



## chapter 21

### DATA SOURCES AND LIMITATIONS

Numerous data sources were used in this report including but not limited to;

- Statistics Canada for demographic information
- The Provincial Health Planning Database (PHPDB) of the Ontario Ministry of Health and Long-Term Care (MOHLTC) for population estimates, hospitalizations and emergency room visits
- The Health Planning System (HELPS) of the Ministry of Health Promotion for births, deaths and therapabortions
- Cancer Care Ontario for cancer incidence and mortality
- Data on health behaviours were obtained from the Canadian Community Health Survey (2000/2001, 2003, 2005) and Peel Region's Rapid Risk Factor Surveillance System (2001-2007)
- Communicable disease data were obtained from the MOHLTC's Integrated Public Health Information System (iPHIS)

Data were also obtained from Peel Public Health, and other departments within the Region of Peel, such as Ontario Works; divisions within Human Services; and the Environment, Transportation and Planning Services Departments. For additional details about methods of analysis used in each of the Chapters of this report, please refer to the Data Methods chapter.

#### Census Data

The Census is conducted every five years and data are provided by Statistics Canada. The most recent Census was conducted on May 16, 2006.

#### Limitations:

- The Census undercounts some groups, such as the homeless, young adults and Aboriginal people on reserves.
- Comparisons between censuses are affected by changes in question wording and in the definition of the population concerned.

### **Live Birth Data**

Live birth data in this report are from two different sources: the Live Birth Database provided through the Health Planning System (HELPS) by the Ontario Ministry of Health Promotion and through the Niday Perinatal Database.

Information about live births is collected by the Office of the Registrar General using the birth registration form completed by parents and the Physician Notice of Birth or Stillbirth form (PNOB) completed by physicians.

Although live birth registration is required by law, limitations include:

- Recall bias from the parent registration form.
- Possible errors in the assignment of municipality of residence/census subdivision of mother.
- The number of births registered in some areas changed dramatically starting in 1991 when the Office of the Registrar General moved from Toronto to Thunder Bay. In addition, registration fees initiated in some areas in 1996 may have reduced the number of infants registered, especially for low income and/or adolescent parents.
- Fluctuations in the proportion of infants with birth weight < 500 grams suggest underreporting or misclassification of borderline viable infants.
- Missing entry of infants from multiple births.
- Out-of-province births are excluded.

### **Niday Perinatal Database**

The Niday Perinatal Database is an internet-based database that uses the provincial CritiCall system as a platform, providing immediate access to real-time population-based perinatal data. Data are provided by the Child Health Network.

The database collects information through the hospitals and from midwives on variables related to maternal, newborn and perinatal care characteristics, including details about births and obstetrical interventions. Data are collected on each birth (not pregnancy). For multiple gestations, each baby is entered separately.

Limitations:

- Only 80% of Ontario births were captured as of 2004.

### **Stillbirth Data**

Information on stillbirths is collected by the Office of the Registrar General and is based on three forms: 1) Statement of Stillbirth – completed by parents, 2) Physician Notice of Birth or Stillbirth – completed by the physician, and 3) Medical Certificate of Stillbirth – completed by the physician.

Limitations:

- Possible errors in the assignment of municipality of residence/census subdivision of mother.
- Because of data quality concerns and underreporting, 1991 and 1992 data should not be used or estimates should be used with caution.

### **Abortion Data**

Information on therapeutic abortions is collected by hospitals and clinics and provided to the Ontario Ministry of Health and Long-Term Care. The information is provided voluntarily by hospitals but is considered to be relatively complete. Since clinics must provide the information as a condition of their license, the data essentially capture all in-clinic therapeutic abortions. Data are based on the client's residence, not where the abortion was performed. Therapeutic abortions data do not include spontaneous abortions, surgical abortion procedures conducted in private abortion clinics, incomplete therapeutic abortion procedures, medical abortion procedures, and procedures to uninsured clinic clients.

Limitations:

- Data for the number of therapeutic abortions performed in clinics were not available until 1992; therefore data for years prior to 1992 undercount the true number of therapeutic abortions performed. The number of hospital and clinic abortions cannot be differentiated in 1993.
- Abortions performed out-of-province are not included.

