data sources and limitations

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

- Statistics Canada for Census and Labour Force Survey data
- IntelliHEALTH of the Ontario Ministry of Health and Long-Term Care (MOHLTC) for population estimates, mortality, hospitalizations, emergency department visits, and medical services data.
- The Canadian Community Health Survey and the Rapid Risk Factor Surveillance System for health behaviour data.

For additional details about the methods of analysis used in each of the chapters of this report, please refer to Chapter 17, Data Methods.

Census Data

The census is conducted every five years and data are provided by Statistics Canada. The most recent census was conducted on May 10, 2011. The 2011 Census questionnaire consisted of the same eight questions that appeared on the 2006 Census short-form questionnaire, with the addition of two questions on language.

Limitations:

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

Vital Statistics Birth Registration (Live Births and Stillbirths)

The Office of the Registrar General (ORG) provides data on all live births and still-births registered in Ontario. The information within the birth registration dataset is provided by both the parents (birth registration form) and the birth attendant (Notice of Live Birth or Stillbirth form). Both forms must be received by the ORG for the birth to be registered.

Limitations:

• Known data quality issues exist within the live birth and stillbirth registration data.

• Although live birth registration is required by law, changes in registration practices and the institution of registration fees have decreased the proportion of births which are registered.

• The most current year of data available at the time of this report was 2007.

Abortion Data

The Ministry of Health and Long-Term Care provides information on therapeutic abortions that occur in Ontario. The current data available use three separate data sources to count therapeutic abortions: OHIP paid claims, hospital discharges and ambulatory care visits. These aggregated data are available from 2001 onward by public health unit of residence, age group, and location of the procedure.

Limitations:

• There have been changes in the number of health care settings captured in the abortion data over time. Only abortions which occurred in hospitals were captured prior to 1992. From 1992 to 2000, abortions in hospitals and designated clinics were captured (although the location of the abortion could not be differentiated). Starting in April 2011, data from 2001 onward include abortions which occurred in hospitals, designated clinics and private physicians' offices (PPOs).

Mortality Data

The Office of the Registrar General obtains information about mortality from death certificates which are completed by physicians. All deaths in Ontario are registered with the office of the division registrar where the death occurs. A Statement of Death must be filed with a division registrar before a Burial Permit can be issued.

Limitations:

• Comorbidity contributes to uncertainty in 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).

Inpatient Hospital Separation Data

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

The most responsible diagnosis code gives the primary reason for a hospital stay. A second set of codes, external cause or 'e-codes' are used to classify the environmental events, circumstances and conditions that cause an injury, for example, motor vehicle traffic injury. While the external codes – e-codes – are the principal means for classifying injury deaths, they are not used as a most responsible diagnosis for hospitalizations, so they need to be examined separately. Ontario residents treated outside of the province are excluded.

Limitations:

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

Adult Mental Health Inpatient Hospital Separation Data

Effective April 1, 2006, hospitalizations for adult patients with mental health codes are being collected in the Ontario Mental Health Reporting System (OHMRS) when an adult requires a stay in a designated bed in a hospital. Children hospitalized for mental health conditions may be included if they were admitted to an adult mental health bed within the hospital.

Limitations:

- The capture of adult mental health hospitalizations within this database will result in a reduction of hospitalizations captured in the hospital separation data, under the Mental Health ICD-10, Chapter V – Mental and Behavioural Disorders (F00-F99). This could impact historical trends over time.

Emergency Department Visit Data

Hospital emergency departments report patient visit information into the National Ambulatory Care Reporting System (NA-CRS), 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, visit several times for the same disease or injury event, or visit more than one hospital for the same disease or injury event.

Limitations:

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

Canadian Community Health Survey

The Canadian Community Health Survey (CCHS) is conducted by Statistics Canada and is aimed at providing health information at the provincial, regional and health unit levels. The target population for the CCHS includes household residents 12 years of age or older in all provinces and territories, with the principal exclusion of populations on Indian Reserves, Canadian Forces Bases, and those living in institutions or more 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 socioeconomic 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.

