Planned to supplement with formula (6%\* - use estimate with caution)

The most common reasons among breastfeeding mothers for introducing liquids other than formula to babies included (multiple responses possible):

- Supplementing solid foods (41%)
- Hydration or constipation (17%\* - use estimate with caution)
- Additional reasons were not releasable due to small numbers

The most common reasons among breastfeeding mothers for introducing formula **and** other liquids to babies included (multiple responses possible):

- Perception of not having enough breast milk (48%)
- Hydration or constipation (27%\* - use estimate with caution)
- Supplementing solid foods (23%\* - use estimate with caution)
- Health professional's advice (14%\* - use estimate with caution)
- Appropriate age (14%\* - use estimate with caution)

### Introduction of Solids

Mothers were asked when their infant was first given solid foods such as infant cereal, fruits, vegetables, meat products, dairy products, grain products, eggs, or legumes. In total, 77% of infants were given solids around the recommended age of six months (Table 8).

**Table 8**  
**Introduction of Solids,**  
**Peel, 2018**

Timing of solids	Per cent	95% confidence interval
Less than 4 months	NR	NR
4 to less than 5 months	17.8	14.5 – 21.6
5 to less than 6 months	33.8	29.6 – 38.2
6 to less than 7 months	43.0	38.5 – 47.6
7 to less than 8 months	NR	NR
8 months or more	NR	NR

\*Use estimate with caution

Source: Peel Infant Feeding Survey 2018, Region of Peel – Public Health.

Among mothers who introduced solids to their infant prior to six months of age, 20% reported exclusive breastfeeding up until that time point. This was similar to the 2017 results.

The most common purees or solid foods given to babies by mothers who introduced solid foods were (multiple responses possible):

- Fruit (88%)
- Vegetables (86%)
- Infant cereal (72%)
- Meat products (38%)
- Grain products (25%)

At the time of the survey, 86% of mothers had given their infant iron-rich foods such as infant cereal, meat products, eggs or legumes. Of these mothers, 63% provided iron-rich foods at least twice daily and 32% provided once daily. These results are similar to the 2017 survey.

The most common reasons for starting to feed babies purees or solid foods included (multiple responses possible):

- Health professional's advice (43%)
- Mother felt it was time (29%)
- Baby showed interest (24%)
- Baby was hungry (18%)

The most common reasons for starting to feed babies purees or solid foods were similar to the 2017 results.

## DISCUSSION

The Region of Peel – Public Health continues to focus on supporting families to achieve their infant feeding goals. The Family Health Division, together with hospital partners, strives to ensure a smooth transition from hospital to home using multiple strategies. In 2018, all public health Infant Feeding services had ample capacity to accommodate additional clients.

In 2018, these strategies included:

- Public Health Nurse Liaisons at each of the three Peel hospital sites, seven days per week, to link clients to infant feeding resources;
- A Breastfeeding Companions Program that offers peer support both in the hospital and community;
- Clinic services (by appointment or walk-in from Monday to Friday, 8:30 am to 4:30 pm) for all families who need breastfeeding technical support;
- A Multichannel Contact Centre service where Public Health Nurses can be accessed by telephone, email or Facebook from Monday to Friday, 8:30 am to 4:30 pm;
- Home visits for women who meet specific criteria for breastfeeding support at home; and
- A Breastfeeding Home Visit Pilot to innovate on the current core breastfeeding home visiting program and to find new ways to support clients through a primary nurse model.

Breast milk is the optimal source of nutrition for babies and the preferred choice for families. To encourage women to breastfeed as much as possible for as long as possible, providing just-in-time information and technical support are important. The Peel Infant Feeding Survey gathers information on the infant feeding practices of mothers in Peel, monitors the rates of breastfeeding in the region, and helps identify both the challenges parents face and the supports used in the community. The PIFS helps Public Health to determine the extent to which feeding practices of families are in line with public health key messages.

