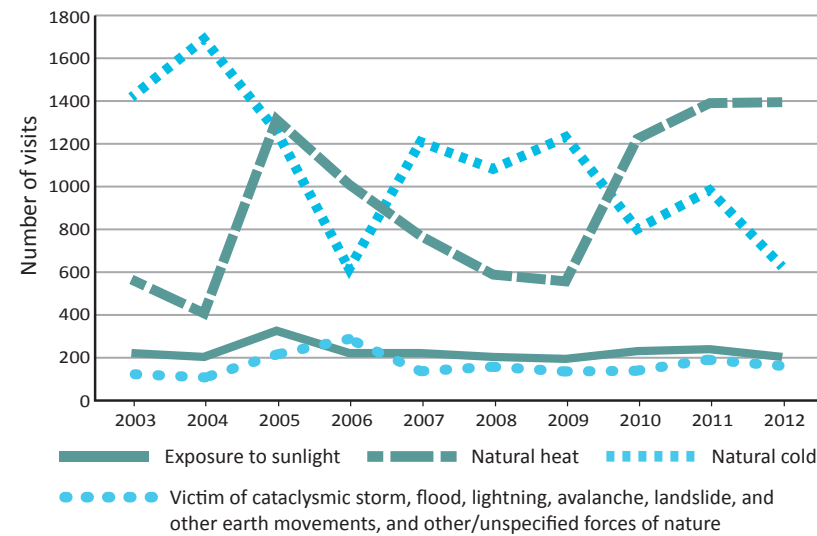


DIRECT IMPACTS BY THE NUMBERS

Number of emergency department visits due to specific extreme weather-related causes, Ontario, 2003-2012¹



Between 2003 and 2009, there were 203 deaths due to extreme weather recorded in Ontario.²

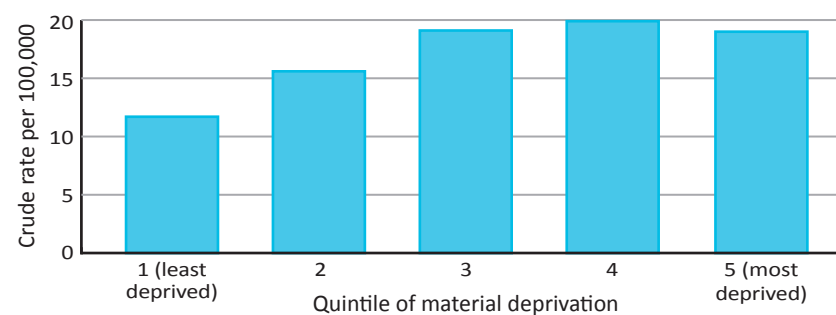
WHO IS AT INCREASED RISK?

Everyone is affected by the impact of extreme weather events, both directly and indirectly.^{3,4} However, some populations have been identified as being at greater risk:³⁻⁵

Seniors
Socially disadvantaged people
People with pre-existing illnesses

Infants and children
Emergency response workers
People living in northern communities

Rates of extreme weather-related emergency department visits stratified by material deprivation,* Ontario, 2012¹



*Measured using the Ontario Marginalization Index.

EXTREME WEATHER

THE FALLOUT AFTER THE STORM

Extreme weather – weather events that are exceptional in terms of frequency or impact – can have outcomes that impact health through direct and indirect effects, including social and economic disruptions.⁵ A changing climate means more extreme weather events, increasing risk to the health of Ontarians.



While direct effects of extreme weather events are a concern to public health, the indirect effects place an even greater burden on Ontarians.^{4,5}

Health outcomes from extreme weather events may include:^{3,5-7}



Changing patterns of vector-borne diseases



Extreme-temperature-related illnesses



Illness from food and water contamination



Impacts of critical infrastructure failure



Impacts of disruption of health services



Injuries



Mental illness



Respiratory and cardiovascular disorders

WHEN DISASTER STRIKES

23 Number of disaster-level extreme weather events* in Ontario from 2003-2012⁸



Floods



Storms and severe thunderstorms



Tornadoes



Wildfires



Winter storms

>770,000 Estimated number of people affected by utility disruptions from disaster-level extreme weather events in Ontario from 2003-2012⁸

>10,000 Estimated number of people evacuated due to disaster-level extreme weather events in Ontario from 2003-2012⁸

*Meets one or more of the following: 10 or more people were killed; 100 or more people were affected/injured/infected/evacuated or homeless; an appeal for national/international assistance was made; had historical significance; caused significant damage/interruption of normal processes such that the community affected could not recover on its own.

Evidence suggests Ontario's climate is changing, which may lead to:^{4,5,9,10}

- 1. Increased average temperatures**
- 2. More drought and floods**
- 3. Increased severity, spatial extent and number of extreme weather events**

Extreme weather is projected to get worse. Public health has a role in mitigating impacts, and should work with the health sector and others to be aware and prepared.

1. Data Source: National Ambulatory Care Reporting System (NACRS), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, Date Extracted: 2013 Nov 15. 2. Data source: Vital statistics, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, Date Extracted: 2013 Nov 15. 3. World Health Organization; World Meteorological Organization. Atlas of health and climate. Geneva, Switzerland: World Health Organization; 2012. Available from: http://www.who.int/iris/bitstream/10665/76224/5/9789241564526_eng.pdf?ua=1. 4. Ontario. Ministry of the Environment. Climate ready: Ontario's adaptation strategy and action plan, 2011-2014. Toronto, ON: Queen's Printer for Ontario; 2011. Available from: http://www.ene.gov.on.ca/stdprodconsume/groups/lr/@ene/@resources/documents/resource/stdprod_085423.pdf. 5. Health Canada. Human health in a changing climate: A Canadian assessment of vulnerabilities and adaptive capacity. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2008. 6. Astrom DO, Forsberg B, Rocklöv J. Heat wave impact on morbidity and mortality in the elderly population: A review of recent studies. Maturitas. 2011;69(2):99-105. 7. Chang SE, McDaniels TL, Mikawoz J, Peterson K. Infrastructure failure interdependencies in extreme events: Power outage consequences in the 1998 ice storm. Nat Hazards. 2007;41(2):337-358. 8. Public Safety Canada. Canadian disasters database [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2013 Sept 13. Available from: <http://www.publicsafety.gc.ca/cnt/rsrsc/cndn-dsstr-dtbs/index-eng.aspx>. 9. Health Canada. Adapting to extreme heat events: Guidelines for assessing health vulnerability. Ottawa, ON: 2011 Available from: http://www.hc-sc.gc.ca/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/climat/adapt/adapt-eng.pdf. 10. Intergovernmental panel on climate change. Managing the risks of extreme events and disasters to advance climate change adaptation; 2012. Available from: <http://ipcc-wg2.gov/SREX/>

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WHO IS AT INCREASED RISK?

Some children are more likely to experience vulnerabilities in early childhood growth and development, including:¹⁻⁶



Boys



Children from low income families



Children from families with lower parental education



Aboriginal children

WHAT ARE THE HEALTH CONSEQUENCES?

