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# Reproductive Health in Wellington-Dufferin-Guelph



Wellington-Dufferin-Guelph Public Health Health Analytics Team 7/31/2013

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Reproductive Health is an important Public Health issue and an upstream investment (Ministry of Health Promotion, 2010). Health before and during pregnancy contribute to healthy birth outcomes. Healthy birth outcomes and preparation for parenthood contribute to healthy children and families (Ministry of Health Promotion, 2010).

This report provides data on many reproductive health indicators. While it is not exhaustive, its intention is to aid Wellington-Dufferin-Guelph Public Health and community partners in their work with expectant mothers and babies. Some data highlights in the Wellington-Dufferin-Guelph area include:

### Average age at birth

In Wellington-Dufferin-Guelph, the average age of mothers giving birth to their first child was 28.2 years while the average age of all mothers giving birth was 29.9 years.

### Fertility rate, age-specific fertility rate, and total fertility rate

In 2009, for every 1000 women aged 15-49 living in WDG, there were 44 live births. This was comparable with Ontario rates. In the same year, women in WDG were expected to have an average of 1.7 children over the course of their childbearing years. The fertility rate among the 30-34 year old population in WDG increased slightly over time. In 2005, the fertility rate for this group was 109 live births per 100 women in this age group. The rate in 2009 for the same population was 118 live births.

### Pregnancy rate, age-specific pregnancy rate, and induced abortions

From 2005-2009, the pregnancy rate in Wellington-Dufferin-Guelph was below the provincial rate. The pregnancy rate takes into account live births, still births, and induced abortions. One trend that was observed was a rise in the teen pregnancy rate in Dufferin County over time. In 2005, the Dufferin teen pregnancy rate of 10.2 pregnancies per 1000 women 10-19 was below the provincial rate of 14.2 pregnancies per 1000 women 10-19 years old. However, in 2009, the Dufferin teen pregnancy rate was 15.4 pregnancies per 1000 women aged 10-19 which was above the provincial rate of 14.8 pregnancies per 1000 teens. At the same time the teen pregnancy rate in Dufferin County was rising, the teen induced adjusted abortion rate was also rising. This increase in the teen induced adjusted abortion rate was also rising.

### Preterm birth rate

The preterm birth rate in WDG was below the provincial rate from 2005-2008 but rose in 2009 due to an increase in the preterm birth rate in Wellington County, in 2009.

### Birth weight

The low birth weight rates for all births and for singleton births in Wellington-Dufferin-Guelph were below the provincial rate from 2005-2009. Additionally, the small for gestational age calculation from 2006-2011 showed that WDG had a lower percentage of babies born below the 10<sup>th</sup> percentile for their gestational age and sex than the province. Interestingly, this trend was reversed for the 2006-2011 high for gestational age calculation. In all years except 2010, WDG had a higher percentage of babies born above the 90<sup>th</sup> percentile for their gestational age and sex.

Reproductive Health is a significant public health issue and an upstream investment (Ministry of Health Promotion, 2010). A woman's pre-pregnancy health contributes to a healthy pregnancy, leading to a healthy birth outcome (Ministry of Health Promotion, 2010). Healthy birth outcomes, coupled with preparation for parenthood, build a foundation for healthy children and families (Ministry of Health Promotion, 2010). Poor birth outcomes have the potential to have lifelong impacts, as they contribute to poor short- and long-term growth and developmental outcomes for infants and children. This can then lead to a higher cost and strain on families and on society (Ministry of Health Promotion, 2010). In order to address the important public health issue of reproductive health, local trends in preconception health (health before becoming pregnant), healthy pregnancies, reproductive health outcomes, and preparation for parenting need to be calculated, monitored over time, and used in program planning.

This report provides time trend and current data on many reproductive health indicators. While it is not exhaustive, its intention is to aid Wellington-Dufferin-Guelph Public Health and community partners in their work with expectant mothers and babies.

### **APHEO Reproductive Health Indicators**

Indicators for this report were chosen from the list of reproductive health core indicators recommended by the Association for Public Health Epidemiologists of Ontario (APHEO). APHEO has recognized the need for consistency among health reports (APHEO, n.d.a). Its Core Indicators Working Group (CIWG) has aimed to systematically define and operationalize a core set of health indicators in Ontario, which includes a set of indicators for reproductive health (APHEO, n.d.a). The CIWG works to ensure the Core Indicators are accurate and up-to-date, and reflect the legislative requirements set in the Ontario Public Health Standards (APHEO, n.d.a).

Based on the APHEO reproductive health indicators, the main sources of data for this report were the Statistics Canada 2006 Census, IntelliHEALTH (Ontario Ministry of Health and Long-Term Care), the Canadian Community Health Survey (2007-2011), and the Canadian Congenital Anomalies Surveillance System (Public Health Agency of Canada).

In addition to the APHEO indicators, other indicators were chosen for examination based on consultations with reproductive health staff and management around data needs. Consideration was also paid to meeting the data requirements set out in the Ontario Public Health Standards, the Accountability Agreement Indicators of the Ministry of Health and Long-Term Care, and WDG Public Health's Key Performance Indicators for monitoring the 2011-2016 strategic plan.

### **Levels of Geography**

Data was shown for Wellington-Dufferin-Guelph and for the province of Ontario to provide a comparison. Additionally, where possible, figures were calculated for both Wellington and Dufferin Counties and the City of Guelph. However, in some cases small numbers prevented the release of figures for these stratified geographies.

### **Age Groupings**

In most cases, age was based upon the age of the mother, except where the indicator specified that the age of the infant must be used (for example in neonatal mortality rates).

Different indicators required the use of different maternal age groupings. Some indicators included mothers of all ages, while some referred to mothers aged 15-49, and others required the calculation of rates based upon narrower age ranges (for example teen pregnancy rates). The ages that were used for each indicator are stated throughout the report.

### **Time Period**

For most of the indicators, a five-year time period was used to assess any changes over time. Because many of the indicators used IntelliHEALTH data, which was only available up until 2009 at the time this report was prepared, the five-year time period that was chosen was 2005-2009. For these indicators, it is important to note that changes may have taken place from 2009 to the present. However, data based on the Canadian Community Health Survey is shown from 2007-2011.

### **Data Sources**

### IntelliHEALTH

### Vital Statistics Births, Stillbirths, and Deaths

Live birth, stillbirth, and death data for Wellington-Dufferin-Guelph and the province were retrieved from IntelliHEALTH, a Ministry of Health and Long-Term Care database. The IntelliHEALTH data originates from the Ontario Office of the Registrar General and within IntelliHEALTH is located in the Vital Statistics administrative live births, stillbirths, and deaths data tables (APHEO, 2013). This data was analyzed by the mother's residence and not where the birth occurred. Some data limitations include:

- Births that occurred among Ontario mothers outside of the province are not available in IntelliHEALTH.
- Electronic registration of births, replacing the former paper-based system, was introduced in 2006 and was fully phased in by 2009. This change in registration process resulted in the elimination of birth registration fees that had been in place in some, but not all, municipalities. During this time period where fees were eliminated, it was observed that fees had been a barrier to birth registration, particularly among vulnerable families (APHEO, n.d.b). The fee barrier had resulted in an underestimation of live births in the municipalities where fees had been charged, and in the province overall (APHEO, n.d.b).

### **Population Data**

Population estimates for women of reproductive age and infants less than one year of age were obtained from IntelliHEALTH. The original source for this IntelliHEALTH data is the Ontario Ministry of Finance and the data are based on intercensal population counts from the 1996, 2001, and 2006 Canadian Censuses. Data limitations include:

• Population estimates found in this report may be different from other reports produced by Wellington-Dufferin-Guelph Public Health that have used different data sources to obtain their figures. This is due to different data sources using different methods to calculate their figures.

### **Canadian Community Health Survey**

Since 2007, the Canadian Community Health Survey (CCHS), administered by Statistics Canada, has been collecting information annually on the health of Canadians aged 12 and over. CCHS data used in this report was obtained by analysis of the Ontario sharefiles for the CCHS for the years 2007 to 2011.