While pregnant, only 74% of mothers intended to offer their baby “breast milk only” during the first four weeks of life. Almost all mothers (98%) reported initiating breastfeeding either in hospital or after discharge. However, about half (48%) of mothers reported their infant was given liquids other than breast milk, primarily formula, in the hospital. Approximately one in four mothers (22%) are provided with formula prior to discharge from the hospital to take home. The proportion of mothers receiving formula decreased in 2017 compared to 2016, and remained the same between 2017 and 2018. This proportion was likely sustained due to the successful effort by Trillium Health Partners to achieve Baby Friendly Initiative designation in 2018, which requires changes to practices and policies in advance of the designation.

Rates of breastfeeding were significantly lower among mothers who received formula to take home from the hospital at all time points except for one-month post-discharge. At six months, among mothers who did not receive formula to take home, 75% continued to breastfeed compared to 57% of mothers who did receive formula. Work will continue in this area since providing free formula to mothers contravenes the World Health Organization’s International Code of Marketing of Breast-milk Substitutes and the Baby-Friendly Initiative.<sup>6</sup>

Beginning at discharge from the hospital or midwifery care, the rates of exclusive breastfeeding drastically decline, with only 50% of mothers reporting exclusive breastfeeding at the time of discharge. Despite this continued trend, the percentage of mothers exclusively breastfeeding at six months has remained stable between 2016 (14%), 2017 (13%) and 2018 (14%). However, this has increased from 2015 when exclusive feeding was only 7%\* (\*use estimate with caution).

Similar to the survey results in 2017, the rates of any breastfeeding gradually declined following hospital discharge with 71% of mothers providing any breastfeeding at six months. The most frequent reason for stopping breastfeeding was the perception of not having enough breast milk.

For mothers who breastfed in the hospital, 85% reported receiving support from a professional while in the hospital. However, consistent with the results from 2017, more challenges in receiving breastfeeding support occurred after the mother and baby left the hospital. Almost half (45%) of mothers who attempted to breastfeed at home reported that they would have benefited from a breastfeeding program or service. Nineteen per cent of these women were not able to use a breastfeeding program. The increase in the proportion of mothers receiving breastfeeding help at a home visit by any professional in 2017 (37%) compared to 2016 (21%) was sustained in 2018 (35%).

The Family Health Division continues to recommend that all exclusively breastfed infants or infants receiving less than 500mL of infant formula receive a daily vitamin D supplement of 400 IU (10 µg) beginning in the first week of life and continuing until the infant's diet includes at least 400 IU (10 µg) per day of vitamin D from other dietary sources. Infants consuming between 500mL and 1,000mL of infant formula a day should receive a daily vitamin D supplement of 200IU (5µg) or 400IU (10µg) every other day. Most mothers (88%) who had given their infant a vitamin D supplement report that they had done so every day or almost every day.

Current messaging states that solid foods should be introduced to infants at around six months of age when the infant shows signs of readiness. About three out of four infants (77%) are being provided with solid foods around the recommended age of six months. However, 23% of infants continue to be offered solid foods either too early (less than five months) or too late (more than seven months); this proportion is consistent with 2017 results. Introducing solid foods too early can impact the duration of breastfeeding. Furthermore, introducing solid foods too late can affect a child's growth and development associated with certain nutrient deficiencies, notably iron.<sup>4</sup>

The most common reasons for introducing purees or solid foods included health professionals' advice, the mother feeling that it was time, and the baby showing interest or being hungry. The provision of iron-rich foods as the first solid foods offered to infants continues to be high with 86% of mothers offering their baby iron-rich foods first.

In 2018, the rates of breastfeeding initiation and any breastfeeding remained similar to previous years (2017, 2016, 2015) while rates of exclusive breastfeeding were similar to 2017 and 2016. As enhancements continue to be made to breastfeeding services in the community and in public health programming, there remain three key areas for continued improvement:

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- Increasing the proportion of women who provide any breast milk to their infant for a longer duration of time;
- Increasing the proportion of women who are predominantly or exclusively breastfeeding at six months; and,
- Increasing the number of parents who introduce solid foods at the right time.

Infant feeding practices continue to be influenced by parental beliefs, inconsistent messages, barriers to accessing services, and current hospital policies.