### ***Congenital Anomalies Data – Neural Tube Defects***

Congenital anomalies data are collected through the Canadian Congenital Anomalies Surveillance System (CCASS). Since 2001, the CCASS has been based on identification of congenital anomalies as a result of hospitalization in the first month of life. Prior to 2001, the collection of data was based on hospitalizations within the first year. Since babies with congenital anomalies are often hospitalized more than once, the CCASS attempts to identify and remove all duplicates.

The total number of live births given by CCASS is different from that of the Office of the Registrar General. This is likely due to the inclusion of out-of-province births. For consistency with other reproductive outcome indicators, the number of live births from the Office of the Registrar General distributed through the Health Planning System (HELPS) is used in the denominator.

Limitations:

- The true number of neural tube defects (NTDs) that occur is underestimated because there is no reporting of the number of therapeutic abortions performed as a result of screening for NTDs.
- Because there are no unique linkable identifiers kept in the database (to protect confidentiality), it makes the process of matching records of the same individual more difficult, especially when other information is missing. This can result in over-counting the number of cases.
- Data are influenced by factors that are unrelated to health status such as availability and accessibility of care, and administrative policies and procedures. This may influence comparisons between areas and over time, particularly for less severe congenital anomalies.
- Ontario residents treated outside of the province are excluded.

### ***Mortality Data***

The Office of the Registrar General obtains information about mortality from death

certificates which are completed by physicians. All deaths within Ontario are registered in the office of the division registrar within which the death occurs. A Statement of Death and a Medical Certificate of Death must be filed with a division registrar before a Burial Permit can be issued.

Limitations:

- Co-morbidity contributes uncertainty to classifying the underlying cause of death.
- Determining the true cause of death may be influenced by the social or legal conditions surrounding the death and by the level of medical investigation, e.g. AIDS, suicide.

### ***Hospital Separation Data***

A hospital separation is a discharge from a hospital due to death, discharge home, or transfer to another facility. Hospitalization data provide only a crude measure of the condition being quantified for the following reasons: a person may be hospitalized several times for the same disease or injury event, or may be discharged from more than one hospital (when transferred) for the same injury event or may not seek care at a hospital.

The “most responsible diagnosis” code gives the primary reason for the hospital stay. A second set of codes – external cause or “e-codes” – are used in the case of an injury to classify the environmental events, circumstances and conditions that caused the injury, for example motor vehicle traffic injury. E-codes are the principal means for classifying injury deaths, but they are not used as a most responsible diagnosis for hospitalizations, so they need to be examined separately.

Limitations:

- Co-morbidity contributes uncertainty to classifying the most responsible diagnosis.
- Data are influenced by factors that are unrelated to health status such as availability and accessibility of care, and administrative policies and procedures. This may influence comparisons between areas and over time.

- Effective April 1, 2006 hospitalizations for adult patients with mental health codes are now being collected in the Ontario Mental Health Reporting System (OMHRS) when an adult requires a stay in a designated psychiatric bed in a hospital. This change will result in a reduction of hospitalizations captured in the hospital separation data, under the Mental Health ICD-10, Chapter V – Mental and Behavioral Disorders (F00-F99).
- Ontario residents treated outside of the province are excluded.
- There may be a delay in the time between when a person is infected and the time they are diagnosed and reported. The length of this delay may vary between different communicable diseases.
- Caution is advised when comparing the rates between Peel and Ontario since the data were obtained from different sources and were downloaded at different time periods. In addition, Ontario data were not cleaned (e.g. removing duplicate records, verifying dates or other information) to the same extent as the Peel-level data.

### ***Emergency Department Visit Data***

Hospital emergency departments report patient visit information into the National Ambulatory Care Reporting System (NACRS), which began in July 2000. Data are not considered to be reliable until the fiscal year 2002/2003.

Ambulatory visit data provide only a crude measure of the condition being quantified since a person may not seek care at an emergency department, or may visit several times for the same disease or injury event, or may visit more than one hospital for the same disease or injury event.

Limitations:

Data are influenced by factors that are unrelated to health status such as availability and accessibility of care, and administrative policies and procedures. This may influence comparisons between areas and over time.

