

# Ontario Health Profile

## Technical Appendix

March 2016

## Public Health Ontario

Public Health Ontario is a Crown corporation dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. Public Health Ontario links public health practitioners, frontline health workers and researchers to the best scientific intelligence and knowledge from around the world.

Public Health Ontario provides expert scientific and technical support to government, local public health units and health care providers relating to the following:

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- infection prevention and control
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- health promotion, chronic disease and injury prevention
- public health laboratory services

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# Overview

This document provides a technical description of the indicators included in Public Health Ontario's Ontario Health Profile. It is designed to be used as a companion document for the infographics, interactive web reports and supplementary data tables. Each indicator description includes: indicator definition, data source, methodological notes and limitations. This information has only been included for those indicators that have been calculated from original analysis. For other indicators, see data citations for further information. Details for specific subgroup analysis (such as socioeconomic grouping and educational level attained) are also included at the end of this appendix. It is important to note that some of the results included in the Ontario Health Profile may not be exactly the same as those included in other reports. This is related to a number of factors such as differences in definition, timeframe or data completeness on a specific access date.

The Ontario Health Profile expands our understanding of the health of Ontarians and equips decision-makers and practitioners with the information they need to take action. It presents an overview of the complex factors that influence and shape Ontario's population health status focusing on key public health issues that have an impact on the whole of the population.

## **2015–16 Ontario Health Profile stories**

1. ANTIMICROBIAL RESITANCE: A public health threat
2. Stop HEALTH CARE-ASSOCIATED INFECTIONS
3. TRAFFIC-RELATED AIR POLLUTION: Avoiding the TRAP zone

## **2014–15 Ontario Health Profile stories**

1. EXTREME WEATHER: The fallout after the storm
2. THE FIRST FIVE YEARS: A foundation for life
3. FOODBORNE ILLNESS: What we don't know can harm us
4. No health without MENTAL HEALTH
5. Defending Ontario against MEASLES
6. OBESITY: A burden across the life course
7. RADON: Risks and realities
8. RESPIRATORY VIRUSES: More than a winter worry
9. ROAD SAFETY: The journey ahead
10. Ontario's POPULATION: Determinants of Health

# 2015–16 Ontario Health Profile stories

# Antimicrobial resistance: A public health threat

## 1. ANTIMICROBIAL RESISTANCE IN SELECTED ORGANISMS

### Indicator definition:

$$\frac{\text{Total number of isolates submitted to PHO Laboratories showing resistance}}{\text{Total number of isolates submitted to PHO Laboratories for susceptibility testing}} * 100$$

### Data source:

Public Health Ontario Laboratory Information Management System. Public Health Ontario, extracted 2015 Sep 29.

### Methodological notes:

- Results are based on the number of isolates tested by Public Health Ontario Laboratories (PHOLs) for antimicrobial susceptibilities.
- Selected organisms include *Candida glabrata* isolated from sterile sites (2010–14), carbapenemase-producing Enterobacteriaceae (CPE; 2011–14), *Escherichia coli* isolated from urinary samples (2010–14), *Klebsiella pneumoniae* isolated from urinary samples (2010–14), *Neisseria gonorrhoeae* (2010–14), *Shigella* species (2010–14).
- With the exception of CPE, all data represent results of antimicrobial susceptibility testing by agar dilution, broth microdilution, and E-test methods to determine minimum inhibitory concentration (MIC) values.
- CPE data represent suspected carbapenemase-positive isolates submitted to PHOL for testing by PCR and/or phenotypic methods.
- *Candida glabrata* data represent isolates cultured from normally sterile body sites only.
- There is no standard MIC cut-off to define resistance in *Neisseria gonorrhoeae*; resistance here is defined as MIC  $\geq$  0.12 $\mu$ g/mL.
- Results are presented by demographic characteristics including:
  - age group
  - sex

### Limitations:

- Includes only isolates submitted for antimicrobial resistance testing, and as such, likely represents a small percentage of the number of infections due to these organisms in the population.
- Counts are based on the number of isolates, and as such it is possible that multiple isolates may actually represent a single patient.
- Due to changes in the interpretation and reporting of cefixime susceptibility in *N. gonorrhoeae* midway through 2010, data obtained prior to July 16, 2010 have been omitted.
- Each isolate tested is assigned to a public health unit (PHU) based on the patient's postal code at the time of submission, or, if no postal code is provided, the postal code of the submitting

facility. This potential for inaccurate assignment may affect counts provided at the individual PHU level.

## **2. CEPHALOSPORIN (CEFIXIME) SUSCEPTIBILITY OF *NEISSERIA GONORRHOEAE***

### **Indicator definition:**

Number of isolates of *Neisseria gonorrhoeae* showing resistance at various minimum inhibitory concentrations

### **Data source:**

Laboratory Information Management System. Streptococcus and STI Unit, National Microbiology Laboratory, Public Health Agency of Canada, extracted 2016 Jan 07.

### **Methodological notes:**

- Minimum inhibitory concentration (MIC) is the amount of antimicrobial required to inhibit visible growth of an organism.
- Observing the distribution of MICs from a given organism provides a trend of how susceptible (or resistant) an infection might be in response to a particular drug treatment.
- Data have been presented for 2006–11 using Clinical and Laboratory Standards Institute (CLSI) interpretations of MIC.
- More recent data have not been included due to a switch in 2012 to World Health Organization (WHO) interpretations of MIC.

### **Limitations:**

- Includes only isolates submitted for antimicrobial resistance testing, and as such, likely represents a small percentage of the number of infections due to these organisms in the population.

# Stop health care-associated infections

## 1. REPORTED CDI / MRSA / VRE CASES

### Indicator definition:

$$\frac{\text{Total number of new nosocomial cases of CDI* / MRSA* bacteremias / VRE* bacteremias in the reporting period}}{\text{Total number of patient days spent in hospital for a reporting period}^\dagger} * 1,000,000$$

\* CDI = *Clostridium difficile* infection, MRSA = methicillin-resistant *Staphylococcus aureus*, VRE = vancomycin-resistant enterococcus

† For CDI, excludes patient days for patients less than one year of age

### Data source:

Hospital self-reported data (Self Reporting Initiative), Ministry of Health and Long-Term Care, extracted 2015 Jun 29.

### Methodological notes:

- All hospitals in Ontario are required to publicly report on adjusted mortality rates, health care-associated infections, surgical site infection prevention, use of surgical safety checklists and hand hygiene compliance among health care workers. Most public reporting of patient safety indicator data is done through the Health Quality Ontario (HQO) website. CDI has been reported on a monthly basis since September 2008, while both MRSA and VRE have been reported on a quarterly basis since December 2008. Only data for complete years are presented in this graph.
- The case definition for CDI is as follows:
  - Laboratory confirmation of a positive toxin assay (A/B) for *Clostridium difficile* together with diarrhea; or, visualization of pseudomembranes on sigmoidoscopy or colonoscopy, or histological / pathological diagnosis of pseudomembranous colitis.
  - New nosocomial cases are those for which the infection was not present on admission (i.e., onset of symptoms > 72 hours after admission) or the infection was present at the time of admission but was related to a previous admission to the same facility within the last 4 weeks and the case has not had in the past 8 weeks. Patients less than one year of age are excluded.
- The case definition for MRSA is as follows:
  - MRSA are strains of *Staphylococcus aureus* that have a minimum inhibitory concentration (MIC) to oxacillin of  $\geq 4$ mcg/ml or contain the *mecA* gene coding for penicillin binding protein 2a (PBP 2A). They are resistant to all of the beta-lactam classes of antibiotics. A case is a patient identified with laboratory confirmed bloodstream infection with MRSA. A blood stream infection is a single positive blood culture for MRSA.
  - New nosocomial cases of MRSA (i.e. more than 6 weeks have elapsed since completion of treatment for a previous MRSA bacteraemia) where the infection was not present on admission (i.e. the onset of symptoms occurred >72 hours after admission) or the

infection was present on admission but related to a previous admission to the same facility within the last 72 hours

- The case definition for VRE is as follows:
  - VRE have a minimal inhibitory concentration (MIC) to vancomycin of  $\geq 32$  mcg/ml. They contain the resistance genes VAN-A or VAN-B. A case is a patient identified with laboratory confirmed bloodstream infection with Vancomycin-resistant Enterococci. A blood stream infection is a single positive blood culture for VRE.
  - New nosocomial cases of VRE (i.e. more than 6 weeks have elapsed since completion of treatment for a previous VRE bacteraemia) where the infection was not present on admission (i.e. the onset of symptoms occurred  $>72$  hours after admission) or the infection was present on admission but related to a previous admission to the same facility within the last 72 hours.
- Results are presented by hospital grouping including:
  - Hospital type (acute, large community, small community, complex continuing care & rehab, and mental health facilities)
  - Per cent of cases seen over 65 years of age (0 to 34.99%, 35 to 49.99% and 50% or more)
  - Bed size (<100 beds, 100 to 249 beds, 250+ beds)
  - NOTE: assignment of hospital groupings were determined by the Health Analytics Branch, Ministry of Health and Long-Term Care (Health Analytics Branch, Ministry of Health and Long-Term Care. Clostridium difficile Infection in Ontario Hospitals, January 2009 to December 2013. Toronto, ON: MOHLTC; 2015)

**Limitations:**

- Includes only cases of CDI / MRSA / VRE associated with the reporting facility and publically reported by hospitals in Ontario.

## 2. REPORTED CDI OUTBREAK CASES

**Indicator definition:**

Number of cases of CDI reported by hospitals during outbreaks

**Data source:**

Integrated Public Health Information System (iPHIS), 2010–14, Ontario Ministry of Health and Long-Term Care, extracted 2015 Jul 7.

**Methodological notes:**

- Data were extracted from iPHIS on July 7th, 2015 and includes only confirmed CDI outbreaks. iPHIS is a dynamic disease reporting system which allows ongoing updates to data previously entered. As a result, data extracted from iPHIS represents a snap shot at the time of extraction and may differ from previous or subsequent reports.