Some limitations associated with the CCHS data include:

- All health-related information from the CCHS is based on self-report, so recall bias, under or overreporting, and proxy errors may occur.
- The CCHS is not designed for detailed analysis of data at the level of local health departments. Therefore, separation of the data into the three communities (and in some cases into Wellington-Dufferin-Guelph) meant that the sample sizes became quite small. As a result, further analysis by age and gender was precluded.

### **Census Data**

Statistics Canada produces statistics that help Canadians better understand their county: its population, resources, economy, society, health, and culture (Wellington-Dufferin-Guelph Public Health, 2012). Information in this report was obtained from the 2006 Census which is conducted every five years.

### Canadian Congenital Anomalies Surveillance System (CCASS)

The CCASS is managed by the Public Health Agency of Canada and is a Canadian surveillance system for congenital anomalies. CCASS data for Ontario comes from the hospitalization data found in the Discharge Abstract Database (DAD) managed by the Canadian Institute for Health Information (CIHI). CIHI processes the data to remove duplicate hospitalizations from a single infant within the same month, as this often occurs among infants with congenital anomalies (APHEO, 2012). A data limitation with this source is that:

• Congenital anomalies may be underreported due to some infants not being diagnosed in the period immediately after birth up to the first month of life.

### A PROFILE OF WELLINGTON-DUFFERIN-GUELPH

Wellington-Dufferin-Guelph Public Health (WDGPH) is one of 36 local health departments in Ontario. The area served by WDGPH is located in southwestern Ontario, approximately 100 km west of Toronto, and comprises two counties: Wellington County and Dufferin County. The municipality of the City of Guelph is geographically located within Wellington County (*See Figure 1*). In this report, the area served by WDGPH is referred to as Wellington-Dufferin-Guelph (WDG).

### Figure 1: Municipalities in Wellington-Dufferin-Guelph, Southwestern Ontario



The mandate of WDGPH is to improve the health of the population through activities that promote health, protect health, and prevent disease and injury.

Wellington-Dufferin-Guelph Public Health is an essential community health service with dedicated staff that focus on promoting and protecting the health of our community. We offer programs and services and advocate for healthy public policies that:

- Promote healthy infant and child development, responsive parenting, healthy lifestyles, and positive mental, reproductive, sexual, and dental health.
- Protect our communities from communicable and infectious diseases, and environmental hazards such as contaminated food and water.
- Prevent disease and injuries.

Table1 summarizes the sociodemographic details of WDG, the service area of WDGPH.

Indicator	Wellington-Dufferin-Guelph	Ontario
Population (Census 2011, Statistics Canada)	265,240	12,851,820
Geographical Profile:		·
Percentage of geographical area that is	98% (97.53%)	N/A
rural (Census 2011, Statistics Canada)		
Percentage of geographical area that is	2% (2.47%)	N/A
urban (Census 2011, Statistics Canada)		
Population Profile	46% of the population lives in	N/A
(Census 2011, Statistics Canada)	urban areas	
Population Growth (from 2006-2011)	4.1% increase	5.7% increase
(Census 2011, Statistics Canada)		
Projected Population Growth from	6.1% increase to 295,000 residents.	N/A
2011 to 2016 (Census 2006, Statistics Canada)		
Diversity:		
<i>Immigrant Status</i> (National Household Survey 2011, Statistics Canada)	15.7%	28.5%
Percentage increase of new immigrants	24%	N/A
from 2001-2006 compared with 1996-		
2001 (Census 2006, Statistics Canada)		
Visible minority population	9.0%	25.9%
(National Household Survey 2011, Statistics		
Canada)	South Asian Chinasa Southaast	South Asian Chinasa Black
(National Household Survey 2011 Statistics	Acian Black Filining	South Asian, Chinese, Black,
Canada)		Filipino, and Latin American
Education (Census 2006, Statistics Canada)	47.7% of the population aged 15	52.7% of the population aged 15
	years and older has completed	years and older has completed
	post-secondary education*.	post-secondary education*
Percentage of Population With No	0.8%	2.3%
Knowledge of Official Languages (Census		
2011, Statistics Canada)		
Median 2005 Family Income After Tax	\$65,284	\$63,441
(Census 2006, Statistics Canada)		
Unemployment Rate (2012, 15yr+)	5.1%	7.8%
(CANSINI Table 109-5324, Statistics Canada 2013)	6.9%	14.99/
Living in Low income Households	0.0%	14.0%
(Census 2006, Statistics Canada)		

### Table1: Sociodemographic profile of Wellington-Dufferin-Guelph, compared to Ontario

\*Post-secondary education includes apprenticeship degrees/certificates, college degrees, and university degrees



## Figure 2: Age-sex distribution of Wellington-Dufferin-Guelph (WDG) population compared to Ontario population, 2011 census<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> Source: Statistics Canada; 2011 Census. Data labels (WDG percentages) rounded to zero decimal places

### **Family Size**

Family size is the number of persons in a census family, which is defined as "a married couple and the children, if any, of either or both spouses; a couple living common law and the children, if any, of either or both partners; or, a lone parent of any marital status with at least one child living in the same dwelling and that child or those children. All members of a particular census family live in the same dwelling. A couple may be of opposite or same sex. Children may be children by birth, marriage or adoption regardless of their age or marital status as long as they live in the dwelling and do not have their own spouse or child living in the dwelling. Grandchildren living with their grandparent(s) but with no parents present also constitute a census family" (Statistics Canada, 2006).

In the 2006 census, 45.5% of families in Wellington-Dufferin-Guelph consisted of 2 persons *(See Figure3).* Twenty and one-half percent consisted of 3 persons, 22.6% were 4-person, and 11.5% were 5 or more persons in size. Family size in Wellington-Dufferin-Guelph and its sub-divisions was fairly consistent with family size in the province. One difference of note was the higher percentage of families with 5 or more persons in Wellington County compared with the provincial rate, the rate for WDG overall, and the rate in Guelph. This could possibly be due to the presence of the Low-German Speaking Mennonite population in Wellington County. In the Low-German Speaking Mennonite population, it is common to have families that are large in size.





<sup>&</sup>lt;sup>2</sup> Family Size Data Source:

Family Sizes and Number of Families: Statistics Canada 2006 Census.

### **Couple and Lone-Parent Families**

In 2006, of all the families in Wellington-Dufferin-Guelph, 87.1% were couple families (either married or common-law) while 12.9% were lone-parent families (*See Table2*). Forty-four and one-half percent of married couple families had children, while the percentage with children was 5.1% among common law families. Thus, the percentage of families that had children was 62.5%.

Wellington-Dufferin-Guelph and especially Wellington County had a lower percentage of lone-parent families than the provincial percentage of 15.8%. The percentage in Wellington County was 8.8%, which brought the overall Wellington-Dufferin-Guelph percentage down to 12.9%. The City of Guelph and Dufferin County had percentages of lone-parent families that were comparable to that of the province. Among lone-parent families in Wellington-Dufferin-Guelph, far more were headed by a female than a male. This is consistent with the provincial figures.

	Total Couple families (married or	Total Married- couple families	al Married Marrie rried- without with ple children childre illies		Total Common- law- couple families	Common- law without children	Common- law with children	Total Lone- parent families	Female lone- parent	Male lone- parent
Region of	common-				lunnes					
WDG	law)									
WDG	87.1%	75.2%	30.6%	44.6%	11.9%	6.7%	5.1%	12.9%	9.8%	3.1%
Wellington										
County	91.2%	81.4%	35.0%	46.4%	9.8%	5.5%	4.3%	8.8%	6.3%	2.5%
Dufferin										
County	86.1%	73.7%	27.8%	45.8%	12.3%	6.2%	6.1%	13.9%	10.2%	3.7%
Guelph	84.5%	71.1%	28.7%	42.5%	13.3%	8.0%	5.2%	15.6%	12.4%	3.2%
Ontario	84.2%	73.9%	29.5%	44.5%	10.3%	6.1%	4.1%	15.8%	12.9%	2.9%

### Table2. Families with Children in Wellington-Dufferin-Guelph, 2006 Census<sup>3\*</sup>

\*Due to rounding, some of the percentages may not add up exactly to the total.