Prior to 2007, data were collected every two years. Data presented for 2000/2001, 2003 and 2005 reflect this data collection method. Starting in 2007, major changes were made to the survey design in order to improve its effectiveness and flexibility through data collection on an ongoing basis. As a result, data collection now

occurs every year, but for Peel a 'cycle' is still considered to be a 2-year period (e.g., 2007/2008, 2009/2010).

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 on the question, data may be subject to recall bias, social desirability bias, non-response bias and errors from proxy reporting.

• Individuals and/or households without a telephone (household or cell) 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 important to public health. Topics include smoking, sun safety, use of bike helmets, and water testing in private wells, for example. The Institute for Social Research (ISR) at York University conducts the survey on behalf of all RRFSS-participating health units.

Limitations:

• Depending on 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.

Early Development Instrument (EDI)

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

The EDI was developed by the Offord Centre for Child Studies at McMaster University. It 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. This timing allows teachers to get to know the children and children to adjust to their new school environment.

The EDI is comprised of five developmental domains that represent 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 'vulnerable' and those scoring above the 75th percentile on one or more domains being considered 'ready'.

Limitations:

• The EDI can be used for service planning purposes but should be used in conjunction with other data such as census, and family, health and community indicators.

• The EDI is meant to be used at the population level, not at the level of the individual.

• 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 results.

Senior Kindergarten Census

The Senior Kindergarten Census (SKC) was designed to be administered in English and French to all parents of children attending senior kindergarten in publicly-funded school boards in Peel. Packages were sent home in the backpack of each senior kindergarten child for all parents to complete. Participation in the survey was voluntary. A total of 14,493 surveys were sent home to parents. Of these, 6,743 completed surveys were returned (47%).

During the survey period, translation services were provided by CCI Research Inc. to respondents who preferred to complete the survey in a language other than English or French. Six surveys were completed in a language other than English or French.

Most questions on the SKC were derived from other surveys including the National Longitudinal Survey of Children and Youth and the Kindergarten Parent Surveys from The Offord Centre and other communities in Ontario including Halton, Waterloo, Hamilton and Timiskaming.

Limitations:

• The response rate was less than ideal (47%).

• Limitations were identified associated with parent-reported height and weight, the need for an alternate format for capturing ethnic origins, and additional information that would be required to fully explore child care.

Peel School Health Survey

The 2011 Peel Public Health School Health Survey was administered to students in Grades 7 to 12 in the Dufferin-Peel Catholic School Board and the Peel District School Board from February to April 2011. The final sample included approximately 8,500 students from 37 elementary schools and 23 secondary schools in Peel.

Data collection included the following four components:

• a self-completed questionnaire;

• height and weight measurements;

• oral health assessment (Grades 10 and 12 only); and

• physical fitness assessment (Grade 9 only).

The survey aimed to collect Peel-specific data related to key issues facing youth. Information was captured on a variety of topics including eating habits, physical activity, substance use, mental health, bullying, injuries and sun safety. Height and weight measurements for each participating student were taken by a Public Health Nurse.

Eligible grade 9 students were instructed to perform four physical fitness tests: Leger 20 meter shuttle run (cardiorespiratory), hand grip strength test (muscular strength), sit and reach test (flexibility), and partial curl-up test (muscular endurance). Students were assigned health benefit ratings based on these four measures. These ratings were derived from Canadian normative data that account for age and gender specific cut-offs.[86] The results are presented in percentage distributions.

In addition, an oral health assessment was completed by public health dental hygienists (Grades 10 and 12 only), in accordance with the Ontario Public Health Standards protocols. Dental caries status was scored and recorded for each individual tooth rather than tooth surfaces in order to reduce the amount of time required for assessment.

Limitations:

• Survey results are not generalizable to all Grade 7 to 12 students in the Peel region as the survey was administered to a sample of students in only two participating school boards. Excluded by design are student dropouts and students enrolled in French schools and private schools.

• Self-reported survey data have the potential for recall error and providing socially desirable answers.

• Due to the cross-sectional nature of the data, causal relationships cannot be inferred.