- Outbreaks were allocated to onset year based on the onset date of the index case. Where onset date of the index case was missing, the date the outbreak was created in iPHIS was used.
- For outbreak-level analysis, where discrepancies were observed between reported CDI aggregate case counts and line listed cases for the outbreak, the counts of cases and deaths were determined based on the higher number.
- Changes to CDI outbreak notification thresholds and CDI case definitions and disease classifications have occurred over the years.
- For case-level analysis, only individual confirmed case records associated with confirmed CDI outbreaks in hospitals were included for demographic analysis. Cases with a non-reportable classification (e.g., probable cases) were excluded. For CDI cases, any outbreak-linked confirmed cases that were reported with an outcome of fatal, or that had a date of death entered during the outbreak period, are counted as a fatal case; however, deaths reported are classified as “all-cause” and may or may not be directly attributable to CDI.
- Results are presented by demographic characteristics including:
  - age group
  - sex
  - sex and age group

**Limitations:**

- The data only represent outbreaks reported to public health and recorded in iPHIS. As a result, all counts will be subject to varying degrees of reporting bias depending on factors such as disease awareness, medical seeking behaviours, changes in laboratory testing, reporting behaviours, and severity of illness
- On September 1, 2008, Ontario amended regulations in 2008 to make CDI outbreaks in public hospitals reportable to public health units under the Health Protection and Promotion Act.<sup>1,2</sup> Although, CDI outbreaks in long-term care homes are also reportable to the local Medical Officer of Health as institutional outbreaks of gastroenteritis, these outbreaks have been excluded due to a lack of consistency in public health unit reporting practices.

# Traffic-related air pollution: Avoiding the TRAP zone

## 1. PER CENT OF THE POPULATION LIVING NEAR MAJOR ROADS AND HIGHWAYS

### Indicator definition:

$$\frac{\text{Population living in TRAP exposure zones}}{\text{Total population}} * 100$$

### Categories by distance from road

Per cent within 100m of a major road or within 500 m of a highway

Per cent within 100m of a major road or within 150 m of a highway

Per cent within 50 m of a major road or highway

### Data source(s):

Statistics Canada. Geographic attribute file: census year 2011. Ottawa, ON: Minister of Industry; 2012. Date extracted: 2015 Jun 1. Available from: <http://www12.statcan.gc.ca/census-recensement/2011/geo/ref/att-eng.cfm>

Ontario. Ministry of Natural Resources and Forestry. Land Information Ontario. Ontario Road Network File: Road Net Element. Toronto, ON: Queen's Printer for Ontario; 2012. Date extracted: 2012 Oct 25.

### Methodological notes:

- Major road and highway were defined according to the Ontario road network (ORN) classification file<sup>1</sup>. A major road includes road classes defined as:
  - Arterial – a major thoroughfare with medium to large traffic capacity.
  - Expressway/highway – a high-speed thoroughfare with a combination of controlled access and intersections at grade level.
- A highway is the road class defined as a:
  - Freeway – an unimpeded, high-speed controlled access thoroughfare for through traffic with typically no at-grade intersections, usually with no property access or direct access and which is accessed by a ramp. Pedestrians prohibited.
- Classifying expressways, highways, and arterials in the ORN as major roads, and freeways as highways may seem counterintuitive but expressways/highways have lower daily traffic compared to freeways and in some rural areas have less traffic than urban arterials, therefore only freeways were chosen to meet the classification of a “highway”.
- Although these definitions are not explicitly based on traffic volume, they provide a reasonable proxy for traffic volume in Ontario.

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<sup>1</sup> Government of Ontario. Government of Ontario IT standard (GO-ITS #29). Ontario Road Network (ORN) data standard for road geometry and attributes [Internet]. Toronto, ON: Queen's Printer for Ontario; 2009 [cited 2015 Dec 29]. Available from: <https://dr6j45jk9xcmk.cloudfront.net/documents/1866/go-its-29-ontario-road-network-orn.pdf>

- Three buffer shapefiles were created to correspond to the three categories identified:
  1. 50 m of a major road or of a highway: one 50 m buffer for selected ORN roads classified as 'Arterial', 'Expressway/Highway', or 'Freeway'
  2. 100 m of a major road or 150 m of a highway: Two buffers were created and merged to create one large buffer:
    - 100m buffers for selected roads classified as 'Arterial' or 'Expressway/Highway'
    - 150m buffers for roads classified as 'Freeway'.
  3. 100 m of a major road or 500 m of a highway: Two buffers were created and merged to create one large buffer:
    - 100m buffers for selected roads classified as 'Arterial' or 'Expressway/Highway'
    - 500m buffers for roads classified as 'Freeway'
- Statistics Canada dissemination blocks (DB) from the 2011 Census, were used to estimate the population. Each DB represents approximately 90 people.
- The DB file was opened in ArcGIS version 9.1 and re-projected to the Canada Albers Equal Area Conic projection.
- Using the ArcGIS "calculate geometry" tool, the area of each DB was determined in square kilometres (km<sup>2</sup>).
- Dissemination blocks were clipped to each of the buffer polygons using the intersect tool.
- The ratio of the area of the DB clip to the area of the DB was used to determine the population within the buffer zone. For example, if the total population within a 2.2515 km<sup>2</sup> area DB was 19 persons, and 0.4323 km<sup>2</sup> was within the buffer, the clipped area's population will be calculated as 3.649 persons (0.4323 km<sup>2</sup>/2.2515 km<sup>2</sup> \* 19).  
The sum of the populations of the clipped DBs was calculated for each health unit and Ontario overall using the summary statistics tool.

#### **Limitation(s)**

- Population exposed is based on census block data from the 2011 census, the most current census block data available. To calculate the population within each buffer zone, an equal population density within each DB was assumed.
- Annual average daily traffic volumes were not available for individual urban areas, therefore the definition of a major road/highway was based on Ontario Road Network File classifications. It is possible that some roads not classified as major roads have a high traffic volume and that certain highways (for example in rural/northern regions) have relatively low traffic. Although the definitions of major road and highway are not explicitly based on traffic volume, they do provide a reasonable proxy for traffic volume in Ontario.

- Ontario Road Network data are now available on the Ontario Open data website.<sup>2</sup> A data file obtained in 2012 from Land Information Ontario was used for this analysis. Between 2012 and 2015, no new highways or freeways opened in Ontario. In 2016, some new sections of Highway 407 and Highway 412 will open, which could lead to different estimates.

## 2. TRENDS IN CONCENTRATIONS OF SPECIFIC AIR POLLUTANTS

### Indicator definitions

- Average annual concentration of NO, NO<sub>2</sub>, NO<sub>x</sub> (2004–13), and PM<sub>2.5</sub> (2004-12):
  - At Toronto West air quality monitoring station (< 500 m from a highway)
  - At the Brantford air quality monitoring station (>100 m from a major road or >500 m from a highway)
  - For all Ontario air quality monitoring stations (average)

### Data source(s):

Ontario. Ministry of the Environment and Climate Change. Air quality in Ontario 2013 report [Internet]. Toronto, ON: Queen’s Printer for Ontario; 2015 [cited 2015 Dec 29]. Available from: <http://www.airqualityontario.com/downloads/AirQualityInOntarioReportAndAppendix2013.pdf>

### Methodological notes:

- The near-traffic air quality monitoring station, Toronto West, was less than 500 m from a major highway and considered influenced by traffic-related air pollution (TRAP). The far from traffic station, Brantford, was greater than > 100 m from a major road or >500 m from a highway and was considered not to be influenced by TRAP.
- Methodology used to PM<sub>2.5</sub> concentration changed in 2013. PM<sub>2.5</sub> data up to 2012 are included in this report.
- Overall trends were measured as the average of all stations over time. Only those stations with data available for all years were included in the overall average (31 stations for PM<sub>2.5</sub>, (Table 1) and 19 for NO/NO<sub>2</sub>/NO<sub>x</sub> (Table 2)).

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<sup>2</sup> Ontario. Ministry of Natural Resources and Forestry. Ontario Road Network: Road Net Element. Toronto, ON: Queen’s Printer for Ontario; 2001 [revised 2009 Mar 4]. Contains information licensed under the Open Government License – Ontario. Available from: <https://www.javacoeapp.lrc.gov.on.ca/geonetwork/srv/en/main.home?uuid=290bfd40-0c8b-46d0-9a6c-0c648d096515>

Table 1. Air quality monitoring stations included and excluded from the average PM<sub>2.5</sub> calculations

<b>Included</b>		<b>Excluded (data not available for all 10 years)</b>	
<b>Monitor ID</b>	<b>City/Town</b>	<b>Monitor ID</b>	<b>City/Town</b>
12008	Windsor Downtown	13001	Chatham
12016	Windsor West	15026	London
14064	Sarnia	18007	Tiverton
15020	Grand Bend	45026	Oshawa
16015	Port Stanley	54012	Belleville
21005	Brantford	77233	Sudbury
26060	Kitchener		
27067	St. Catharines		
28028	Guelph		
29000	Hamilton Downtown		
29114	Hamilton Mountain		
29118	Hamilton West		
31103	Toronto Downtown		
33003	Toronto East		
34020	Toronto North		
35125	Toronto West		
44008	Burlington		
44017	Oakville		
46089	Brampton		
46108	Mississauga		
47045	Barrie		
48006	Newmarket		
49005	Parry Sound		
49010	Dorset		
51001	Ottawa Downtown		
56051	Cornwall		
56010	Morrisburg		
59006	Peterborough		
63203	Thunder Bay		
71078	Sault Ste. Marie		
75010	North Bay		

Table 2. Air quality monitoring stations included and excluded from the average NO, NO<sub>2</sub>,NO<sub>x</sub> calculations

Included		Excluded (data not available for all 10 years)	
Monitor ID	City/Town	Monitor ID	City/Town
12008	Windsor Downtown	13001	Chatham
12016	Windsor West	45026	Oshawa
14064	Sarnia	59006	Peterborough
15026	London		
21005	Brantford		
26060	Kitchener		
29000	Hamilton Downtown		
31103	Toronto Downtown		
33003	Toronto East		
34020	Toronto North		
35125	Toronto West		
44008	Burlington		
44017	Oakville		
46089	Brampton		
47045	Barrie		
48006	Newmarket		
51001	Ottawa Downtown		
54012	Belleville		
75010	North Bay		

**Limitation(s):**

- Ontario does not have a near-road monitoring system in place. Some ambient pollution monitors are situated close to major roads and highways and could be expected to be more highly influenced by TRAP than others.