Children experiencing vulnerabilities in early childhood growth and development are at increased risk for a number of outcomes in later years, including:^{7,8}



Teens

Increased rate of school failure, antisocial behaviour, teen pregnancy



Young adults

Obesity, high blood pressure, depression



Middle age

Coronary heart disease, type 2 diabetes



Older adults

Premature aging, memory loss

Intervention during the early years of a child's life through public investment programs has an estimated return of

6-to-1³

WELL-BABY VISIT: A MEASUREMENT OPPORTUNITY

The enhanced 18-month well-baby visit is the last routine contact between children and their physicians before school entry. It is an ideal point for assessing early childhood growth and development.¹⁰



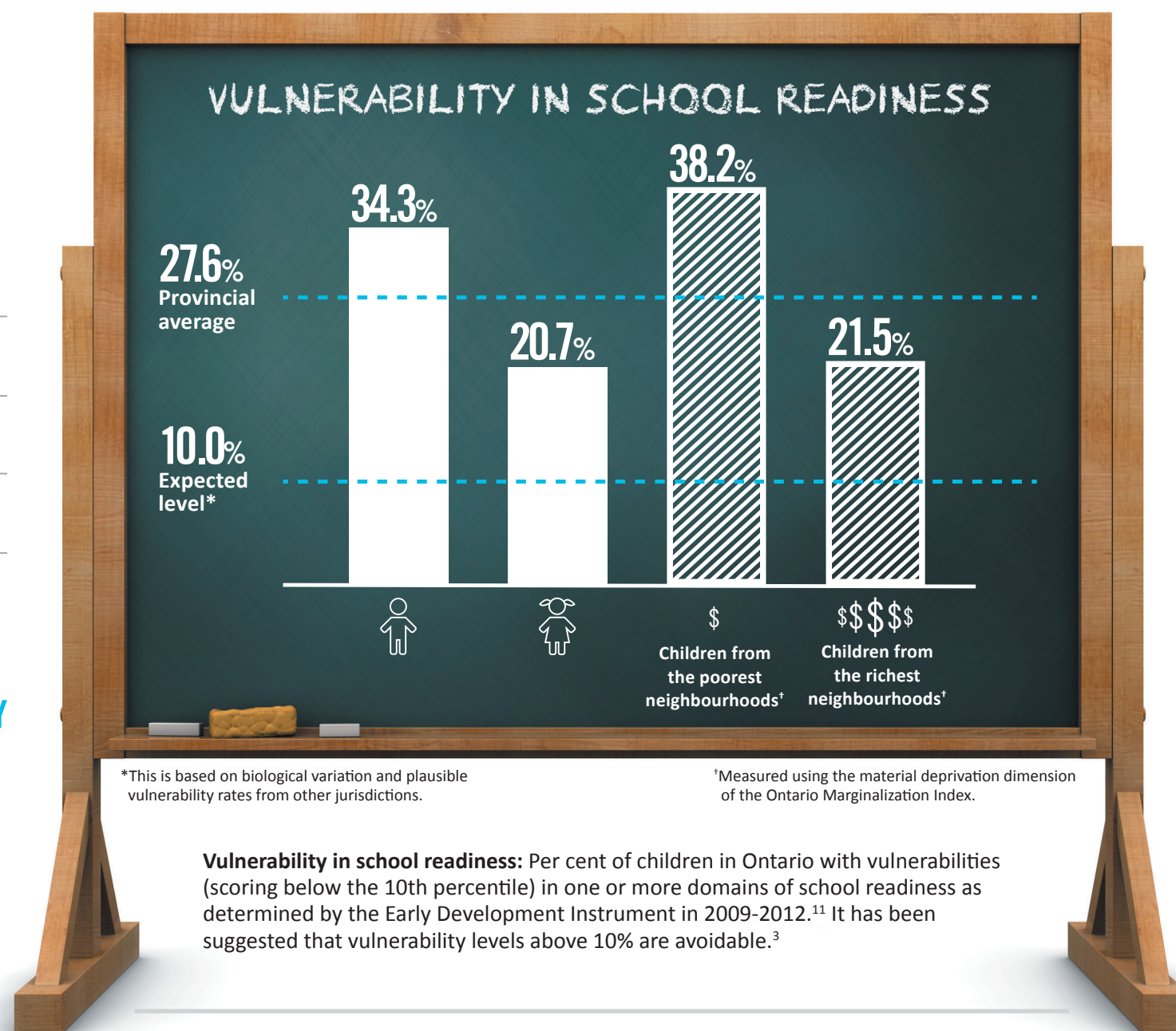
As few as **38.2%**

of eligible children were recorded as receiving an enhanced 18-month well-baby visit in 2009-2010.¹⁰

THE FIRST 5 YEARS

A FOUNDATION FOR LIFE

A child's first five years strongly influence health across the life course.^{1,2,7,8} Some children, due to socioeconomic, environmental and biological factors, experience vulnerabilities in early childhood growth and development, leaving them at a disadvantage.



SCHOOL READINESS AND ONTARIO'S CHILDREN

School readiness is a good indicator of early childhood growth and development, and a predictor of outcomes in later years. It is assessed using the Early Development Instrument (EDI), an internationally recognized tool completed by a child's teacher upon school entry that identifies vulnerabilities in readiness to learn in five domains.¹²

Per cent of children entering school in Ontario with vulnerabilities in the following domains:



Physical health and wellbeing¹¹



17.0%



11.5%



Communication skills and general knowledge¹¹



14.5%



8.5%



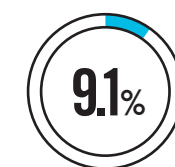
Emotional maturity¹¹



15.3%



4.9%



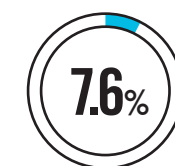
Social competence¹¹



12.8%



5.2%



Language and cognitive development¹¹



9.8%



5.4%

1. Kershaw P, Forer B. Selection of area-level variables from administrative data: An intersectional approach to the study of place and child development. Health Place. 2010;16(3):500-11. 2. Boivin M, Hertzman C, editors. Early childhood development: Adverse experiences and developmental health: The Royal Society of Canada - Canadian Academy of Health Sciences Expert Panel. Ottawa, ON: Royal Society of Canada; 2012. Available from: https://rsc-src.ca/sites/default/files/pdf/ECDev%20Report_2.pdf 3. Kershaw P, Anderson L, Warburton B, Hertzman C. 15 by 15: A comprehensive policy framework for early human capital investment in BC. Vancouver, BC: Human Early Learning Partnership; 2009. Available from: <http://earlylearning.ubc.ca/media/publications/15by15-full-report.pdf> 4. Curtin M, Madden J, Staines A, Perry U. Determinants of vulnerability in early childhood development in Ireland: A cross-sectional study. BMJ Open. 2013;3(5):e002387. 5. Cushon JA, Yu LTH, Janzen BL, Muhajarine N. Neighborhood poverty impacts children's physical health and well-being over time: Evidence from the early development instrument. Early Educ Dev. 2011;22(2):183-205. 6. Brinkman SA, Gialamas A, Rahman A, Mittinty MN, Gregory TA, Silburn S, et al. Jurisdictional, socioeconomic and gender inequalities in child health and development: Analysis of a national census of 5-year-olds in Australia. BMJ Open. 2012;2(5):e001075. 7. Barker DJP. The developmental origins of adult disease. J Am Coll Nutr. 2004;23:588S-95S. 8. Lemelin J, Boivin M, Forget-Dubois N, Dionne G, Séguin JR, Brendgen M, et al. The genetic environmental etiology of cognitive school readiness and later academic achievement in early childhood. Child Dev. 2007;78(6):1855-69. 9. Heckman JJ. The case for investing in disadvantaged young children. In: First Focus, ed. Big ideas for our children: Investing in our nation's future. Washington, D.C.: First Focus; 2010. p.49-58. Available from: <http://www.firstfocus.net/sites/default/files/The%20Case%20for%20Investing%20in%20Disadvantaged%20Young%20Children%20-%20Heckman.pdf> 10. Guttman A, Klein-Geltink J, Kopp A, Cairney J. Uptake of the new fee code for Ontario's enhanced well-baby visit: A preliminary evaluation. Toronto, ON: Institute for Clinical Evaluation Sciences; 2011. Available from: http://www.ices.on.ca/file/Well%20Baby_final%20Report.pdf 11. Data source: Early Development Instrument, Offord Centre for Child Studies via Ministry of Child and Youth Services (views expressed do not necessarily reflect those of the Ministry). 12. Janus M, Offord DR. Development and psychometric properties of the early development instrument (EDI): A measure of children's school readiness. Can J Behav Sci. 2007;39(1):1-22.

