

Reproductive Health Status in Oxford County



Oxford County Public Health
August 2008

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Executive Summary

Oxford County has made reproductive health progress over the past two decades.

The characteristics of new parents in Oxford County have changed in recent years. Mothers and fathers are choosing to have children later in life than they did previously and mothers, overall, are having fewer children. While the percentage of new mothers who are married has declined, very few new mothers live alone with their baby. At the same time, most new mothers have sought prenatal care and engaged in behaviours thought to have a positive effect on the health of their child, including breastfeeding. This suggests that new mothers are increasingly supported by non-traditional family structures and are utilizing available resources, such as literature and public health programming.

A number of birth outcome trends in Oxford County mirror those of the rest of the province. These trends include decreasing birth rates, increasing birth rates in older age groups, decreasing teen pregnancy rates, decreasing low birth weight rates, decreasing infant mortality rates, and increasing multiple birth rates. Therapeutic abortion, preterm birth, and low birth weight rates continue to be below the Ontario average. Most of these trends can be viewed as progress. Some of these can be viewed as secular, reflecting a shift in norms, rather than an improvement or decline. Factors that have contributed to these trends include increased use of family planning and contraceptives, improved obstetric and pediatric care, health-related behaviours, socioeconomic status, and cultural norms.

Public health programming over the past decade has helped families receive prenatal and postnatal care when the factors listed above have presented challenges. To enable Oxford County women and families to achieve optimal preconception health, experience healthy pregnancies, and have the healthiest newborns possible, the maintenance of healthy public policy and the creation of safe and supportive environments must be continued and enhanced with opportunity. This will ensure that the health of expectant and new parents, newborns and young children remains a priority throughout the county.

Chapter 1: Introduction

The main goal of the Ontario Public Health Reproductive Health Program is to enable individuals and families to achieve optimal preconception health, experience a healthy pregnancy, have the healthiest newborn(s) possible, and be prepared for parenthood. This report focuses on the reproductive health status of women in Oxford County and provides useful information to identify community need, and develop locally-relevant activities and services.

Building on formats previously modeled by other health units, *Reproductive Health Status in Oxford County* describes reproductive health trends in Oxford County, including reproductive health outcomes and associated determinants of health. This report synthesizes primary research, secondary data sources, and relevant literature into a single comprehensive report that can be used as a reference to influence the development of healthy public policy and program activities and services for the promotion of reproductive health. We hope that this report will be useful to local program planners, staff, community stakeholders, and all those interested in emerging reproductive health trends.

Reproductive Health Status in Oxford County is divided into five sections. In most sections, Oxford County data are compared over-time or to the Ontario average. This is a form of benchmarking used to help identify successes and areas in need of improvement. Appropriate statistical tests were used to determine if differences observed were significant. Where events observed were low, multiple years of data were collapsed to remove large variations in rates. Caution should be used when drawing conclusions from data with large variations. Finally, as an aid to readers, attempts were made to place findings in the context of relevant literature. Readers are encouraged to use these findings in the context of their own work or recently released information.

Thank you for taking the time to read this report. We hope that it meets your information needs and contributes to your understanding of healthy pregnancies, birth outcomes, and preparation for parenthood in Oxford County.

1.1 Data Sources

The compilation of this report was made possible by many credible data sources. Most data sources were chosen based on recommendations made through the Core Indicators for Public Health in Ontario project, developed by the Association for Public Health Epidemiologists in Ontario (APHEO). In this project, APHEO collaborates with various partners to collate extensive information on each indicator, including identifying key data sources and issues surrounding their availability and accuracy. Using this information, reproductive health indicators were developed for this report based on the following data sources:

The Ontario Office of the Registrar General (ORG) is the original source of data for live births, still births, and infant deaths in Ontario. Population estimates were originally provided by Statistics Canada. These data were distributed to the County of Oxford by:

- a) Provincial Health Planning Database (PHPDB), Health Planning Branch, Ontario Ministry of Health and Long-Term Care (MOHLTC).
- b) Health Planning System (HELPS), Public Health Branch, Ontario Ministry of Health and Long-Term Care (MOHLTC).

The Canadian Institute for Health Information (CIHI) is the original data source for therapeutic abortions (TAs) in hospitals. For TAs in Ontario clinics, the original data source is the Ontario MOHLTC. These data were distributed to the County of Oxford through HELPS.

Socioeconomic data and information concerning infant feeding practices originated from the Southern Ontario Infant Feeding Survey (SOIFS), conducted by the County of Oxford in collaboration with the MOHLTC and prepared by Compustat Consultants Inc in 2003. Prenatal care data were collected through the Rapid Risk Factor Surveillance System (RRFSS) and analyzed in-house.

Chapter 2: Who are Oxford County's New Mothers?

2.1 Sociodemographic Characteristics

Most of the information presented in this section is based on information collected through the Southern Ontario Infant Feeding Survey (SOIFS) conducted by Compustat Consultants Inc. from May 2002 to October 2003. Oxford County worked with seven other health units to implement this two-part survey project as part of the Ministry of Health & Long-Term Care Perinatal and Child Health Survey Strategies Initiative to address a broad spectrum of important issues related to infant feeding and nutrition. Other information is based on vital statistics data from the ORG.

2.1.1 Age

In 2004, the average age of new mothers in Oxford County was 28.3 years (Figure 2-1). From 1986 to 2004, the average age of mothers in Oxford County steadily increased over time so that the average age in 2004 is 1.6 years higher than the average age reported in 1986. This steady increase is similar to that reported for Ontario as a whole. The average age of new mothers in Oxford County, however, has consistently been one to two years lower than the provincial average over this period. Similarly, while the average age of new fathers in Oxford County in 2004 is 30.1 years, the average age has steadily increased over time and has consistently been approximately two years lower than the Ontario average since 1986.

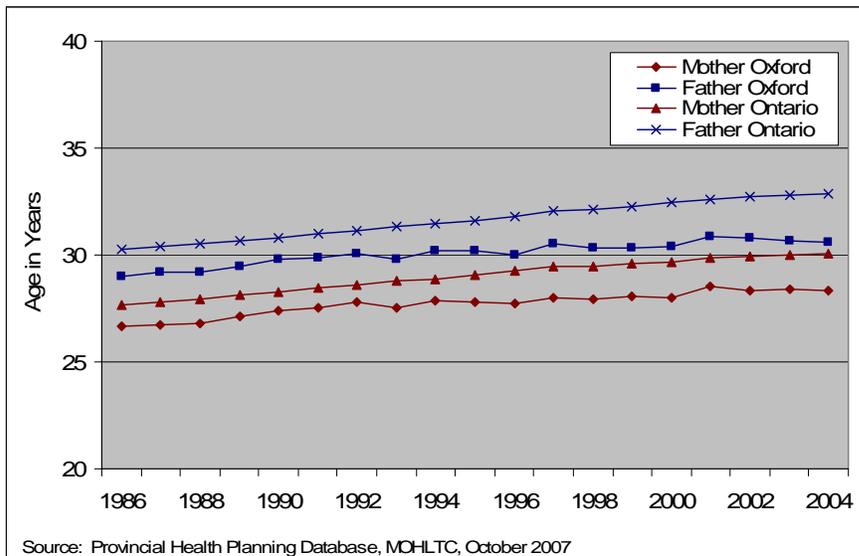


Figure 2-1 Average age of new mothers and fathers 1986-2004, Oxford vs. Ontario

Figure 2-2 describes the age distribution of new mothers of live births in Oxford County in 1989, 1994, 1999, and 2004. In 2004, 5.3% of new mothers was under 20 years, 20.4% was 20 to 24 years, 33.8% was 25 to 29 years, 29.5% was 30 to 34 years, and 11.0% was 35 years or older of age. From 1989 to 2004, the proportion of new mothers in the 20 to 24 years and 25 to 29 years of age groups significantly decreased, while the proportion of mothers over 35 years of age and older significantly increased. This suggests that women in Oxford County are choosing to have babies later in life.

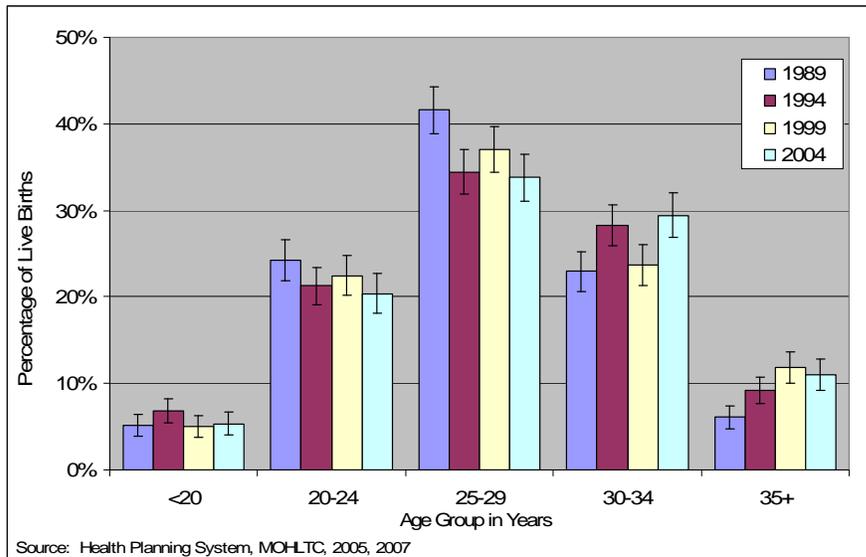


Figure 2-2 Age distribution of mothers of live births in Oxford County in 1989, 1994, 1999, 2004

2.1.2 Household Support, Education and Income

Household support to new mothers can be measured in a number of ways. In the past, marital status has been used as a marker of household support to new mothers, including financial and emotional support (Loxton et al. 2006). Figure 2-3 describes the percentage of new mothers that were married at the time of their child's birth in Oxford County over the past 19 years. The percentage of new mothers that were married significantly decreased with time over this period.

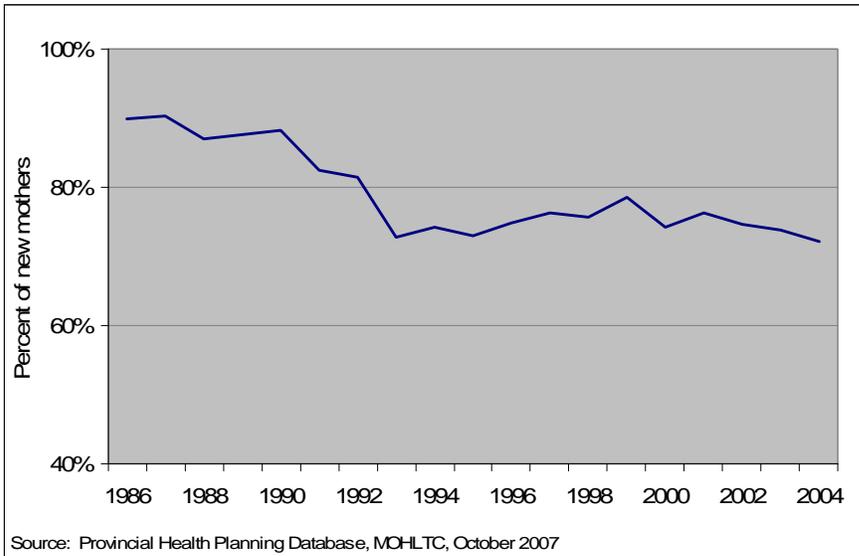


Figure 2-3 Proportion of new mothers in Oxford County married at time of their child's birth.