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.

• 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.

Dental Indices Survey

The Peel Dental Health Indices Survey collected data pertaining to the oral health status of children aged 5, 7, 9 and 13 years for the period 2006 through 2008. Oral health status was assessed by a dental hygienist for Peel Public Health in accordance with the Ministry of Health and Long-Term Care (2001) Dental Indices Survey protocol. Only cases of obvious health conditions were recorded. If there was any doubt as to the presence of a disease it was not scored.

Limitations:

• There is an inability to make comparisons across health units or provincially due to differences in sampling methodology.

Medical Services Data

The Medical Services database captures information on approved claims by physicians to the Ontario Health Insurance Plan (OHIP) for services provided. Almost 95% of Ontario physicians are paid on a fee-for-service basis and submit claims to OHIP. Each record within the database represents a discrete service provided to a specific person.

Limitations:

• The accuracy of the patient's residential information (e.g., postal code, public health unit of residence) may be limited. Changes to residential information may not be updated within the database, especially for patients with older health cards (i.e., red and white health cards).

• There may be inconsistencies, either over time or between providers, in the manner in which providers bill for particular types of services rendered.

data methods

GENERAL DATA METHODS

Within the tables and figures of this report, values are presented to one decimal of precision while values in the text of the report are rounded to the nearest whole number. Due to rounding, some values may sum to more or less than 100%.

To ensure confidentiality and to meet reporting requirements, data are presented as follows:

• Canadian Community Health Survey (CCHS), Rapid Risk Factor Surveillance System (RRFSS) and Peel Public Health's Student Health Survey:

  - "NR – not releasable due to small numbers" when the coefficient of variation is greater than 33.3, the unweighted numerator was less than 10 individuals or the unweighted denominator was less than 30 individuals.

  - "Use estimate with caution" when the coefficient of variation is between 16.6 and 33.3.

• Vital statistics, hospitalizations and emergency department visit data are suppressed when cell counts are comprised of fewer than five individuals.

• Early Development Instrument (EDI) data with denominators less than 15 individuals are suppressed.

For analyses using the Canadian Community Health Survey or the Rapid Risk Factor Surveillance System, outcomes of interest where the sum of missing, do not know or refused responses was greater than five per cent resulted in these records being included in the denominator. This may be a different approach to previous Peel Public Health reports and may result in numerical differences between reports.

All data presented from the CCHS and RRFSS have been weighted to account for the sampling method used.

In this report 95% confidence intervals are included for survey data. Complex sampling methods have been used to calculate the 95% confidence intervals for both CCHS and Peel Public Health's School Health Survey data, to address the sampling methods used.

The following terms have been used to imply statistical significance between groups: "significantly", "more likely", and "less likely." Ninety-five per cent confidence intervals were used to determine the significance of differences between groups.

International Classification of Diseases (ICD) Codes

Causes of death, illness or injury are coded using a standard system called the International Statistical Classification of Diseases and Related Health Problems Tenth Revision (ICD-10). The Ninth Revision of the International Classification of Diseases (ICD-9) was used to code cause of death between 1979 and 1999, and hospital separations between 1986 and 2002. The ICD-10 system was used to code mortality data from 2000 forward. Hospitalization data from 2003 forward were coded using the Canadian version of the ICD-10 system (ICD-10-CA), with codes provided by the Canadian Institute for Health Informa-

tion. As changes in the coding system may cause artificial changes in the number of cases of a particular illness, trends in specific causes of mortality or morbidity must be interpreted with caution.

CHAPTER-SPECIFIC METHODS

Chapter 1 – Peel Children and Their Parents

Custom data profiles from the 2006 Canadian census were purchased for this report for children in specific age groups (1 to 3 years, 4 to 8 years, 9 to 11 years, 12 to 14 years, and 15 to 18 years) and parents of children aged one to 18 years.