### ***Integrated Public Health Information System (iPHIS)***

The communicable diseases data contained in this report are based on the list of diseases which are reportable to the local Medical Officer of Health under the authority of the Health Protection and Promotion Act (HPPA).

Limitations:

- The data include only those persons who were tested and/or diagnosed with a communicable disease by a health care professional.

### ***Cancer Incidence and Mortality***

The Ontario Cancer Registry (OCR) of Cancer Care Ontario registers all new cases of cancer in Ontario, as well as cancer-related deaths. All types of cancer are registered, except non-melanoma skin cancer. The system is passive and relies predominantly on administrative data. The OCR has four major data sources: hospital discharge summaries with cancer diagnoses, pathology reports with any mention of cancer, records from the Regional Cancer Centres or Princess Margaret Hospital, and death certificates with cancer as the underlying cause of death. Since the OCR may receive multiple reports for the same patient, computerized probabilistic record linkage is used to identify and remove duplicates.

### ***Institute for Clinical Evaluative Sciences***

Data regarding the prevalence of certain chronic conditions were obtained from the Institute for Clinical Evaluative Sciences' in-Tool, a web-based information system. In-tool provides "treated" prevalence rates of chronic conditions using the Johns Hopkins Adjusted Clinical Groups (ACG) Case-Mix System. The ACG System was developed on the premise that the burden of illness of a population was correlated to the level of resources necessary to provide health care to that particular population. Its unique methodology uses administrative data (for example, physician billing claims, hospital



admissions and discharge data) that have been coded according to the International Classification of Diseases to quantify and predict health system utilization and cost by accounting for the totality of diagnoses experienced by a person within a given time period rather than for any specific disease.

Limitations:

- Individuals excluded from the prevalence calculation included: out-of-province residents; those with invalid or missing age, sex and/or geographic information; individuals who died or whose date of last contact with the health care system was greater than five years prior to the analysis date.

### **Canadian Community Health Survey**

The Canadian Community Health Survey (CCHS) is a federal survey aimed at providing health information at the provincial, regional and health unit levels. The target population of the CCHS includes household residents in all provinces and territories, with the principal exclusion of populations on Indian Reserves, Canadian Forces Bases, those living in institutions and some remote areas. There is one randomly selected respondent per household, with an over-sampling of youths resulting in a second member of certain households being interviewed. The CCHS sample is primarily a selection of dwellings drawn from the Labour Force Survey area sampling frame. For the regional level survey, the sample is supplemented with a random digit-dialling sample in some health regions.

The interview for the health region-level survey includes common content to be asked of all sample units, optional content determined by each health region from a predefined list of questionnaire modules, and socio-economic and demographic content. A focused provincial-level survey consists of some general health content and one focus content topic per cycle. Focus content is intended to be an in-depth treatment of topical issues.

The CCHS consists of two cross-sectional surveys conducted over a two-year, repeating cycle:

- Cycle 1.1 – CCHS 2000/2001, data collected by health region
- Cycle 2.1 – CCHS 2003, data collected by health region
- Cycle 3.1 – CCHS 2005, data collected by health region

Focused Content

- Cycle 1.2 – CCHS 2002, focused on mental health – data collected by province
- Cycle 2.2 – CCHS 2004, focused on nutrition – data collected by province

Data collection for the CCHS is done by either computer assisted personal or telephone interviewing for the area sample or telephone interviewing for the random digit-dialling sample.

Limitations:

- Depending upon the question, data may be subject to recall bias, social desirability bias and errors from proxy reporting.
- Individuals and/or households without a telephone would be excluded from the sampling frame.
- Some analyses are limited by sample size.

### **Rapid Risk Factor Surveillance System**

The Rapid Risk Factor Surveillance System (RRFSS) is an on-going telephone survey occurring in various public health units across Ontario. Each month, a random sample of 100 adults aged 18 years and older is interviewed regarding awareness, knowledge, attitudes and risk behaviours of importance to public health, for example smoking, sun safety, use of bike helmets, and water testing in private wells. The Institute for Social Research (ISR) at York University conducts the survey on behalf of all RRFSS-participating health units.