Figure 2-4 describes the distribution of new mothers' responses when asked at three month's post-partum, "Who lives with you and your baby in your household?" Overall, the vast majority of new mothers in Oxford County reported living with a partner or a partner and other children (97%). Three percent (3.1%) of mothers reported living with parents and/or their extended family and 1.9% reported living alone with their baby or their baby and other children.

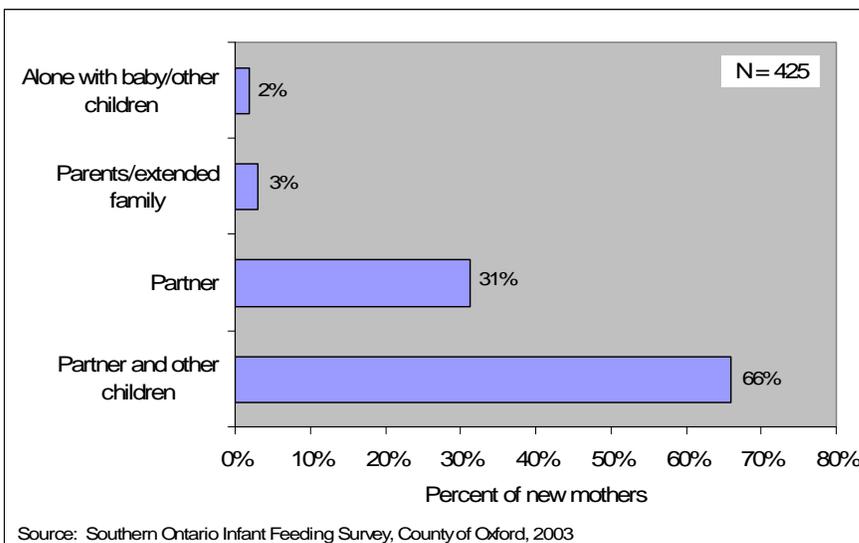


Figure 2-4 Distribution of new mothers' responses when asked at three month's post-partum, "Who lives with you and your baby in your household?"

Of the new mothers surveyed in Oxford County, 43.0% reported trade certificate or college certificate/diploma, 27.1% reported high school diploma, 19.8% reported bachelor's degree or higher, and 9.9% reported elementary school or some high school as their highest level of education completed (Figure 2-5). The percentage of surveyed new mothers reporting a bachelor's degree or higher and percentage reporting trade certificate or college diploma are slightly higher than percentages reported through the 2001 Census for all females 20 to 34 years of age in Oxford County (2002 Statistics Canada – Community Profiles). Given that the Southern Ontario Infants Feeding Survey (SOIFS) was completed over the telephone with English-speaking mothers, this may suggest sampling bias.

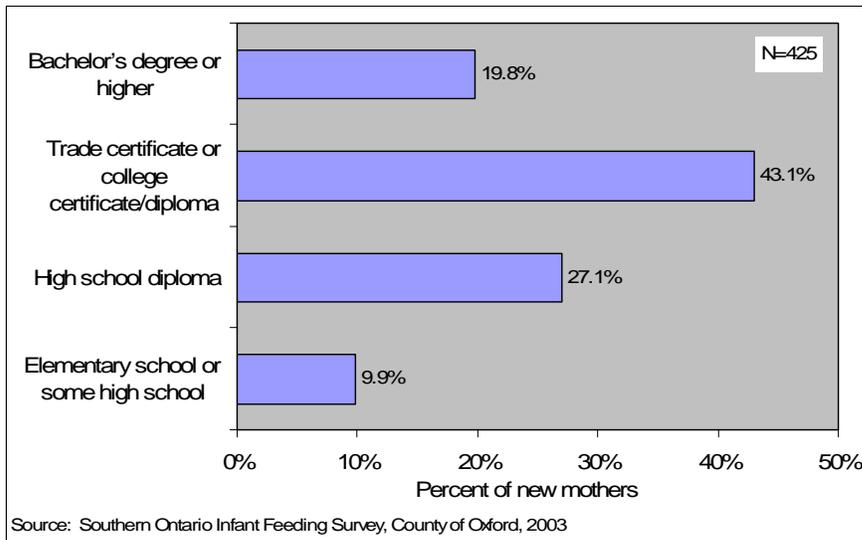


Figure 2-5 Distribution of the highest level of education completed reported by new mothers in Oxford County.

Figure 2-6 describes the annual household income reported by new mothers surveyed in Oxford County in 2003. Four percent (4.4%) of new mothers reported their annual household income as less than \$20,000; 19.8% reported between \$20,000 and \$39,999; 24.5% reported between \$40,000 and \$59,999; 18.1%

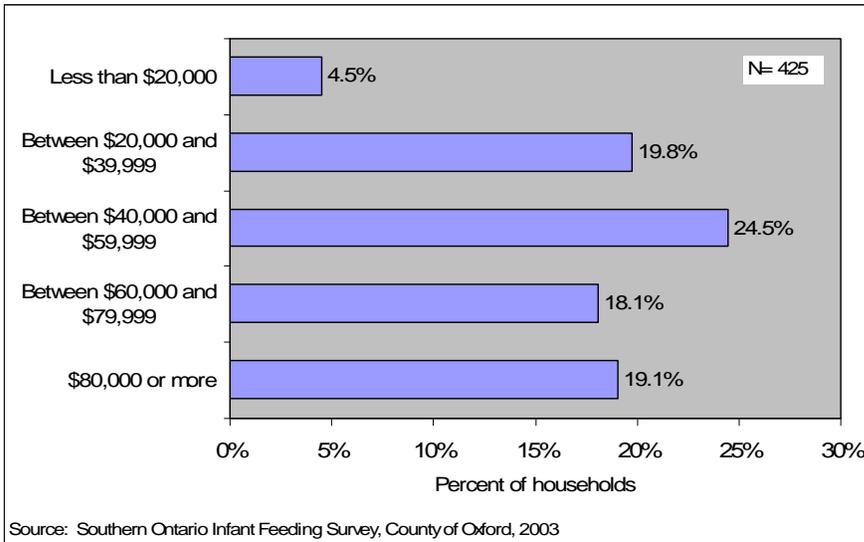


Figure 2-6 Distribution of annual household income for new mothers in Oxford County.

2.2 Mothers' Health-Related Practices

Information for this section was gathered through the SOIFS. Additional prenatal care information has been collected through the Rapid Risk Factor Surveillance System (RRFSS) and through the 2005 Canadian Community Health Survey by Statistics Canada. This information is summarized below.

2.2.1 Breastfeeding

In the SOIFS, new mothers were asked a series of questions concerning their infant feeding practices two days, three months, and nine months after birth. Figure 2-7 summarizes breastfeeding duration amongst new mothers participating in the SOIFS. When asked what their baby was fed in the first two days after birth, 53% of mothers reported breast milk at all feedings, 30% reported a combination of breast milk and other fluids, and 17% reported formula at all feedings.

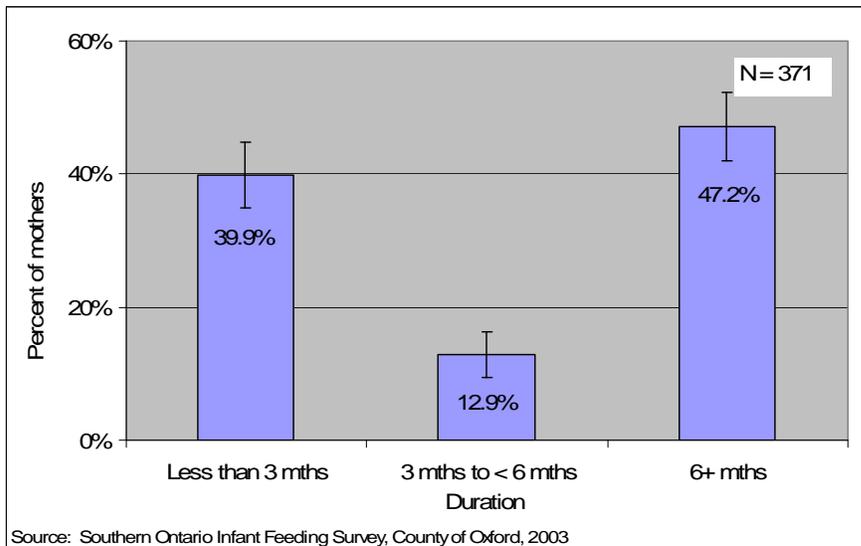


Figure 2-7 Breastfeeding Duration in new mothers in Oxford County when asked 9-months postpartum.

Three months after birth, 40% of mothers reported that their baby was being fed breast milk only, 31% reported that their baby was being fed formula only, and 12% reported that their baby was being fed both breast milk and formula. In addition, 12% of mothers reported that their baby was being fed formula with other fluids or solids (not including breast milk) and 5% reported that their baby was being fed breast milk with other fluids or solids. This shows that there was a 13% decrease in the number of mothers who were exclusively breastfeeding three months after birth compared to two days after birth. Overall, 85% of mothers were found to have initiated breastfeeding with their baby, while 15% reported that they had never breastfed at all.

Mothers who had formerly breastfed their baby, but were no longer breastfeeding at 3-months postpartum, were asked how old their baby was when they stopped breastfeeding. Over one-third (37%) reported that they had stopped breastfeeding by the time their baby was 2 weeks old, 59% reported stopping by the time the baby was 1 month old, and a total of 83% had stopped by the time their baby was 2 months old. These mothers also were asked why they had decided to stop breastfeeding their baby. The top five most frequently reported reasons are displayed in Table 2-1.

Table 2-1 "Why did you decide to stop breastfeeding?"*	
Response Category	Percentage of Respondents
Not enough milk	42.2%
Baby couldn't latch	11.2%
Not enough time/too busy	9.5%
Mother too tired	8.6%
Colicky/fussy baby	8.6%
*Mothers who formerly breastfed (n=116). More than one response allowed.	
3-Month Postpartum Survey (2002) Oxford County Infant Feeding Survey	

2.2.2 Infant Feeding Sources at 9-months Postpartum

Of the mothers who were asked about the type of milk that their babies were being fed at 9-months postpartum, 15% of mothers were feeding their baby breast milk only and 14% were feeding their baby breast milk along with formula or milk. Therefore, 9-months postpartum, 29% of mothers were still feeding their baby breast milk. The remaining mothers were not breastfeeding at all and were instead feeding formula, milk, or formula plus milk. Of the mothers who were not breastfeeding at 9-months postpartum, 74% reported that they had breastfed their baby in the past.

