



2010

# born in Peel

Key Findings on  
Maternal and Infant Health

## INTRODUCTION

Situated in the heart of southern Ontario's major urban centres, Peel includes the cities of Brampton and Mississauga and the town of Caledon. It is the second largest municipality in Ontario, with a population of 1.2 million people. Over the past 15 years, Peel's population has grown rapidly, increasing by over 425,000 people from 1991 to 2006 (a 58% population increase).

Almost half (49%) of Peel residents are immigrants compared to 28% of all Ontario residents. Not only does Peel have a large immigrant population but many residents have been in Canada for a short time. Ten per cent of all Peel residents immigrated to Canada in the past five years (between 2001 and 2006).

The large proportion of recent immigrants has had a positive impact on the health of the region – this is known as the 'healthy migrant effect.' Immigrants to Canada tend to be healthier and have fewer risk factors than non-immigrants. Recent immigrants are less likely to have preterm births or prenatal problems such as high blood pressure, placental abruption (the placenta separating from the uterine wall) or placental infarction (the blood supply to the baby being blocked).<sup>1,2</sup>

The benefit seen with the 'healthy migrant effect', however, diminishes the longer immigrants live in Canada and the more their behaviour (and risk factors) resembles that of non-immigrants.

In addition to its high immigration rate, Peel is also a diverse region made up of a blend of ethnic origins. The most commonly reported ethnic origin among residents was East Indian (18%), followed by English (14%), Canadian (12%), Scottish (9%) and Irish (9%).

Peel also has a high proportion of young families which has meant a large increase in the number of babies born in Peel over the past two decades (from 10,059 in 1986 to 15,976 in 2006 - a 59% increase).

While immigrants in general have positive health outcomes, women of certain ethnic groups (regardless of being born inside or outside of Canada) may have different risks during pregnancy and labour such as stillbirth. There may also be ethnocultural differences in behaviours and beliefs related to maternal health issues such as knowing what to eat or what health-care services they should use during pregnancy. Immigrant women may also need different supports such as services and messages in their own language.

With a large population that is ethnoculturally diverse and in their prime childbearing years, issues related to maternal and infant health are of great importance to residents, public health practitioners, health-care providers and planners in Peel.

## MATERNAL AND INFANT HEALTH STATUS REPORT OVERVIEW

This report is intended to highlight some of the key findings reported by Peel Public Health in *Born in Peel: Examining Maternal and Infant Health*. Readers interested in a more detailed examination of issues related to maternal and infant health in Peel can access the full report in electronic format at:

**[peelregion.ca/health/reports](http://peelregion.ca/health/reports)**. The report includes information on topics such as birth rates, risk factors for preterm birth and small-for-gestational-age, maternal medical conditions, stillbirth, labour and delivery, birth outcomes, maternal and infant mortality, congenital anomalies, and breastfeeding. Statistics for Peel were compared against those for health units across the rest of the Greater Toronto Area (GTA) and Ontario as a whole.

Data sources used for this report and their limitations are described in full in the report *Born in Peel: Examining Maternal and Infant Health*.

## SUMMARY OF KEY FINDINGS

In general, Peel’s mothers and infants have been doing well compared to the rest of the GTA and all of Ontario. The vast majority of Peel infants were born at a healthy weight and at full-term (37 to 42 weeks). Maternal and infant deaths are rare, and the rates of neural tube defects (e.g., anencephaly and spina bifida) and Sudden Infant Death Syndrome (SIDS) have declined dramatically. Most pregnant women had their first prenatal visit with a health-care provider within the first trimester of their pregnancy and only a small percentage of mothers smoked during pregnancy.