### 3. POPULATIONS AT RISK

#### Indicator definitions

Per cent of publicly-funded schools near major roads and highways

$$\frac{\text{Number of publicly-funded schools in TRAP exposure zones}}{\text{Total number of publicly-funded schools}} * 100$$

Per cent of public school children near major roads and highways

$$\frac{\text{Number of school children enrolled in publicly-funded schools in TRAP exposure zones}}{\text{Total number of school children (total number of school children enrolled in publicly-funded schools)}} * 100$$

Per cent of long-term care homes near major roads and highways

$$\frac{\text{Number of long-term care homes in TRAP exposure zones}}{\text{Total number of long-term care homes}} * 100$$

#### Categories by distance from roads:

Per cent within 100m of a major road or within 500 m of a highway

Per cent within 100m of a major road or within 150 m of a highway

Per cent within 50 m of a major road or highway

#### Data source(s):

1) Ontario. Ministry of Education; Ontario School Information System (OnSIS). Enrolment by grade in elementary schools: 2013-14 academic year. Toronto, ON: Queen's Printer for Ontario; 2014[updated 2015 Oct 8]. Date extracted: 2014 Nov 20. Contains information licensed under the Open Government License - Ontario. Available from: <https://www.ontario.ca/data/enrolment-grade-elementary-schools>

2) Ontario. Ministry of Education; Board School Identification Database (BSID) / Ontario School Information System (OnSIS). Ontario public school contact information. Toronto, ON: Queen's Printer for Ontario; 2013[updated 2015 Oct 22]. Date extracted: 2015 Nov 20. Contains information licensed under the Open Government License – Ontario. Available from: <http://www.ontario.ca/data/ontario-public-school-contact-information>

3) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Stakeholder relationship management (SRM) system. Toronto, ON: Queen's Printer for Ontario. Date extracted: 2015 Feb 19

4) Ontario. Ministry of Natural Resources and Forestry; Land Information Ontario. Ontario Road Network File: Road Net Element. Toronto, ON: Queen's Printer for Ontario; n.d. Date extracted: 2012 Oct 25.

**Methodological notes:**

See **Indicator 1: Per cent of the population living near major roads and highways** for methodology used to create buffer zones.

**Elementary schools in TRAP exposure zones**

- All schools with a grade range of JK-8 inclusive were selected, for all public and Catholic schools, English and French, in the province.
- Schools in hospitals, treatment centres, juvenile detention and correctional centres were excluded from the analysis.
- Schools for which student enrolment data were not available were also excluded from the analysis.
- Address and postal code of schools were obtained from the Ontario public school contact information, Board School Identification Database (BSID). To determine latitude and longitude of schools in urban areas (i.e., schools for which the second digit of postal codes was from one and nine), postal codes were matched with the Postal Code Conversion File, 2013 version.
- In rural areas, the postal code or address is not always an accurate indicator of the physical location of a school. Google Maps was used to find the latitude and longitude of rural schools (i.e., schools for which the second digit of the postal code was zero). Latitude and longitude were added to the schools file and mapped using ArcGIS, version 9.1.
- Counts and proportions of LTCHs within each of the three buffer zones were calculated for each PHU and Ontario overall using the “select by location” function in ArcGIS.

**Elementary school children attending school in TRAP exposure zones**

- All schools with a grade range of JK-8 inclusive were selected, for all public and Catholic schools, English and French, in the province.
- Schools in hospitals, treatment centres, juvenile detention and correctional centres were excluded from the analysis.
- Schools for which student enrolment data were not available were also excluded from the analysis.
- School enrollment figures were joined to the list of all publicly-funded schools using the unique school identification number.
- With the matched schools already mapped for indicator “Elementary schools in TRAP exposure zones”, the “select by location” function was used to select schools within each public health unit and each of the three buffer zones.
- The number and proportion of students attending schools located within each of the three buffer zones were calculated for each PHU and for Ontario overall using the summary statistics tool in ArcGIS.

**Long-term care homes in TRAP exposure zones**

- From a list of all Long-Term Care Homes (LTCHs), the “select by location” function was used to select LTCHs within each buffer of the three buffer zones.
- Counts and proportions of LTCHs within each of the three buffer zones were calculated for each PHU and Ontario overall using the summary statistics tool in ArcGIS.

**Limitation(s):**

- Eighty-seven schools from the contact list of 3980 elementary schools were not matched (the school contact list was current for the 2014-15 academic year, and the enrollment figures are from the 2013–14 academic year, the most current data available at time of analysis). These schools were excluded from the of “Elementary schools in TRAP exposure zones” and “Elementary school children attending school in TRAP exposure zones” indicators.
- Annual average daily traffic volumes were not available for individual urban areas, therefore the definition of a major road/highway was based on Ontario Road Network File classifications. It is possible that some roads not classified as major roads have a high traffic volume and that certain highways (for example in rural/northern regions) have relatively low traffic. Although the definitions of major road and highway are not explicitly based on traffic volume, they do provide a reasonable proxy for traffic volume in Ontario.

**4. DURATION OF COMMUTE TO WORK****Indicator definition**

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Number of people age 15 and older who commute to work for a specified amount of time  
Total number of people age 15 and older who commute to work

\* 100

**Categories by commute mode**

Total commuters

Car, truck or van

Public transit

Active commuting (walking or cycling)

Cycling

Walking

**Data source(s):**

Statistics Canada, Advisory Services, Central Region. Semi-custom table specifications. Database: 2011 National Household Survey (NHS). Geography: 1) Canada, provinces, territories and health regions (approximately 149 geographies) 2) Census metropolitan areas, tracted census agglomerations and census tracts in Ontario (approximately 2361 geographies) (all GNRs included) [unpublished]. Prepared 2015 Jun 30.

### Methodological notes:<sup>3</sup>

- Population is the Employed Labour Force Aged 15 Years and Over Having a Usual Place of Work or No fixed Workplace Address, in Private Households of Canada
- Excludes National Household Survey data for one or more incompletely enumerated Indian reserves or Indian settlements.
- For the 2011 National Household Survey (NHS) estimates, the global non-response rate (GNR) is used as an indicator of data quality. This indicator combines complete non-response (household) and partial non-response (question) into a single rate. The value of the GNR is presented to users. A smaller GNR indicates a lower risk of non-response bias and as a result, lower risk of inaccuracy. The threshold used for estimates' suppression is a GNR of 50% or more. For more information, please refer to the National Household Survey User Guide, 2011.
- Disclosure control rules have been applied to data tables available from the National Household Survey (NHS). The number of actual records used to derive any number in a table must meet a minimum criterion. For a table cell where this criterion is not met, the number is replaced by a zero. Due to this disclosure control, subtotals will not necessarily aggregate to the total. As well, users should note that random rounding has also been applied to the data.)

### Limitations(s)

- Commuting length doesn't account for variations in pollution levels experienced by different commuters taking various routes (for example, the GO train vs. the 401).
- The National Household Survey assumes that the commute to work originates from the usual place of residence, but this may not always be the case. In some cases, respondents may be on a business trip and may have reported their place of work or mode of transportation based on where they were working during the trip. Some persons maintain a residence close to work and commute to their home on weekends. Students often work after school at a location near their school. As a result, the data may show unusual commutes and an unusual mode of transportation.

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<sup>3</sup> Statistics Canada. 2011 National Household Survey: Data tables. Mode of transportation (20), average commuting duration, commuting duration (7), time leaving for work (7), sex (3) and age groups (11) for the employed labour force aged 15 years and over having a usual place of work or no fixed workplace address, in private households of Canada, provinces, territories and census divisions, 2011 National Household Survey [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2013 [cited 2016 Feb 8]. Available from: <https://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/dt-td/Rp-eng.cfm?TABID=1&LANG=E&A=R&APATH=3&DETAIL=0&DIM=0&FL=A&FREE=0&GC=01&GL=-1&GID=1125423&GK=1&GRP=0&O=D&PID=105623&PRID=0&PTYPE=105277&S=0&SHOWALL=1&SUB=0&Temporal=2013&THEME=96&VID=0&VNAMEE=&VNAMEF=&D1=0&D2=0&D3=0&D4=0&D5=0&D6=0>

## 2014–15 Ontario Health Profile stories

# Extreme weather: The fallout after the storm

## 1. EXTREME WEATHER-RELATED EMERGENCY DEPARTMENT VISITS

### Indicator definition:

$$\frac{\text{Number of individuals with an emergency department visit attributed to extreme weather}}{\text{Total population}} * 100,000$$

### Data sources:

National Ambulatory Care Reporting System (NACRS), 2003–12, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2013 Nov 15.

Population Estimates, 2003–12, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2013 Oct 29.

### Methodological notes:

- All extreme weather related causes were determined using the following ICD-10 codes: X30-33, X36-39.
- Subcategories were determined using the following ICD-10 codes:
  - Natural cold: X31
  - Natural heat: X30
  - Other: X32-X33, X36-X39

### Limitations:

- Includes only emergency department visits coded as having a weather-related external cause. It is possible that weather was a factor in more emergency department visits.

## 2. EXTREME WEATHER-RELATED HOSPITALIZATIONS

### Indicator definition:

$$\frac{\text{Number of individuals with an inpatient hospitalization attributed to extreme weather}}{\text{Total population}} * 100,000$$

### Data sources:

Discharge Abstract Database (DAD), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2013 Nov 15.