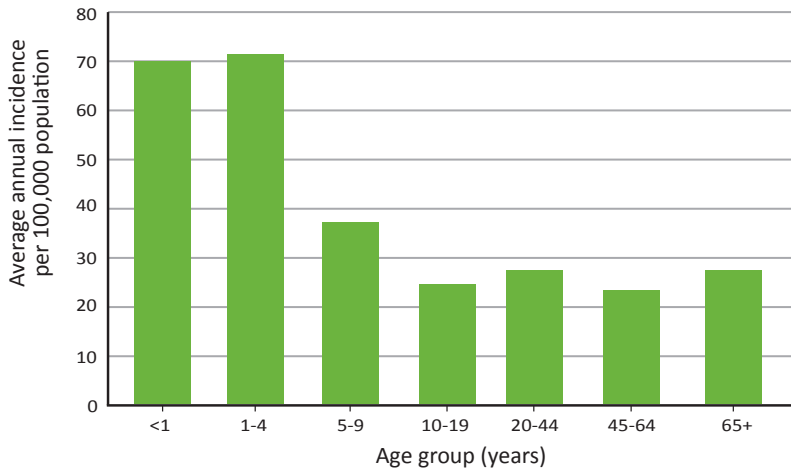
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OCCURRENCE OF FOODBORNE ILLNESSES*

AGE

- Children are more likely to be diagnosed with foodborne illness
- Adults aged 65 or older are most likely to be hospitalized or die as a result of infection¹

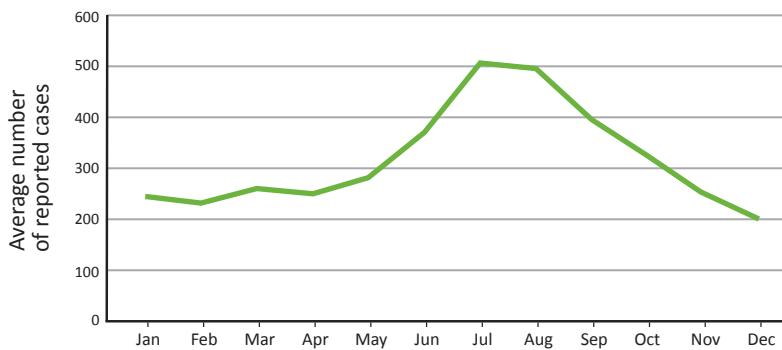
Average annual incidence of foodborne illness* by age group, Ontario, 2006-2012²



SEASON

Reported cases of foodborne illness increase in summer months.

Average annual number of foodborne illnesses* by month, Ontario, 2006-2012²



FOODBORNE ILLNESS

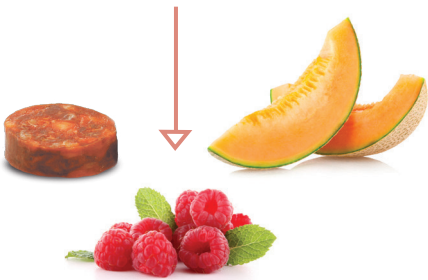
WHAT WE DON'T KNOW CAN HARM US



The burden of foodborne illness is estimated to be substantial.³⁻⁵ Although self-limited in most instances, serious health effects or death may occur.⁶ Determining the true impact foodborne illness has on Ontario is difficult as it is underreported.

100,000
Estimated true[†] number of cases of foodborne illnesses* in Ontario each year²

Approximately **4%** of the estimated true number of cases of foodborne illness* are reported:
3,700 Estimated known[‡] cases of foodborne illnesses* in Ontario each year²

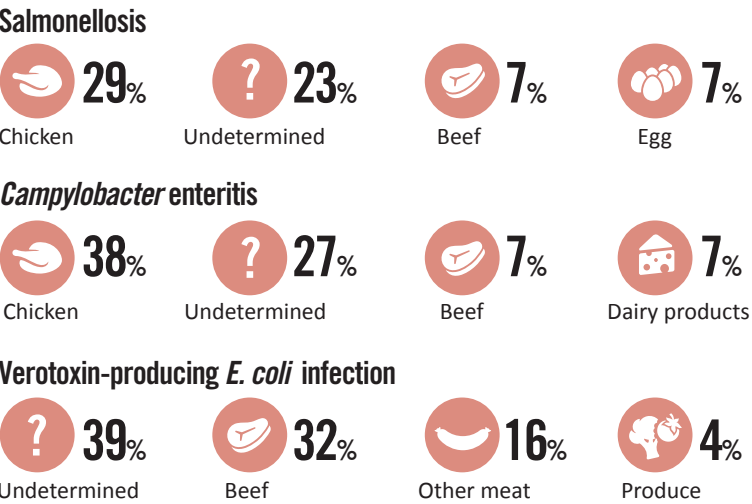


While reportable, not all cases of foodborne illness are captured. Reasons cases may not be captured include:

- Symptomatic individuals do not seek medical attention
- Symptomatic individuals seek medical attention but a lab test is not ordered
- A lab test is ordered but the individual does not submit a specimen
- A specimen is submitted but does not contain the organism resulting in a negative test
- The organism causing the illness may be present but cannot be identified by the lab
- A positive test result may not be reported to the health unit and entered in the tracking system
- Cases may be entered in the tracking system but a link to food as the source of the illness may not be made

SUSPECTED FOOD SOURCES

The top four food sources for reported cases of domestically-acquired foodborne illness[§] in Ontario, 2007-2010, were:⁷



DEFENDING ONTARIO AGAINST MEASLES

LIFE WITHOUT THE VACCINE

Thanks to routine childhood immunization, Ontario has seen a marked drop in measles cases – a very different story than the days before the vaccine was introduced in 1963.



300,000 - 400,000 measles cases annually in Canada with 90% of children infected by 10 years of age prior to the vaccine.^{1,2}

2.7 Million

Expected deaths worldwide each year without vaccination.³ Globally, measles is the leading cause of vaccine-preventable deaths in children.^{1,2}

HOW SERIOUS IS MEASLES?

With measles comes many complications, some fatal. These include:^{1,4}



Otitis media
5-15 per 100 cases



Pneumonia
5-10 per 100 cases



Encephalitis
1 per 1,000 cases



Death
1-2 per 1,000 cases

Children under the age of five are most at risk of complications.