2.2.3 Individual Health Practices

Through the RRFSS telephone survey, reproductive health questions were asked to all surveyed women in Oxford County 18 to 49 years of age. Information was collected about mothers' prenatal care behaviours that can have a positive impact on the future health of their babies. The prevalence of these behaviours in recent or expecting mothers in Oxford County has been summarized in Figure 2-8. Additional information has been provided through the SOIFS study.

Overview

In Oxford County in 2007, 63.3% of recent or expecting mothers reported visiting a health care provider to help plan for a healthy pregnancy. Sixty-five percent (65.3%) of recent or expecting mothers also reported taking a vitamin supplement containing folic acid before becoming pregnant. Eighty-two percent (81.6%) of recent or expecting mothers in Oxford County reported receiving prenatal care from a health care provider during their first trimester. This demonstrates that the majority of recent or expecting mothers in Oxford County are taking steps to ensure a healthy pregnancy.

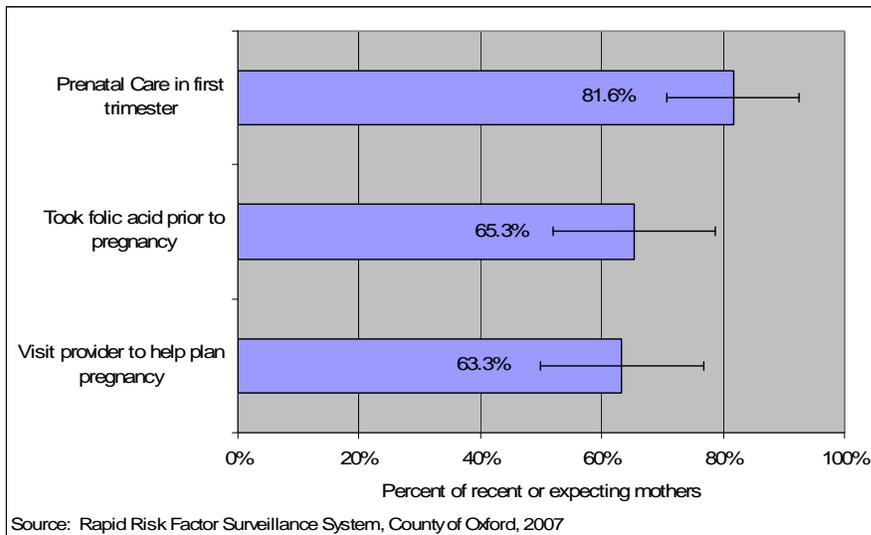


Figure 2-8 Prevalence of prenatal care behaviours in recent or expecting mothers in Oxford County in 2007.

Folic Acid Supplementation

Sixty-five percent (65.3%) of recent or expecting mothers reported taking a vitamin supplement containing folic acid before becoming pregnant (RRFSS 2007). Eighty-nine percent (89%) of mothers surveyed in Oxford County reported having taken a folic acid supplement or prenatal vitamin during the early stages of pregnancy (SOIFS).

Exercise

Most mothers surveyed in Oxford (82.8%) reported being physically active during their pregnancy (SOIFS). Seventy-four percent (74%) of mothers reported walking, 5% reported aerobics, 5% reported swimming, and 2% reported muscle training as the one activity that they participated in the most (SOIFS). Health care professionals, including physicians and midwives, were equally likely to give information about physical activity and pregnancy to women who exercised regularly and those who did not exercise ($p=0.93$).

Weight Gain, Physical Activity and Healthy Eating

The distribution of reported weight gain during pregnancy by recent mothers in Oxford County is shown in Figure 2.9. Recent mothers interviewed gained an average of 33.8 pounds (s.d. ± 13.4 pounds) during their pregnancy (range 3.5 to 80.0 pounds). Women who reported that they were not physically active during pregnancy gained an average of 38.8 pounds during pregnancy (s.d. ± 15.7 pounds), which is significantly higher than the average 33.0 pounds (s.d. ± 12.9 pounds) gained by those who reported being physically active ($p=0.004$).

Over three quarters (76.0%) of recent mothers interviewed stated that they received information on healthy eating during pregnancy. There was no association between receiving information on healthy eating during pregnancy and weight gain during pregnancy ($p=0.229$).

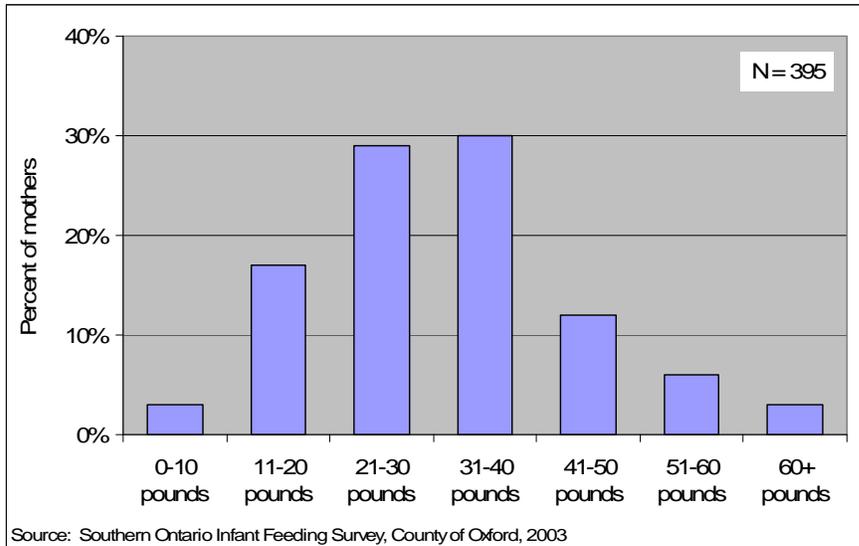


Figure 2-9 Distribution of weight gain during pregnancy reported by recent mothers in Oxford County in 2003.

Smoking

Several studies have shown that exposure to tobacco smoke leads to poor health outcomes in unborn babies and young infants (Kukla et al. 2006, Lam et al. 2001, Triche and Hossain 2007). In the SOIFS, mothers were asked, “*Did you smoke tobacco at all during your pregnancy?*” Almost one-fifth (19.6%) of the women surveyed indicated that they smoked at some point during their pregnancy. In this group, 85.7% reported that they have smoked since they had their baby. The average age of women who smoked at some point during their pregnancy (27.8 years) was significantly lower than the average age of women who reported that they never smoked (29.3 years) ($p=0.012$).

Of the women who smoked ($n=79$), 32% reported that they quit during pregnancy and another 57.0% reported that they cut back on the amount they smoked.

Women who reported smoking during their pregnancy were less likely than those who were non-smokers to have a university, college, or trade school degree/diploma ($p<0.0001$) and were less likely to live in a household with an annual income of \$40,000 or more ($p=0.015$).

To investigate exposure to second-hand tobacco smoke, participants were asked if anyone smoked regularly inside their home. Seven percent (7.0%) of new mothers reported that someone regularly smoked inside their home during their pregnancy. Five percent of all surveyed mothers reported that someone in their home currently smokes tobacco on a daily basis. Given that the negative effects of tobacco smoke on children are well documented, this demonstrates that more needs to be done to educate new mothers on the effects of tobacco smoke on the unborn baby and on young infants.

Alcohol

One quarter (25.0%) of surveyed mothers reported that they had used alcohol during their pregnancy. Almost two-thirds of mothers (64.0%) reported that they received information about its use during pregnancy. There was no association between receiving information about alcohol and pregnancy and drinking alcohol during pregnancy ($p=0.845$).

Postpartum Depression

Most mothers surveyed (89.3%) reported that they knew the signs of postpartum depression. Of mothers that reported that they knew the signs, 25.8% reported experiencing symptoms of postpartum depression and 65.8% reported receiving help with those symptoms.

Pre-Term Labour

Most mothers surveyed reported that they know the signs of premature labour (80.0%), and about half of mothers (50.4%) reported that they received information about premature labour. Mothers who reported that they received information about pre-term labour were significantly more likely to know the signs of premature labour ($p<0.0001$).

Chapter 3: Fertility and Pregnancy

3.1 Pregnancy Rates

3.1.1 Total Pregnancy Rates

Pregnancy rate is defined as the number of pregnancies, including live births, still births (20 weeks gestation or more) and therapeutic abortions per 1000 females of reproductive age. This indicator is often used in combination with other indicators to assess rates of planned, unplanned, and unhealthy pregnancies, as well as reproductive outcomes. Figure 3-1 shows pregnancy, live birth, and therapeutic abortion rates in Oxford County from 1996 to 2004.

What's Going On?

- ❖ Pregnancy rates in Oxford County for females 15 to 49 years have gradually decreased from 1996 to 2004. This trend mirrors that of the live birth rate over this same period.
- ❖ Therapeutic abortion (TA) rates from 1996 to 2004 have remained relatively stable. This suggests that declining live birth rates over this period are largely due to declining pregnancy rates.

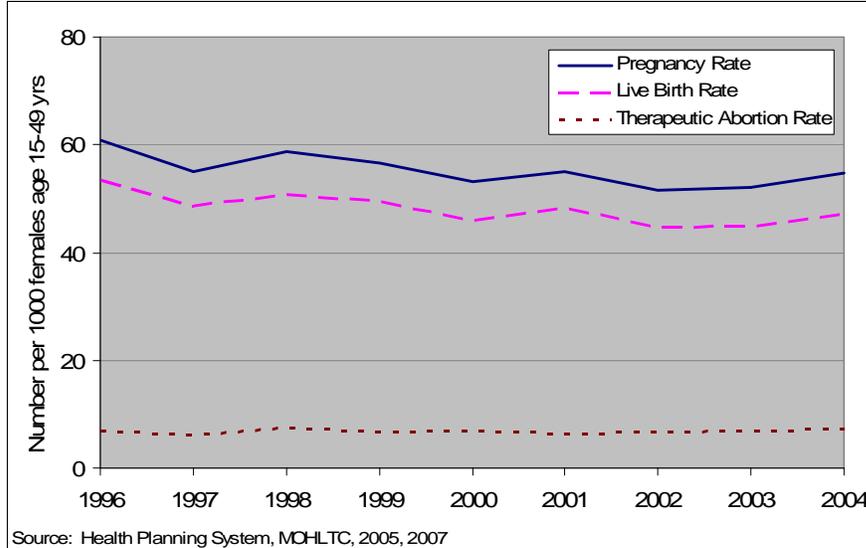


Figure 3-1 Pregnancy, live birth and therapeutic abortion rates in Oxford County females 15 to 49 years of age from 1996 to 2004.

Total pregnancy rates for females in Oxford County and in Ontario as whole are displayed in Figure 3-2.

What's Going On?

- ❖ In 2004, the total pregnancy rate in Oxford County was 55 pregnancies per 1000 females age 15 to 49 years. In that same year, the total pregnancy rate in Ontario as a whole was 53 pregnancies per 1000 females age 15 to 49 years.
- ❖ While the pregnancy rate in Oxford County in 2004 was 55 pregnancies per 1000 females, in 1996 the pregnancy rate was 61 pregnancies per 1000 females. From 1996 to 2004, there has been a gradual decrease in pregnancy rates in Oxford County. The rate of this decrease is similar to that observed provincially.