Parents were defined by Statistics Canada for this purpose as persons who are lone-parents or are either spouses or common-law partners, of same or opposite sex, with children aged one to 18 years of age. This definition uses spouses, common-law partners and children as defined by census family status. Children refer to blood, step- or adopted sons and daughters (regardless of age or marital status) who are living in the same dwelling as their parent(s), as well as grandchildren in households where there are no parents present.

Using survey data, the definition of parents also differed based on the data source:

- Canadian Community Health Survey (CCHS): parents are defined as either a respondent living with their spouse/partner and one or more children, or a single parent living with one or more children.
- Rapid Risk Factor Surveillance System (RRFSS): parents are defined as those who have at least one child 17 years of age or younger living in their household.

Some tables and figures present census data for parents only (as defined above), whereas some present data for the whole

Peel population (e.g., income). The distinction can be made between these two using the table or figure title (e.g., Highest Level of Education Attained by Parents, Median and Mean After-tax Family Income by Type of Family).

Figure 17.1 below is a visual depiction of the definitions used by Statistics Canada to describe family categories within the 2006 Canadian census.

## Chapter 2 – Caregiver Capacity

The data presented in Figure 2.4 have been restricted to parents 25 to 64 years of age.

Chapter 3 – Community Capacity

High School Graduation Rates

The high school graduation rate provided by the Ministry of Education indicates the number of students who have successfully completed all requirements to earn a secondary school diploma expressed as a proportion of a population group. The

Figure 17.1
Economic and Census Family Membership and Family Status
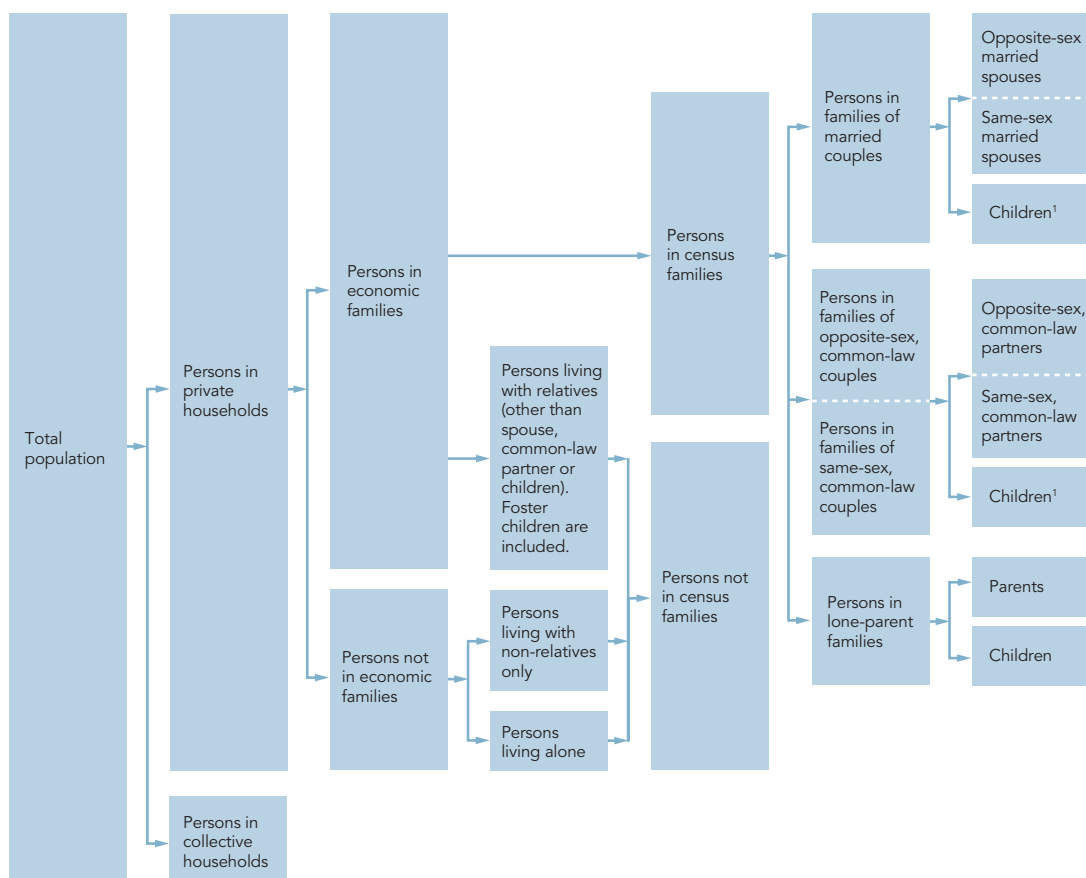
1. May or may not be present
Source: Statistics Canada, 2006 Census Dictionary. January 2010. Minister of Industry.