Population Estimates, 2003–12, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2013 Oct 29.

**Methodological notes:**

- All extreme weather related causes were determined using the following ICD-10 codes: X30-33, X36-39.
- Subcategories were determined using the following ICD-10 codes:
  - Natural cold: X31
  - Natural heat: X30
  - Other: X32-X33, X36-X39

**Limitations:**

- Includes only hospitalizations coded as having a weather-related external cause. It is possible that weather was a factor in more hospitalizations.

### 3. EXTREME WEATHER-RELATED DEATHS

**Indicator definition:**

$$\frac{\text{Number deaths attributed to extreme weather}}{\text{Total population}} * 100,000$$

**Data sources:**

Vital statistics, 2003–09, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date extracted: 2013 Nov 15

Population Estimates, 2003–09, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2013 Oct 29.

**Methodological notes:**

- All extreme weather related causes were determined using the following ICD-10 codes: X30-33, X36-39.
- Subcategories were determined using the following ICD-10 codes:
  - Natural cold: X31
  - Natural heat: X30
  - Other: X32-X33, X36-X39

**Limitations:**

- Includes only deaths coded as having a weather-related external cause. It is possible that weather was a factor in more deaths.

## 4. NUMBER OF HEATWAVES

**Indicator definition:**

Number of instances of three or more consecutive days with temperatures of 32 degrees Celsius or greater in a public health unit

**Data source:**

Government of Canada. Climate data [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2003-2012. Available from: <http://climate.weather.gc.ca/>

**Methodological notes:**

- Heatwaves occurring in multiple public health units at the same time were counted separately.

**Limitations:**

- None stated.

## 5. NUMBER OF TORNADOES

**Indicator definition:**

Number of recorded tornadoes that touched down in a public health unit

**Data source:**

Data courtesy of Dr. David Sills, Cloud Physics and Severe Weather Research Section, Environment Canada; see Sills DML, Scriver SJ, King PWS. The tornadoes in Ontario project (TOP). 22nd AMS conference on severe local storms. Amer Meteorol Soc, 2004

**Methodological notes:**

- A small number of tornadoes (n=7) were counted twice because their paths crossed public health unit boundaries.

**Limitations:**

- None stated.

# The first five years: A foundation for life

## 1. PER CENT VULNERABLE IN SCHOOL READINESS USING THE EARLY DEVELOPMENT INSTRUMENT (EDI), OVERALL AND BY DOMAIN

### Indicator definition:

*Overall vulnerability in school readiness:*

$$\frac{\text{Number of kindergarten children scoring below the 10}^{\text{th}} \text{ percentile in one or more domains of the EDI}}{\text{Total number of kindergarten children with EDI scores}} * 100$$

*Vulnerability by domain:*

$$\frac{\text{Number of kindergarten children scoring below the 10}^{\text{th}} \text{ percentile in [domain]}}{\text{Total number of kindergarten children with EDI scores}} * 100$$

### Data source:

Early Development Instrument, 2009–12 (combined), Offord Centre for Child Studies via Ministry of Child and Youth Services (views expressed do not necessarily reflect those of the Ministry).

### Methodological notes:

- Domains of school readiness: physical health and wellbeing, communication skills and general knowledge, emotional maturity, social competence, language and cognitive development.
- Vulnerability on an EDI domain is defined as scoring below the cut-score represented by the 10th percentile of the domain for the Ontario baseline (the first provincial EDI cycle, 2004-2006).
- Includes data from all publically funded school boards and authorities, and 11 schools on Indian reserves.
- Includes only cases that have valid EDI results, in class more than one month, not special needs status, and in a senior kindergarten class.
- Data has been combined for the entire study period.

### Limitations:

- None stated.

# Foodborne illness: What we don't know can harm us

## 1. ESTIMATED AVERAGE ANNUAL NUMBER OF REPORTED CASES OF FOODBORNE ILLNESS

### Indicator definition:

Sum of [annual number of known cases of pathogen-specific illness adjusted for foodborne transmission] from 2006 to 2012

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7 years included

### Data source:

integrated Public Health Information System (iPHIS), 2006–12 (combined), Ontario Ministry of Health and Long-Term Care, extracted 2013 Nov 22.

### Methodological notes:

- Laboratory-confirmed cases in the integrated Public Health Information System (iPHIS) of *Campylobacter* enteritis, listeriosis, salmonellosis, yersiniosis, or verotoxin-producing *Escherichia coli* (*E. coli*) (VTEC) infection thought to be attributable to food, adjusted for foodborne transmission and to exclude illness related to travel outside of Canada. The proportion of illness caused by these pathogens that is thought to be attributable to food is as follows: *Campylobacter*, 68%; *Listeria*, 84%; *Salmonella*, 80%; VTEC, 76%; *Yersinia*, 80%.
- Based on available data in iPHIS, these are considered to be the top five foodborne illnesses in Ontario, accounting for over half of all foodborne illnesses that are due to reportable enteric pathogens. The proportion of pathogen-specific enteric illness thought to be due to foodborne transmission is as follows: *Campylobacter*, 68%; *Listeria*, 84%; *Salmonella*, 80%; VTEC, 76%; *Yersinia*, 80%.
- For more details on methodology see: Thomas MK, Murray R, Flockhart L, Pintar K, Pollari F, Fazil A, et al. Estimates of the burden of foodborne illness in Canada for 30 specified pathogens and unspecified agents, circa 2006. *Foodborne Pathog Dis.* 2013;10(7):639-48.

### Limitations:

- Not all pathogens associated with foodborne illnesses are reportable in Ontario.
- Reportable foodborne illnesses due to pathogens not listed in the top five and due to chemical contamination were not included.
- Foodborne illness is likely under-reported in iPHIS.

## 2. ESTIMATED AVERAGE ANNUAL NUMBER OF TRUE CASES OF FOODBORNE ILLNESS

### Indicator definition:

Sum of [annual number of known cases of pathogen-specific illness adjusted for foodborne transmission, under-reporting and under-diagnosis] from 2006 to 2012

---

7 years included

### Data source:

integrated Public Health Information System (iPHIS), 2006–12 (combined), Ontario Ministry of Health and Long-Term Care, extracted 2013 Nov 22.

### Methodological notes:

- Laboratory-confirmed cases in iPHIS of *Campylobacter* enteritis, listeriosis, salmonellosis, yersiniosis, or verotoxin-producing *Escherichia coli* (*E. coli*) (VTEC) infection thought to be attributable to food, adjusted for foodborne transmission and to exclude illness related to travel outside of Canada. These are considered to be the top five foodborne illnesses in Ontario, accounting for over half of all foodborne illnesses that are due to reportable enteric pathogens. This estimate was derived using a statistical model to account for the level of under-reporting and under-diagnosis of these illnesses. Most of these cases are not reported in iPHIS.
- The proportion of pathogen-specific enteric illness caused by these pathogens that is thought to be due attributable to foodborne transmission food is as follows: *Campylobacter*, 68%; *Listeria*, 84%; *Salmonella*, 80%; VTEC, 76%; *Yersinia*, 80%. Multipliers used to adjust for under-reporting and under-diagnosis of foodborne illness due to these pathogens is as follows: *Campylobacter*, 27.2; *Listeria*, 1.7; *Salmonella*, 26.1; VTEC, 20.1; *Yersinia*, 39.3. Note: To take into account the uncertainty and year to year variability of the values, distributions of the annual number of cases of each of the five pathogens in Ontario, 2006 – 2012, were used in the model. Therefore, applying these multipliers to average annual number of cases will yield slightly different results.
- Based on available data in iPHIS, these are considered to be the top five foodborne illnesses in Ontario, accounting for half of all foodborne illnesses that are due to reportable enteric pathogens.
- For more details on methodology see: Thomas MK, Murray R, Flockhart L, Pintar K, Pollari F, Fazil A, et al. Estimates of the burden of foodborne illness in Canada for 30 specified pathogens and unspecified agents, circa 2006. *Foodborne Pathog Dis.* 2013;10(7):639-48.

### Limitations:

- Not all pathogens associated with foodborne illnesses are reportable in Ontario.
- Reportable foodborne illnesses due to pathogens not listed in the top five and due to chemical contamination were not included.
- Foodborne illness is likely under-reported in iPHIS.

### 3. ESTIMATED INCIDENCE RATE OF FOODBORNE ILLNESS

**Indicator definition:**

Annual cases of pathogen-specific foodborne illness (or illness due to the five pathogens combined)

\* 100,000

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Total population

**Data sources:**

integrated Public Health Information System (iPHIS), 2006–12, Ontario Ministry of Health and Long-Term Care, extracted 2013 Nov 22.

Population Estimates, 2006–12, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2013 Oct 29.

**Methodological notes:**

- Laboratory-confirmed cases in iPHIS of *Campylobacter* enteritis, listeriosis, salmonellosis, yersiniosis, or verotoxin-producing *Escherichia coli* (*E. coli*) (VTEC) infection thought to be attributable to food, adjusted for foodborne transmission and to exclude illness related to travel outside of Canada. These are considered to be the top five foodborne illnesses in Ontario, accounting for over half the proportion of all foodborne illnesses that are due to reportable enteric pathogens. The proportion of pathogen-specific enteric illness caused by these pathogens that is thought to be due attributable to foodborne transmission food is as follows: *Campylobacter*, 68%; *Listeria*, 84%; *Salmonella*, 80%; VTEC, 76%; *Yersinia*, 80%.
- Based on available data in iPHIS, these are considered to be the top five foodborne illnesses in Ontario, accounting for half of all foodborne illnesses that are due to reportable enteric pathogens.
- For more details on methodology see: Thomas MK, Murray R, Flockhart L, Pintar K, Pollari F, Fazil A, et al. Estimates of the burden of foodborne illness in Canada for 30 specified pathogens and unspecified agents, circa 2006. *Foodborne Pathog Dis.* 2013;10(7):639-48.