**Limitations:**

- Depending upon the question, data may be subject to recall bias, social desirability bias and errors from proxy reporting.
- Individuals and/or households without a telephone (household or cell) would be excluded from the sampling frame.
- In Peel, the survey is administered in English only.
- Some analyses are limited by sample size.

***Illness Costs of Air Pollution (ICAP)***

The Illness Costs of Air Pollution (ICAP) was developed by the Ontario Medical Association and is used to identify the direct health effects and the economic consequences to the provincial healthcare system of air pollution in Ontario. ICAP has focused on cardio-respiratory illnesses caused by the principal components of smog, namely ground level ozone and air-borne particulate matter.

ICAP utilizes data from a number of sources, including: the Environment Canada's National Air Pollution Surveillance Network (1985 to 2003), the United States Environmental Protection Agency (2000 to 2003), various epidemiological studies related to premature deaths, hospital admissions and emergency room visits, Statistics Canada (2001 Census and death statistics), and the Canadian Institute of Health Information (CIHI).

***Workplace Safety & Insurance Board***

The Workplace Safety and Insurance Board (WSIB) promotes workplace health and safety, and provides a workers' compensation system for the employers and workers of Ontario. The data related to allowed claims for compensation for lost-time injuries, traumatic fatalities and occupational disease were provided by the WSIB. Claims for lost-time injuries and traumatic fatalities were identified by forward sortation area (FSA - the first three digits of the postal code). Occupational disease claims however, were identified by the municipalities of exposure.

**Limitations:**

- The number of claims reflect only those which have been accepted for compensation, not the total number of claims filed for workplace injuries, fatalities or cases of occupational disease.
- Changes in the number of allowed claims over time may not reflect real trends in workplace injuries and may reflect underlying changes in the number of payroll hours worked (denominator).
- Since FSAs may overlap with other counties or municipalities, especially in rural areas, only the largest FSAs in Peel were included. This results in a small under-estimate of the true number of claims in Peel, but also reduces the likelihood of inclusion of claims from neighbouring areas.
- Approximately 69% of all Ontario workers are covered by the WSIB. Those who are not covered under the Workplace Safety and Insurance Act or self-employed/independent operators can obtain coverage through other insurers.
- It is possible that some injuries and fatalities may have occurred in Peel at an employer's branch location, and these claims would not be reflected in these data.

***Hedgehog / PHIBIS***

The Hedgehog Environmental System also referred to as Peel Health Integrated Business Information System (PHIBIS), is a fully integrated, client-server based information management system designed and built by environmental health professionals to support their full range of inspection activities including data entry, retrieval and reporting needs.

**Limitations:**

- Data entry into PHIBIS is conducted at point of source by inspectors mainly while in the field and may include instances of data entry error.
- The reporting features are designed to support inspection activities.

### **Early Development Instrument (EDI)**

The Early Development Instrument (EDI) is a tool that helps communities to understand how well they are preparing children for Grade 1. Results can show community strengths and weaknesses in supporting their children and, therefore, can be a useful tool in assessing community gaps and assets.

The EDI, developed by the Offord Centre for Child Studies at McMaster University, is a teacher-completed, community-based population measure. The EDI is completed in Peel on a three-year cycle in the second half of the kindergarten year to allow for teachers to get to know the children and for children to adjust to their new school environment.

The EDI is comprised of five developmental domains that represent the critical components of child development: communication and general knowledge, emotional maturity, language and cognitive development, physical health and well-being, and social competence. Each domain is scored on a scale of one to ten, with a higher score indicating greater developmental readiness. EDI scores are presented in this report as percentiles, with those scoring below the 10th percentile on one or more domains being considered “developmentally vulnerable” and those scoring above the 75th percentile on one or more domains being considered “developmentally ready”.

Limitations:

- The EDI can be used for service planning purposes but should be used in conjunction with other data, such as Census, family, health and community indicators.
- The indicators are meant to be used at the population, not individual, level.
- Due to differences in methodology, Peel EDI results cannot be compared to other regions or to the provincial results.

- As students who do not live in Peel but attend Peel schools are excluded from the analysis, the results presented are not reflective of all students attending Peel schools.
- Children identified as having special needs by the teacher are not included in the EDI.