Worldwide, fertility rates have been declining and contraceptive use has been increasing for decades (UNICEF, 2001). In 2000, for example, the percentage of women 15 to 49 years of age in a union using contraception ranged from 23% to 78% in industrialized countries. This suggests that the decline in pregnancy rates observed provincially and in Oxford County is, in large part, due to the increase in contraception use.

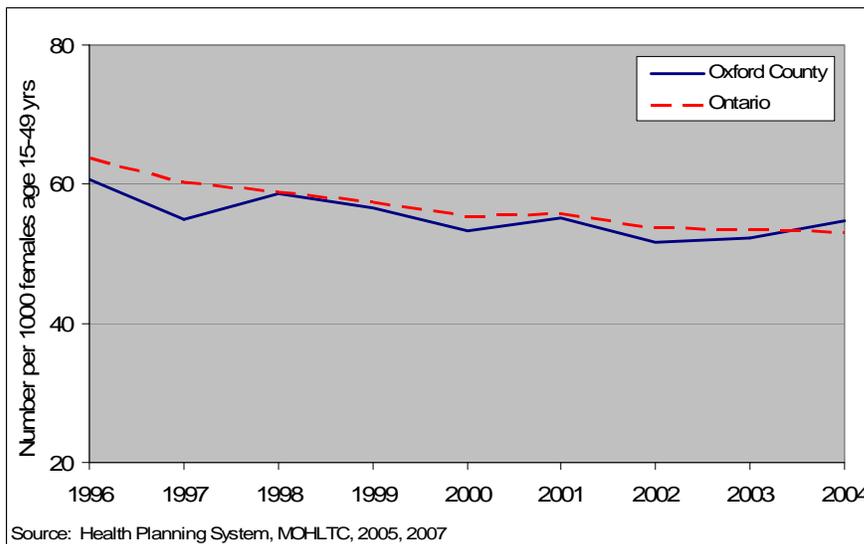


Figure 3-2 Total pregnancy rates in females 15 to 49 years of age in Oxford County and Ontario, 1996 to 2004.

3.1.2 Age-Specific Pregnancy Rates

The risk of poor pregnancy outcomes is elevated for mothers near the beginning or end of the reproductive phase, including teenagers and females 35 years of age and older (Huang et al. 2008, MacDorman et al. 2007). Age-specific pregnancy rates are used to help identify sub-groups of women at risk of complications during or after pregnancy and to support reproductive health program planning.

Figure 3-3 shows age-specific pregnancy rates in 2004 for females in Oxford County and Ontario as a whole.

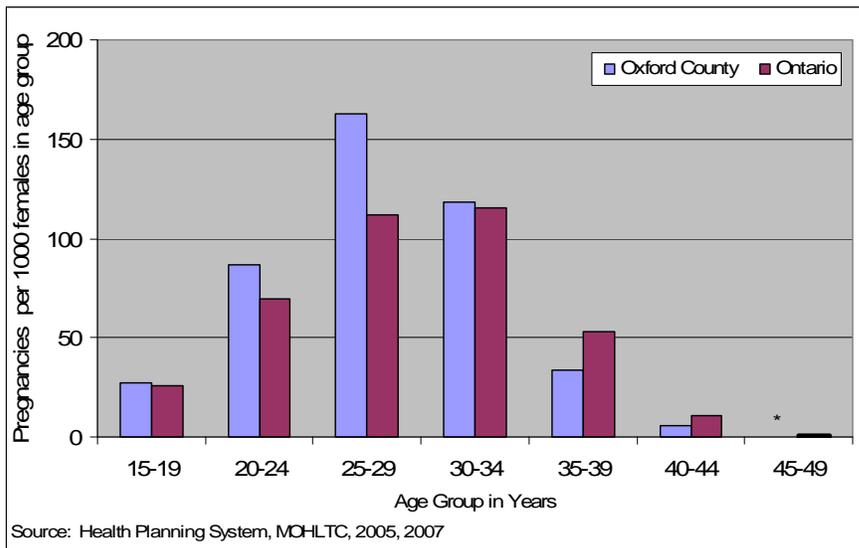


Figure 3-3 Age-Specific pregnancy rates for females in Oxford County and Ontario, 2004.

What's Going On?

- ❖ As expected, pregnancy rates are increased in the middle of the reproductive phase and decrease the beginning and end of the phase.
- ❖ Oxford County has a higher rate of pregnancy in the 15 to 19 years, 20 to 24 years, 25 to 29 years, and 30 to 34 years maternal age groups compared to Ontario as a whole (Fig. 3-3). These rates, however, are only statistically significantly higher in the 20 to 24 years and 25 to 29 years age groups.

Teen Pregnancy Rates

Figure 3-4 shows teen pregnancy rates in Oxford County compared to Ontario from 1996 to 2004. Figure 3-5 shows teen pregnancy, live birth, and therapeutic abortion rates in Oxford County from 1996 to 2004.

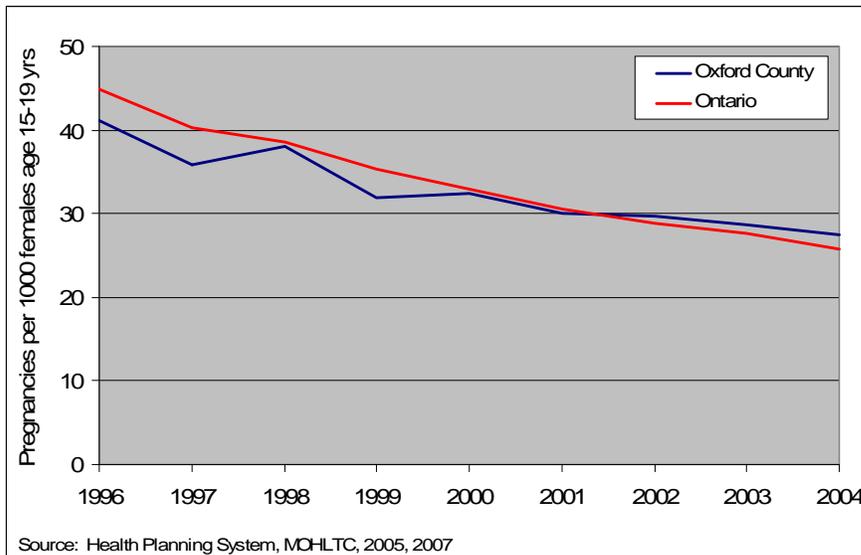


Figure 3-4 Teen Pregnancy Rates (females 15 to 19 years of age) in Oxford County and Ontario as a whole, 1996 to 2004.

What's Going On?

- ❖ In 2004, the teen pregnancy rate in Oxford County was 28 pregnancies per 1000 population of females. In that same year, the teen pregnancy rate in Ontario as a whole was slightly lower at 26 pregnancies per 1000 population of females.
- ❖ The teen pregnancy rate in Oxford County dropped significantly from 41 pregnancies per 1000 population of females in 1996 to 28 pregnancies per 1000 population of females in 2004.
- ❖ From 1996 to 2004, teen pregnancy rates in Oxford County have steadily decreased. This is consistent with the provincial trend.
- ❖ Similarly, the teen live birth rate in Oxford County has decreased over this same time period.

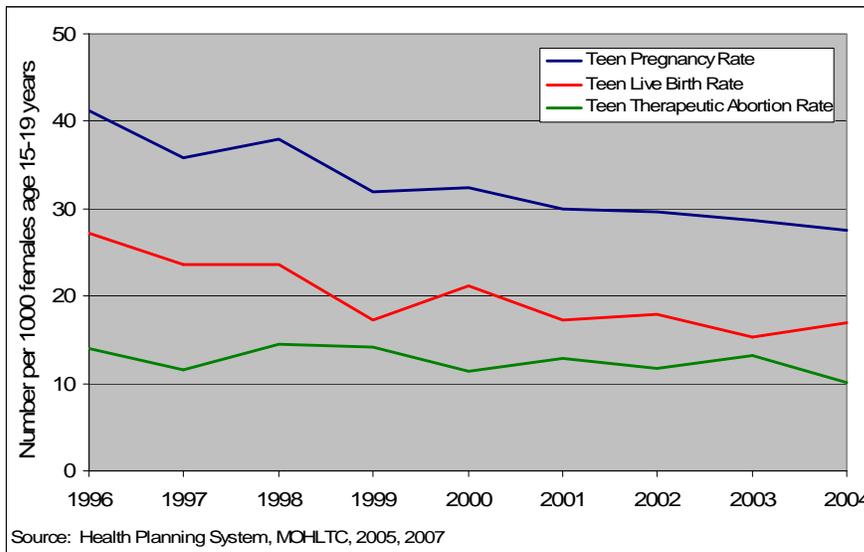


Figure 3-5 Pregnancy, live birth and therapeutic abortion rates in Oxford County females 15 to 19 years of age, 1996 to 2004.

In Oxford County, current teen pregnancy rates are slightly higher, pregnancy rates in young adult females are significantly higher, and pregnancy rates to older females are significantly lower compared to Ontario as a whole. This suggests that females in Oxford County are not choosing to delay childbearing at the same rate as their counterparts throughout the province. The trend toward lowering teen pregnancy rates over the past 20 years in Oxford County is widespread and occurring across the industrialized world (Singh and Darroch 2000). Overall, trends in pregnancy rates in Oxford County are similar to those observed in Ontario.

3.2 Therapeutic Abortion Rates and Proportions

Therapeutic abortion (TA) is defined as the deliberate termination of a pregnancy resulting in the death of the fetus or embryo. This term is used to refer to induced abortions rather than spontaneous abortions or miscarriages.

Rates, ratios, and proportions of TAs are used as indicators of unwanted or unplanned pregnancy (Core Indicators Working Group 2007). TAs are also performed to discontinue pregnancies with abnormal findings at genetic screening (e.g. suspected spinal cord defects). Indicators using TA data reflect all types of TAs described.

The *rate* of TAs represents the number of therapeutic abortions per 1,000 females in a given age group. The *therapeutic abortion ratio* is the ratio of therapeutic abortions per live birth to females in a given age group. The *proportion* of TAs represents the percentage of pregnancies that result in a therapeutic abortion.

Please note that the number of TAs is known to be incomplete (Core Indicators Working Group 2007) and pregnancy losses of less than 20 weeks gestation are not included in this indicator.

It is important to consider that TA rates and ratios may be affected by access to medical care and/or access to or use of contraceptive options. Changes over time may be associated with access to medical care, including ease of travel to out-of-province services, and shifting cultural norms.

3.2.1 All Ages

The overall rates for therapeutic abortions in Oxford County and Ontario as a whole over time are shown Figure 3-6. Overall proportions of TAs are shown in Figure 3-7.