**Limitations:**

- Not all pathogens associated with foodborne illnesses are reportable in Ontario.
- Reportable foodborne illnesses due to pathogens not listed in the top five and due to chemical contamination were not included.
- Foodborne illness is likely under-reported in iPHIS.

## 4. SUSPECTED EXPOSURE SETTINGS OF FOODBORNE ILLNESS

### Indicator definition:

$$\frac{\text{Total number of cases of pathogen-specific foodborne illness (or illness due to the five pathogens combined) thought to be contracted in a specific setting}}{\text{Total number of cases of pathogen-specific foodborne illness (or illness due to the five pathogens combined)}} \times 100$$

### Data source:

integrated Public Health Information System (iPHIS), 2007–10 (combined), Ontario Ministry of Health and Long-Term Care, extracted 2011 Oct 3.

### Methodological notes:

- Only includes cases of enteric illness classified as “foodborne” using the exposure transmission mode category within iPHIS.
- Included laboratory-confirmed cases in iPHIS of *Campylobacter* enteritis, listeriosis, salmonellosis, yersiniosis, or verotoxin-producing *Escherichia coli* (*E. coli*) (VTEC) infection were included. These are considered to be the top five foodborne illnesses in Ontario, accounting for over half of all foodborne illnesses that are due to reportable enteric pathogens.
- Includes only cases of the top five enteric illnesses that were classified as foodborne by the exposure transmission mode category within iPHIS. These cases were reviewed to identify suspected food settings and sources (Tables 1 and 2). (Tables 1 and 2). iPHIS fields reviewed were: exposure name; exposure detail comments; exposure setting description; exposure setting comments; nature of contact description; exposure transmission mode; exposure source; exposure source details; exposure role name; address province; and address country. Open text and predesigned text from the twelve fields were reviewed for information on mode of transmission, setting where the illness resulted at and most likely source of foodborne illness. The information was reviewed by three people (a senior program specialist and two information clerks) for consistency.

Table 1: Classification of reported exposure settings

Main Category	Sub Categories	Examples
Restaurant	restaurant	restaurant, food courts, buffet restaurant, deli, take-out
	hostel/hotel/motel room service	
	cafeteria	hospital/university/school/workplace cafeteria
Other retail food establishment	foods	grocery stores, variety store
	bakery	
	banquet hall	

Main Category	Sub Categories	Examples
	caterer	
	temporary food premises	food bank, recreational centre event
	mobile food premises	meals on wheel, mobile fruit vendor, mobile vending
	butcher shop	
	food processing plant	
	farm/farm gate/food stand	
	farmers' market	
	other	
Institutions	hospital	acute, rehab centre, health centre, inpatient
	long-term care facility and retirement homes	
	child care centre	daycare, day camp
	group home	
	recreational camp	summer camp
Private home	home	
	cottage	
	living on farm	
Community event	picnic	
	religious events	
	BBQ	
	potluck	
	fairs	
Other	fire hall	
	train/plane	
	work place	
Unknown		

**Limitations:**

- Not all pathogens associated with foodborne illnesses are reportable in Ontario.
- Reportable foodborne illnesses due to pathogens not listed in the top five and due to chemical contamination were not included.
- Foodborne illness is likely under-reported in iPHIS.
- When determining exposure source and settings, it should be noted that a single case may be counted more than once if more than one transmission mode was indicated in iPHIS. These possible duplicate cases were not removed. There may also be relevant exposure information that is not reported in iPHIS.
- Detailed risk factor information is not consistently available in iPHIS. Cases in which no exposure information was specified (approximately 22%); cases that resided out-of-province; and cases that did not meet case definition of foodborne illness were removed from the dataset.

- The suspected food source and suspected setting in which the food was consumed are usually determined through case interview and not confirmed by testing. This information may be subject to biases.
- There are differences among and within public health units as to how reported enteric illness cases are investigated and recorded. As a result, the amount of information reported for enteric illness cases in iPHIS varies across health units, not all cases have exposures listed and some have multiple modes of transmission and multiple settings and sources.
- Information available in iPHIS for source data and environmental factors associated with the reported foodborne illness is limited. Assumptions were made to classify the source and the settings as concise and detailed information was not available in iPHIS (see Tables 1 and 2 for classification assumptions of the sources and settings). Therefore, the exposure information presented here may not reflect the true exposure sources and settings involved.
- Reportable foodborne illnesses due to pathogens not listed in the “top five” and due to chemical contamination were not included. Foodborne illness due to the “top five” pathogens accounted for 56% of all reported foodborne disease during 2007–10.

## 5. SUSPECTED FOOD SOURCES OF FOODBORNE ILLNESS

### Indicator definition:

$$\frac{\text{Total number of cases of pathogen-specific foodborne illness (or illness due to the five pathogens combined) thought to be contracted from a specific source}}{\text{Total number of cases of pathogen-specific foodborne illness (or illness due to the five pathogens combined)}} \quad *100$$

### Data source:

integrated Public Health Information System (iPHIS), 2007–10 (combined), Ontario Ministry of Health and Long-Term Care, extracted 2011 Oct 3.

### Methodological notes:

- Includes laboratory-confirmed cases in iPHIS of *Campylobacter* enteritis, listeriosis, salmonellosis, yersiniosis, or verotoxin-producing *Escherichia coli* (*E. coli*) (VTEC) infection were included. These are considered to be the top five foodborne illnesses in Ontario, accounting for over half of all foodborne illnesses that are due to reportable enteric pathogens.
- Includes only cases of the top five enteric illnesses that were classified as foodborne by the exposure transmission mode category within iPHIS. These cases were reviewed to identify suspected food sources (Tables 2). iPHIS fields reviewed were: exposure name; exposure detail comments; exposure setting description; exposure setting comments; nature of contact description; exposure transmission mode; exposure source; exposure source details; exposure role name; address province; and address country. Open text and predesigned text from the twelve fields were reviewed for information on mode of transmission, setting where the illness

resulted at and most likely source of foodborne illness. The information was reviewed by three people (a senior program specialist and two information clerks) for consistency.

Table 2: Classification of reported exposure sources

Main category	Sub-categories	Examples
Chicken	whole, ground or chicken pieces	unspecified chicken, BBQ, baked
	chicken dishes	chicken sandwich, chicken burger, chicken salad, chicken stew, butter chicken
	other chicken	chicken liver, chicken hotdog
Other poultry	turkey	roast, turkey sandwich, turkey burger
	game bird	pigeon
	goose	
	duck	duck, duck blood, duck pate
	quail	
	unspecified poultry	unspecified poultry
Beef	ground beef	hamburger-hamburger meal, meatball
	unspecified beef or whole muscle beef	steak, BBQ beef rib, roast beef
	beef dishes	beef patties, beef patty, roasted beef sandwich, beef soup, beef chilli
	other beef	beef liver, corned beef, all beef hotdog, beef sausage, beef jerky
Pork	unspecified pork	
	other pork	bacon, pork chops, pork sausage, rib, roasted pig, ham, canned pork
	pork dishes	pork, mixed dishes
Other meat	lamb	lamb liver and lamb dishes
	unspecified meat-liver	liver , BBQ rib
	goat	
	game meat	bear, deer
	mixed meat	hot dog, sausage, blood sausage
	luncheon	salami, deli meat and deli meat sandwich, bologna, cold cut (unspecified)
Dairy product	milk	pasteurised milk, baby formula (powder and liquid), unpasteurised milk
	cheese	pasteurized cheese, unpasteurized cheese, cream cheese, blue cheese, cheddar cheese
	yogurt	
	ice-cream	
	other dairy	butter, cream, sour cream,
	dairy substitute	almond milk, soya milk

	dairy unspecified	
Egg	eggs	unspecified egg, under cooked eggs, sunny side up, poached egg
	egg dishes	egg sandwich, egg salad
Seafood	shell fish	shrimp, scallop, crab, oyster, clam, mussel
	fish	tuna, salmon, unspecified fish, BBQ eel
	seafood dishes	sushi, tuna salad, clam chowder, crab cake, calamari sauce
Produce	berries	strawberries, blueberries
	other fruits	unspecified fruits, apple, mango, cantaloupe, melon
	leafy vegetables	salad mix, lettuce, spinach, arugula
	other vegetables, including root vegetables	unspecified vegetables, sprout, mushroom, potato, carrot
	produce dishes	fruit salad, garden salad, vegetarian baby food, bean curd, apple sauce, veggie burger, hash brown, french fries, onion rings
Multi-ingredient foods	soup	noodle soup, broccoli soup, meat soup
	salads	Caesar salad, chicken salad, potato salad, Waldorf salad.
	baby food	mixed meat and veggie baby food
	pizza	unspecified pizza, pepperoni pizza, cheese pizza, chicken pizza
	multi-ingredient sandwiches	turkey bacon sandwich, tuna salad sandwich, breakfast sandwich, Ruben sandwich
	other multi-ingredient food	California rolls, cabbage rolls, Alfredo pasta, Thai food, pasta sauce, Cajun rice bowl, cannelloni, cashew nut chicken, cheese tortellini Alfredo sauce
Beverages	juice	apple cider (unpasteurised and pasteurised), berries and banana juice
	other	lemonade, coconut water
Baked items	bakery	banana cream pie, batter, cake, butter tart, bread, roti
Other foods	sauces	cream sauce, tomato sauce
	nuts	almond, peanut, peanut butter, pecan spread
	grains and grain dishes	rice, noodles, pasta, popcorn, cereal
	beans	hummus, chickpea, lentil
	condiments	salad dressing, mayonnaise
	chocolate	
	cereals	
	other	vitamins, mouse droppings, feces
Unknown	unknown food	

**Limitations:**

- Not all pathogens associated with foodborne illnesses are reportable in Ontario.
- Reportable foodborne illnesses due to pathogens not listed in the top five and due to chemical contamination were not included.
- Foodborne illness is likely under-reported in iPHIS.
- When determining exposure source and settings, it should be noted that a single case may be counted more than once if more than one transmission mode was indicated in iPHIS. These possible duplicate cases were not removed. There may also be relevant exposure information that is not reported in iPHIS.
- Detailed risk factor information is not consistently available in iPHIS. Cases in which no exposure information was specified; cases that resided out-of-province; and cases that did not meet case definition of foodborne illness—approximately 22%— were removed from the dataset.
- For food source attribution, the suspected food source and suspected setting in which the food was consumed are usually determined through case interview and not confirmed by testing. This information may be subject to biases.
- There are differences among and within public health units as to how reported enteric illness cases are investigated and recorded. As a result, the amount of information reported for enteric illness cases in iPHIS varies across health units, not all cases have exposures listed and some have multiple modes of transmission and multiple settings and sources.
- Information available in iPHIS for source data and environmental factors associated with the reported foodborne illness is limited. Assumptions were made to classify the source and the settings as concise and detailed information was not available in iPHIS (see Tables 1 and 2 for classification assumptions of the sources and settings). Therefore, the exposure information presented here may not reflect the true exposure sources and settings involved.