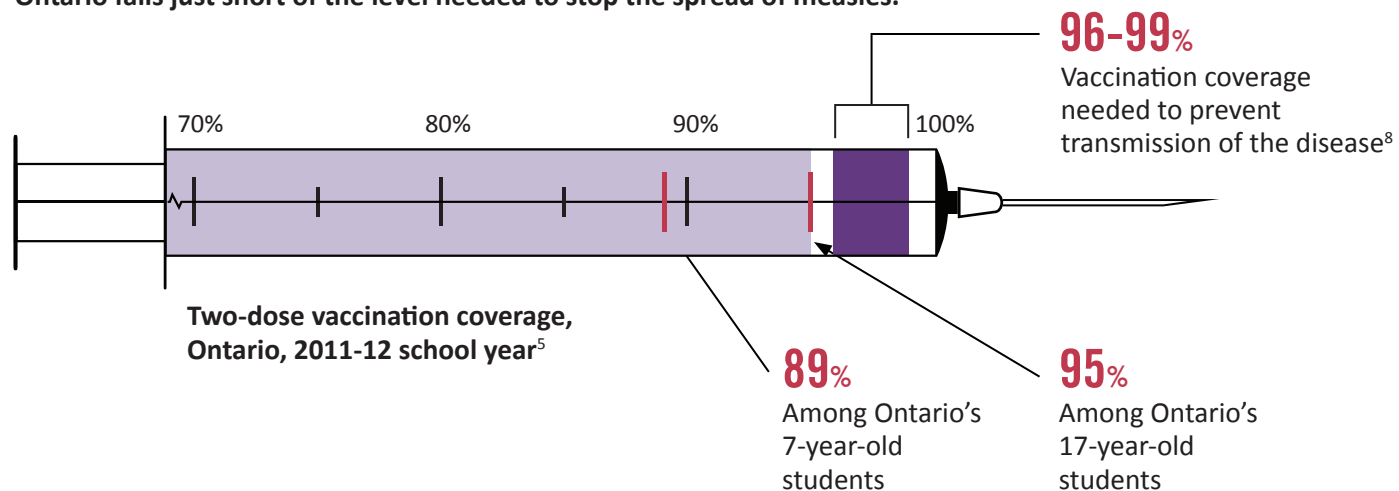
Measles during pregnancy can cause:¹



- Premature labour
- Miscarriage
- Low birth weight

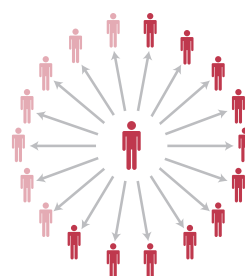
Measles has been eliminated in the Americas, including Ontario – but some Ontarians are still at risk of catching the disease. If the province is to remain free of one of the world's most contagious diseases, we need to be vigilant.

Ontario falls just short of the level needed to stop the spread of measles.



HOW CONTAGIOUS IS CONTAGIOUS?

The virus spreads easily via droplets expelled into the air by sneezes and coughs. The virus may even live on surfaces for two hours and infects most people who cross its path.⁶



11-18

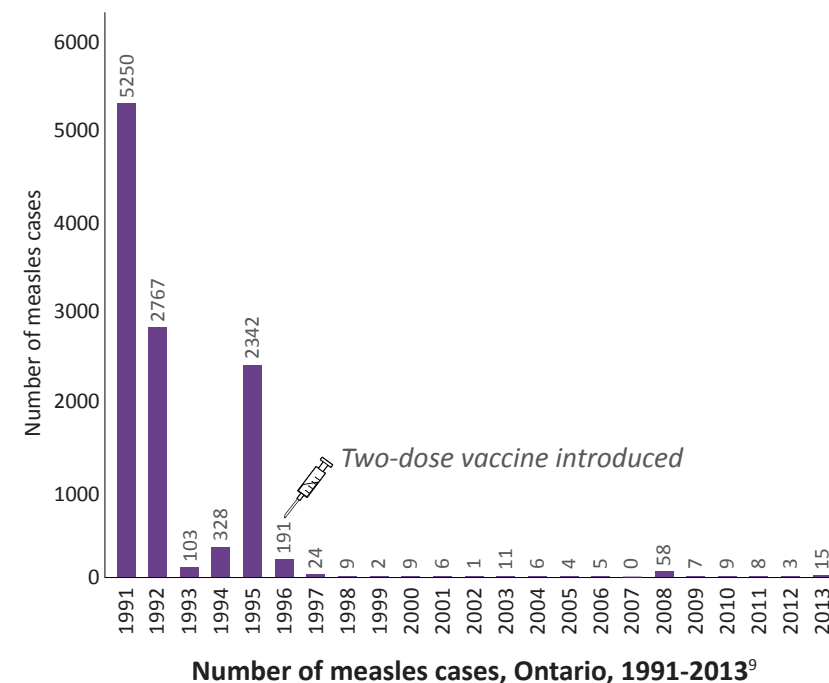
Number of new cases per contact with a single infectious case in unvaccinated populations⁷

IMMUNIZATION IS OUR BEST DEFENCE

IMMUNIZATION IS KEY

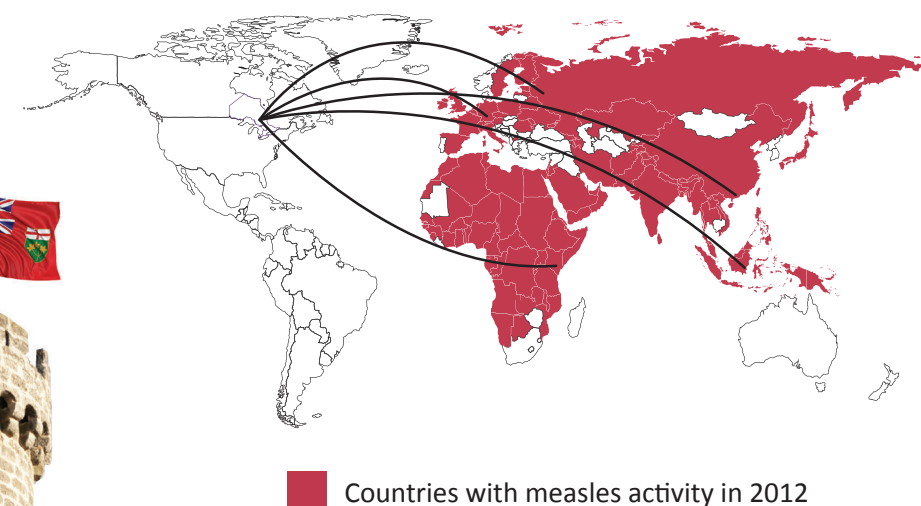
Receiving two doses of vaccine is a free and very effective form of protection against the virus both for individuals and the community.

Since the two-dose vaccine was introduced in Ontario in 1996, very few cases of measles have been reported each year.



RISKS BEYOND OUR BORDERS

Exposure to the measles virus by those travelling abroad and from visitors to Canada puts unvaccinated Ontarians at risk.¹⁰



1. National Advisory Committee on Immunization; Public Health Agency of Canada. Canadian immunization guide. Evergreen ed. Part 4 active vaccines: measles vaccine. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2012. Available from: <http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-meas-roug-eng.php> 2. World Health Organization. Measles vaccines: WHO position paper. Wkly Epidemiol Rec. 2009; 84(35):349-60. Available from: <http://www.who.int/wer/2009/wer8435.pdf> 3. National Center for Immunization and Respiratory Diseases. Vaccines and immunizations. Basics and common questions: what would happen if we stopped vaccinations? [Internet]. Atlanta, GA: Centers for Disease Control and Prevention; 2013 Sep 18. Available from: <http://www.cdc.gov/vaccines/vac-gen/whatifstop.htm#measles> 4. Wolfson LJ, Grais RF, Luquero FJ, Birmingham ME, Strebel PM. Estimates of measles case fatality ratios: a comprehensive review of community-based studies. Int J Epidemiol. 2009;38(1):192-205. 5. Public Health Ontario. Immunization coverage report for school pupils 2011-12 school year. Toronto, ON: Queen's Printer for Ontario; 2013. 6. Plans-Rubio P. Evaluation of the establishment of herd immunity in the population by means of serological surveys and vaccination coverage. Hum Vaccin Immunother. 2012;8(2):184-8. 7. National Center for Immunization and Respiratory Diseases, Division of Viral Diseases. Measles (Rubeola). Transmission of measles [Internet]. Atlanta, GA: Centers for Disease Control and Prevention; 2009 Aug 31. Available from: <http://www.cdc.gov/measles/about/transmission.html> 8. Anderson RM, May RM. Infectious diseases of humans: dynamics and control. Oxford: Oxford University Press; 1992. 9. Data Source: Integrated Public Health Information System (iPHIS), Distributed by Public Health Ontario, Extracted December 2, 2013 10. Measles & Rubella Initiative. The measles & rubella initiative 2012 annual report. Washington, DC: American Red Cross; 2012. Available from: <http://www.measlesrubellainitiative.org/wp-content/uploads/2013/07/MRI-2012-Annual-Report.pdf>