<sup>&</sup>lt;sup>3</sup> Data Source for Families with Children: Statistics Canada 2006 Census

### **Opposite and Same-sex Status**

In the 2011 Census, it was reported that 99.22% of couples in Ontario were opposite-sex couples while 0.77% were same-sex couples (*See Table3*). Female same-sex couples accounted for 0.35% of couples, while male same-sex couples accounted for 0.42%. In Guelph, the total percentage of same-sex couples was comparable with the province. However, Guelph had nearly twice the percentage of same-sex couples with children (0.27%) compared with the province (0.17%). Unfortunately, data on couples by opposite and same-sex status were only available for select cities in Ontario. Figures were not available for Wellington and Dufferin Counties.

It is important to note that the Census doesn't ask questions about sexual behavior or gender identity, which limits the survey's ability to accurately depict the LGBTQ population (WDG Public Health, 2013). Additionally, underreporting may adversely affect the accuracy of LGBTQ data (WDG Public Health, 2013). Individuals may be worried about the confidentiality of these surveys and may choose not to disclose their sexual orientation (WDG Public Health, 2013). Additionally, some individuals who experience same-sex attraction and/or engage in sexual activities with people of the same gender do not necessarily identify themselves as gay, or bisexual, again limiting the accuracy of the data (WDG Public Health, 2013). Finally, these data excludes certain groups such as people who do not speak English or French, people who are transient or homeless, people without status, and people living in group homes (WDG Public Health, 2013).

Region		Ontario		Guelph						
Type of Couple	Opposite- sex couples	Female same- sex couples	Male same- sex couples	Opposite- sex couples	Female same- sex couples	Male same- sex couples				
Total Couples	99.22%	0.35%	0.42%	99.20%	0.52%	0.28%				
Couples with Children	99.84%	0.13%	0.04%	99.73%	0.24%	0.03%				
Couples with Children aged 24 and Under	99.82%	0.14%	0.04%	99.76%	0.27%	0.00%				
Couples with children aged 25 and over only	99.92%	0.05%	0.03%	99.71%	0.29%	0.00%				

Table3. Opposite and Same-Sex Couples in Ontario and Guelph, 2011 Census<sup>4\*</sup>

\*Due to rounding, some of the percentages may not add up exactly to the total.

<sup>&</sup>lt;sup>4</sup> Data source for opposite and same-sex couples: Statistics Canada, 2011 Census

# AVERAGE AGE OF PARENTS AND PROPORTION OF BIRTHS BY AGE OF PARENT

### **Definitions:**

Average age of parents at the birth of their child is the sum total of the number of live births at each age of the mother (or father) multiplied by the age of the mother (or father) divided by the total number of live births for the year.

*Proportion of births by age* is the total number or live births for the mother's (or father's)

age group divided by the total

Average Age of Mother Interpretation: The average (mean) age for all mothers giving birth in WDG in 2009 was 29.9 years while the average (mean) age of mothers at the birth of their first child was 28.2 years.

number of live births, expressed as a percentage of total live births.

**About the Indicator:** Average and median ages of the mother, along with proportion of births by age, can also be calculated for mothers giving birth to their first infants. This is not available for fathers due to the information collected by the data source.

**Key Findings:** The average ages of all mothers giving birth, of mothers birthing their first infant, and of fathers at the births of their children remained fairly stable in all areas from 2005-2009. In 2009, average ages were fairly consistent across geographies *(See Table4)*. Locations in Wellington-Dufferin-Guelph were comparable to average ages in the province overall.

	Average age of mother	Average age of mother at 1 <sup>st</sup> birth	Average age of father
WDG	29.9	28.2	32.3
WELLINGTON	29.5	27.3	31.9
DUFFERIN	29.9	28.3	32.3
GUELPH	30.1	28.6	32.5
ONTARIO	30.1	28.3	33.1

### Table4. Average and Median ages of mothers and fathers, 2009<sup>5</sup>

In 2009, the highest proportion of births was to mothers 31 years of age, with 8.0% of births occurring to mothers of this age *(See Figure4)*. Eight point seven percent of mothers giving birth to their first child were 28 years old, the most common age for birth of the first child. The most common age of fathers at the birth of their child in this year was 31 years (8.0% of fathers). However, the ages of 7.0% of fathers were unknown.

<sup>&</sup>lt;sup>5</sup> Data Source for Age Calculations:

**Live Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: [October 29, 2012]



Figure4. Proportion of Births by Age of Mother, Overall and at Birth of First Infant, and Father in Wellington-Dufferin-Guelph, 2009

### **CRUDE BIRTH RATE**

**Definition:** The crude birth rate of a population is the total number of live births occurring in a year, per 1000 people – male and female (APHEO, 2012).

*Crude Birth Rate Interpretation:* In 2009, for every 1000 residents in Wellington-Dufferin-Guelph, there were approximately 11 babies born.

**About the Indicator:** For this indicator, births to mothers outside the 15-49 year age group and live births of babies weighing less than 500 grams are both included in the crude birth rate calculation. Caution must be taken when comparing crude birth rates between areas and across time, as this rate does not account for differences in the population's gender and age structure (APHEO, 2012). Age specific fertility rates are used for comparisons over time and between geographies (APHEO, 2012).

**Key Findings:** The crude birth rate was fairly stable from 2005-2009 in all locations (*See Figure5*). In 2009, Wellington-Dufferin-Guelph's crude birth rate of 10.9 was comparable to Ontario's rate of 10.8 (*See Table5*). Guelph's crude birth rate was slightly higher than the rates in Wellington or Dufferin Counties, but this could be explained by the age structure of the population (APHEO, 2012); a higher percentage of the population of Guelph is in the reproductive age range of 15 to 49 years old than the populations of Wellington or Dufferin.

12 of live ple 1000	*	*	*	*	*
mber ths p					
bir Du	2005	2006	2007	2008	2009
WDG	10.8	11.1	10.8	11.2	10.9
	10.8	10.8	10.9	11.0	10.8

### Figure 5. Crude Birth Rate in WDG and Ontario, 2005-20096

### Table5. Crude Birth Rates in Wellington, Dufferin, and Guelph, 2009

Location	Number of Live	2009 Population	Birth Rate per 1,000				
	Births in 2009		population for 2009				
WDG	2,979	272,244	10.9				
Wellington	906	91,237	9.9				
Dufferin	581	57,806	10.1				
Guelph	1,492	123,136	12.1				
Ontario	141,688	13,064,900	10.8				

<sup>6</sup> Crude Birth Rate Data Sources:

**Hospital Live Birth Data**: Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22. 2012.

**Population Estimates**: Population Estimates [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22, 2012.

**Definition:** The general fertility rate is the number of live births occurring in a year, per 1000 women aged 15 to 49 years.

**About the Indicator:** The general fertility rate applies to the female population of childbearing age (considered 15-49 years), and is a more refined indicator than the crude birth rate. Live births of babies weighing less than 500 grams are included in the calculation of this rate. Caution must be taken when comparing general fertility rates between areas and across time, as this rate does not account for differences in age structures of populations (APHEO, 2012). Age specific fertility rates are better used for comparisons over time and between geographies (APHEO, 2012).

**Key Findings:** The general fertility rate in WDG was fairly stable from 2005-2009 and was also comparable to the general fertility rate of the province (*See Figure6*). In Guelph, the general fertility rate was consistently slightly higher than the rates in WDG overall, as well as those in Wellington and Dufferin counties, and the province; this could possibly be explained by Guelph having a higher percentage of their female population in the 15-49 age group.

**General Fertility Rate Interpretation:** In 2009, for every 1000 women aged 15-49 living in Wellington-Dufferin-Guelph, there were about 44 babies born.