## **HEALTH UNIT SURVEYS**

### **Survey of Parents of Children 0 to 2 Years – 2002**

The Survey of Parents of Children 0 to 2 Years was conducted by Peel Public Health in 2002. The sampling frame for this survey was drawn from the Integrated Services for Children Information System (ISCIS). Survey respondents consisted of mothers who resided in Peel, delivered a baby in 2000 or 2001, consented to participate in the survey and spoke English. Data were collected between May 6th and October 4th, 2002.

Limitations associated with this survey include:

- Low response rate (46%).
- Administration of the survey in English only.
- An under-representation of respondents who were younger or in either the lower and higher income categories.
- The potential for social desirability bias, particularly for certain questions (for example, alcohol consumption and smoking during pregnancy, supervision of children when brushing their teeth).

### **Prenatal Education Classes: Survey of Mothers - 2003**

The Prenatal Education Classes: Survey of Mothers was conducted by Peel Public Health in 2003. The telephone survey was administered to new mothers from the Healthy Babies/Healthy Children Program who resided in Peel, delivered a baby between the months of May and October 2003, consented to participate in the survey and

spoke English. Data were collected between June and November of 2003. Focus group discussions were held with three groups to elicit further information: one with settlement workers who may work with pregnant women who are recent immigrants; and two with mothers who participated in the telephone survey (both those who did and those who did not attend prenatal classes).

Limitations associated with this survey include:

- Focus group attendance was extremely low and therefore the results might not be representative of all mothers in the study.
- The telephone survey and focus groups were conducted in English only.

### ***Breastfeeding Survey – 2004/2005***

In 2004/2005, Peel Public Health undertook a two-part telephone survey of new mothers in Peel. The study was designed to collect information regarding breastfeeding initiation and duration, as well as other breastfeeding practices among new mothers when their child was six-months old and again when their child was 12-months old. Mothers who never breastfed their infants were also asked about their awareness and utilization of resources. The target population for this survey was Peel mothers with six-month old children; this included mothers who gave birth between March 13, 2004 and September 10, 2004. Later, those who were still breastfeeding at six months were interviewed for a follow-up survey at 12-months post-partum. Data for the six month survey were collected between September 30, 2004 and March 23, 2004. For the 12 month survey, data were collected between March 28, 2005 and September 14, 2005.

Limitations associated with this survey include:

- The potential for recall and social desirability biases.

### ***Smoking and Pregnancy - 2002***

The Smoking and Pregnancy Survey, a joint study co-ordinated by the University of Toronto, was conducted with Peel Public Health in May and June 2002. The telephone survey was administered to new mothers from the Healthy Babies/Healthy Children Program who resided in Peel and agreed to participate. A structured questionnaire was used to gather specific information about mothers' overall smoking behaviour throughout pregnancy and postpartum. This survey was a follow-up to a previous survey in 2001, with the intention to increase the sample size of women that intended to quit or successfully quit at the time of the survey.

Limitations associated with this survey include:

- The potential for social desirability bias, due to the sensitive nature of the questions.



### ***School Health Assessment Survey - 2004***

The School Health Assessment Survey was designed by Peel Public Health in collaboration with its partners in education: the Peel District School Board and the Dufferin-Peel Catholic District School Board. Data were collected from a sample of over 7,000 children in grades 7 to 12 during the spring and fall of 2004. Topics covered in the survey included: eating habits, body weight, physical activity; tobacco, alcohol and drug use; bullying and safety; mental health and self esteem; sexual health; dental health; injuries; and sun safety.

Limitations associated with this survey include:

- Inability to account for the cluster-sampling method used during the survey (data may show less variability than the student population at large, as students from the same school and class may be more similar to each other than they would be to others not in their school or class).
- The study findings cannot be generalized to all Grade 7 to 12 students in Peel, as only those in the Public and Separate Boards were included (students in private and francophone schools were excluded).
- The potential for social desirability or recall bias.