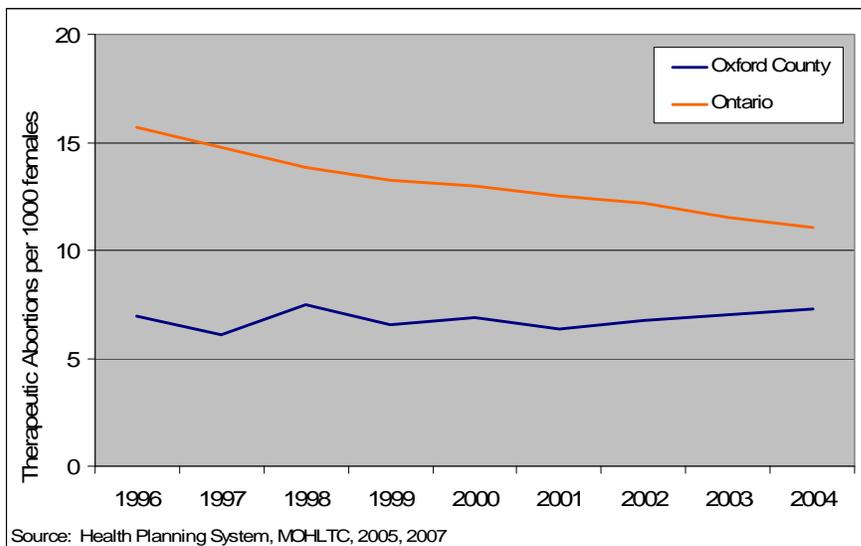


Figure 3-6 Therapeutic abortion rates per 1000 females 15 to 49 years of age in Oxford County and Ontario, 1996 to 2004.

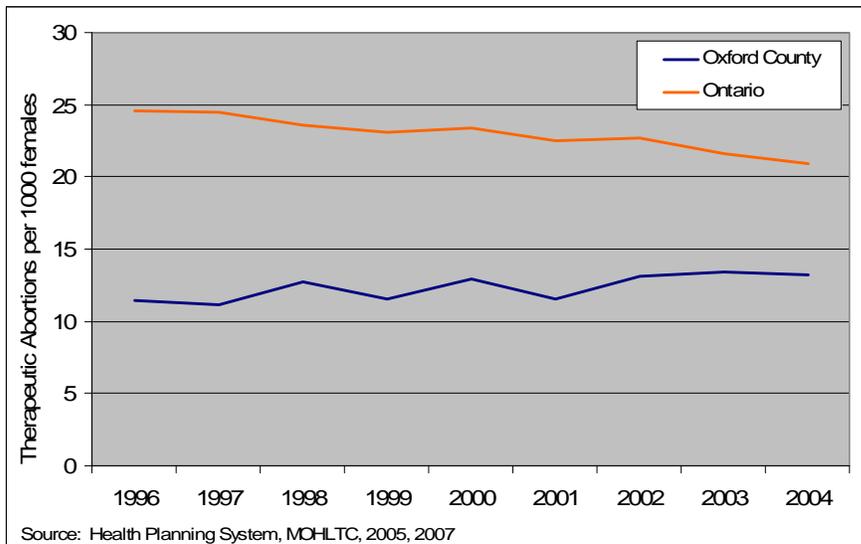


Figure 3-7 Therapeutic abortions per 100 pregnancies (proportion) in Oxford County and Ontario, 1996 to 2004.

What's Going On?

TA Rates

- ❖ In 2004, the rate of TAs in Oxford County was 7.3 per 1000 females. This is significantly lower than the rate of 11.1 TAs per 1000 females in Ontario as a whole during that same year.
- ❖ From 1996 to 2004, the rate of TAs in Oxford County remained relatively stable. This differs from the provincial trend where rates have steadily decreased.
- ❖ Throughout this time period, TA rates in Oxford County have consistently remained lower than that of the province.

TA Proportions

- ❖ In 2004, 13 out of every 100 pregnancies to Oxford County females resulted in TAs. The proportion of pregnancies that resulted in TAs in Oxford County is significantly lower than that of Ontario as a whole.
- ❖ From 1996 to 2004, the proportion of pregnancies to Oxford County females that resulted in TAs slightly increased, while the proportion of TAs in the province as a whole slightly decreased.
- ❖ Throughout this time period, TA proportions in Oxford County have consistently remained significantly lower than that of the province.

TA Ratios

- ❖ In 2004, the overall TA ratio in Oxford County, including all age groups, was 0.154. This ratio is significantly lower than the ratio of 0.266 observed in Ontario as a whole for that same year.
- ❖ Similar to TA rates, the TA ratio in Oxford County has remained relatively stable and consistently significantly lower than the TA ratio of Ontario as a whole.

Overall, rates, proportions, and ratios of TAs in Oxford County continue to be lower than the provincial average. This could be indicative of cultural norms prevalent in the Oxford community or access to medical services, including family planning and abortion services.

3.2.2 Teens

Young women frequently cite concerns about the effects of unplanned pregnancies on future life course outcomes, including education, employment and relationships as reasons for seeking abortion. Abortion may mitigate some of these effects (Fergusson et al. 2007).

Figure 3-8 compares the distribution of TAs across age groups in Oxford County and Ontario as a whole. Figure 3-9 shows the proportion of teen TAs in Oxford County versus Ontario from 1996 to 2004. Figure 3-10 shows the three-year moving average of teen TA rates in Oxford County and Ontario from 1996 to 2004. Figure 3-11 compares TA ratios over time for females 15 to 19 years of age and females 20 to 49 years of age.

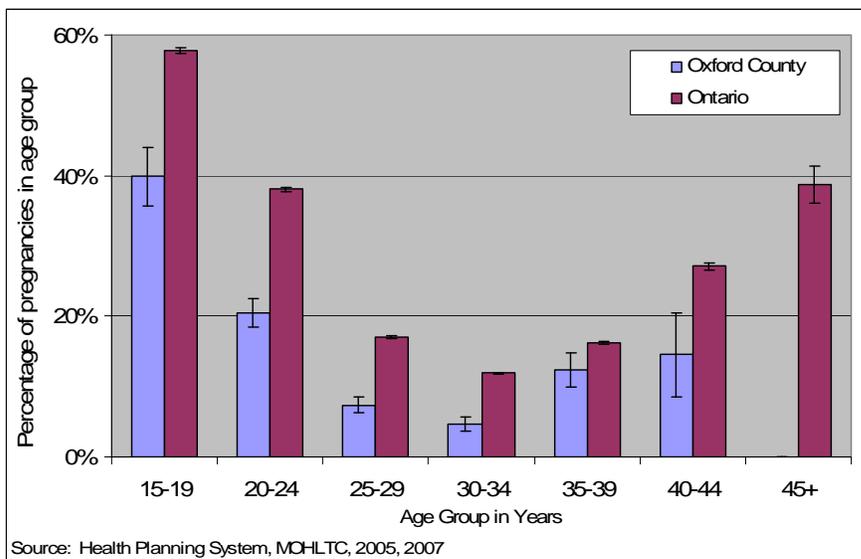


Figure 3-8 Age-specific proportions of pregnancies resulting in therapeutic abortions in Oxford County and Ontario combined for years 2000 to 2004.

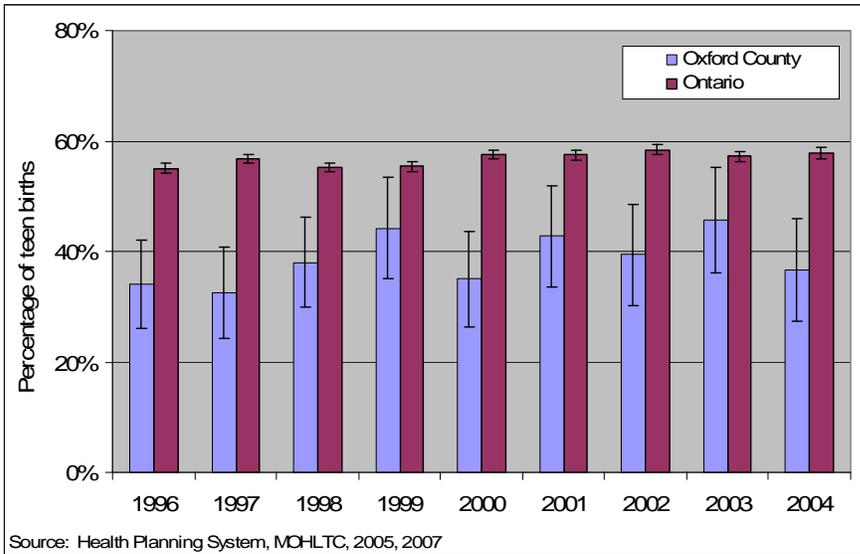


Figure 3-9 Proportion of teen pregnancies resulting in therapeutic abortions in Oxford County and Ontario, 1996 to 2004.

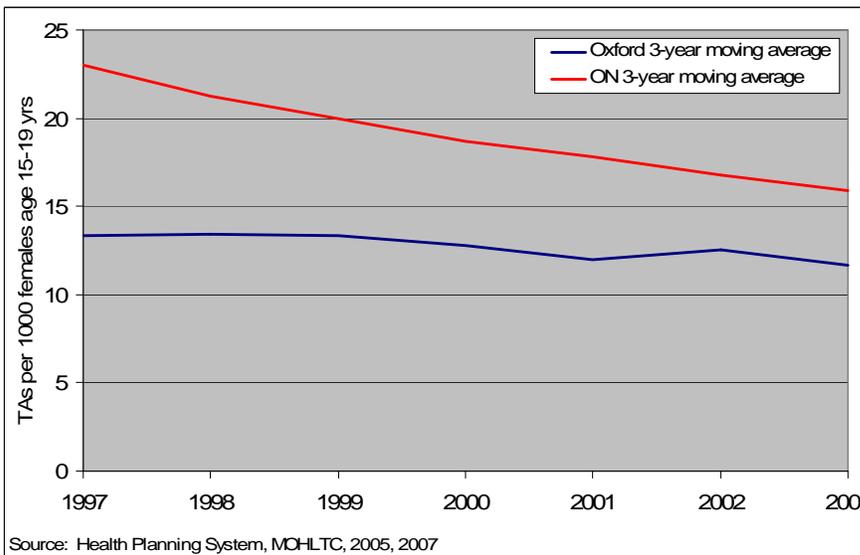


Figure 3-10 Three-year moving average of teen therapeutic abortion rates for females 15 to 19 years of age in Oxford County versus Ontario, 1996-2004.