### Figure6. General Fertility Rate, 2005-2009<sup>7</sup>

<sup>7</sup> General Fertility Rate Data Sources:

**Hospital Live Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22. 2012.

**Population Data:** Population Estimates [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22, 2012.

### **AGE-SPECIFIC FERTIILTY RATES**

**Definition:** The age-specific fertility rate is the number of live births to females in a given age group during a given time period, per 1000 women in that age group.

**About the Indicator:** Age-specific fertility rates are better for comparisons across geographies and over time than crude birth rates or the overall general fertility rate (APHEO, 2012). In the calculations below, live births where the mother's age was unknown were excluded. Live births of babies weighing less than 500 grams are included in the calculation of this rate.

**Key Findings:** Most of the age-specific fertility rates remained steady during the 2005-2009 time period. One observable trend was a slight increase in the fertility rate among the 30-34 year old WDG population from 108.8 per 1000 females aged 30-34 in 2005 to 117.9 in 2009 (See Appendix 1). There

were also slight overall increases in rates among 25-29 year-old and 40-44 year-old women over the five-year period (Appendix 1).

In 2009, in Wellington-Dufferin-Guelph, Dufferin County, The City of Guelph, and Ontario, the highest fertility rates occurred in the 30-34-year-old age Age-specific Fertility Rate Interpretation: In 2009, for every 1000 women aged 30-34 living in Wellington-Dufferin-Guelph, there were about 117.9 babies born. This increased from the 2005 rate.

group (See Figure 7). This trend was consistent across time. However, in Wellington County, the highest fertility rate occurred in the 25-29 year age group.

-8					P	
Number of live   births per 1000   females in an   00   700		- Char				
Ũ	15-19	20-24	25-29	30-34	35-39	40-44
■ WDG	8.5	40.6	105.5	117.9	51.3	10.06
WELLINGTON	5.6	58.7	134.2	113.0	47.7	10.60
DUFFERIN	8.2	42.6	122.1	122.3	42.6	8.22
■ GUELPH	11.2	31.0	88.6	118.7	57.7	10.21
ONTARIO	10.8	41.4	89.1	108.4	54.6	10.17

### Figure 7. Age-specific Fertility Rates in Wellington-Dufferin-Guelph in 20098

\*The 45-49 age group was excluded from this chart due to small numbers.

<sup>8</sup> Age-specific fertility rate data sources:

**Hospital Live Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22. 2012.

**Population Data:** Population Estimates [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22, 2012.

**Definition:** The fertility rate for older mothers is the number of live births to mothers aged 35-49 years, per 1000 women aged 35-49 years.

**About the Indicator:** Historically, the fertility rate among older mothers (35-49 years of age) has been increasing in the province. Giving birth at an older age has unique implications for the health of both the mother and the baby (Ministry of Health Promotion, 2010). Risks to the mother include hypertension and diabetes (Ministry of Health Promotion, 2010). Risks to the baby that are more common with mothers 35 and older compared with younger mothers are placental problems, low birth

weight and perinatal mortality (Ministry of Health Promotion, 2010). In the calculations below, live births where the mother's age was unknown were excluded, and

Age-specific Fertility Rate for Women Over 35: In 2009, for every 1000 women aged 35 and over living in Wellington-Dufferin-Guelph, there were about 19 babies born.

live births of babies weighing less than 500 grams were included.

**Key Findings:** While the fertility rate among women 35 to 49 increased very slightly from 2005-2009 in Ontario, it remained approximately constant in Wellington-Dufferin-Guelph over the five year span (*See Figure8*). Guelph had a higher fertility rate for mothers 35-49 than Wellington or Dufferin Counties. This could be attributed to Guelph having a higher population of college or university degree recipients (Wellington-Dufferin-Guelph Public Health, 2012). Higher educational status has been found to be positively correlated with delayed childbearing (Johnson & Tough, 2012)

RNumber of live births per 1000 females 0 2 3 3 3 0 3 0 3 0 3 3 0					
	2005	2006	2007	2008	2009
WDG	18.4	17.5	16.9	17.7	18.5
WELLINGTON	14.5	15.7	14.9	16.3	16.9
	15.6	15.8	13.3	16.3	15.0
	22.9	19.8	20.1	19.4	21.6
	18.2	18.7	19.6	20.0	20.3

### Figure 8. Age-Specific Fertility Rates among Women 35-49, by Geography<sup>9</sup>

<sup>9</sup> Age-specific fertility rate data sources:

**Hospital Live Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: [October 22. 2012]

**Population Data:** Population Estimates [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: [October 22, 2012]

### **AGE-SPECIFIC FERTILITY RATE: TEENS**

**Definition:** The teen fertility rate is the number of live births to mothers aged 10-19 years, per 1000 women aged 10-19 years.

**About the Indicator:** Teen pregnancy significantly predicts social, educational, and employment barriers in the future, as teen pregnancy is more common among vulnerable teens (Ministry of Health Promotion, 2010). Additionally, health risks associated with teen pregnancy include: anemia, hypertension, eclampsia and depressive disorders (Ministry of Health Promotion, 2010). Teens are also

more likely to deliver low birth weight babies (Ministry of Health Promotion, 2010).

Live births of babies weighing less than 500 grams are included in the calculation of this rate.

**Teen Fertility Rate Interpretation:** In 2009, for every 1000 women aged 10-19 living in Wellington County, approximately 3 babies were born. In the same year, in Guelph, for every 1000 women in the same age group, 6 babies were born.

**Key Findings:** The fertility rates among teens in WDG, Dufferin, and Ontario remained

approximately constant from 2005-2009 (*See Figure9*). The teen fertility rate in Guelph appeared slightly unstable with rises in 2006 and 2008 and a drop in 2007. The reason for this is not clear. In all years, except 2007, the teen fertility rate in Guelph was higher than all areas, including Ontario. Wellington County had the lowest teen fertility rate, but a very slight increase in the rate occurred over the five-year period.



### Figure9. Teen Fertility Rates, by Geography<sup>10</sup>

<sup>10</sup> Age-specific fertility rate data sources:

**Hospital Live Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22. 2012.

**Population Data:** Population Estimates [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22, 2012.

Definition: The total fertility rate estimates the average number of children that would be born per

female if all females lived to the end of their childbearing years and bore children according to the age-specific fertility rates for that area and period.

**About the Indicator:** The total fertility rate is affected by the average age of the mother at their first birth (APHEO, 2012). A

**Total Fertility Rate Interpretation:** In 2009, women in Wellington-Dufferin-Guelph were expected to have an average of 1.7 children over the course of their childbearing years.

total fertility rate of 2.1 children per female indicates a fertility rate that is equal to replacement levels for developed countries (APHEO, 2012), that is, a rate that enables the maintenance of population levels. 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 (APHEO, 2012).

Live births of babies weighing less than 500 grams are included in the calculation of this rate.

**Key Findings:** Total fertility rates remained stable in all locations from 2005-2009. In 2009, the total fertility rates in Wellington-Dufferin-Guelph, Wellington County, Dufferin County, and Guelph were comparable with Ontario's rate of 1.6 children per female (*See Figure10*) – well below the replacement level of 2.1 children per female.





<sup>11</sup> Total Fertility Rate Data Sources:

**Hospital Live Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 15. 2012 and October 18, 2012.

**Population Data:** Population Estimates [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 16, 2012 and October 18.2012.

**Definition:** The induced abortion rate is defined as the total number of reported induced abortions for females 15-49 years old, per 1000 females

aged 15-49 years.

About the Indicator: The adjusted induced abortion rate excludes procedures performed within 40 days of a previous induced abortion, as, most often, the second procedure Induced Abortion Rate Interpretation: In 2009, of every 1000 females aged 15-49 in WDG, 9.6 had an induced abortion.

is due to complications with the first procedure (MOHLTC, 2012). Induced abortions may indicate unwanted or unplanned pregnancies (APHEO, 2012). They may also be conducted to stop pregnancies where prenatal screening has detected abnormal findings (APHEO, 2012). The induced abortion calculation does not include medically or pharmacologically-induced abortions, for example from the emergency contraceptive pill (APHEO, 2012).