A strategic direction for the Region of Peel – Public Health is to work with community partners to support mothers in feeding infants, based on their needs and individual infant feeding goals. Along with community partners, Public Health can do this by removing barriers, engaging in continuous quality improvement and innovating. This strategic direction is actioned by:

- Continued tailoring of infant feeding programs and services to ensure they are available to all new mothers and their families when and where they need or want them;
- Continued work with Peel hospital partners to support their efforts to achieve or maintain Baby-Friendly Initiative designation. This includes the review of infant feeding policies and protocols regarding supplementation and provision of formula; and
- Providing clear and consistent information to parents about infant feeding, including when and how to introduce solid foods.

## METHODS

### Survey Sampling

Following the birth of an infant, consent is obtained by the hospital nurse or midwife for the mother to be contacted by the Region of Peel – Public Health. Consent was documented using the Healthy Babies Healthy Children (HBHC) Screening Tool. Completed screening tools are faxed to the Region of Peel – Public Health and entered into the provincial Integrated Services for Children Information System (ISCIS) database.

Mothers with infants between 26 and 33 weeks of age (about six to eight months) on the start date of the survey period (April 17, 2018) were selected from the ISCIS database for inclusion in the sampling frame. All teen mothers (aged 15 to 19 years) were selected, along with a random sample of adult mothers (20+ years), all who were residing within one of Peel's three municipalities. Out of the sample of 1,000 mothers, 418 surveys were completed, which resulted in 92% of completed surveys required (455). To achieve the remaining 37 surveys (8%), 200 more records were sampled from a second sampling frame. The second frame included mothers with infants between 31 and 33 weeks of age on the start date of their survey period (June 7, 2018). Unlike the 2017 survey, mothers with infants 26 to 30 weeks (about six to seven months) were not included. This decreased the size of the second sampling frame, which in the previous year was quite large for the size of the sample drawn.

Excluded from the sampling frames were:

- Mothers with known involvement of the Children's Aid Society
- Mothers of a stillborn infant or a live born infant who died

After the random sample was drawn, the list of possible survey respondents was sorted by the infant's age, so that mothers with the oldest infants were contacted first. This resulted in more mothers taking the survey during the desired time period of six to eight months postpartum. Regardless of the order of the list, all mothers were to be called at least 15 times before the record was terminated.

### Survey Tool

The survey tool was comprised of 48 questions; eight of these questions were worded differently for mothers who delivered in hospital compared to those who had a home birth. The survey was approximately 15 to 20 minutes in duration and completed using a Computer-Assisted Telephone Interview (CATI) system. Topics included in the survey and described in this report include:

- Birth and Baby
- Breastfeeding Initiation and Support
- Feeding in Hospital
- Feeding at Home (Breastfeeding)
- Hospital Births: Feeding at Home (Other liquids)
- Home Births: Feeding at Home (Other liquids)
- Feeding at Home (Solids)
- Vitamin D Supplementation
- Characteristics of the Mother



Data were collected through a telephone survey conducted by CCI Research Inc. The surveys were administered in the respondent's language of preference through the use of a professional language line. Calls were made during the day and evening, on weekdays and weekends between April 17 and June 13, 2018. At the time the survey was taken, mothers were between six to eight months postpartum.

A standard script was used to describe the survey and to obtain consent to participate. Respondents were informed of their rights as a participant (e.g. to refuse to answer any question, to end their participation at any time).

Call disposition statistics were collected to capture the number of completed calls and the reasons for non-completion or refusal (where given). The majority of mothers (97%) in the sample were called until the list was exhausted according to the call specifications (i.e. at least 15 call attempts). Of the 36 records that were not exhausted, 24 requested a call-back that could not be resolved before the survey ended (asked to be called back after the survey period ended, answering machine, no answer and partially complete surveys). Due to a technical issue, eight telephone numbers were prevented from returning to the calling list, and therefore were not called to the maximum number of attempts.

### Survey Development

One notable revision was made to the 2018 survey that differed from previous surveys. For the question regarding breastfeeding initiation ("what were you planning on feeding your baby for the first 4 weeks of his/her life?") the response option "combination of foods (e.g. breast milk, formula, juice)" was split into two options, "combination of breast milk and formula, only" and "combination of any foods (e.g. breast milk, formula, juice)". Due to this change, breastfeeding initiation in 2018 is not comparable to other years.