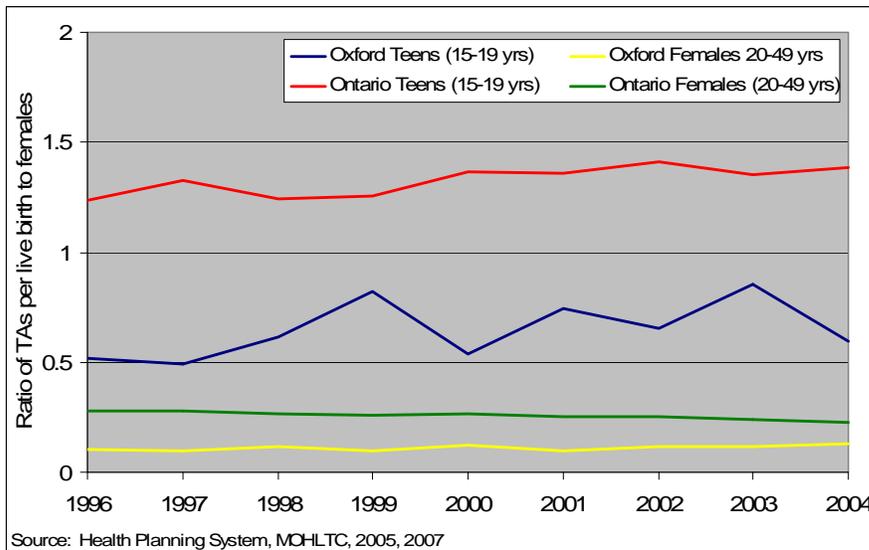


Figure 3-11 Therapeutic abortion ratios for female age 15 to 19 years of age compared to females 20 to 49 years, 1996 to 2004.

What's Going On?

TA Proportions

- ❖ Similar to the trend observed in Ontario, females 15 to 19 years of age in Oxford County had the largest proportion of pregnancies that resulted in TAs compared to all other age groups.
- ❖ For the years 2000 to 2004 combined, 39.9% of pregnancies to females 15 to 19 years of age in Oxford County resulted in TAs (Fig. 3-8). This is significantly lower than the 57.7% observed in Ontario as a whole for this age group.
- ❖ Similar to the provincial trend, the proportion of teen TAs in Oxford County has stayed relatively stable since 1996 (Fig. 3-9).

TA Rates

- ❖ In 2003, the teen TA rate (3 year moving average) was approximately 12 TAs per 1000 female 15 to 19 years of age (Fig. 3-10).
- ❖ Since 1997, the teen TA rate (3 year moving average) has been consistently lower than the provincial average.

TA Ratios

- ❖ Recall that the *therapeutic abortion ratio* is the ratio of therapeutic abortions per live birth to females in a given age group. Figure 3-11 compares the TA ratios for Oxford County females age 15 to 19 years, Oxford County females age 20 to 49 years, Ontario females age 15 to 19 years, and Ontario females age 20-49 years.
- ❖ In Oxford County, the TA ratio has been consistent since 1996 for females 15 to 19 years and 20 to 49 years of age.
- ❖ Since 1996, Oxford County females 15 to 19 years of age have had a TA ratio consistently higher than Oxford County females 20 to 49 years of age and consistently lower than Ontario females 15 to 19 years of age.

Chapter 4: Birth Outcomes

4.1 Live Birth Rates

A live birth is the event that a fetus is born alive with heartbeats or respiration regardless of gestational age. A live birth is not necessarily a viable birth. Trends in live births are used to monitor and describe reproductive health in a region for a variety of planning purposes (Temmerman et al. 2006).

There are a number of ways to describe live birth trends in a population. The crude birth rate is a general indicator used to describe the number of new births relative to the entire population. Figure 4-1 shows crude birth rates in Oxford County and Ontario as a whole from 1986 to 2004. The crude birth rate in Oxford County has been comparable to that of Ontario throughout this period. Over the past 15 years, the crude birth rates in Oxford County and Ontario have steadily declined.

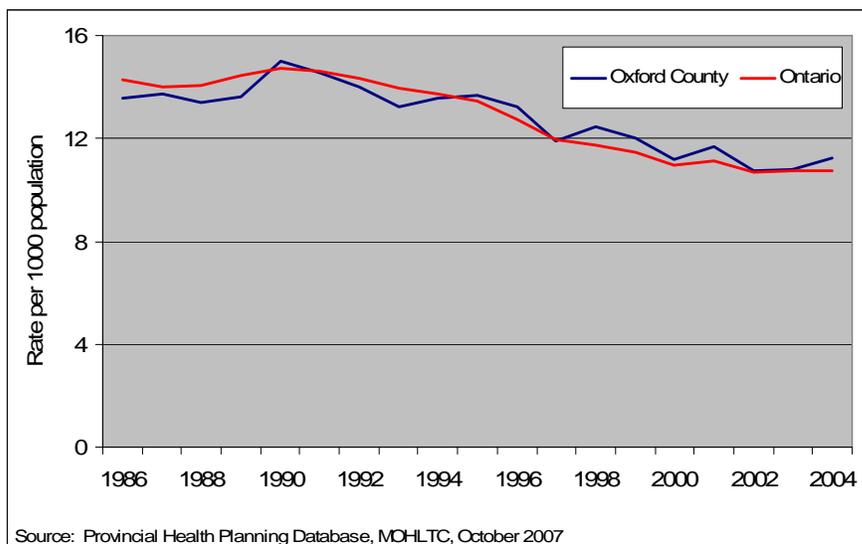


Figure 4-1 Crude Birth Rates in Oxford County and Ontario from 1986 to 2004.

Please note that these rates are heavily influenced by the age structure of the population. For example, the crude birth rate will be higher in populations where more of the females are of childbearing age (15-49 years). To allow for comparability over time and between populations, other types of birth rates are often reported (Hamilton et al. 2006). Many of these appear below.

4.1.1 Live Birth Rate (General Fertility Rate)

The live birth rate, also known as the general fertility rate, is the ratio of the number of live births to the female population age 15 to 49 years in a given time period. The live birth rate is more refined than the crude birth rate because it is restricted to females of reproductive age.

Figure 4-2 shows live birth rates from 1986 to 2004 in Oxford County and in Ontario as a whole.

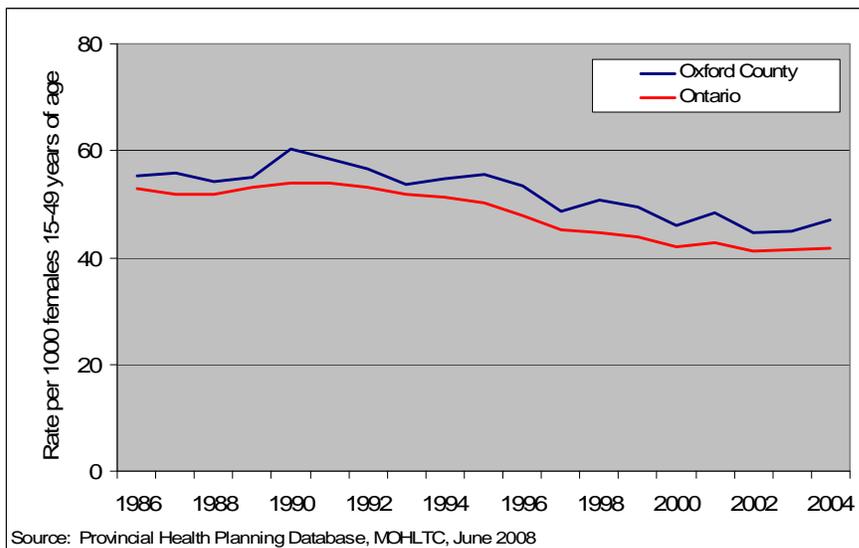


Figure 4-2 Live Birth Rates in females 15 to 49 years of age in Oxford County and Ontario from 1986 to 2004.

What's Going On?

- ❖ In 2004, the live birth rate in Oxford County was 47 live births per 1000 females age 15 to 49 years
- ❖ Between 1986 and 2004, the live birth rate in Oxford County dropped over 15.0%. During this time, the decline in live birth rate has been steady, which is consistent with provincial trends.
- ❖ From 1986 to 2000, the live birth rate in Oxford County has consistently remained above the provincial average.

4.1.2 Total Fertility Rate

General fertility rates, or live birth rates, can also be expressed as a total fertility rate. The total fertility rate is the average number of children that would be born per woman if all women lived to the end of their childbearing years and bore children according to the age-specific fertility rates for that area and period. Decreased fertility rates have been associated with: increased urbanization, higher levels of education in females, higher participation rates in the labour force for females, prevention of unwanted pregnancies, greater access to abortion, unstable employment, and economic instability. A total fertility rate of 2.1 children per female is required for population replacement in more developed countries, when rates of immigration are not considered (World Health Organization 2001).

What's Going On?

- ❖ In 2004, the total fertility rate for Oxford County was 1.9 children per female. This is higher than the rate of 1.5 children per female calculated for Ontario as a whole in the same year. This is also higher than the rate observed in Oxford County in 1986 of 1.7 children per female.
- ❖ This suggests that females 15 to 44 years of age in Oxford County are having more children than in the past.
- ❖ Please note that this rate has been calculated for females 15 to 44 years of age. Females fewer than 15 years and over 44 years of age have been excluded because of low cell counts.

4.1.3 Age-Specific Live Birth Rates

At both extremes of the reproductive phase, female pregnancy outcomes are described as poor. Pregnancies at these phases of the reproductive span are considered at increased risk for obstetric complications, and increased maternal and newborn morbidity and mortality (Kirchengast 2007). Similar to age-specific pregnancy rates, age-specific live birth rates are used to help identify sub-groups of women at risk of complications during pregnancy and to support reproductive health program planning.

Figure 4-3 shows age-specific live birth rates in five-year age groupings for Oxford County in 1994 and 2004. Figure 4-4 illustrates the 2004 age-specific live birth rates in Oxford County compared to Ontario as a whole.

What's Going On?

New Mothers Under 30 Years of Age

- ❖ From 1994 to 2004, the live birth rates in the less than 20 years and, 20 to 24 years maternal age groups dropped (Fig. 4-3).
- ❖ Similarly, the live birth rates for Ontario as a whole dropped in these maternal age groups (data not shown).
- ❖ The most significant decrease in live birth rate in Oxford County occurred in the 20 to 24 years maternal age group.
- ❖ In 2004, the live birth rates in the 15 to 19 years, 20 to 24 years, and 25 to 29 years age groups were significantly higher than those in Ontario as a whole (Fig. 4-4).

New Mothers Over 30 Years of Age

- ❖ From 1994 to 2004, the live birth rates in Oxford County in the 30 to 34 years, 35 to 39 years, and 40+ years maternal age groups increased (Fig. 4-3).
- ❖ This is consistent with the provincial trend.
- ❖ In Oxford County, the most significant increase in live birth rates occurred in the 30-34 years age group.
- ❖ In 2004, the live birth rates in Oxford County were lower in the 35 to 39 years and 40 to 44 years maternal age groups than the provincial average (Fig. 4-4).

Live birth rates in Oxford County over the past decade generally decreased in the under 25 years age groups and increased in the 25+ years age groups. While the magnitude of this shift is less than that of the province as a whole, it is consistent with the provincial trend and similar to shifts experienced in other industrialized countries (Andersson 1999, Pinnelli and Cesare 2005). Because this coincides with a decrease in pregnancy rates and a stable therapeutic abortion rate, this demonstrates that females in Oxford County are choosing to delay childbearing.