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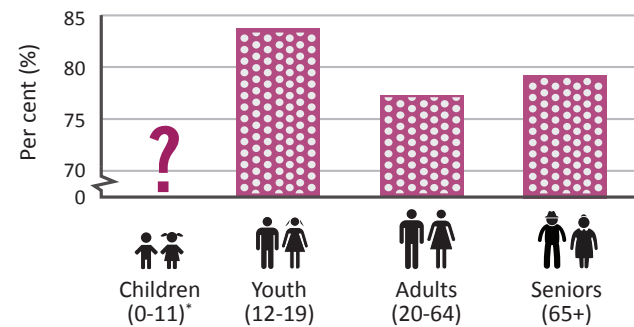
NO HEALTH WITHOUT MENTAL HEALTH

MENTAL HEALTH

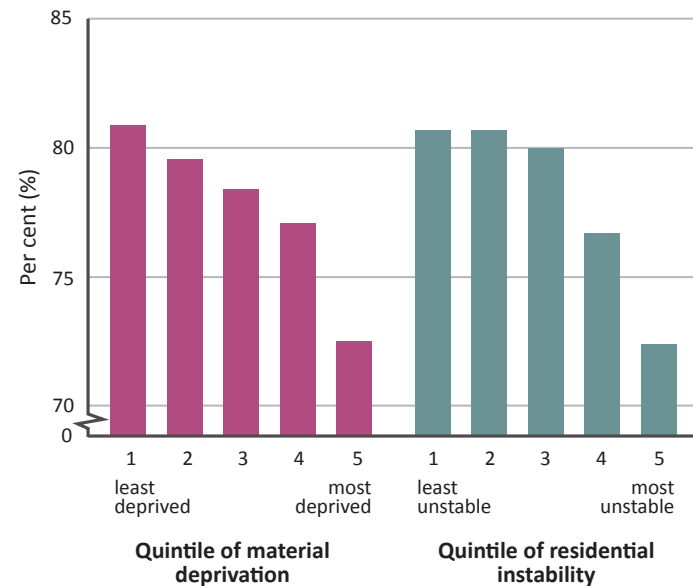
Mental health: the capacity to feel, think and act in ways that enhance our ability to enjoy life, realize our own potential, deal with challenges and contribute to society.^{1,2}

Positive mental health is expressed through life satisfaction and subjective wellbeing.

Self-reported positive mental health, Ontario, 2011-2012³



Self-reported positive mental health is more common in people from neighbourhoods with low material deprivation and low residential instability^{3†}



*Data on children is not available.

†Measured using the Ontario Marginalization Index.

Mental health and mental illness – distinct but related concepts – are critically important to the health of Ontarians. The burden of poor mental health and mental illness begins in childhood and affects health across the life course.²

INTERCONNECTED ELEMENTS OF WELLBEING

Mental health, mental illness and physical health are interconnected elements of wellbeing that impact each other.⁴

Poor mental health and mental illnesses:^{4,5}

- Are risk factors for some chronic diseases
- Contribute to intentional and unintentional injuries
- May increase the risk of transmission for some infectious diseases
- May delay seeking medical care
- May affect the quality of care received
- May affect adherence to treatment

Mental health and illness affect everyone, either directly or indirectly.⁶ The risk of both poor mental health and mental illness varies by gender and is associated with:^{7,8}



Educational attainment



Income



Aboriginal status

Promoting positive mental health can impact overall wellbeing by:¹

- Increasing resilience
- Decreasing self-harm
- Helping to reduce the risk of developing mental illness
- Improving recovery in those already suffering from mental illness

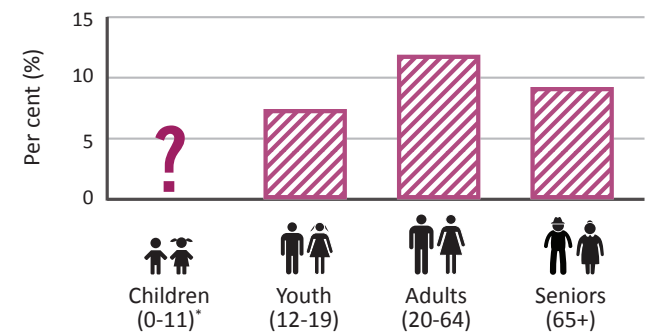
MENTAL ILLNESS

Mental illness: alterations in thinking, mood or behaviour. Symptoms may range from mild to severe⁶ and may be one-time, episodic or continuous.¹

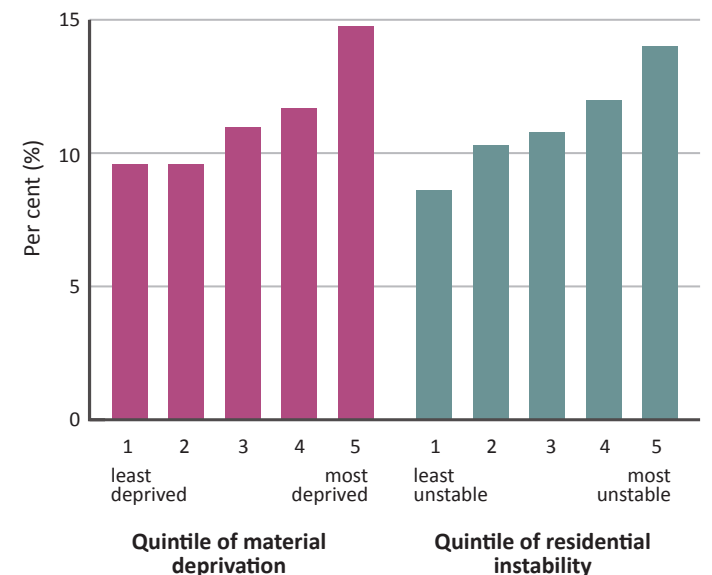
It is estimated that the burden of mental illness (the loss of health-adjusted life years) on Ontarians is:⁹

- **1.5x** that of cancer
- **7x** that of all infectious diseases

Self-reported mood and anxiety disorders, Ontario, 2011-2012³



Self-reported mood and anxiety disorders are more common in people from neighbourhoods with high material deprivation and high residential instability^{3†}



1. Mental Health Commission of Canada. Changing directions, changing lives: The mental health strategy for Canada. Calgary, AB: Mental Health Commission of Canada; 2012. Available from: <http://strategy.mentalhealthcommission.ca/pdf/strategy-text-en.pdf> 2. Government of Canada. The human face of mental health and mental illness in Canada. Ottawa, ON: Minister of Public Works and Government Services Canada; 2006. Available from: http://www.phac-aspc.gc.ca/publicat/human-humain06/pdf/human_face_e.pdf 3. Data source: Canadian Community Health Survey 2011/2012, Statistics Canada, Canada Share File, Distributed by Ontario Ministry of Health and Long-Term Care. 4. Canadian Institute for Health Information. Improving the health of Canadians: Exploring positive mental health. Ottawa, ON: CIHI; 2009. Available from: http://www.cpa.ca/cpasite/userfiles/Documents/Practice_Page/positive_mh_en.pdf 5. Prince M, Patel V, Saxena S, Maj M, Maselko J, Phillips MR, et al. No health without mental health. Lancet. 2007;370(9590):859-77. 6. Langlois KA, Samokhvalov AV, Rehm J, Spence ST, Gorber SC. Health state descriptions for Canadians: Mental illnesses. Ottawa, ON: Statistics Canada; 2012. Available from: <http://www.statcan.gc.ca/pub/82-619-m/82-619-m2012004-eng.pdf> 7. World Health Organization. Mental health: Strengthening our response [Internet]. Geneva, Switzerland: World Health Organization; 2010. Available from: <http://www.who.int/mediacentre/factsheets/fs220/en/> 8. Mikkonen J, Raphael D. Social determinants of health: The Canadian facts. Toronto, ON: York University School of Health Policy and Management; 2010. Available from: http://www.thecanadianfacts.org/The_Canadian_Facts.pdf 9. Ratnasingham S, Cairney J, Rehm J, Manson H, Kurdyak PA. Opening eyes, opening minds: The Ontario burden of mental illness and addictions report. Toronto, ON: Institute for Clinical Evaluative Studies and Public Health Ontario; 2012. Available from: http://www.publichealthontario.ca/en/eRepository/Opening_Eyes_Report_En_2012.pdf

OBESEITY A BURDEN ACROSS THE LIFE COURSE

WHAT CAUSES OBESEITY?

$$\text{Energy expenditure} < \text{Energy intake} = \text{OBESEITY}$$

The causes of obesity are complex, multifaceted and interrelated. Obesity is influenced by:¹⁻⁴

BIOLOGY



INDIVIDUAL BEHAVIOURS



PHYSICAL, SOCIAL AND POLICY ENVIRONMENT



Factors that contribute to the risk of becoming obese begin before birth and extend across the life course.^{2,3}

HOW IS OBESEITY MEASURED?