# Defending Ontario against measles

## 1. REPORTED MEASLES

**Indicator definition:**

$$\frac{\text{Confirmed cases of measles}}{\text{Total population}} \times 1,000,000$$

**Data sources:**

integrated Public Health Information System (iPHIS), 1991–2013, Ontario Ministry of Health and Long-Term Care, extracted 2 Dec 2013.

integrated Public Health Information System (iPHIS), 2014, Ontario Ministry of Health and Long-Term Care, extracted 2015 Feb 11.

Population Estimates, 1991–2013, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2013 Oct 29.

**Methodological notes:**

- Determination of PHU based on diagnosing health unit.
- Excludes cases where Diagnosing Health Unit = MOHLTC (i.e., excludes out-of-province cases).
- Includes only cases where provincial case CLASSIFICATION DESCRIPTION field = "CONFIRMED" and DISPOSITION DESCRIPTION not in ("DOES NOT MEET DEFINITION", "CLOSED - DUPLICATE - DO NOT USE", "ENTERED IN ERROR").
- Year derived using Accurate Episode Date field in iPHIS.
- As 2014 PHU level population data were not available at the time of analysis, 2013 data were used as a proxy measure.
- Vaccination status of measles cases in Ontario is only available from 2006 to 2013.

**Limitations:**

- iPHIS is a dynamic disease reporting system which allows ongoing updates to data previously entered. As a result, data extracted from iPHIS represent a snap shot at the time of extraction and may differ from previous or subsequent reports.
- The data only represent cases reported to public health and recorded in iPHIS. As a result, all counts will be subject to varying degrees of underreporting due to a variety of factors, such as disease awareness, medical care seeking behaviours, changes in laboratory testing, reporting behaviours, clinical practice, and severity of illness.

# No health without mental health

## 1. SELF-REPORTED POSITIVE MENTAL HEALTH

### Indicator definition:

Weighted number of respondents age 12 and older classified as having “flourishing” positive mental health

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\* 100

Weighted total number of respondents age 12 and older

### Data source:

Canadian Community Health Survey 2011/12, Statistics Canada, Ontario Share File, distributed by Ontario Ministry of Health and Long-Term Care.

### Methodological notes:

- Positive mental health was measured using the short form of the Mental Health Continuum, a 14-question scale validated for use in individuals 12 years of age and older.
- Calculated using PMHDCLA variable
  - To be classified as having “flourishing” mental health, an individual must report experiencing at least one of three signs of hedonic wellbeing (e.g., feeling interested/satisfied with life) every day or almost every day, and at least six of eleven signs of positive functioning (e.g., contributed to society) during the past month.
- Respondent coded as “NOT STATED” were excluded from the analysis.
- Bootstrapping techniques were used to produce the coefficient of variation (CV) and 95% confidence intervals (CIs). Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified in any tables where applicable, and should be interpreted with caution due to high sampling variability. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability.

### Limitations:

- Indicator is based on self-reported data.
- The CCHS excludes individuals living on reserves and other Aboriginal settlements, institutions, full-time members of the Canadian Armed Forces, and residents of remote regions of the country.

## 2. SELF-REPORTED MOOD AND ANXIETY DISORDERS

### Indicator definition:

Weighted number of respondents age 12 and older reporting having a mood or anxiety disorder

---

Weighted total number of respondents age 12 and older

\* 100

### Data source:

Canadian Community Health Survey 2003–2011/12, Statistics Canada, Ontario Share File, distributed by Ontario Ministry of Health and Long-Term Care.

### Methodological notes:

- Calculated using the variables CCC\_280 and CCC\_290.
- Respondents coded as “DON’T KNOW”, “NOT STATED” or “REFUSAL” for both variables were excluded from the analysis.
- Questions refer to conditions diagnosed by a health professional and that are expected to last or have already lasted 6 months or more.
- Bootstrapping techniques were used to produce the coefficient of variation (CV) and 95% confidence intervals (CIs). Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified in any tables where applicable, and should be interpreted with caution due to high sampling variability. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability.

### Limitations:

- Indicator is based on self-reported data.
- The CCHS excludes individuals living on reserves and other Aboriginal settlements, institutions, full-time members of the Canadian Armed Forces, and residents of remote regions of the country

## 3. SUICIDE

### Indicator definition:

Number of deaths among those aged 10 and older attributed to suicide

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Total population age 10 and older

\* 100,000

### Data sources:

Vital statistics, 2003–2009, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, extracted 2013 Nov 15.

Population Estimates, 2003–2009, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2013 Nov 15.

**Methodological notes:**

- Suicide was defined using the following ICD-10 codes: X60-X84, Y87.0.

**Limitations:**

- None stated.

## 4. SELF-HARM RELATED HOSPITALIZATION

**Indicator definition:**

Number of hospitalizations among those age 10 and older attributed to suicide

\* 100,000

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Total population age 10 and older

**Data sources:**

National Ambulatory Care Reporting System (NACRS), 2003–2012, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2013 Nov 15.

Population Estimates, 2003–2009, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2013 Oct 29.

**Methodological notes:**

- Self-harm was defined using the following ICD-10 codes: X60-X84, Y87.0.
- Hospitalization and population data was limited to individuals age 10 and older.

**Limitations:**

- None stated.

# Obesity: A burden across the life course

## 1. CORRECTED SELF-REPORTED OBESITY IN ADULTS AND SENIORS

### Indicator definition:

Weighted number of respondents age 20 and older with a corrected self-reported body mass index of 30 or greater

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Weighted total number of respondents age 20 and older

\* 100

### Data source:

Canadian Community Health Survey 2003–2011/12, Statistics Canada, Ontario Share File, distributed by Ontario Ministry of Health and Long-Term Care.

### Methodological notes:

- Calculated using the variable HWTDBMI
- Respondents coded as 'NOT APPLICABLE' or 'NOT STATED' were excluded from the analysis.
- Females that reported being pregnant or breastfeeding at the time of interview were also excluded.
- Respondents with a BMI greater than or equal to 30 were classified as obese
- Self-reported BMI was corrected to better reflect measured BMI using an equation suggested by Gorber et al.<sup>4</sup>
  - Males:  $BMI_{(measured)} = -1.08 + 1.08 (BMI_{self-reported})$
  - Females:  $BMI_{(measured)} = -0.12 + 1.05 (BMI_{self-reported})$
- Bootstrapping techniques were used to produce the coefficient of variation (CV) and 95% confidence intervals (CIs). Data with a coefficient of variation (CV) from 16.6% to 33.3% should be interpreted with caution due to high sampling variability. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability.

### Limitations:

- Although correction equations have been used, this indicator is based on self-reported data and is still an imperfect representation of measured BMI.
- The CCHS excludes individuals living on reserves and other Aboriginal settlements, institutions, full-time members of the Canadian Armed Forces, and residents of remote regions of the country.

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<sup>4</sup> Gorber SC, Shields M, Tremblay MS, McDowell I. The feasibility of establishing correction factors to adjust self-reported estimates of obesity. Health Reports, 2008.

## 2. CORRECTED SELF-REPORTED WEIGHT DISTRIBUTION IN ADULTS AND SENIORS

### Indicator definition:

Weighted number of respondents age 20 and older with a corrected self-reported body mass index in each category listed below

---

Weighted total number of respondents age 20 and older

\* 100

### Data source:

Canadian Community Health Survey 2003–2011/12, Statistics Canada, Ontario Share File, distributed by Ontario Ministry of Health and Long-Term Care.

### Methodological notes:

- Calculated using the variable HWTDBMI.
- Respondents coded as 'NOT APPLICABLE' or 'NOT STATED' were excluded from the analysis.
- Females that reported being pregnant or breastfeeding at the time of interview were also excluded.
- Weight categories:
  - Underweight: BMI less than 18.5
  - Healthy weight: BMI greater than or equal to 18.5 and less than 25
  - Overweight: BMI greater than or equal to 25 and less than 30
  - Obese: BMI greater than or equal to 30
- Self-reported BMI was corrected to better reflect measured BMI using an equation suggested by Gorber et al.<sup>5</sup>
  - Males:  $BMI_{(measured)} = -1.08 + 1.08 (BMI_{self-reported})$
  - Females:  $BMI_{(measured)} = -0.12 + 1.05 (BMI_{self-reported})$
- Bootstrapping techniques were used to produce the coefficient of variation (CV) and 95% confidence intervals (CIs). Data with a coefficient of variation (CV) from 16.6% to 33.3% should be interpreted with caution due to high sampling variability. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability.

### Limitations:

- Although correction equations have been used, this indicator is based on self-reported data and is still an imperfect representation of measured BMI.
- The CCHS excludes individuals living on reserves and other Aboriginal settlements, institutions, full-time members of the Canadian Armed Forces, and residents of remote regions of the country.

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<sup>5</sup> Gorber SC, Shields M, Tremblay MS, McDowell I. The feasibility of establishing correction factors to adjust self-reported estimates of obesity. Health Reports, 2008.