Most pregnancy-related problems happen more often among mothers in the youngest and oldest age groups. Teen mothers are more likely to smoke during pregnancy, receive prenatal care later in pregnancy, have low body mass index (BMI) and may have less support after giving birth. Older mothers are more likely to have multiple and preterm

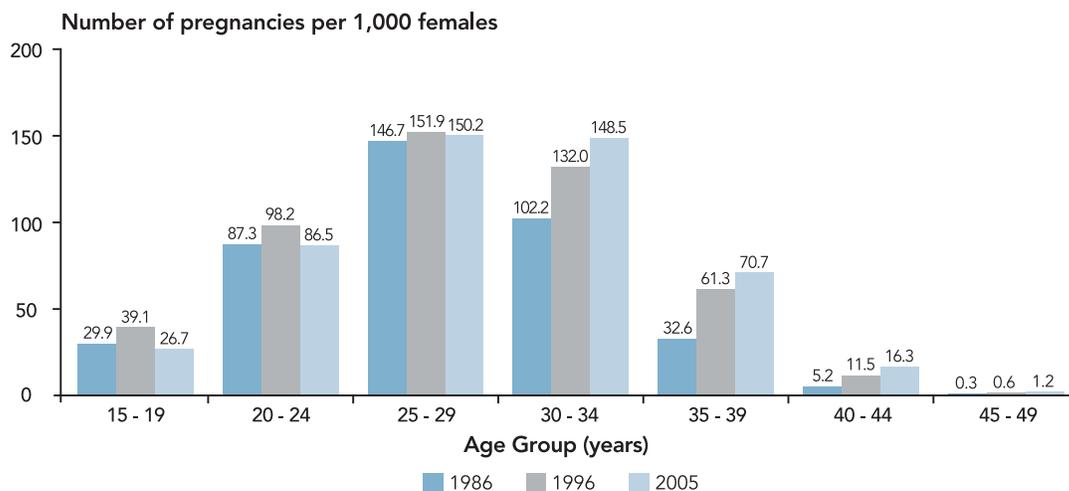
births as well as to develop health conditions such as diabetes or high blood pressure during pregnancy.

### ***The demographic profile of new mothers is changing***

There has been a shift in the demographic profile of mothers in Peel and Ontario – with women choosing to delay pregnancy until later in life (Figure 1). This has brought its own set of pregnancy-related problems (such as stillbirth and preterm birth) for a number of reasons. Although older mothers may have higher socioeconomic status, they are also more likely to have chronic health conditions prior to pregnancy (e.g., high blood pressure) and are more likely to develop conditions such as diabetes during pregnancy. Older mothers are more likely to conceive multiples - both through natural means as well as through reproductive assistance.

Compared to women who have given birth one or two previous times, women who have not

**Figure 1**  
Age-Specific Pregnancy Rate,  
Peel, 1986, 1996, 2005



Note: Live births less than 500 grams are included.  
Sources: Ontario Live Birth and Stillbirth Databases 1986-2005, IntelliHEALTH Ontario, Ministry of Health and Long-Term Care  
1986-2000 Abortion data from Health Planning System (HELPS), Ministry of Health and Long-Term Care  
2001-2005 Abortion data, IntelliHEALTH Ontario, Ministry of Health and Long-Term Care  
Population Estimates 1986-2005, IntelliHEALTH Ontario, Ministry of Health and Long-Term Care

given birth before are at a higher risk for having babies who are stillborn, preterm or small-for-gestational-age. A woman's first pregnancy helps to mature and develop her uterus for her current and future pregnancies. In the past, women who were pregnant over the age of 35 years were likely to have had previous pregnancies. With the changing demographics of mothers, women are now more likely to have their first child at an older age. Among these mothers, the combination of having their first child and being older puts them at an even higher risk for pregnancy-related complications.

### **Abortion rates are stable**

Among Peel women 15 to 49 years of age, the abortion rate has been stable over the past six years. The abortion rate was highest among women aged 20 to 29 years. There has been a change in the method used to count abortions in Ontario, with abortions occurring in additional types of health-care settings being captured within the data from 2001 onward.

### **Stillbirth rates are not higher in Peel**

Preliminary analysis suggested that stillbirth rates were higher in Peel; however, further analysis showed that the higher rate in Peel was the result of more stillbirths with a birth weight under 500 grams. There are two possible reasons for this finding. First, given

that the birth weight distribution in Peel has been shifted towards lower birth weights due to the high proportion of immigrant mothers, more stillbirths at 20 weeks gestation have a birth weight which falls below 500 grams. The second possible reason is that Peel physicians may be more likely to register fetal losses which occur at or beyond 20 weeks gestation as stillbirths, even when they have a birth weight of less than 500 grams.