The Region of Peel – Public Health conducted a pre-pilot test of the 2015 survey questions and skip patterns in the Family Health Division in March 2015. Prior to each survey cycle, CCI Research Inc. tested the survey tool using the CATI System. Minor revisions to the survey instrument were considered following the results of these tests.

### Analysis and Reporting

Descriptive statistics of estimates (proportions) and confidence intervals are presented in this report. Respondents to the Peel Infant Feeding Survey were compared to non-respondents using chi-square tests (categorical variables) and t-tests (continuous variables) based on mother's municipality of residence, mother's age, gestational age among singletons, infant birth weight, type of birth, feeding method at discharge and delivery method. A *p-value* of less than 0.05 was considered statistically significant.

Analysis was computed using the svy procedure in Stata 15.1. Data presented in this report have been weighted using design weights based on age category of mothers (e.g. teen mothers, adult mothers).

The weighting was done to account for the probability of selection for each respondent and was adjusted for non-response. The final design weight was the product of the probability of being sampled and the non-response adjustment factor (the proportion of respondents out of the eligible sample of respondents). Data describing respondent characteristics of the sample (Table 2, Table A1, Table A2) are unweighted.

In this report, data are presented where the numerator is 10 or more and the denominator is 30 or more. Any data with values less than this numerator or denominator were suppressed and labelled as not releasable due to small numbers. The coefficient of variation (CV) was also computed to determine the releasability of survey estimates. Estimates with a CV of 0.0-16.5 were releasable, estimates with CVs falling within 16.6-33.3 were released with caution and estimates with CV greater than or equal to 33.4 were labelled not releasable due to small numbers. Additionally, if the proportion of missing responses for a question was five per cent or greater, cases with missing responses were kept in the analysis. If the proportion of missing responses for a question was less than five per cent, cases with missing responses were excluded from the analysis. Instances where the missing responses were included in the analysis are noted in the text, tables or figures.

### LIMITATIONS

There are several limitations to the Peel Infant Feeding Survey and analysis presented in this report:

- The sampling frame from ISCIS does not include all births in Peel because not all women consent to have their data collected through ISCIS. It is possible that the 10% of births not captured in ISCIS are systematically different than the births that are included in the database.
- PIFS was developed to have a sufficient sample to provide a precise estimate of the rate of exclusive breastfeeding at six months postpartum. However, the PIFS is insufficiently powered to detect differences between subgroups (e.g. age group, immigrant status, income).
- Due to the small number of teen mothers surveyed and the releasability guidelines for the PIFS (required denominator of at least 30 individuals), the PIFS sample does not allow for the reporting of breastfeeding practices among teen mothers (15 to 19 years) at this point in time.
- Due to differences in sampling methodology, data from the 2018, 2017, 2016 and 2015 PIFS reports should not be compared with previous infant feeding reports by Region of Peel – Public Health (i.e. 2004/2005, 2009/2010) where convenience sampling was used.
- In addition, some questions have changed and may be asked differently from the 2012/2013 Infant Feeding Surveillance System Summary Report. When making comparisons between 2018 PIFS data (as well as 2015, 2016 and 2017) and 2012/2013 data, caution should be taken to ensure questions are comparable. Differences in weighting methods between 2012/2013 and the 2015, 2016, 2017 and 2018 analyses will not have significant impact on the proportions presented; however, they will provide additional precision to the estimates.

## ACKNOWLEDGEMENTS

This report was written by Natalie Causarano and Sabrina Azwim. Additional review and input was provided by Anne Fenwick, Dr. Kathryn Marsilio, Julie Stratton, Linda DeVouge and Claudine Bennett.

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### APPENDIX 1: Supplemental Tables