method for calculating the graduation rate is based on a cohort approach which measures the percentage of students who graduated within five years of starting Grade 9. The cohort graduation rate is the number of graduates of a cohort divided by the number of students of the same cohort, multiplied by 100. The Ministry of Education does not publish this information by gender, board or region.

Well Baby Visits

The number of enhanced 18-month well baby visits in 2010 was determined by summing the number of visits for fee schedule codes equal to A002 or A268 for children less than two years of age whose public health unit of residence was Peel.

EDI analysis methods

The distribution of EDI scores across the five domains represents the proportion of children at various levels of readiness for school. Areas of concern can be identified by comparing the distribution of Peel children to the expected distribution.

To examine how language impacts school readiness in Peel, children were defined as being either:

• English or French speakers (English language only children in English school board or French language only children in French school board);
• second language learners (non-English/French language listed and ESL/FSL identified by teacher); or
• bilingual (non-English/French language listed and no ESL/FSL identified by teacher).

Peel children who were bilingual were more likely to have attended junior kindergarten (93%) compared to second language learners (92%) or the language control group (92%).

Chapter 5 – Safe, Supportive Environments

The Peel Regional Police serve the municipalities of Brampton and Mississauga but not Caledon. Data from the annual reports from Peel Regional Police therefore represent incidents in Brampton and Mississauga only. However, incidents may involve individuals who live inside or outside of Peel Region.

The estimated number of hospitalizations among children and adults due to asthma that are related to exposure to outdoor contaminants is presented from a computer model called the Illness Cost of Air Pollution (ICAP). This model considers local health statistics, regional air quality and population data to estimate the health and economic damages of poor air quality in populations. The estimates are likely conservative as they are based on centrally located air monitoring sites which may not capture information for higher risk areas in Peel that are heavily impacted by traffic.

Chapter 7 – Mental Health Status of Children

Table 7.1 presents the rate of hospitalizations among children due to selected mental health conditions. Children hospitalized for mental health conditions may be captured either within the inpatient hospitalization database or within the adult mental health database, depending on the situation (i.e., whether they were admitted to an adult mental health bed within the hospital or not). Therefore, the data in Table 7.1 are the sum of hospitalizations for these conditions among children one to 18 years of age captured within both databases. The conditions listed were categorized by ICD-10 code as follows: anxiety, adjustment, obsessive/compulsive, phobia, and somatoform disorders (F40-F45; F48; F93); mood disorders (F30-F39); schizophre-

nia, schizotypal and delusional disorders (F20-F29); disorders due to psychoactive substance use (F10-F19); eating disorders (F50); and all other disorders (F01-F09; F51-F92; F94-F99).

Chapter 9 – Health-Care Utilization

The age- and sex-specific rates of hospitalization and emergency department visits for all causes are calculated by dividing the total number of hospital discharges or emergency department visits for a particular age and sex group by the total population in that same age and sex group. The rates are expressed per 100,000 population.

Within this chapter, the "leading causes" of hospitalization and emergency department visits are presented, which reflect groupings of ICD codes for specific causes of hospitalizations or emergency department visits. These groupings are based on knowledge of the specific medical conditions. The specific ICD-10 groupings may differ slightly between similar leading causes of hospitalization and emergency department visit data due to the specific codes used in each situation.

Chapter 12 – Injuries

The types of injuries presented in Figure 12.2 were selected to illustrate how the types of injuries change between children of different age groups. These are not necessarily the leading causes of injuries among this age group.