**Key Findings:** Induced Abortion rates remained fairly consistent from 2005-2009 in most areas, with a very slight increase occurring in Dufferin County over the five-year period (*See Figure11*). In all areas in Wellington-Dufferin-Guelph and across all years, the induced abortion rate was below the Ontario rate.





<sup>12</sup>Induced Abortion Rate Data Sources:

**Total Number of Induced Abortions:** Therapeutic Abortion Summary, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22. 2012 and October 23, 2012.

**Population Data:** Population Estimates [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22, 2012 and October 23.2012.

**Definition:** The adjusted teen induced abortion rate is defined as the total number of reported induced abortions for females 10-19 years old, per 1000 females aged 10-19 years.

**About the Indicator:** This calculation excludes procedures performed within 40 days of a previous induced abortion, as, most often, the second procedure is due to complications with the first procedure (MOHLTC, 2012). The induced abortion calculation does not include medically or

**Teen Induced Abortion Rate Interpretation:** In 2009, of every 1000 females aged 10-19 in Dufferin County, 10.8 had an induced abortion.

pharmacologically-induced abortions, for example from the emergency contraceptive pill (APHEO, 2012).

**Key Findings:** Upon examining the teen adjusted induced abortion rate, several trends can be seen *(See Figure12).* While rates in Ontario, Wellington-Dufferin-Guelph, and Wellington County appear to remain stable, the rate in Guelph appears to have dropped slightly from 7.9 in 2005 to 5.7 in 2009. However, the most consistent trend was in Dufferin County where the teen induced therapeutic abortion rate appeared to steadily climb from 5.4 in 2005 to 11.4 in 2008, followed by a slight drop to 10.8 in 2009. This rate rose above the Ontario rate of 9.3 in 2008 to 11.4 and remained above the provincial average in 2009. This increase from 2005 to 2009 was found to be highly statistically significant (p<0.01).

	15					
Number of reported induced abortions	per 1000 females aged 10-19 01		*			
-	0	2005	2006	2007	2008	2009
W	/DG	7.0	6.8	7.5	8.2	7.4
——- W	-WELLINGTON 4.9		4.7	4.2	6.2	5.1
D	UFFERIN	5.4	7.1	8.5	11.4	10.8
──G	UELPH	7.9	6.8	8.1	6.1	5.7
<del>~~</del> 0	NTARIO	8.8	9.2	9.4	9.3	9.0

### Figure 12. Teen Adjusted Induced Abortion Rate by Location, 2005-2009<sup>13</sup>

<sup>&</sup>lt;sup>13</sup> Induced Abortion Rate Data Sources:

**Total Number of Induced Abortions:** Therapeutic Abortion Summary, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22. 2012 and October 23, 2012.

**Population Data:** Population Estimates [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22, 2012 and October 23.2012.

### **PREGNANCY RATE**

**Definition:** The pregnancy rate is the total number of live births, still births and reported induced abortions in females 15-49 years old, per 1000 women aged 15-49.

About the Indicator: The pregnancy rate excludes miscarriages.

**Key Findings:** Pregnancy rates in WDG remained fairly consistent from 2005-2009 (*See Figure13*). In all areas of Wellington-Dufferin-Guelph, including WDG as a whole, pregnancy rates were below overall Ontario rates. In all

**Pregnancy Rate Interpretation:** In 2009, for every 1000 females aged 15-49 in WDG, 53.9 pregnancies occurred.

years, the City of Guelph had a higher pregnancy rate than either Wellington or Dufferin Counties.



### Figure 13. Pregnancy Rates by Location, 2005-2009.14

**Total Number of Therapeutic Abortions:** Therapeutic Abortion Summary, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22. 2012 and October 23, 2012.

<sup>&</sup>lt;sup>14</sup> Pregnancy Rate Data Sources:

**Live and Still Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22. 2012 and October 23, 2012.

**Population Data:** Population Estimates [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22, 2012 and October 23.2012.

### **AGE-SPECIFIC PREGNANCY RATES**

**Definition:** The age-specific pregnancy rate is the total number of live births, stillbirths, and induced abortions to women in a specific age group per 1000 women in that age group.

About the Indicator: In calculating this indicator, pregnancies where the mother's age was not available were excluded.

**Key Findings:** Pregnancy rates were highest in the 30-34 year age category in 2005, 2008, and 2009, with the 25-29-year-old age group having the second highest pregnancy rate (*See Figure14*). This trend was reversed in 2006 and 2007.



### Figure14. Age-Specific Pregnancy Rate in WDG, 2005-2009<sup>15</sup>

**Total Number of Therapeutic Abortions:** Therapeutic Abortion Summary, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22. 2012 and October 23, 2012.

<sup>&</sup>lt;sup>15</sup> Pregnancy Rate Data Sources:

**Live and Still Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22. 2012 and October 23, 2012.

**Population Data:** Population Estimates [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22, 2012 and October 23.2012.

**Definition:** The teen pregnancy rate is the total number of live births, still births and induced abortions for females 10-19 years old, per 1000 females aged 10-19 years.

**About the Indicator:** In calculating this indicator, the age of the mother at the time of the event is used (for example age at the birth or induced abortion) (APHEO, 2012). Therefore, a mother that gets pregnant at age 19 but gives birth at age 20 is not included in the teen pregnancy calculation (APHEO, 2012). Similarly to the age, the mother's residence used in the calculation of the indicator is that recorded at the time of the event (APHEO, 2012). This means that a mother who gets pregnant in one region but relocates to another before giving birth will be counted as having become pregnant in the new area.

Key Findings: In Wellington County, the City of Guelph, WDG as a whole, and Ontario, the teen

pregnancy rate remained fairly stable from 2005-2009 (*See Figure15*). Dufferin County saw an increase in its teen pregnancy rate from 10.2 per 1000 teens in 2005 to 15.4 per 1000 teens in 2009. In 2008 and 2009, the teen pregnancy rate in Dufferin County rose above the provincial rate. Wellington County

**Teen Pregnancy Rate Interpretation:** In 2009, for every 1000 women aged 10-19 living in Wellington-Dufferin-Guelph, 12.5 pregnancies occurred.

had the lowest pregnancy rate across all years, and in 2009, the Wellington pregnancy rate of 8.0 per 1000 teens aged 10-19 was well below the Ontario rate of 14.8 per 1000 10-19 year-old teens. Guelph and Wellington-Dufferin-Guelph also had pregnancy rates below the provincial rates throughout the five-year period, except for 2006 when the pregnancy rate in Guelph was slightly higher than the provincial rate.



Figure 15. Teen Pregnancy Rate by Location, 2005-2009<sup>16</sup>

**Total Number of Therapeutic Abortions:** Therapeutic Abortion Summary, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22, 2012 and October 23, 2012.

<sup>&</sup>lt;sup>16</sup> Pregnancy Rate Data Sources:

**Live and Still Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22, 2012 and October 23, 2012.

**Population Data:** Population Estimates [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22, 2012 and October 23, 2012.

**Definition:** The Preterm Birth Rate is the percentage of all live births that occur before 37 weeks of gestation.

**About the Indicator:** Preterm birth is the top cause of neonatal and infant mortality in Canada (APHEO, 2012). Associations have been found between preterm birth and multiple birth status, maternal diabetes, maternal hypertension, and previous preterm deliveries (APHEO, 2012). Additional

factors that increase the risk of pre-term birth include a mother's age (less than 20 years or greater than 35 years), the first delivery to a mother (primiparous birth), single marital status, smoking, high perceived stress, illicit drug use, low pre-pregnancy weight, low or high weight gain, and some races/ethnicities (APHEO, 2012). In general, the preterm birth rate has been increasing in Canada in recent years (APHEO, 2012).

**Preterm Birth Rate Interpretation:** In 2009, 9.4% of all live births to women aged 15-49 years old in WDG were preterm.