### **Immigration impacts birth weight**

The majority of babies in Peel are born to immigrant mothers and these babies have significantly lower birth weights than babies born to Canadian-born mothers. Peel has a particularly high proportion of immigrant mothers born in South Asia (including India, Pakistan, Bangladesh, Sri Lanka, Bhutan and Nepal). This report uses the mother's country of birth from the birth registration database, which typically corresponds to ethnic origin. However, this method underestimates the effect of ethnicity, as the 'Canadian-born mothers' category includes mothers from a wide range of ethnic backgrounds.

As a result of the high proportion of babies born to immigrant mothers from South Asia, the average birth weight in Peel was significantly lower than that in the rest of the GTA or Ontario. Infants of South-Asian-born mothers weighed significantly less than

**Table 1**  
Singleton Stillbirth Rate<sup>†</sup>,  
Peel, Non-Peel GTA, Ontario, 1986, 1996, 2005

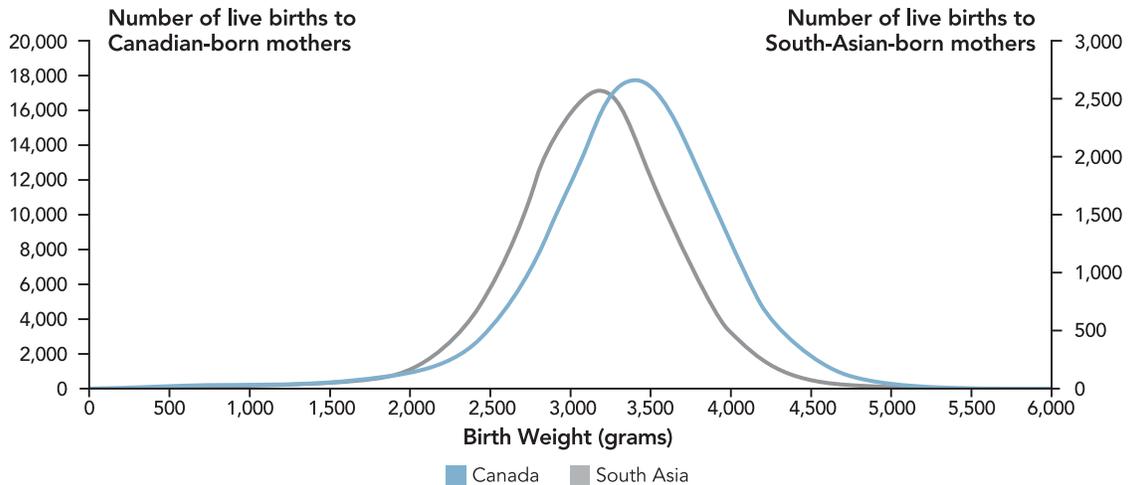
Year	Peel		Non-Peel GTA		Ontario	
	Stillbirth rate	Stillbirth rate (≥ 500g)	Stillbirth rate	Stillbirth rate (≥ 500g)	Stillbirth rate	Stillbirth rate (≥ 500g)
1986	5.4	4.9	6.2	5.3	5.9	5.2
1996	7.2	4.8	6.0	4.5	5.9	4.5
2005	8.0	4.6	6.0	3.9	6.3	4.2

<sup>†</sup>per 1,000 births

Source: Ontario Live Birth and Stillbirth Databases 1986-2005, IntelliHEALTH Ontario, Ministry of Health and Long-Term Care

**Figure 2**

**Birth Weight by Maternal Region of Birth (Canada and South Asia only).  
Ontario, 2002 – 2006 Combined**



Source: Ontario's Live Birth Database 2002 – 2006, IntelliHEALTH Ontario, Ministry of Health and Long-Term Care  
Note: Data have been smoothed

infants born to Canadian-born mothers (189 grams or 6.7 ounces for females and 220 grams or 7.8 ounces for males) (Figure 2).