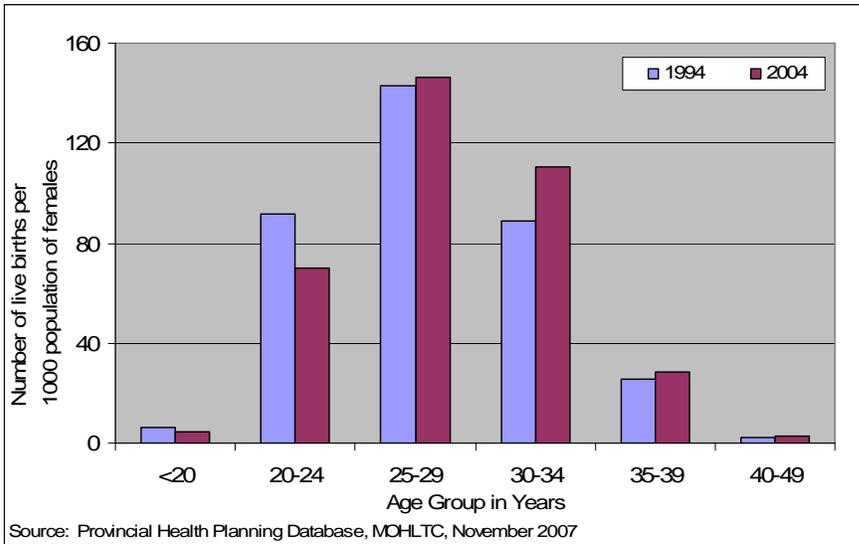


Figure 4-3 Age-specific live birth rates in Oxford County in 1994 and 2004.

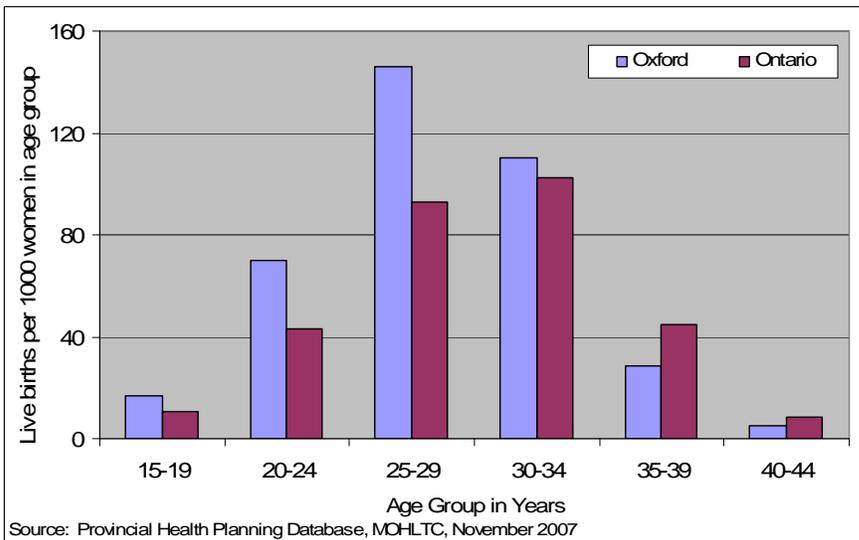


Figure 4-4 Age-specific fertility rates in Oxford County and Ontario as a whole, 2004.

4.1.4 Multiple Live Birth Rate

Babies of multiple gestations, often termed multiple births, are at increased risk for premature delivery, low birth weight, and neonatal death (World Health Organization 2006). For these analyses, a multiple live birth is a live birth that results from a pregnancy in which two or more fetuses have developed. Figure 4-5 depicts the three-year moving average of multiple births in Oxford County compared to Ontario as a whole from 1987 to 2003.

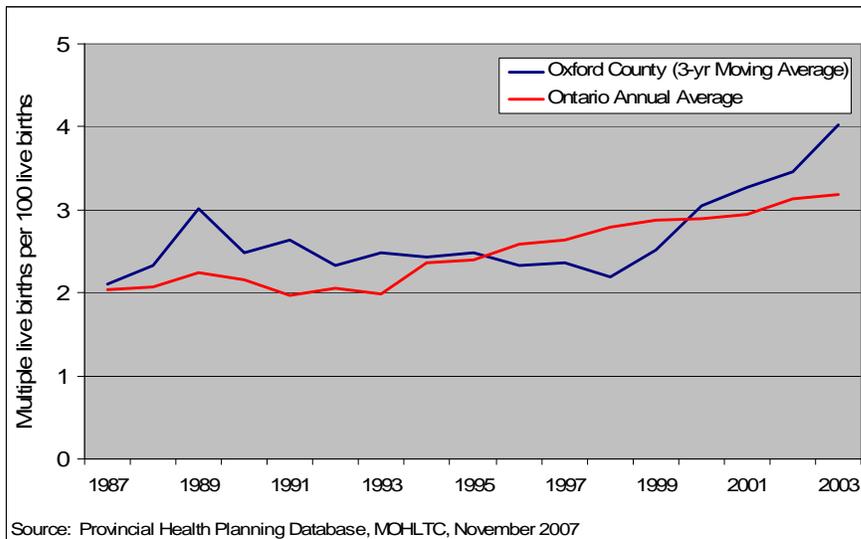


Figure 4-5 Multiple Live Birth Rates in Oxford County and Ontario, 1987 to 2003.

What's Going On?

- ❖ In 2003, the three-year average number of multiple live births in Oxford County was 4.0 multiple births per 100 live births.
- ❖ In that same year, the average number of multiple births in Ontario as a whole was 3.2 multiple births per 100 live births, demonstrating that Oxford County has a higher multiple birth rate than Ontario as a whole.
- ❖ From 1987 to 2003, the multiple birth rates in Oxford County fluctuated in large part due to the low frequency at which multiple births occur.

Adjusting for fluctuation due to low occurrence, the multiple birth rate in Oxford County has still increased over the past five years. This is consistent with the provincial trend, as well as trends observed internationally for developed countries (Allen et al. 2006). Increases in multiple birth rates have been shown to be associated with increased use of assisted reproductive technology, maternal age, and additional secular trends (Allen et al. 2006).

4.2 Preterm Birth Rate

Preterm birth is defined as a live birth delivered before 37 completed weeks of gestation. It is important to monitor preterm birth rates because infants who are born premature are at increased risk for developmental disabilities, health problems, and poor growth (Berhman and Stith Butler 2007).

In Canada, as in other developed countries, preterm birth is the most important cause of infant mortality, illness and disability. In recent years, the preterm birth rate in Canada has increased steadily. In part due to increases in multiple births and early deliveries requiring obstetric intervention, much of the occurrence of preterm birth remains unexplained (McCourt et al. 2005).

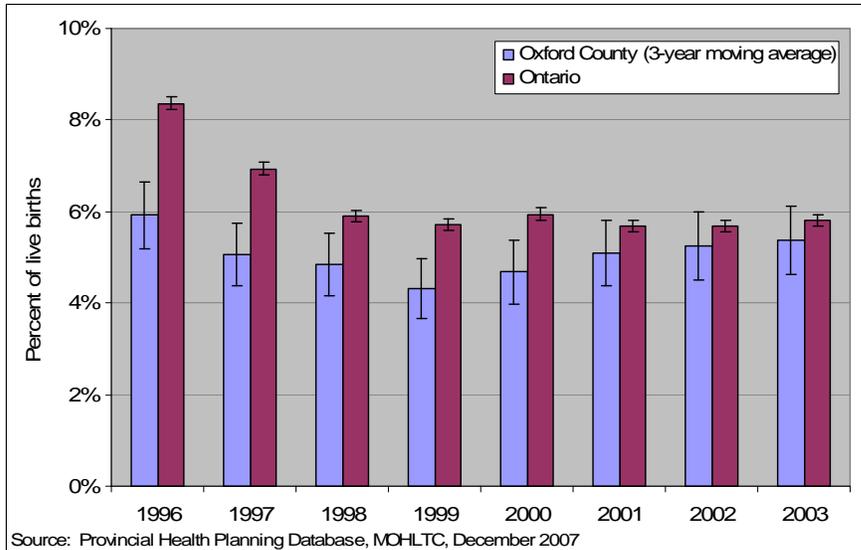


Figure 4-6 Proportion of preterm births in Oxford County and Ontario, 1996 to 2003.

What's Going On?

- ❖ Figure 4-6 shows the proportion of preterm births to mothers in Ontario as a whole and Oxford County using a 3-year moving average. NB: This excludes multiple births, births with birth weight under 500 grams, births to out-of-province mothers, and stillbirths.
- ❖ Similar to the national trend (Public Health Agency of Canada 2005), the Oxford County 3-year moving average for proportion of preterm births has steadily increased since 1999.
- ❖ On the contrary, average proportion in Ontario has remained relatively stable since 1999.
- ❖ Since 1996, the proportion of preterm births in Oxford County has consistently remained below that of Ontario as a whole.

Potential explanations for the observed rates include increases in obstetric intervention, greater registration of early-gestation births and increases in the use of ultrasound-based estimates of gestational age (Public Health Agency of Canada 2005). Still, this does not fully explain the differences observed over time and between Oxford County and Ontario as a whole. Factors known to contribute to preterm birth include individual-level behavioral and psychosocial factors, neighborhood characteristics, environmental exposures, medical conditions, infertility treatments, biological factors, and genetic history. Many of these factors occur in combination, particularly in those who are socioeconomically disadvantaged (Berhman and Stith Butler 2007).

4.3 Low Birth Weight Rate

Birth weight is defined as the weight of a fetus or infant at the time of delivery. For live births, birth weight is measured in the first hour of life. Birth weight standards based on gestational age are useful for identifying infants at high risk for perinatal morbidity and mortality (Arbuckle et al. 1993). The most common standard is that of the International Classification of Diseases (ICD), where the most recent revision, the ICD-10, classifies infants born under 2500 grams as low birth weight (World Health Organization 1992). Infants with lower birth weights experience increased morbidity and mortality compared to infants of normal birth weight (Arbuckle et al. 1993, Savitz et al. 2000). As such, low birth weight (LBW) is considered a key determinant of health in infants and children.

Figure 4-7 displays the LBW rates in Oxford County (3-year moving average) from 1992 to 2003 compared to rates in Ontario as a whole. Birth weight is affected by mother's age, type of birth (i.e. multiple gestation), gestational age, parity, lifestyle factors (e.g. smoking, nutrition), weight gain during pregnancy, physical and social environment (e.g. intrauterine infection, diabetes mellitus, low socioeconomic status), and genetic factors (Arbuckle et al. 1993). To eliminate the effects of premature birth and multiple gestations on observed low birth weight rate, only full-term singleton births to mothers residing in Ontario have been included in the analysis.