**Table A1**  
Demographic Characteristics of Respondents,  
Peel, 2015 – 2018

Characteristic	2015 Per cent	2016 Per cent	2017 Per cent	2018 Number	2018 Per cent
<b>Municipality</b>					
Brampton	51.0	52.8	52.5	231	50.8
Caledon	4.8	4.2	3.5	20	4.4
Mississauga	44.2	43.1	44.0	204	44.8
<b>Maternal Age Group (years)*</b>					
15-24	18.5	4.8	3.3	12	2.6
25-29	37.1	25.9	23.0	109	24.0
30-34	35.8	43.3	41.8	200	44.0
35-39	6.4	21.3	26.5	117	25.7
40+	2.2	4.6	5.5	17	3.7
<b>Respondent's First Child</b>					
Yes	46.0	45.5	57.0	195	42.9
No	54.0	54.5	43.0	260	57.1
<b>Breastfed Previous Children</b>					
Yes, some of them	4.5	7.7	9.2	18	6.9
Yes, all of them	86.1	83.9	81.9	224	86.2
No	9.4	8.5	8.9	18	6.9
<b>Sex of Infant</b>					
Female	45.8	50.8	47.5	215	47.3
Male	54.2	49.2	52.5	240	52.8
<b>Type of Birth</b>					
Single	97.1	97.1	98.9	448	98.5
Multiples	2.9	2.9	NR	NR	NR
<b>Delivery Type</b>					
Caesarean Section	31.0	30.2	30.5	152	33.5
Vaginal	69.0	69.8	69.5	302	66.5
Missing	0.0	0.0	0.0	NR	NR
<b>Planned Caesarean Section</b>					
Yes	46.8	59.1	54.0	75	49.3
No	53.2	40.9	46.0	77	50.7
<b>Attended Prenatal Classes</b>					
Yes	27.0	26.3	28.0	116	25.9
No	73.0	73.7	72.0	332	74.1

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**Table A1**  
**Demographic Characteristics of Respondents continued**

Characteristic	2015 Per cent	2016 Per cent	2017 Per cent	2018 Number	2018 Per cent
<b>Birth Location</b>					
William Osler Health System – Brampton Civic Hospital	33.2	35.1	34.9	150	33.1
William Osler Health System – Etobicoke General	5.5	5.7	3.7	15	3.3
Trillium Health Partners – Mississauga Hospital	18.9	17.7	18.0	87	19.2
Trillium Health Partners – Credit Valley Hospital	30.3	30.7	30.0	137	30.2
Other, including home birth	12.1	10.8	13.3	64	14.1
<b>Infants' Length of Stay in Hospital</b>					
Less than 1 day (Less than 24 hours)	3.3	NR	2.4	10	2.2
1 day (24 to 47 hours)	41.5	44.7	44.7	199	44.0
2 days (48 to 71 hours)	30.1	28.5	29.8	148	32.7
3 days (72 to 95 hours)	13.2	11.1	9.4	45	10.0
4 days or more (96 hours or more)	11.9	13.7	13.6	50	11.1
<b>Marital Status</b>					
Married (legally)	80.7	81.1	82.3	401	88.3
Common-law or living with a partner	9.9	9.7	7.7	25	5.5
Single (never married)	8.6	7.9	7.0	21	4.6
Separated / Divorced / Widowed	NR	NR	3.1	NR	NR
<b>Education</b>					
High school or less	16.3	18.5	15.1	56	12.4
Some post-secondary	8.1	7.7	7.4	46	10.2
Post-secondary graduate	75.6	73.8	77.5	348	77.3
<b>Household Income Before Taxes</b>					
Less than \$50,000	33.0	35.8	32.6	132	29.0
\$50,000 to less than \$80,000	16.0	15.6	12.5	74	16.3
\$80,000 or more	33.2	31.4	37.2	186	40.9
Don't Know	9.0	8.6	9.0	27	5.9
Refused	8.8	8.6	8.8	36	7.9
<b>Gestational Age</b>					
<37 weeks (preterm)	8.1	9.1	6.6	17	4.0
37 weeks or greater (term)	91.9	90.9	93.4	413	96.1
<b>Mother born in Canada</b>					
Yes	36.7	34.8	30.9	152	33.4
No	63.3	65.2	69.2	303	66.6