This explains Peel's higher rate of low birth weight (LBW), a birth weight of less than 2,500 grams, and small-for-gestational-age (SGA), a newborn who weighs less than 90% of newborns of the same sex and gestational age. These newborns may have experienced restricted fetal growth. Immigrant mothers have babies who weigh less, hence their babies are more likely to be labelled as SGA. Despite their smaller size at birth, South Asian and East Asian newborns are less likely to die before the end of their first week of life.<sup>3</sup> This provides support for the belief among some researchers and health-care providers that smaller South Asian and East Asian infants are appropriately sized and may not have experienced fetal growth restriction.

#### ***Preterm births have increased***

The rate of preterm birth has also increased over the past two decades. Babies born

preterm may require more health care after birth and may have long-term health concerns. The increasing trend can be attributed to several factors, including an increase in multiple births. It may also be attributed to the increased use of early ultrasound (before 18 weeks) to determine gestational age. Ultrasounds are more accurate and usually show that a fetus was conceived later in the mother's menstrual cycle than would be assumed based on the traditional method of using the date of the mother's last menstrual period. This means more babies born in the past may actually have been preterm.

#### ***Multiple births are increasing***

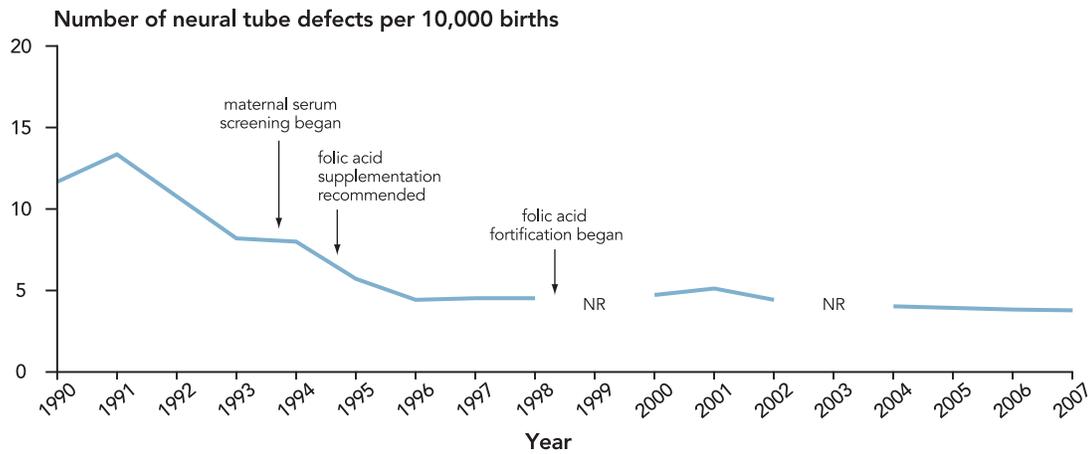
With more women delaying pregnancy and/or using assisted human reproduction technology, multiple births have increased over the past 20 years. Multiples are at a higher risk for preterm birth, stillbirth and other obstetrical complications. Multiples may have long-term health conditions.

**NTDs and SIDs have declined**

There have been dramatic declines in the rates of neural tube defects (NTDs) and Sudden Infant Death Syndrome (SIDS) over the past