### 3. SELF-REPORTED LOW PHYSICAL ACTIVITY

**Indicator definition:**

Weighted number of respondents age 12 and older who reported being inactive during their leisure time

---

Weighted total number of respondents age 12 and older

\* 100

**Data source:**

Canadian Community Health Survey 2003–2011/12, Statistics Canada, Ontario Share File, distributed by Ontario Ministry of Health and Long-Term Care.

**Methodological notes:**

- Calculated using the variable PACDPAL.
- Respondents coded as 'NOT APPLICABLE' or 'NOT STATED' were excluded from the analysis.
- Bootstrapping techniques were used to produce the coefficient of variation (CV) and 95% confidence intervals (CIs). Data with a coefficient of variation (CV) from 16.6% to 33.3% should be interpreted with caution due to high sampling variability. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability.

**Limitations:**

- The CCHS excludes individuals living on reserves and other Aboriginal settlements, institutions, full-time members of the Canadian Armed Forces, and residents of remote regions of the country.

### 4. SELF-REPORTED HIGH SEDENTARY BEHAVIOUR

**Indicator definition:**

Weighted number of respondents age 12 and older who reported spending 15 or more hours of leisure time engaged in sedentary behaviour (excluding reading) per week

---

Weighted total number of respondents age 12 and older

\* 100

**Data source:**

Canadian Community Health Survey 2007/08–2011/12, Statistics Canada, Ontario Share File, distributed by Ontario Ministry of Health and Long-Term Care.

**Methodological notes:**

- Calculated using the variable SACDTER.
- Respondents coded as 'NOT APPLICABLE' or 'NOT STATED' were excluded from the analysis.
- Bootstrapping techniques were used to produce the coefficient of variation (CV) and 95% confidence intervals (CIs). Data with a coefficient of variation (CV) from 16.6% to 33.3% should be interpreted with caution due to high sampling variability. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability.

**Limitations:**

- The CCHS excludes individuals living on reserves and other Aboriginal settlements, institutions, full-time members of the Canadian Armed Forces, and residents of remote regions of the country.

## 5. SELF-REPORTED LOW VEGETABLE AND FRUIT CONSUMPTION

**Indicator definition:**

Weighted number of respondents age 12 and older who reported consuming vegetables and fruit fewer than five times per day

\* 100

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Weighted total number of respondents age 12 and older

**Data source:**

Canadian Community Health Survey 2003–2011/12, Statistics Canada, Ontario Share File, distributed by Ontario Ministry of Health and Long-Term Care.

**Methodological notes:**

- Calculated using the variable FVCGTOT.
- Respondents coded as 'NOT APPLICABLE' or 'NOT STATED' were excluded from the analysis.
- Bootstrapping techniques were used to produce the coefficient of variation (CV) and 95% confidence intervals (CIs). Data with a coefficient of variation (CV) from 16.6% to 33.3% should be interpreted with caution due to high sampling variability. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability.

**Limitations:**

- The CCHS excludes individuals living on reserves and other Aboriginal settlements, institutions, full-time members of the Canadian Armed Forces, and residents of remote regions of the country.

# Radon: Risks and Realities

## 1. HOMES WITH RADON CONCENTRATIONS AT SPECIFIED LEVELS

### Indicator definition:

$$\frac{\text{Number of homes with radon concentrations at specified levels}}{\text{Total number of homes}} * 100\%$$

### Data source:

Health Canada. Cross-Canada survey of radon concentration in homes: final report. Ottawa, ON: Her Majesty the Queen in Right of Canada, represented by the Minister of Health; 2012. Available from: [http://www.hc-sc.gc.ca/ewh-semt/alt\\_formats/pdf/radiation/radon/survey-sondage-eng.pdf](http://www.hc-sc.gc.ca/ewh-semt/alt_formats/pdf/radiation/radon/survey-sondage-eng.pdf).

### Methodological notes:

- Health Canada conducted the Cross-Canada Survey of Radon Concentrations in Homes during the fall and winter of 2009–10 and 2010–11 (1). The sampling included all health regions in Canada (known as public health units in Ontario). Health Canada derived a population-weighted estimate of the percentage of the population in Ontario that lived in homes with radon concentrations in different categories (e.g., “above 200 Bq/m<sup>3</sup>”) using 2006 Census data.
- Health Canada provided Public Health Ontario with radon concentrations for homes in Ontario from this cross-Canada survey. For this Ontario Health Profile, these data were categorized to correspond to the exposure levels for radon-attributable preventable lung cancer deaths cited in the research article by Peterson et al. and used in the “Health impacts” section of the web report (2).
- The category defined as “at or above 200 Bq/m<sup>3</sup>” in this Ontario Health Profile was labelled “above 200 Bq/m<sup>3</sup>” in the Health Canada report (1), but includes those homes at 200 Bq/m<sup>3</sup> in both reports. In addition, Health Canada corrected the public health unit to which several homes in Ontario were assigned following the release of the Cross-Canada Survey of Radon Concentrations in Homes, and the updated information is included in this Ontario Health Profile. As a result some estimates of the proportion of homes at or above 200 Bq/m<sup>3</sup> in the Ontario Health Profile are slightly different from those reported in the Cross-Canada Survey of Radon Concentrations in Homes.

### Limitations:

- None stated.

## 2. PREVENTABLE RADON-ATTRIBUTABLE LUNG CANCER DEATHS

### Indicator definition:

Number of radon-attributable lung cancer deaths that could be prevented each year if all homes at or above specified levels were remediated to background levels (10 – 30 Bq/m<sup>3</sup>), by geography

**Data source:**

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Lung cancer risk from radon in Ontario: burden of illness results by health unit [draft]. Toronto, ON: Queen's Printer for Ontario; [2013].

**Methodological notes:**

- Lung cancer deaths attributed to radon exposure at specified levels was estimated using population-attributable risk. Refer to original research article for details about methodology (Peterson E, Aker A, Kim J, Li Y, Brand K, Copes R. Lung cancer risk from radon in Ontario, Canada: how many lung cancers can we prevent? *Cancer Causes Control*. 2013;24(11):2013-20. Available from: [http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3824583/pdf/10552\\_2013\\_Article\\_278.pdf](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3824583/pdf/10552_2013_Article_278.pdf) )
- The number and proportion of lung cancer deaths that could be prevented each year if all homes at or above 100 Bq/m<sup>3</sup> and 200 Bq/m<sup>3</sup> were remediated to outdoor levels are provided in the data source cited. Additional categories are presented in the Ontario Health Profile web report.
- Public health unit-level preventable lung cancer deaths do not add up to the Ontario estimate due to the use of population weighting to calculate the Ontario estimate

**Limitations:**

- None stated.

### 3. LUNG CANCER AND LIFETIME EXPOSURE TO RADON

**Indicator definition:**

Estimated per cent of people who will get lung cancer by lifetime exposure to radon at specified levels

**Data source:**

Radon Working Group. Report of the Radon Working Group on a new radon guideline for Canada, 2006.

**Methodological notes**

- Adapted from: Radon Working Group. Report of the Radon Working Group on a new radon guideline for Canada. Submitted to the Federal Provincial Territorial Radiation Protection Committee [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada, represented by the Minister of Health; 2006 [cited 2013 Nov 20]. Available from: [http://www.mtpinnacle.com/pdfs/WG\\_Report\\_2006-03-10\\_en.pdf](http://www.mtpinnacle.com/pdfs/WG_Report_2006-03-10_en.pdf)

**Limitations:**

- None stated.

# Respiratory viruses: More than a winter worry

## 1. PER CENT POSITIVITY

### Indicator definition:

Specimens with a positive test result (by type of virus)

\* 100

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All specimens submitted for lab testing (by type of virus)

### Data source:

Adapted from: Public Health Ontario. Ontario respiratory virus bulletin [Internet]. Toronto, ON: Ontario Agency for Health Protection and Promotion; c2014. Available from:

<http://www.publichealthontario.ca/en/ServicesAndTools/SurveillanceServices/Pages/Ontario-Respiratory-Virus-Bulletin.aspx>.

### Methodological notes:

- These data are originally sourced from the Public Health Agency of Canada's (PHAC) Centre for Immunization and Respiratory Infectious Diseases (CIRID).
- These data represent the number of specimens tested, which may not necessarily correspond with the number of patients as more than one specimen may have been submitted per patient.

### Limitations:

- The numbers reported represent results submitted to the CIRID by 16 participating laboratories in Ontario, including 11 Public Health Ontario Laboratories (PHOLs) and five hospital-based laboratories. Note that not all laboratories report in every week and a small number of laboratories tend to report in week 52.
- Results were assigned to a particular surveillance week based on when test results are reported to PHAC; these data are not updated when results are submitted late for previous surveillance weeks.
- The data only represent results submitted to the CIRID. As a result, all counts will be subject to varying degrees of underreporting depending on factors such as disease awareness, medical seeking behaviours, changes in laboratory testing, reporting behaviours, and severity of illness.

## 2. REPORTED INFLUENZA

### Indicator definition:

$$\frac{\text{Confirmed cases of influenza}}{\text{Total population}} * 100,000$$

### Data sources:

integrated Public Health Information System (iPHIS), 2005–13, Ontario Ministry of Health and Long-Term Care, extracted 2 Dec 2013.

Population Estimates, 2005–2012, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2013 Oct 29.

### Methodological notes:

- Determination of PHU based on diagnosing health unit.
- Excludes cases where Diagnosing Health Unit = MOHLTC (i.e., excludes out-of-province cases).
- Includes only cases where provincial case CLASSIFICATION DESCRIPTION field = "CONFIRMED" and DISPOSITION DESCRIPTION not in ("DOES NOT MEET DEFINITION", "CLOSED - DUPLICATE - DO NOT USE", "ENTERED IN ERROR").
- Year derived using Accurate Episode Date field in iPHIS.
- Influenza season runs from September to August of the following year.