**Key Findings:** From 2005-2009, the preterm birth rate remained fairly stable, with the exception of that in Wellington County, which increased slightly from 2007 to 2009 (*See Figure16*). This increase led to the 2009 preterm birth rate of 9.4% in Wellington County being higher than Ontario's rate of 7.8, and also pulled the 2009 Wellington-Dufferin-Guelph rate above Ontario's to 8.1%.



### Figure16. Rate of Preterm Births, by Location, 2005-2009<sup>17</sup>

<sup>17</sup> Preterm Birth Rate Data Sources:

**Live Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 19, 2012.

**Population Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 19, 2012.

### **MULTIPLE BIRTH RATE**

**Definition:** The multiple birth rate is the percentage of all births (live and still) to women 15-49 years old that are multiple births (live and still).

**About the Indicator:** Historically, the multiple birth rate has been increasing. This is likely due to the increased use of reproductive technology in Canada, which, in turn, reflects increasing age and lower fertility in women trying to conceive (APHEO, 2012).

**Key Findings:** From 2005-2009, the multiple birth rate in Ontario, Wellington-Dufferin-Guelph, and the City of Guelph remained approximately steady. There were slight fluctuations of the rates in Wellington and Dufferin Counties *(See Figure17)*. Rates in WDG and Guelph were at or below the

*Multiple Birth Rate Interpretation:* In 2009, 3.2% of all live births to women aged 15-49 living in WDG were multiple births.

Ontario average in all years except 2008. In 2005 and 2006, the multiple birth rate in Dufferin County was below the provincial average. However, in 2007, the rate spiked to a high of 5.1%. It remained above the provincial average in 2008 and then fell below it in 2009. Wellington County had a multiple birth rate below the provincial average in all years except 2005, when it just exceeded it.



### Figure17. Percentage of Multiple Births by Location, 2005-2009<sup>18</sup>

<sup>&</sup>lt;sup>18</sup>Multiple Birth Rate Data Sources

**Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 22. 2012 and October 23, 2012, and October 25<sup>th</sup>.

### LOW BIRTH WEIGHT RATE

**Definition:** The low birth weight rate is the percentage of all live births to women 15-49 years old that produce babies weighing less than 2500 grams.

### About the Indicator: Low birth weight may be caused by premature birth, slow growth of the

fetus, or both, although these issues have different public health implications (APHEO, 2012). Low birth weight has historically been a common proxy measure of infant morbidity and mortality and is used to compare

Low Birth Weight Rate Interpretation: In 2009, among women aged 15-49 living in Wellington-Dufferin Guelph, 5.3 percent of births were of low birth weight babies.

countries (APHEO, 2012). Birth weight can be affected by the mother's age, birth intervals, type of birth, gestational age, parity, lifestyle factors (e.g. smoking), weight gain during pregnancy, physical and social environment, intrauterine infection, diabetes, low socioeconomic status, genetic factors and more (APHEO, 2012).

**Key Findings:** The low birth weight rates in all locations remained fairly stable from 2005 to 2009 *(See Figure18).* Rates in Wellington-Dufferin-Guelph and its sub-locations were below the provincial average, except those for Guelph in 2007 and Dufferin in 2008, which were above it. The rate in Wellington County rose between 2008 and 2009 from 3.9% to 5.8% after having remained very stable for the previous three years. This change may have been due to normal or random fluctuation in rates; however, when data is available for future years, this trend should be monitored.



### Figure 18. Low Birth Weight Rate by Location, 2005-2009<sup>19</sup>

<sup>&</sup>lt;sup>19</sup> Low Birth Weight Rate Data Sources

**Live Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 19, 2012.

### LOW BIRTH WEIGHT RATE FOR SINGLETON BIRTHS

**Definition:** The low birth weight rate for singleton births is the percentage of singleton births of 37 weeks gestation or more, to women 15-49 years old, that produce babies weighing less than 2500g.

### About the Indicator: The

calculation of this indicator excludes preterm and multiple births, both of which often result in low birth weight. Low birth weight is a major risk factor for perinatal and infant

Low Birth Weight Rate for Singleton Births Interpretation: In 2009, 1.2% of singleton, full-term babies born to women aged 15-49 years in WDG were low birth weight (weighed less than 2500g).

mortality and is an extremely important indicator of a newborn's chances of survival (MOHLTC, 2012).

**Key Findings:** From 2005 to 2009, low birth weight rates for singleton births were fairly stable in Ontario, Wellington County, and Wellington-Dufferin-Guelph (*See Figure19*). Trends in Dufferin County over time could not be examined due to small numbers in 2007 and 2009, necessitating the suppression of rates for these years. Rates in Guelph remained fairly stable, but fluctuated between being above and below the provincial average.



### Figure 19. Low Birth Weight Rate for Singleton Births by Location, 2005-2009<sup>20</sup>

\*2007 and 2009 rates for Dufferin were suppressed due to small numbers

<sup>&</sup>lt;sup>20</sup> Low Birth Weight Rate Data Sources:

**Live Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 25, 2012.

**Definitions:** The small for gestational age percentage is the percentage of singleton live births at 22-43 weeks gestation with weights below the 10<sup>th</sup> percentile of birth weights for their sex and gestational age.

### About the

**Indicator:** Despite challenges in accurate measurement,

**Small for Gestational Age Percentage Interpretation**: In 2011, 7.8% of singleton live births at 22 to 43 weeks gestation in WDG were of babies that weighed less than the 10th percentile of birth weights for their sex and gestational age.

gestational age provides an important context for assessing birth weight (APHEO, 2012). Recall errors, post-conception bleeding, irregular or unusually long or short menstrual cycles, delayed ovulation, a pregnant woman's, or her partner's, desire to indicate a later conception, and unrecognized fetal loss, can all affect the accuracy of gestational age data (APHEO, 2012). The reference table used to determine the values of the percentiles also affects the accuracy of small for gestational age calculations (APHEO, 2012). To obtain the overall percentage for this indicator, male and female numbers of small for gestational age are calculated separately and then summed together (APHEO, 2012).

**Key Findings:** From 2006-2011, WDG consistently had a lower percentage of singleton births below the 10<sup>th</sup> percentile of birth weights for their gestational age and sex, than Ontario (*See Figure20*). Data were not available by county or municipality.



### Figure 20. Small for Gestational Age Calculation in WDG and Ontario, 2006-2011<sup>21</sup>

<sup>&</sup>lt;sup>21</sup> Small for Gestational Age Data Sources:

**Live Birth Data:** Ontario Vital Statistics Live Birth Data [2006-2011], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 29, 2013.

**Definitions:** The large for gestational age percentage is the percentage of singleton live births at 22-43 weeks gestation with weights above the 90<sup>th</sup> percentile of birth weights for their sex and gestational age.

**About the Indicator:** As with the small for gestational age calculation, gestational age provides an important context for assessing birth weight, despite challenges in its accurate measurement (APHEO,

2012). Some challenges with accurately determining gestational age include: recall errors, post-conception bleeding, irregular or unusually long or short menstrual cycles, delayed ovulation, a pregnant woman's, or her partner's, desire to indicate a later

Large for Gestational Age Calculation Interpretation: In 2011, 10.7% of singleton live births at 22-43 weeks gestation in WDG were of babies that weighed more than the 90<sup>th</sup> percentile of birth weights for their sex and gestational age.

conception, and unrecognized fetal loss (APHEO, 2012). The reference table used to determine the values of the percentiles also affects the accuracy of large for gestational age calculations (APHEO, 2012).

As for the previous indicator, to obtain the overall percentage of large for gestational age, male and female numbers of large for gestational age are calculated separately and then summed together (APHEO, 2012).

**Key Findings:** In all years from 2006 to 2011 except 2010, the percentage of singleton live births in WDG with weights above the 90<sup>th</sup> percentile of birth weights for their gestational age and sex was higher than the provincial rate (*See Figure21*). In 2010, the percentage fell slightly below the Ontario average was in 2010. Data was not available by county or municipality.



### Figure 21. Large for Gestational Age Calculation in WDG and Ontario, 2006-2011<sup>22</sup>

<sup>&</sup>lt;sup>22</sup> Large for Gestational Age Data Sources:

**Live Birth Data:** Ontario Vital Statistics Live Birth Data [2006-2011], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 29, 2013.