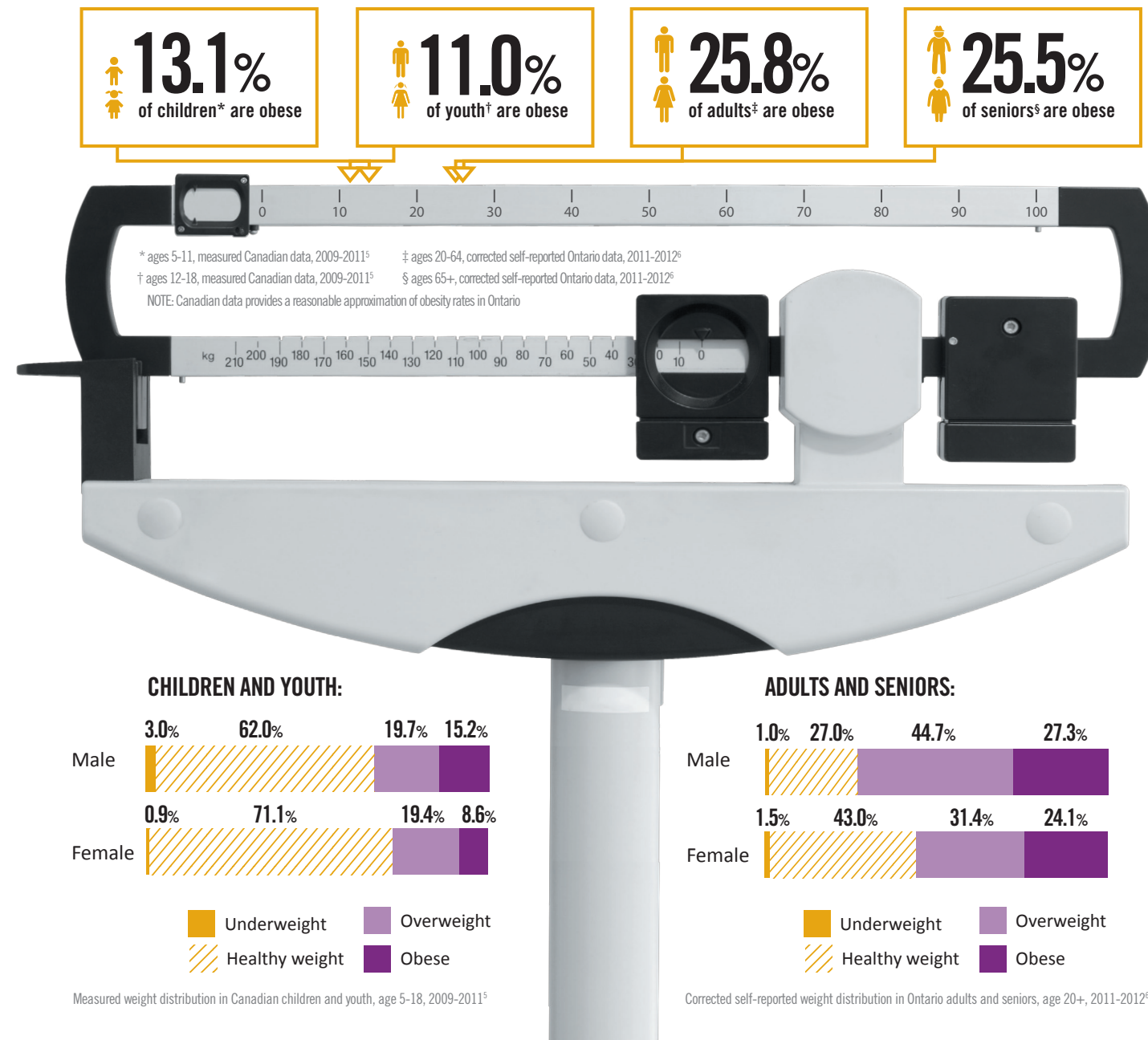
Obesity is often measured using **body mass index (BMI)**.

$$\text{BMI} = \frac{\text{weight (kg)}}{\text{height}^2 (\text{m}^2)}$$

Underweight: <18.5 kg/m²
 Normal: 18.5-24.9 kg/m²
 Overweight: 25-29.9 kg/m²
 Obese: 30+ kg/m²

For children and youth, BMI-for-age is often calculated using sex-specific growth charts from the World Health Organization.

A substantial proportion of the Ontario population – both adults and children – is obese, and an even greater proportion is overweight. This is a result of several decades of increase and cannot be attributed to just one cause. Obesity is a complex issue with a negative impact on the health and quality of life of Ontarians.



DISPARITIES IN OBESEITY

Obesity rates are not consistent—disparities have been found in adult subpopulations. Obesity rates are higher in:⁶

- Females from neighbourhoods with the highest material deprivation (28.0%), compared to the lowest (19.9%)
- People born in Canada (28.7%), compared to people that immigrated in the past five years (13.2%)
- People who have not completed high school (33.9%), compared to people with post-secondary education or more (25.7%)
- People who identify as Aboriginal (38.2%), compared to people who do not (28.4%)

THE IMPACT OF OBESEITY

Obesity in children and youth may lead to:^{3,7}

- Asthma
- Glucose intolerance and type 2 diabetes
- Obesity in adulthood
- Orthopaedic complications
- Sleep apnea
- Self-esteem and mental health-related issues

In addition, obesity in adults may also lead to:^{3,8-11}

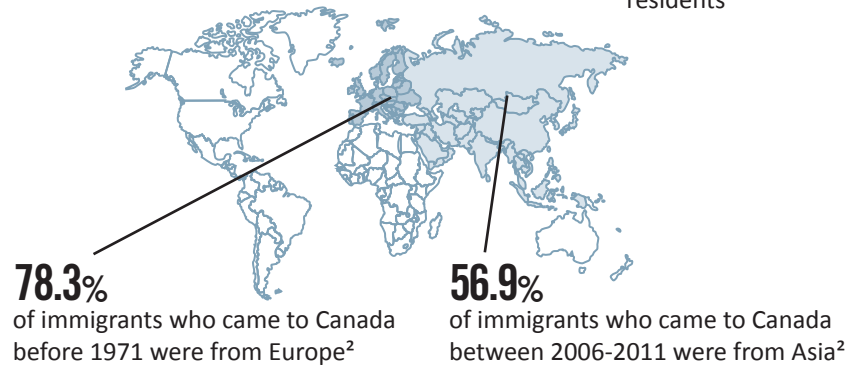
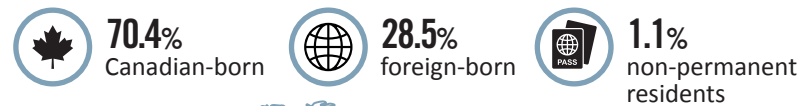
- Cancer
- Hypertension
- Infertility and disrupted reproductive functioning
- Ischaemic heart disease and stroke
- Liver and gall bladder disease
- Metabolic syndrome
- Musculoskeletal disorders
- Premature mortality
- Respiratory disease
- Type 2 diabetes