### ***Dental Indices Survey***

The Peel Dental Health Indices survey collected data pertaining to the oral health status of children for the years 2003/2004 and 2004/2005. Data for junior kindergarten/senior kindergarten (JK/SK), grade 6 and 8 were collected in 2003/2004; while data for JK/SK, grade 2 and grade 4 were collected in 2004/2005. Findings of this report represent children from selected schools enrolled in senior kindergarten and grades 2, 4, 6, and 8 in each of the Region's municipalities. Oral health status was assessed by a dental hygienist from Peel Public Health in accordance with the 1997 Ontario Ministry of Health and Long-Term Care protocol. Only cases of health conditions which were obvious were recorded. When in doubt of the presence of disease, the disease was not scored.

The main limitation associated with this survey:

- Inability to make comparisons across health units or provincially due to differences in sampling methodology.

### ***Transportation Tomorrow Survey***

The Transportation Tomorrow Survey collects information on the travel habits of residents aged 11 years and older and provides a database for long-range planning and improvement of transportation facilities. Similar surveys were conducted in 1986, 1991, 1996 and 2001 in Peel and the greater Toronto area. In addition to trip information of each household member (i.e. trip origin, destination, time, purpose, method of travel) survey participants were asked about age, sex, employment status, size of household and number of motor vehicles.

This survey consisted of telephone interviews of a randomly selected sample of households in central Ontario. Households in the Greater Toronto Area were surveyed from September to December 2006.

The main limitation associated with this survey:

- 2006 results are preliminary.

### ***Cordon Count Survey***

The Cordon Count Program involves the counting of vehicles and people that cross selected counting stations strategically located at major crossings, such as roads or rail lines, creating screenlines or cordons every two or three years across the Greater Toronto Area. Vehicles were counted in locations near the municipal boundaries and other specific areas during the daylight hours (5:30 a.m.-8:30 p.m.) on one typical weekday during Spring/Fall in 2006. Manual counting is used to obtain the vehicle type and occupancy data. Ridership counts are provided by the Toronto Transit Commission and GO Transit.

The objective of the Program is to collect consistent and comprehensive regional daily vehicle and person movement data in order to monitor travel pattern changes and to assist in the

planning of the transportation system in Peel. The data provide a valuable information source to estimate future vehicle (passenger and truck) and transit trends.

Limitations:

- The majority of commercial vehicle travel occurs during off-peak periods.
- The definition of total person and total person auto trips varies among the regions in the GTA.

### ***Child Health and Environment Community Health Survey – 2006/2007***

The Child Health and Environment Community Health Survey was a cross-sectional telephone survey, conducted to collect information related to parents'/primary caregivers' knowledge, attitudes and behaviours towards their children's health and environmental issues in Peel. The target population for the survey was parents/primary caregivers who lived in Peel, were the parent/primary caregiver for a child under the age of 18 years at least 50% of the time, and were 18 years of age or older. The survey was administered from December 13, 2006 to January 21, 2007 (excluding the holiday period of December 22nd to January 1st).

Limitations associated with this survey include:

- The potential for social desirability and recall biases.
- Exclusion of those without residential telephone service.

### ***Ipsos Reid Recreation and Physical Fitness Survey***

The primary objective of this survey was to assess citizens' physical activity levels and recreation behaviours and needs. A total of 900 telephone interviews were conducted with Peel residents aged 16 years or older. All interviews were conducted between January 24 and February 11, 2008. Results were weighted using the 2006 Census to ensure that the sample's age/sex distribution reflects that of the actual Peel population.

Limitations associated with this survey include:

- The potential for social desirability and recall biases.
- Exclusion of those without residential telephone service.

### ***Healthy Babies, Healthy Children (HBHC) Physician Survey***

In 2006-2007, Peel Public Health conducted a survey of 650 new mothers in Peel regarding their prenatal and postpartum care. Mothers successfully contacted between November 7th, 2006 and January 2nd, 2007 by the HBHC Public Health Nurses (PHNs) were asked to participate in the survey. Mothers were asked about their prenatal care (including when they first received prenatal care and by what type of health care provider), the frequency of prenatal visits and their postpartum care (including who would be providing this care).

Limitations associated with this survey include:

- Only new mothers successfully contacted by the HBHC PHNs were included. Of the 2,026 births recorded during the period of data collection, only 44% (891 families) were successfully contacted.
- No demographic data about the mothers were collected to assess representativeness of the sample.