**Table A1**  
**Demographic Characteristics of Adult Respondents continued**

Characteristic	2015 Per cent	2016 Per cent	2017 Per cent	2018 Number	2018 Per cent
<b>Length of Time in Canada</b>					
Non-immigrant	37.0	35.0	30.9	152	33.4
Recent (0 to 5 years)	20.8	22.6	25.0	96	21.1
Intermediate (6 to 10 years)	15.3	18.2	15.8	69	15.2
Long term (11 years or more)	26.8	24.2	28.3	138	30.3
<b>Ethnic Origins</b>					
Other North American (e.g. Canadian, American)			7.4	25	5.5
British (e.g. English, Scottish, Irish)			8.8	51	11.2
South Asian (e.g. East Indian, Pakistani, Sri Lankan, Punjabi)			29.9	165	36.3
Caribbean (e.g. Jamaican, Trinidadian, West Indian)			7.7	50	11.0
African (e.g. Egyptian, Ghanaian, Nigerian, South African)			7.2	38	8.4
European (e.g. Italian, Portuguese, Polish, French, Greek)			17.6	105	23.1
East or South East Asian (e.g. Chinese, Filipino, Vietnamese, Korean)			10.4	48	11.0
West Central Asian / and Middle Eastern (e.g. Iranian, Lebanese, Iraqi, Afghan)			5.0	34	7.5
Latin, Central and South American (e.g. Guyanese, Columbian, Ecuadorian, Salvadorean)			4.5	26	5.7
First Nations, Inuit and Métis			NR	NR	NR

N=455

Note: Unweighted.

\*Proportion of characteristics is significantly different between years.

NR – Not releasable due to small numbers

Source: Peel Infant Feeding Survey 2015 – 2018, Region of Peel – Public Health.

**Table A2**  
**Comparison of Characteristics of Respondents to Non-Respondents\*,**  
**Peel, 2018**

Characteristic	Respondents Per cent (n=455)	Non-respondents Per cent (n=745)	p-value
<b>Municipality</b>			<b>0.23</b>
Brampton	50.8	51.7	
Caledon	4.4	3.9	
Mississauga	44.8	44.4	
<b>Mother's Age (years)</b>			<b>0.01</b>
Mean	32.3	31.5	
<b>Gestational Age Group (singletons only)</b>			<b>0.002</b>
<37 weeks (preterm)	3.3	7.9	
37 weeks or greater (term)	96.7	92.1	
<b>Infant Birth Weight (grams)</b>			<b>0.01</b>
Mean	3,313.0	3,223.5	
<b>Type of Birth</b>			<b>0.8</b>
Single	98.5	98.7	
Multiple	NR	1.3	
<b>Feeding Method at Discharge</b>			<b>0.5</b>
Breast Milk	43.7	39.9	
Breast Milk Substitute	NR	3.0	
Both	22.4	23.1	
Missing	31.9	34.1	
<b>Delivery Method**</b>			<b>0.11</b>
Caesarean Section	31.4	26.0	
Vaginal	62.0	67.7	
Missing	6.6	6.3	

\*Non-respondents include other call types (n=49) (answering machine, those who requested a call back, hung up, line busy, no answer, partial complete of survey or language barrier), refused or removed their number (n=130), were ineligible (n=45), not in service (n=106), invalid telephone number (n=2), or were not reached before the maximum number of call attempts (n=296) or the target number of completed surveys was reached before they were contacted (n=117).

\*\*Proportion of respondents differs compared to variables in Appendix Table A1 due to a different data source being used.

Source: Integrated Services for Children Information System (ISCIS), 2018, Region of Peel – Public Health.

Note: Unweighted.

**Table A3**

**Any Breastfeeding Duration by Formula Received from Hospital at Discharge Status, Peel, 2018**

Breastfeeding duration	Did not receive formula to take home	Received formula to take home
	Per cent (95% CI)	Per cent (95% CI)
<b>Two weeks</b>	97.7 (95.5-98.9)	90.9 (83.4-95.2)
<b>1 month</b>	95.4 (92.7-97.2)	87.9 (79.8-93.0)
<b>2 months</b>	91.2 (87.7-93.7)	79.8 (70.7-86.6)
<b>3 months</b>	85.8 (81.7-89.1)	70.7 (60.9-78.9)
<b>4 months</b>	80.4 (75.9-84.2)	65.7 (55.7-74.4)
<b>5 months</b>	76.7 (71.9-80.8)	57.6 (47.6-66.9)
<b>6 months or longer</b>	74.7 (69.8-78.9)	56.6 (46.6-66.0)

CI – Confidence Interval

Source: Peel Infant Feeding Survey 2018, Region of Peel – Public Health.