1. Public Health Agency of Canada and Canadian Institute for Health Information. Obesity in Canada: A joint report from the Public Health Agency of Canada and the Canadian Institute for Health Information. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2011. Available from: https://secure.cihi.ca/free_products/Obesity_in_canada_2011_en.pdf 2. Foresight. Tackling obesities: Future choices - project report. London, U.K.: Government Office for Science; 2007. Available from: <http://www.bis.gov.uk/assets/foresight/docs/obesity/17.pdf> 3. Public Health Ontario. Addressing obesity in children and youth: Evidence to guide action for Ontario. Toronto, ON: Queen's Printer for Ontario; 2013. Available from: http://www.publichealthontario.ca/en/eRepository/Addressing_Obesity_Children_Youth_Sept2013.pdf 4. Wardle J. Eating behaviour and obesity. Obes Rev. 2007;8 Suppl 1:73-5. 5. Statistics Canada. Canadian health measures survey: Cycle 2 data tables – 2009 to 2011. Table 25: Distribution of the household population aged 5 to 18, by body mass index norms based on direct measures – World Health Organization (WHO) system, by age and sex, Canada, 2009 to 2011. Ottawa, ON: Minister of Industry; 2012. Available from: <http://www.statcan.gc.ca/pub/82-626-x/2012001/026-eng.pdf> 6. Data source: Canadian Community Health Survey 2011/2012, Statistics Canada, Canada Share File, Distributed by Ontario Ministry of Health and Long-Term Care. 7. Ezzati M, Hoon SV, Lopez AD, Danaei G, Rodgers A, Mathers CD, et al. Comparative quantification of mortality and burden of disease attributable to selected risk factors. In: Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJL, editors. Global burden of disease and risk factors. Washington, D.C.: World Bank; 2006. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK11813/> 8. Kopelman P. Health risks associated with overweight and obesity. Obes Rev. 2007;8 Suppl 1:13-7 9. World Health Organization. Obesity and overweight [Internet]. Geneva: World Health Organization; 2013. Available from: <http://www.who.int/mediacentre/factsheets/fs311/en/index.html> 10. Reilly JJ, Kelly J. Long-term impact of overweight and obesity in childhood and adolescence on morbidity and premature mortality in adulthood: Systematic review. Int J Obes (Lond). 2011;35(7):891-8. 11. Griffiths LJ, Parsons TJ, Hill AJ. Self-esteem and quality of life in obese children and adolescents: A systematic review. Int J Pediatr Obes. 2010;5(4):282-304.

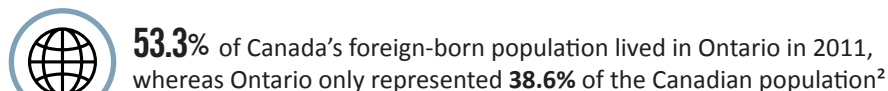
ONTARIO'S POPULATION

IMMIGRATION

Ontario's population in 2011:¹



Three most common countries of birth of immigrants living in Ontario in 2011:¹

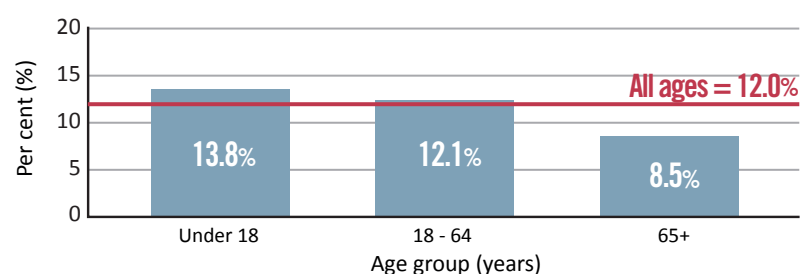


INCOME



This after-tax low income measure translates to a single person earning less than \$19,930 or a family of four earning less than \$39,860.⁴

Per cent of the population living in low income households by age group, Ontario, 2011:³

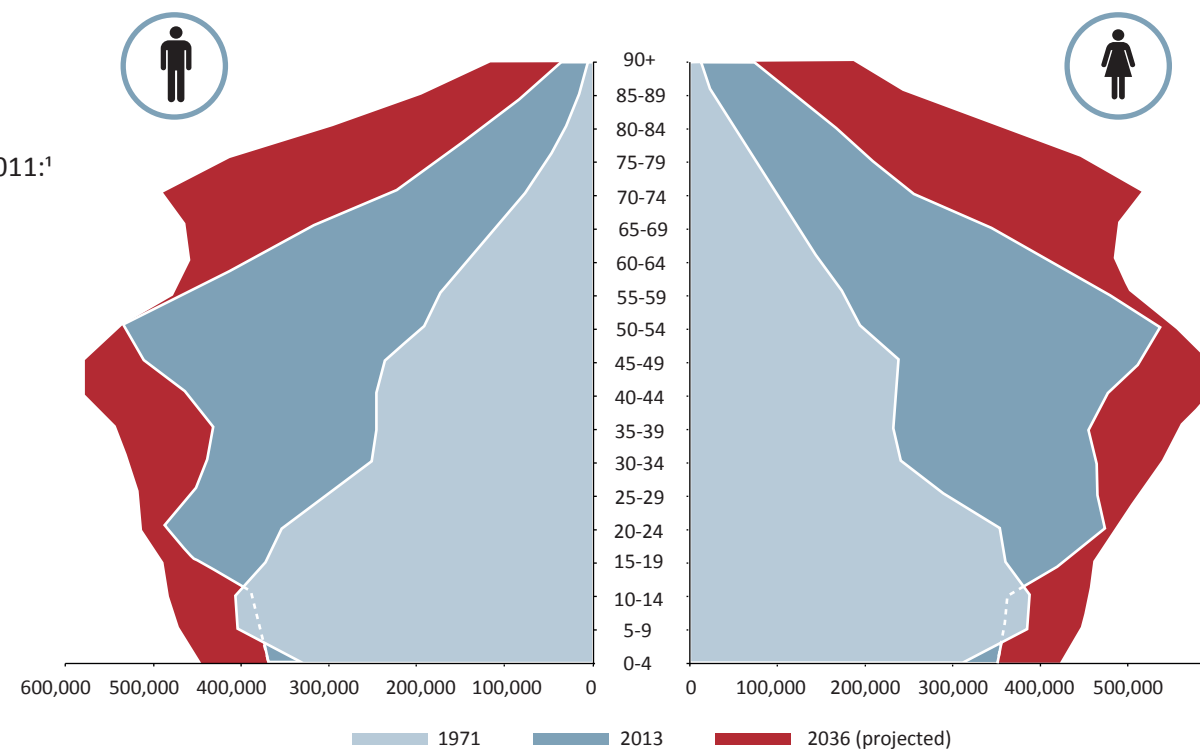


DETERMINANTS OF HEALTH

Differences in the demographics of Ontario's population are known to impact health. These determinants of health play a key role in the health status of the population as a whole – understanding them and how they have changed over time can help to meet the health needs of Ontarians.

The structure of the Ontario population has aged over the past decades, and is projected to continue to do so in the future.