### **RATE OF CONGENITAL ANOMALIES**

**Definition:** The congenital anomalies rate is the number of live and stillbirths identified as having at least one congenital anomaly, per

10,000 live and still births.

### **About the Indicator:**

Congenital anomalies have historically been one of the

**Rate of Congenital Anomalies Interpretation**: In 2009, for every 10,000 live and still births that occurred in Wellington-Dufferin-Guelph, 346.1 babies had a congenital anomaly.

leading causes of infant death, especially in the postneonatal period (APHEO, 2012). Under-reporting of some congenital anomalies may occur due to certain conditions not being diagnosed after birth, and due to pregnancies being terminated as a result of screening for these conditions (APHEO, 2012). The majority of congenital anomalies (40-60%) are from unknown causes (APHEO, 2012).

**Key Findings:** In 2005 and 2009, congenital anomalies in Wellington-Dufferin-Guelph occurred at rates lower than the provincial rate; however, the rate rose above the Ontario rate in 2006 and remained higher until 2008 (*See Figure22*). When comparing 2009 rates of congenital anomalies between areas of Wellington-Dufferin-Guelph, it was observed that the rate in the City of Guelph was noticeably lower than those in Wellington and Dufferin Counties (*See Figure23*).



### Figure 22. Congenital Anomalies in Wellington-Dufferin-Guelph and Ontario, 2005-2009<sup>23</sup>





<sup>23</sup> Congenital Anomalies Data Sources:

Public Health Agency of Canada. Canadian Congenital Anomalies Surveillance System [2005-2009]. Date extracted: November 28, 2012.

**Definition:** The neural tube defect (NTD) rate is the number of live and stillbirths that produce babies identified as having a neural tube defect, per 10,000 live and still births.

**About the Indicator:** NTDs happen when the baby's spinal cord, skull, or brain does not develop normally between the third and fourth week of pregnancy (SOGC, 2009). Consumption of a daily multivitamin that contains 0.4-1.0 mg of folic acid during the period three months prior to becoming pregnant and throughout pregnancy can reduce the risk of having a baby with a neural tube defect (SOGC, 2009).

**Key Findings:** From 2005-2009, rates of neural tube defects in Wellington-Dufferin-Guelph and Guelph were higher than the provincial rate; however, due to small numbers, calculated rates in WDG and Guelph are unstable which is illustrated by the high confidence intervals associated with the estimate *(See Figure24).* Due to small numbers, rates for Wellington and Dufferin Counties could not be released, due to small numbers.

Concerning folic acid, the Canadian Community Health Survey asked respondents the following question: "Did you take a vitamin supplement containing folic acid before your last pregnancy, that is, before you found out that you were pregnant?" From 2007 to 2010, the percentage of women who had been pregnant in the last five years that had taken folic acid before they knew they were pregnant was below the provincial average; however, in 2011, this number jumped above the Ontario average to 69.2% (Cl 41.6-87.6%) while the provincial percentage was 50.4% (Cl 45.9-54.8%) (*See Figure25*). It is important to note that Wellington-Dufferin-Guelph numbers must be interpreted with caution, as they are based on relatively low numbers of respondents. This is reflected in the wide confidence intervals associated with these estimates.



Figure 24. Rate of Neural Tube Defects in Wellington-Dufferin-Guelph, Guelph, and Ontario, 2005-2009.<sup>24</sup>

<sup>&</sup>lt;sup>24</sup> Congenital Anomalies Data Sources:

Public Health Agency of Canada. Canadian Congenital Anomalies Surveillance System [2005-2009]. Date extracted: November 28, 2012.

### NEURAL TUBE DEFECTS AND FOLIC ACID SUPPLEMENTATION

![](_page_36_Figure_1.jpeg)

Figure 25. Percent of CCHS Respondents in WDG and Ontario that had been Pregnant in the Last Five Years Who Took Folic Acid Supplementation Before Pregnancy, 2007-2011.<sup>25</sup>

E: These estimates should be interpreted with caution, as they are based on relatively low numbers of respondents and are therefore associated with high sampling variability

F: Due to excessively high sampling variability, this estimate does not meet Statistics Canada's quality standards. Conclusions based on this estimate will be unreliable and most likely invalid.

<sup>&</sup>lt;sup>25</sup> Folic Acid Supplementation Data:

Canadian Community Health Survey, 2007-2011.

**Definition:** The perinatal mortality rate is the total number of fetal or infant deaths occurring between the end of the 20<sup>th</sup> week of gestation and the end of the 6<sup>th</sup> day following birth, per 1000 total live and still births.

About the Indicator: The perinatal mortality rate reflects both the effectiveness of public health

programs and the quality of obstetric and pediatric care (APHEO, 2012). Associations have been found between perinatal mortality and poverty, a baby's birth weight, length of gestation, and a mother's age and marital status. (APHEO, 2012).

**Perinatal Mortality Rate Interpretation:** In 2009, for every 1000 babies born in Wellington-Dufferin Guelph, 6.7 were stillborn, or died before 7 days following birth.

For this indicator, the number of stillbirths used for the calculation includes only babies that were at the 20<sup>th</sup> week of gestation or beyond, and weighed greater than or equal to 500 grams.

**Key Findings:** From 2005 to 2009, the perinatal mortality rate in WDG was below the Ontario rate in all years except 2006 (*See Figure26*). In 2006, high counts of stillbirths occurred in the City of Guelph and Dufferin County. These high stillbirth counts drove up the overall rate for WDG. The reason for this increase is unclear. Other than in 2006, the perinatal mortality rate for Wellington-Dufferin-Guelph remained approximately constant. The provincial rate remained fairly stable over time. Rates for the City of Guelph and Wellington and Dufferin Counties were suppressed due to small numbers.

![](_page_37_Figure_7.jpeg)

![](_page_37_Figure_8.jpeg)

<sup>26</sup> Perinatal Mortality Rate Data Sources:

**Live Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 29, 2012 & November 9, 2012.

**Still Birth Data:** Ontario Vital Statistics Still Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: November 9, 2012.

**Definition:** The crude stillbirth rate is the number of stillbirths greater than or equal to 20 weeks gestation or greater than or equal to 500 grams, per 1000 total births (live and still).

**Key Findings:** The crude stillbirth rate in Wellington-Dufferin-Guelph was below the provincial average in all years except for 2006, when it rose to 5.7 stillbirths per 100 births while the Ontario rate was 4.4 (*See Figure27*). While the provincial rate remained fairly

**Crude Stillbirth Rate Interpretation:** In 2009, for every 1000 births (live and still) in Wellington-Dufferin Guelph, 3.3 stillbirths occurred.

steady, the local rate ranged from 1.8 to 5.7 stillbirths per 1000 births.

![](_page_38_Figure_5.jpeg)

### Figure 27. Crude Stillbirth Rate in Wellington-Dufferin-Guelph and Ontario, 2005-2009.27

**Live Birth Data:** Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 29, 2012 & November 9, 2012.

<sup>&</sup>lt;sup>27</sup> Crude Stillbirth Rate Data Sources:

**Stillbirth Data:** Ontario Vital Statistics Still Birth Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: November 9, 2012.

# **NEONATAL AND INFANT MORTALITY RATES**

births. of age or younger, per 1000 live Definition: The neonatal mortality rate is the total number of deaths for live born infants at 27 days

The infant mortality rate is the total number of deaths for live born infants 364 days of age or younger, per 1000 live births.