### Limitations:

- iPHIS is a dynamic disease reporting system which allows ongoing updates to data previously entered. As a result, data extracted from iPHIS represent a snap shot at the time of extraction and may differ from previous or subsequent reports.
- The data only represent cases reported to public health and recorded in iPHIS. As a result, all counts will be subject to varying degrees of underreporting due to a variety of factors, such as disease awareness, medical care seeking behaviours, changes in laboratory testing, reporting behaviours, clinical practice, and severity of illness.

# Road safety: The journey ahead

## 1. PREVENTABLE DEATHS DUE TO ROAD TRAFFIC INJURIES

### Indicator definition:

Total number of road traffic deaths in a given age group<sub>i</sub> (less than age 75)

\*100

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Total number of deaths from preventable causes in that age group<sub>i</sub>

### Data sources:

Vital Statistics, 2003–09 (combined), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2012 Dec 1.

Population Estimates, 2000–09 (combined), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2013 Oct 29.

### Methodological notes:

- Road traffic deaths due to traffic-only collisions (i.e., involving motor vehicles, motor cyclists, other and unspecified motor vehicles, pedestrians and pedal cyclists): V02-V04 (.1-.9), V09.2, V12-V14 (.3-.9), V19 (.4-.6), V20-V28 (.3-.9), V29 (.4-.9), V30-V39 (.4-.9), V40-V49 (.4-.9), V50-V59 (.4-.9), V60-V69 (.4-.9), V70-V79 (.4-.9), V80 (.3-.5), V81.1, V82.1, V83-V86 (.0-.3), V87 (.0-.8), V89.2
- For a full list of ICD-10 codes included in the denominator please refer to [www.publichealthontario.ca](http://www.publichealthontario.ca), [Avoidable Mortality Snapshot Metadata](#).
- Indicator was replicated from methodology used by the Canadian Institute for Health Information (CIHI) for the 2012 Health Indicators report. For a detailed description of methodological considerations refer to original report: [https://secure.cihi.ca/free\\_products/health\\_indicators\\_2012\\_en.pdf](https://secure.cihi.ca/free_products/health_indicators_2012_en.pdf)
- Does not include deaths of Ontario residents which occurred out of province.

### Limitations:

- Not all deaths considered as being preventable can actually be prevented, however, measures such as preventable mortality are appropriate for monitoring trends and not for explaining them in full.
- Age 75 is used as the upper age limit, however, it is regarded as somewhat arbitrary as there are deaths in the population aged 75 and older that can be prevented.

## 2. EMERGENCY DEPARTMENT VISITS, HOSPITALIZATIONS AND DEATHS FROM ROAD TRAFFIC COLLISION INJURY

### Indicator definition:

Number of emergency department visits/hospitalizations/deaths due to road traffic collisions

$$\frac{\text{Number of emergency department visits/hospitalizations/deaths due to road traffic collisions}}{\text{Total population}} * 100,000$$

### Data sources:

National Ambulatory Care Reporting System (NACRS), 2003–12, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2013 Jun 25.

Vital Statistics, 2000–09, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2012 Dec 1.

Population Estimates, 2000–12, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, Date Extracted: 2013 Oct 29.

### Methodological notes:

- ICD-10 external cause of injury groupings included in road traffic injury indicators:
  - All motor vehicle collisions (i.e., traffic-only collisions involving motor vehicles, motor cyclists, other and unspecified motor vehicles, pedestrians and pedal cyclists): V02-V04 (.1-.9), V09.2, V12-V14 (.3-.9), V19 (.4-.6), V20-V28 (.3-.9), V29 (.4-.9), V30-V39 (.4-.9), V40-V49 (.4-.9), V50-V59 (.4-.9), V60-V69 (.4-.9), V70-V79 (.4-.9), V80 (.3-.5), V81.1, V82.1, V83-V86 (.0-.3), V87 (.0-.8), V89.2
  - Collisions involving pedestrians: V02-V04 (.1, .9), V09.2
  - Collisions involving pedal cyclists: V12-V14 (.3-.9), V19 (.4-.6)
- Age-standardized rates have been age-standardized to the 1991 Canadian population.
- For a detailed description of methodology for calculating injury-related emergency department visits, hospitalizations and deaths refer to the Association of Public Health Epidemiologists in Ontario webpages: <http://www.apheo.ca/index.php?pid=296>, <http://www.apheo.ca/index.php?pid=110> and <http://www.apheo.ca/index.php?pid=109>

### Limitations:

- Indicator includes only those admitted to the emergency department, hospitalized or killed, and as such only represent more serious injuries that require an emergency department visit or hospitalization, rather than all road traffic injuries in the population (i.e., excludes those treated in doctors' offices or clinics or those who may have been injured but did not seek treatment in hospital for a road traffic injury).
- Road traffic injury resulting in death before admission to hospital is not captured in the emergency department or hospitalization data.

### 3. CELL PHONE USE WHILE DRIVING AND SEAT BELT USE

#### Indicator definitions:

*Proportion of drivers that have ever used a cell phone while driving:*

$$\frac{\text{Weighted number of licensed drivers age 16+ that reported having ever used a cell phone while driving}}{\text{Weighted total number of licensed drivers age 16+}} * 100$$

*Proportion of drivers that always use a seat belt while driving:*

$$\frac{\text{Weighted number of licensed drivers age 16+ that reported always wearing a seat belt when driving}}{\text{Weighted total number of licensed drivers age 16+}} * 100$$

*Proportion of front seat passengers that use a seat belt while in a motor vehicle:*

$$\frac{\text{Weighted number of passengers age 12+ that reported always wearing a seat belt while in a motor vehicle (front seat)}}{\text{Weighted total number of front seat passengers age 12+}} * 100$$

*Proportion of back seat passengers that use a seat belt while in a motor vehicle:*

$$\frac{\text{Weighted number of passengers age 12+ that reported always wearing a seat belt while in a motor vehicle (back seat)}}{\text{Weighted total number of back seat passengers age 12+}} * 100$$

#### Data source:

Canadian Community Health Survey (CCHS), 2009–10, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health and Long-Term Care.

#### Methodological notes:

- Cell phone use by licensed drivers that reported ever using a cell phone (hands free or hand held) while driving (DRV\_03A [hand-held] + DRV\_03B [hands-free]))

- Seat belt use always when a driver or passenger (DRV\_02 [driver],), DRV\_08A [front seat passenger], DRV\_08B [back seat passenger]))
- Respondents with answers to these questions coded as “NOT STATED” were excluded from the analysis.
- Bootstrapping techniques were used to produce the coefficient of variation (CV) and 95% confidence intervals (CIs). Data with a coefficient of variation (CV) from 16.6% to 33.3% should be interpreted with caution due to high sampling variability. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability.

**Limitations:**

- Based on self-reported data. Respondents may not disclose their true use of cell phones or seat belts while driving.
- The CCHS excludes individuals living on reserves and other Aboriginal settlements, institutions, full-time members of the Canadian Armed Forces, and residents of remote regions of the country.

# Ontario's population: Determinants of health

## 1. POPULATION OF ONTARIO BY AGE GROUP AND SEX

### Indicator definition:

Population counts in each age group by sex, 1971 (estimate), 2013 (estimate) and 2036 (projected)

### Data sources:

1971 and 2013: Statistics Canada. CANSIM Table 051-0001: Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual (persons unless otherwise noted) [Internet].

Ottawa, ON: Statistics Canada; 2013. Available from:

<http://www5.statcan.gc.ca/cansim/a05?lang=eng&id=0510001>.

2036: Population Projections, 2036, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted 2014 Mar 21.

### Methodological notes:

- Estimates are final intercensal for 1971 and preliminary postcensal for 2013. Intercensal estimates are produced using counts from two consecutive censuses adjusted for census net undercoverage (CNU) (including adjustment for incompletely enumerated Indian reserves (IEIR)) and the components of demographic growth that occurred since that census and postcensal estimates.
- The population growth, which is used to calculate population estimates, is comprised of the natural growth, international migration and interprovincial migration.
- Population projections are originally produced by the Ontario Ministry of Finance.
- All population figures are for July 1 of that year.

### Limitations:

- None stated.

## Population subgroup analysis

For some indicators, analyses are provided by subgroups of interest. This includes neighbourhood-level material deprivation and residential instability (from the Ontario Marginalization Index [ON-Marg]). In addition, for those indicators sourced from Canadian Community Health Survey (CCHS), subgroup analysis may be provided by education, immigration status, Aboriginal status, Francophone status and the size of the community where the respondent reported living.

### Data sources:

Ontario Marginalization Index (ON-Marg) 2006, Distributed by the Chair in Research on Urban Neighbourhoods, Community Health and Housing (CRUNCH), McMaster University:

<http://www.crunch.mcmaster.ca/ontario-marginalization-index>

Canadian Community Health Survey 2003–2011/12, Statistics Canada, Ontario Share File, distributed by Ontario Ministry of Health and Long-Term Care.

### Methodological notes:

- Neighbourhood-level material deprivation, ethnic concentration, residential instability and dependency are based on the 2006 Canadian Census. Postal codes were used to assign dissemination areas (DA), which in turn were linked to the ON-Marg.
- For CCHS-based indicators:
  - Education reflects the highest level of education attained by the respondent (calculated only for those age 25+). Three categories were used: Less than secondary school graduation, secondary school graduation and some post-secondary education, and post-secondary graduation; based on the EDUDR04 variable.
  - Immigration status is divided into those who are Canadian born, and those who immigrated 0-4 years, 5-9 years or 10+ years ago; based on the SDCDRES variable.
  - Aboriginal status was identified as those respondents who self-identify as Aboriginal (North American Indian, Métis, or Inuit) from those who do not consider themselves to be Aboriginal; based on the SDCDABT derived variable. Only those living off-reserve are included in the CCHS.
  - Francophone status was identified as those respondents who indicated that French was their mother tongue; based on the SDCDFL1 variable
  - Rural and population centre size where the respondent lives is divided into rural and small (1,000 to 29,999), medium (30,000 to 99,999) and large (100,000+) population centres; based on the GEODPSZ variable.

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