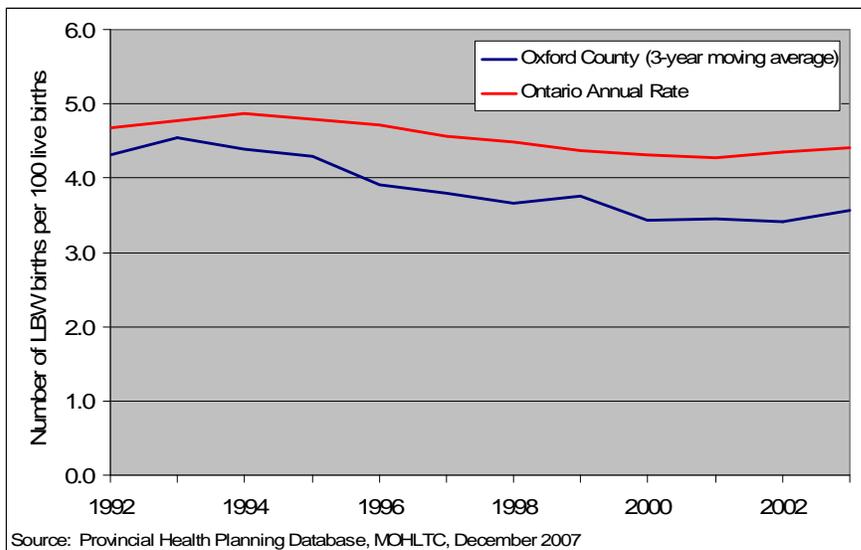


Figure 4-7 Low birth weight rate of full-term singleton births in Oxford County and Ontario, 1992-2003.

What's Going On?

- ❖ In 2003, the three-year moving average LBW rate in Oxford County was 3.6 LBW births per 100 live births or 36 LBW births per 1000 live births.
- ❖ Low birth weight rates in Oxford County have gradually declined over the past 13 years. This is consistent with the provincial trend.
- ❖ Oxford County's LBW rate of 3.57 in 2002-2004 is slightly lower than the provincial average of 4.4. While this difference is not statistically significant, Oxford County's LBW rate consistently remained lower than that of Ontario from 1992 to 2003.

Declining low birth weight rates in Oxford County are consistent with provincial and national trends. One of the main reasons attributed to this decline is an increase in internal control over birth outcomes, including family planning and family health programs, among women contemplating a future pregnancy (Weisman et al. 2008). Improved socioeconomic circumstance, prenatal care, and favorable health behaviours are often part of these family planning activities. Risk factors that are barriers to family planning include lower maternal age, no postsecondary education, and not being married or common-law at the time of birth. As shown in Chapter 2, over the past 15 years, there has been a steady improvement in Oxford County for all of these risk factors among new mothers. This suggests that family planning/family health programs that are targeted towards females with these risk factors have been successful.

4.4 Perinatal Mortality Rate

Perinatal mortality refers to the death of a fetus or a neonate. This includes stillbirths at 28 or more weeks gestation and deaths in the first week of life (Statistics Canada 2007). The perinatal mortality rate, therefore, is the number of perinatal deaths per 1000 total births (including stillbirths). This indicator reflects standards of obstetric and pediatric care, as well as the effectiveness of public health initiatives.

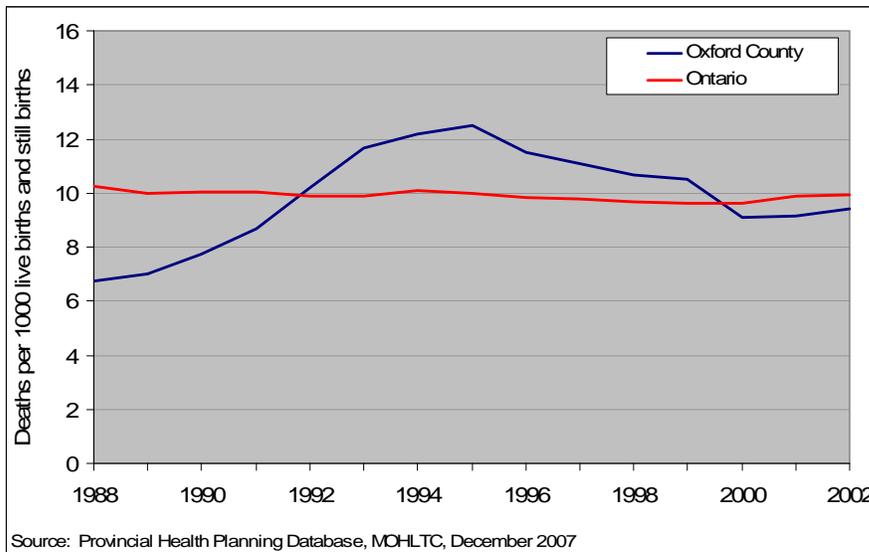


Figure 4-8 Perinatal mortality rate (five-year moving average) in Oxford County and Ontario, 1988-2002.

What's Going On?

- ❖ Perinatal mortalities in Oxford County are relatively rare (Fig. 4-8). As a result, these rates are presented as five-year moving averages.
- ❖ In 2000-2004, the perinatal mortality rate in Oxford County was 9.4 deaths per 1000 births. This is slightly lower than Ontario's overall perinatal mortality rate.
- ❖ The perinatal mortality rates in Oxford County were elevated from 1993 to 1997, but this difference was not statistically significant.

While perinatal mortality is an important indicator of maternal care and maternal health and nutrition, it also reflects the quality of available obstetric and pediatric care (World Health Organization 2006). Recent decreases in perinatal mortality rates in Oxford County and Ontario could be reflective of improvements in these areas. Although social factors exert the main influence on the outcome of a birth, proper medical care still tends to play an important role.

NB: Registration fees initiated in some Ontario regions in 1996 may have reduced the number of infants registered, especially for low income and/or adolescent parents and/or multiple births. Therefore, observed perinatal mortality rates might be lower than the true rate in the population.

4.5 Infant Mortality Rate

The infant mortality rate refers to the number of deaths to live born infants at 364 days of age or younger per 1000 live births. Infant mortality rates are used as an indicator of community health and well-being, including nutrition, education, access to health care and socioeconomic development (Health Canada 2003).

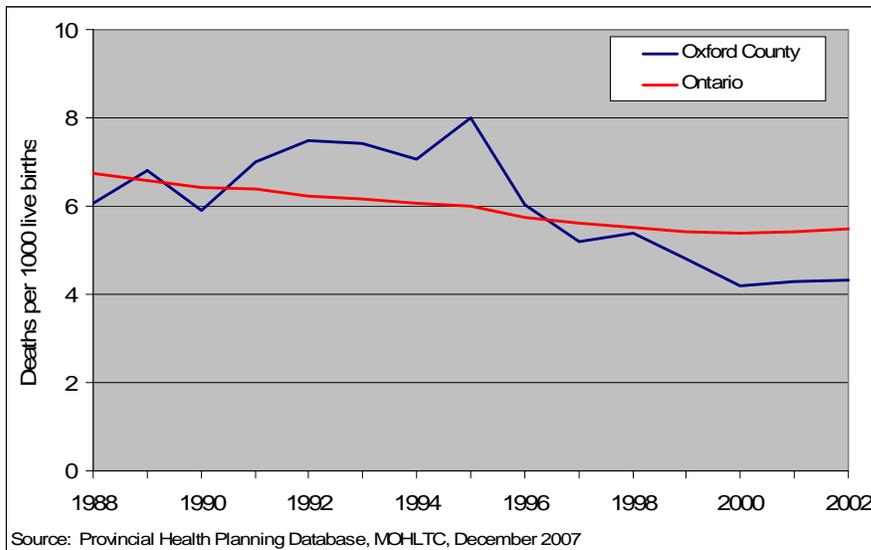


Figure 4-9 Infant Mortality Rate (five-year moving average) in Oxford County and Ontario, 1988-2002.

What's Going On?

- ❖ Like perinatal mortalities, infant mortalities in Oxford County are relatively rare. As a result, these rates are presented as five-year moving averages (Fig. 4-9).
- ❖ In 2000-2004, the infant mortality rate in Oxford County was 4.33 deaths per 1000 live births. This is slightly lower than the provincial infant mortality rate for the same time period.
- ❖ Similar to provincial trends, the infant mortality rate in Oxford County has decreased over the past 15 years.

In Oxford County, improvements have been made in making prenatal and postpartum care available to new mothers, including mothers who may be at high risk for poor nutrition, lower education, and low-income. This may have contributed to the reduction in infant mortality by increasing healthy behaviours during the prenatal and postpartum periods. At the same time, family planning initiatives have also been targeted at high risk groups, helping females make the decision to reproduce when they are physically, emotionally, and socioeconomically ready to do so.

NB: Registration fees initiated in some Ontario regions in 1996 may have reduced the number of infants registered, especially for low income and/or adolescent parents and/or multiple births. Therefore, recent observed infant mortality rates might be lower than the true rate in the population.

Chapter 5: Conclusions

Over the past two decades, the reproductive health picture in Oxford County has seen many changes. Some of these changes have been secular, reflecting a shift in norms, rather than an improvement or decline. For the most part, however, these changes have resulted in improved reproductive outcomes for both women and children in Oxford County. This report has attempted to show the distribution of birth outcomes in Oxford County, while also describing some of the factors that impact on these outcomes, including who are Oxford's new mothers, mother's health-related behaviours, and pregnancy and fertility decisions.

The characteristics of new parents in Oxford County have changed in recent years. Mothers and fathers are choosing to have children later in life than they did previously and mothers, overall, are having fewer children. While the percentage of new mothers who are married has declined, very few new mothers live alone with their baby. At the same time, most new mothers have sought prenatal care and engaged in behaviours thought to have a positive effect on the health of their unborn child. In the postnatal period, most mothers attempted to breastfeed. This suggests that new mothers are increasingly supported by non-traditional family structures and are utilizing available resources, such as literature and public health programming i.e. Prenatal Health Fairs, Prenatal Classes, Healthy Babies Healthy Children Program, and Well Baby Clinics.

A number of birth outcome trends in Oxford County mirror those of the rest of the province. These trends include decreasing birth rates, increasing birth rates in older age groups, decreasing teen pregnancy rates, decreasing low birth weight rates, decreasing infant mortality rates, and increasing multiple birth rates. Factors that have contributed to these trends include increased use of family planning and contraceptives, improved obstetric and pediatric care, health-related behaviours, socioeconomic status, and cultural norms. Public health programming i.e. Healthy Babies Healthy Children over the past decade has helped high-risk families receive prenatal and postnatal care when these factors have presented challenges.

Please note that the information presented in this report concerns Oxford County as a whole and does not draw conclusions about any particular community in Oxford County. This also means that outcomes occurring in important subgroups have not been explored.

For some birth outcomes, the case count was so low that numerous years were collapsed together to remove large variations in reported rates. It is also important to note that the number of births registered in some census divisions changed dramatically starting in 1991 when the Office of the Registrar General moved from Toronto to Thunder Bay.

Similarly, in 1996, registration fees initiated in some census divisions in 1996 may have reduced the number of infants registered, especially for low income and/or adolescent parents and/or multiple births. When reviewing the information in this report, it is important to consider that these data limitations also explain the rates observed.

The information presented in this report shows that Oxford County has made reproductive health progress over the past two decades. To enable Oxford County women and families to achieve optimal preconception health, experience healthy pregnancies, and have the healthiest newborns possible, the maintenance of healthy public policy and the creation of safe and supportive environments must be continued and enhanced with opportunity. Further analysis to explore the distribution of reproductive outcomes in important subgroups in Oxford County could help identify groups at risk for poor reproductive health and improve targeted program delivery.

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