**Infant Mortality Rate Interpretation:** In 2009, for every 1000 live births in Wellington-Dufferin Guelph, 5 infants died before reaching 1 year of age.

economic conditions within a community or subpopulation (APHEO, 2012). About the Indicator: High infant mortality rates can serve as an indication of poor social and

per 1000 live births. 2006 to 2009. In 2009, the WDG rate moved above the Ontario average of 3.7 to 4.0 neonatal deaths remained fairly stable (See Figure 28). However, there was a slight but consistent rise in the rate from Key Findings: From 2005 to 2009, the neonatal mortality rate in Wellington-Dufferin-Guelph

3.5 to 6.6 infant deaths per 1000 live births, and was higher than the provincial rate in 2008 and 2009 The infant mortality rate in Wellington-Dufferin-Guelph showed a great deal of variation, ranging from (See Figure 29)

Due to small numbers, WDG rates may be unstable and should be interpreted with caution

![](_page_39_Figure_8.jpeg)

![](_page_39_Figure_9.jpeg)

<sup>28</sup> Mortality Rate Data Sources:

Death Data: Ontario Vital Statistics Death Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: October 29, 2012 & November 9, 2012.

Care, IntelliHEALTH ONTARIO, Date Extracted: October 25, 2012. Live Birth Data: Ontario Vital Statistics Live Birth Data [2005-2009], Ontario Ministry of Health and Long-Term

![](_page_40_Figure_0.jpeg)

**Definition:** The maternal mortality ratio is the number of direct and indirect maternal deaths per 100,000 live births.

**About the Indicator:** Maternal death is defined as "death while pregnant or within 42 days of the termination of pregnancy, irrespective of the duration and the site of the pregnancy (i.e. ectopic or uterine), from any cause related to or aggravated by the pregnancy or its management but not from

accidental or incidental causes" (WHO, 2013).

Maternal Mortality Ratio: In 2009, there were 7.8 maternal deaths per 100,000 live births.

**Key Findings:** In Ontario, in the fiveyear period from 2005-2009, the maternal

mortality ratio ranged from 7.8 to 11.9 maternal deaths per 100,000 live births *(See Table6)*. However, the number of deaths was very small, so the estimated maternal mortality ratios are likely very unstable. In Wellington-Dufferin-Guelph, calculations could not be completed, due to either no maternal deaths occurring or to small numbers of deaths; this necessitated suppression of the numbers and the estimated ratio for 2007.

	Well	lington-Duffe	rin-Guelph	Ontario							
Year	# Deaths	# Live Births	Maternal Mortality Ratio	# Deaths	# Live Births	Maternal Mortality Ratio					
2005	0	2831	0	16	134904	11.9					
2006	0	2947	0	14	136644	10.2					
2007	<5	2896	*	12	139603	8.6					
2008	0	3028	0	16	142053	11.3					
2009	0	2979	0	11	141688	7.8					

### Table6. Maternal Mortality Ratio in Wellington-Dufferin-Guelph and Ontario, 2005-200929

\*Data suppressed due to small numbers.

<sup>&</sup>lt;sup>29</sup> Maternal Mortality Ratio Data Sources:

Maternal Death Data: Ontario Vital Statistics Death Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: [November 28, 2012)]

**Live Birth Data:** Ontario Vital Statistics Death Data [2005-2009], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: [November 28, 2012)]

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Live	Live Births per 1000 women																								
			WDG				WE	LLINGT	ON			D	UFFERI	N				GUELPH	1			C	ONTARI	0	
Age	<b>'</b> 05	<b>'</b> 06	<b>'</b> 07	<b>'</b> 08	<b>'09</b>	<b>'</b> 05	<b>'</b> 06	<b>'</b> 07	<b>'08</b>	<b>'</b> 09	<b>'</b> 05	<b>'</b> 06	<b>'</b> 07	<b>'</b> 08	<b>'</b> 09	<b>'</b> 05	<b>'0</b> 6	<b>'</b> 07	<b>'</b> 08	<b>'</b> 09	<b>'</b> 05	<b>'</b> 06	<b>'</b> 07	<b>'08</b>	<b>'</b> 09
10-	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0.06	0.04	0.06	0.06	0.06
14																									
15-	8.4	9.6	7.8	10.9	8.5	4.2	3.6	5.6	6.5	5.6	10.0	8.8	10.0	10.3	8.2	11.2	15.1	8.5	15.0	11.1	10.4	10.5	10.8	11.1	10.8
19																									
20-	44.5	42.8	44.3	46.4	40.6	56.7	55.9	55.8	63.8	58.7	40.8	43.7	47.2	37.8	42.6	39.7	36.2	37.7	40.7	31.0	42.1	42.1	42.9	42.9	41.4
24																									
25-	99.5	112.2	109.8	101.4	105.5	135.6	148.4	137.4	124.9	134.2	112.7	140.6	120.4	132.7	122.1	79.9	87.4	94.7	82.7	88.6	94.0	92.7	91.5	92.0	89.1
29																									
30-	108.7	114.2	111.4	124.0	117.9	108.4	113.8	110.4	115.0	113.0	100.3	120.9	104.3	131.0	122.3	112.4	111.8	114.8	125.8	118.7	105.5	106.8	108.9	108.8	108.4
34																									
35-	50.6	47.5	47.6	50.3	51.3	40.8	42.8	42.3	47.0	47.7	43.4	44.9	37.0	49.5	42.6	60.7	51.8	56.3	52.8	57.7	48.1	50.2	53.0	54.1	54.6
39																									
40-	7.9	8.1	7.0	7.3	10.1	8.8	9.0	7.4	8.0	10.6	5.1	5.2	6.0	4.7	8.2	9.6	8.8	6.2	7.4	10.2	8.3	8.5	8.8	9.5	10.2
44																									
45-	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0.4	0.3	0.5	0.5	0.5
49																									

### Appendix 1. Age-Specific Fertility Rates by Location, 2005-2009

NR = Not releasable due to small numbers

### Appendix 2. Age Specific Pregnancy Rates by Location, 2005-2009

Pregnancies per 1000 women																									
	WDG					WELLINGTON				DUFFERIN					GUELPH					ONTARIO					
Age	<b>'</b> 05	<b>'</b> 06	<b>'</b> 07	<b>'08</b>	<b>'</b> 09	<b>'</b> 05	<b>'</b> 06	<b>'</b> 07	<b>'</b> 08	<b>'</b> 09	<b>'</b> 05	<b>'0</b> 6	<b>'</b> 07	<b>'</b> 08	<b>'</b> 09	<b>'</b> 05	<b>'</b> 06	<b>'</b> 07	<b>'08</b>	<b>'</b> 09	<b>'</b> 05	<b>'06</b>	<b>'</b> 07	<b>'08</b>	<b>'</b> 09
10- 14	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0.4	0.3	0.3	0.4	0.4
15- 19	20.8	21.4	20.8	25.2	21.3	13.9	12.6	13.8	18.9	15.5	21.3	23.0	26.2	31.8	28.9	26.3	27.9	23.6	26.6	21.8	27.8	28.2	28.9	28.8	27.6
20- 24	63.9	66.0	67.8	70.7	62.0	72.9	81.8	79.1	82.7	77.9	73.2	72.2	74.0	73.9	78.0	56.6	56.3	60.0	63.7	48.5	74.9	75.6	76.5	75.8	73.0
25- 29	115.1	128.1	125.5	117.8	121.5	146.0	165.7	154.4	139.5	149.6	134.0	155.9	137.3	147.5	142.2	95.9	103.0	109.5	100.2	103.9	119.5	118.8	96.3	117.7	114.2
30- 34	119.5	125.5	122.4	136.5	128.5	123.7	126.1	127.7	128.4	127.3	117.5	121.7	116.8	124.1	119.1	111.8	135.4	113.2	144.0	136.1	123.9	123.5	128.8	140.0	130.5
35- 39	56.5	54.8	56.1	58.4	58.9	44.2	47.4	47.9	51.2	55.5	48.8	53.8	43.9	59.1	47.0	68.6	60.1	67.4	62.8	66.7	60.5	67.9	70.6	70.9	70.6
40- 44	9.8	11.6	9.3	9.2	13.3	9.7	11.8	10.4	9.8	13.7	6.5	8.5	8.3	6.7	11.7	11.8	13.1	8.9	10.2	13.8	12.4	13.0	13.3	14.1	15.0
45- 49	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0.8	0.7	0.8	0.9	0.9

NR = Not releasable due to small numbers