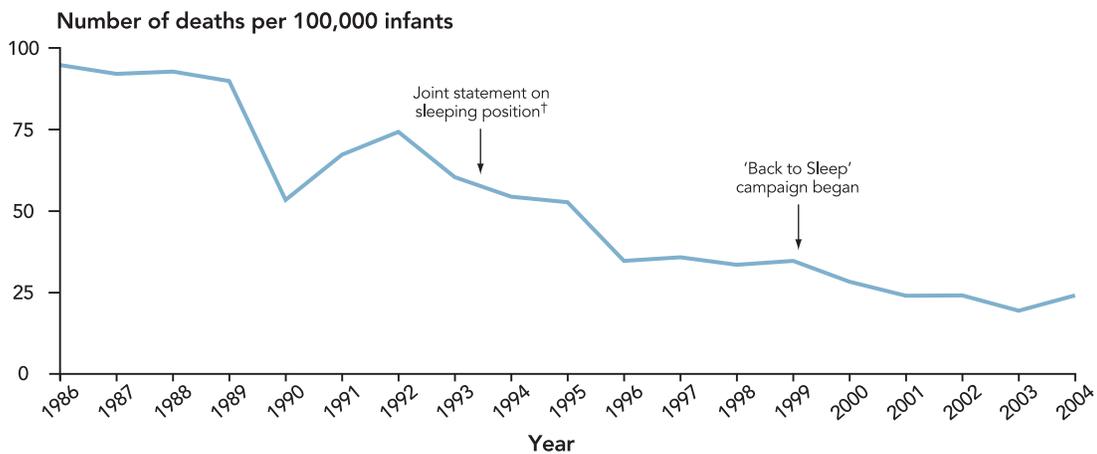
two decades. The reduction in NTDs can be attributed to the fortification of white flour, enriched pasta and cornmeal with folic acid in Canada and recommendations for taking

**Figure 3**  
Rate of Neural Tube Defects,  
Peel, 1990–2007



NR = Not releasable due to small numbers (<5)  
 Note: Numbers represent the number of anomalies and a child may have more than one type of anomaly.  
 Source: Congenital Anomalies 1990 – 2007, Canadian Congenital Anomalies Surveillance System (CCASS)

**Figure 4**  
Sudden Infant Death Syndrome Death Rate,  
1986–2004



Sources: Ontario Mortality Databases 1986–2004, IntelliHealth Ontario, Ministry of Health and Long-Term Care  
 †Statement by The Canadian Foundation for the Study of Infant Deaths, the Canadian Institute of Child Health, the Canadian Paediatric Society and Health Canada

folic acid supplements prior to pregnancy. The reduction in SIDS is attributed to recommendations for placing babies to sleep on their backs.

### ***Higher risk associated with use of reproductive technology***

With advances in assisted human reproduction (AHR) technology more women have an opportunity to become pregnant; however, there are associated risks, including multiple births and stillbirth. Although a significant portion of the risk associated with AHR is explained by the occurrence of multiples, even a woman who conceives a single baby through AHR has a significantly higher risk for having a preterm or small-for-gestational-age baby.<sup>4</sup>

### ***Maternal mortality is very low***

In the past, pregnancy sometimes resulted in the death of the mother. Today, the number of maternal deaths in Canada is extremely low each year. There have been 13 maternal deaths in Peel over the last two decades.

## **Challenges for Peel**

Although Peel mothers and infants are generally healthy, our findings highlighted some challenges in addressing maternal and infant health in Peel.

### ***Declining birth rates but more births***

The number of births in Peel has increased due to the population growth of women in the reproductive age group. The implication of this for public health and health-care planners is the increasing need for services, despite the declining crude birth rate and general fertility rate.

### ***Prenatal education class attendance is low***

Prenatal education classes help pregnant women and new mothers make informed choices regarding care for themselves and their newborns. Thirty-one per cent of

first-time mothers in Peel attended prenatal education classes during their pregnancy.

### ***Breastfeeding rates are low***

The vast majority of pregnant women in Peel expressed the intent to breastfeed their newborn and initiated breastfeeding. However, just over one-third of Peel newborns were exclusively fed breast milk at the time of discharge from hospital. Only 10% of mothers reported meeting the recommendation of exclusively breastfeeding until six months of age. Peel Public Health is currently working with the three Peel hospitals to support exclusive breastfeeding practices in order to reduce the rate of supplementary feeding within hospitals.

### ***Pre-pregnancy obesity is a problem***

Pre-pregnancy obesity has been associated with a number of problems before, during and after pregnancy. Examples include: infertility; development of diabetes or high blood pressure during pregnancy; need for a Caesarean section; need for a prolonged hospital stay; difficulty with breastfeeding; stillbirth; delivery of a baby who has congenital anomalies and/or is large-for-gestational-age.<sup>5</sup>

As being overweight becomes more common, so does having diabetes. Diabetes during pregnancy has been associated with maternal death, babies who are large-for-gestational-age (LGA) and babies born with congenital anomalies. Proper insulin control may reduce the risk of these negative consequences.

### ***Over a quarter of births are by Caesarean section***

Twenty-eight per cent of babies are born by Caesarean section in Peel. Mothers who have a Caesarean section have longer hospital stays, higher risk for complications after delivery and are less likely to breastfeed exclusively at the time of hospital discharge. They are also highly likely to have another Caesarean section during their next pregnancy.

### **Improving the quality of maternal and infant data in Ontario**

Assessment of maternal and infant health in Peel can only be as good as the data used. Each of the potential data sources have strengths and limitations, with none of the sources providing sufficient information for a thorough understanding of issues related to maternal and infant health. Details can be found in the report *Born in Peel: Examining Maternal and Infant Health*.

Aside from data quality concerns, there were also data gaps at the regional level related to reproductive health. These include the prevalence of: infertility treatments, alcohol consumption, pre-pregnancy obesity or gestational weight gain, pre-pregnancy or gestational infection, social support and living arrangements, working conditions, environmental exposures, psychosocial stress, postpartum mood disorders (PMD), or intimate partner violence.

Estimates of the prevalence of these concerns may be obtained from provincial or national statistics.

### **RECOMMENDATIONS**

Based on our findings and in order to improve our understanding of maternal and infant health, it is recommended that:

- New programs and services be developed to address the diverse and changing ethnic and cultural background of pregnant women, their families and new mothers in Peel;
- Modifiable risk factors (such as maternal obesity, alcohol consumption and smoking during pregnancy) be reduced;

### **CONCLUSIONS**

In the past 15 years, Peel has experienced a rapidly growing, young and ethnoculturally diverse population which makes maternal and infant health issues all the more important to public health practitioners, health-care providers, residents and planners in Peel.

While Peel's mothers and infants are healthy compared to the rest of Ontario, there are some challenges. The increasing number of births in Peel each year, coupled with the high level of immigration and ethnic diversity, places pressure on public health and other health-care providers to meet the growing demand for obstetrical care and ethnocultural-specific programs and services in this area.

The changing profile of first-time mothers in Peel makes it necessary to re-examine the needs of older mothers including multiple births.

Peel Public Health will continue to monitor these statistics and trends, as well as lobby for improved data sources to better assess the health of Peel's infants and mothers.

- Geographic variation in reproductive and live birth outcomes across Peel be examined;
- Additional research be conducted to find the underlying reason for some of the unexplained findings in the full report (for example, the rising multiple birth rate within the younger maternal age groups); and
- Overall quality and timeliness of birth registration data in Ontario be improved.

## REFERENCES

1. Urquia ML, Frank JW, Moineddin R, Glazier RH. Immigrants' duration of residence and adverse birth outcomes: a population-based study. *BJOG* 2010;117:591—601.
2. Ray JG, Vermeulen MJ, Schull MJ, Singh G, Shah R, Redelmeier DA. Results of the Recent Immigrant Pregnancy and Perinatal Long-term Evaluation Study (RIPPLES). *CMAJ* 2007;176:1419-26.
3. Kierans WJ, Joseph KS, Luo Z, Platt R, Wilkins R, Kramer MS. Does one size fit all? The case for ethnic-specific standards of fetal growth. *BMC Pregnancy and Childbirth* 2008;8.
4. Fretts RC. Etiology and prevention of stillbirth. *Am J Obstet Gynecol* 2005;193:1923-35.
5. Arendas K, Qiu Q, Gruslin A. Obesity in pregnancy: pre-conceptional to postpartum consequences. *J Obstet Gynaecol Can* 2008;30:477-88.





7120 Hurontario St., P.O. Box 630 RPO Streetsville  
Mississauga, ON L5M 2C1 • 905-799-7700

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