Population of Ontario by age group and sex, 1971, 2013, 2036^{5,6}



A sizable share of the population is now economically and/or socially dependent on working-age Ontarians and may put additional demands on the health system.⁷

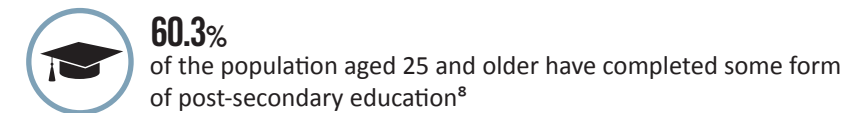
Population of Ontario:

1971 = 7,849,027⁵
2013 = 13,537,994⁵
2036 = 17,371,792⁶

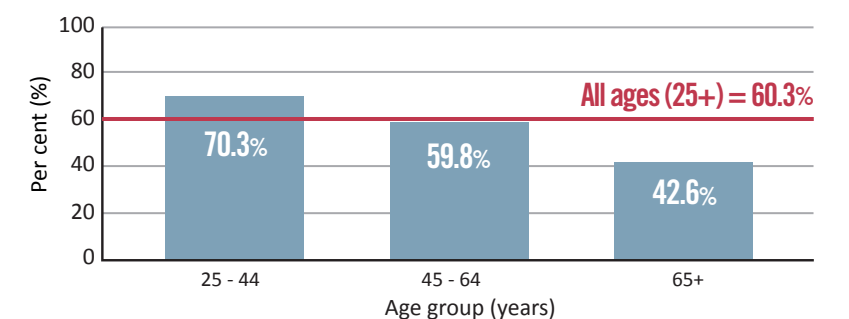
Population 65 years of age and older:

1971 = 650,501 (8.3%)⁵
2013 = 2,057,899 (15.2%)⁵
2036 = 4,166,812 (24.0%)⁶

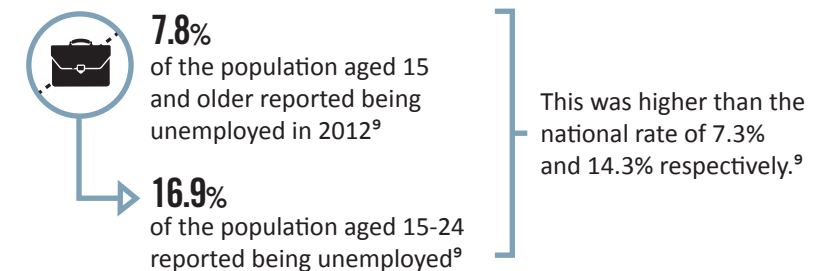
EDUCATION



Per cent of the population who have completed some form of post-secondary education by age group, Ontario, 2011⁸

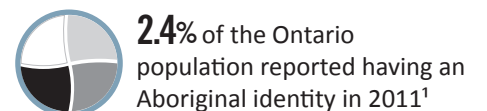


EMPLOYMENT



ABORIGINAL POPULATION

The Aboriginal population in Ontario is diverse and includes First Nations, Inuit and Métis.



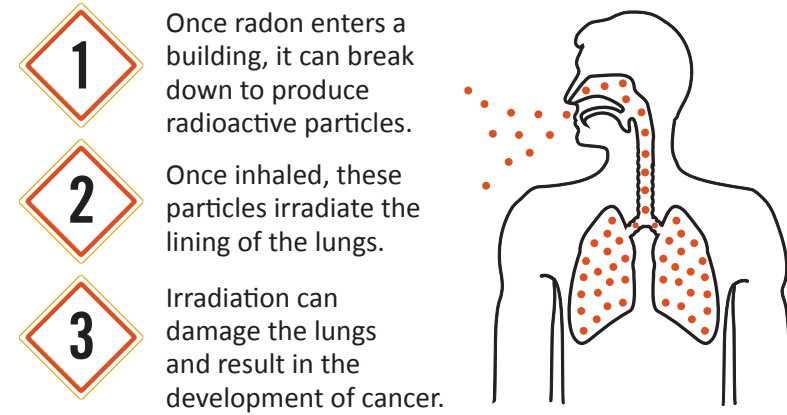
31.2 years
median age of the Aboriginal population in Ontario¹

40.2 years
median age of the non-Aboriginal population in Ontario¹

1. Statistics Canada. National Household Survey: NHS focus on geography series – Ontario. Income [Internet]. Ottawa, ON: Statistics Canada; 2013. Available from: <http://www12.statcan.gc.ca/nhs-enm/2011/as-sa/fogs-spg/Pages/F0G.cfm?lang=E&level=2&GeoCode=35> 2. Statistics Canada. Immigration and ethnocultural diversity in Canada: National Household Survey, 2011. Ottawa, ON: Minister of Industry; 2013. Available from: <http://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-010-x/99-010-x2011001-eng.pdf> 3. Statistics Canada. CANSIM Table 202-0802: Persons in low income families, annual [Internet]. Ottawa, ON: Statistics Canada; 2013. Available from: <http://www5.statcan.gc.ca/cansim/a05?lang=eng&id=2020802> 4. Statistics Canada. CANSIM Table 202-0808: Low income measures by income source and household size, 2011 constant dollars, annual [Internet]. Ottawa, ON: Statistics Canada; 2013. Available from: <http://www5.statcan.gc.ca/cansim/a05?lang=eng&id=2020808> 5. 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> 6. Data Source: Population Projections [2036], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, Date Extracted: [2014/03/21]. 7. Statistics Canada. Dependency ratio [Internet]. Ottawa, ON: Statistics Canada; 2010. Available from: <http://www.statcan.gc.ca/pub/82-229-x/2009001/demo/dep-eng.htm> 8. Statistics Canada. 2011 National Household Survey: Data tables. Education and labour. [Internet]. Ottawa, ON: Statistics Canada; 2013. Available from: <http://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/dt-td/lp-eng.cfm?LANG=E&APATH=3&DETAIL=0&DIM=0&FL=A&FREE=0&GC=0&GID=0&GK=0&GRP=0&PID=0&PRID=0&PTYPE=105277&S=0&SHOWALL=1&SUB=0&Temporal=2013&THEME=96&VID=0&VNAMEF=&VNAMEF> 9. Statistics Canada. CANSIM Table 109-5324: Unemployment Rate, Canada, provinces, health regions (2013 boundaries and peer groups. Ottawa, ON: Statistics Canada; 2013. Available from: <http://www5.statcan.gc.ca/a05?lang=eng&id=1095324>

RADON AND THE LUNGS

Radon is invisible and odourless,¹ and radon can kill.²

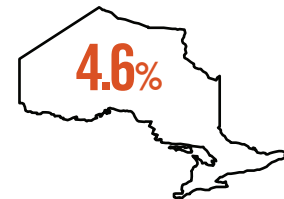


LOWER LEVELS ARE BETTER

Any exposure to radon poses some risk to Ontarians.³ However, there are benefits to reducing exposure to as low as possible.

200 Bq/m³

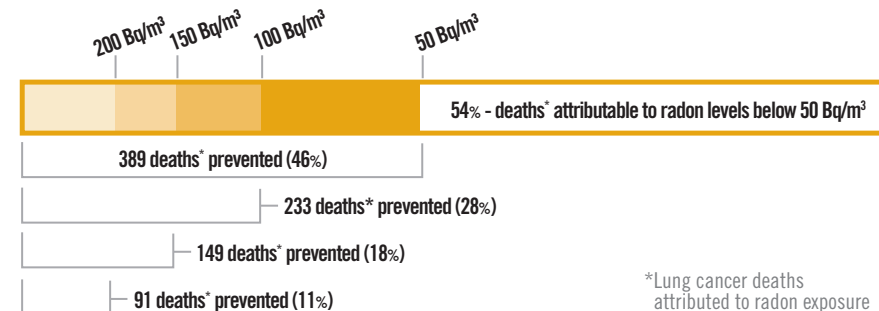
Health Canada recommends action be taken above this level.^{4,5}



The estimated percentage of Ontarians who lived in homes with radon concentrations greater than 200 Bq/m³ in 2009-2011.⁴

Becquerel (Bq) = The unit used to measure the number of radioactive decays of a radon atom

Radon-attributable lung cancer deaths that could be prevented each year if all homes above these levels were at background level (10-30 Bq/m³), Ontario, 2007³



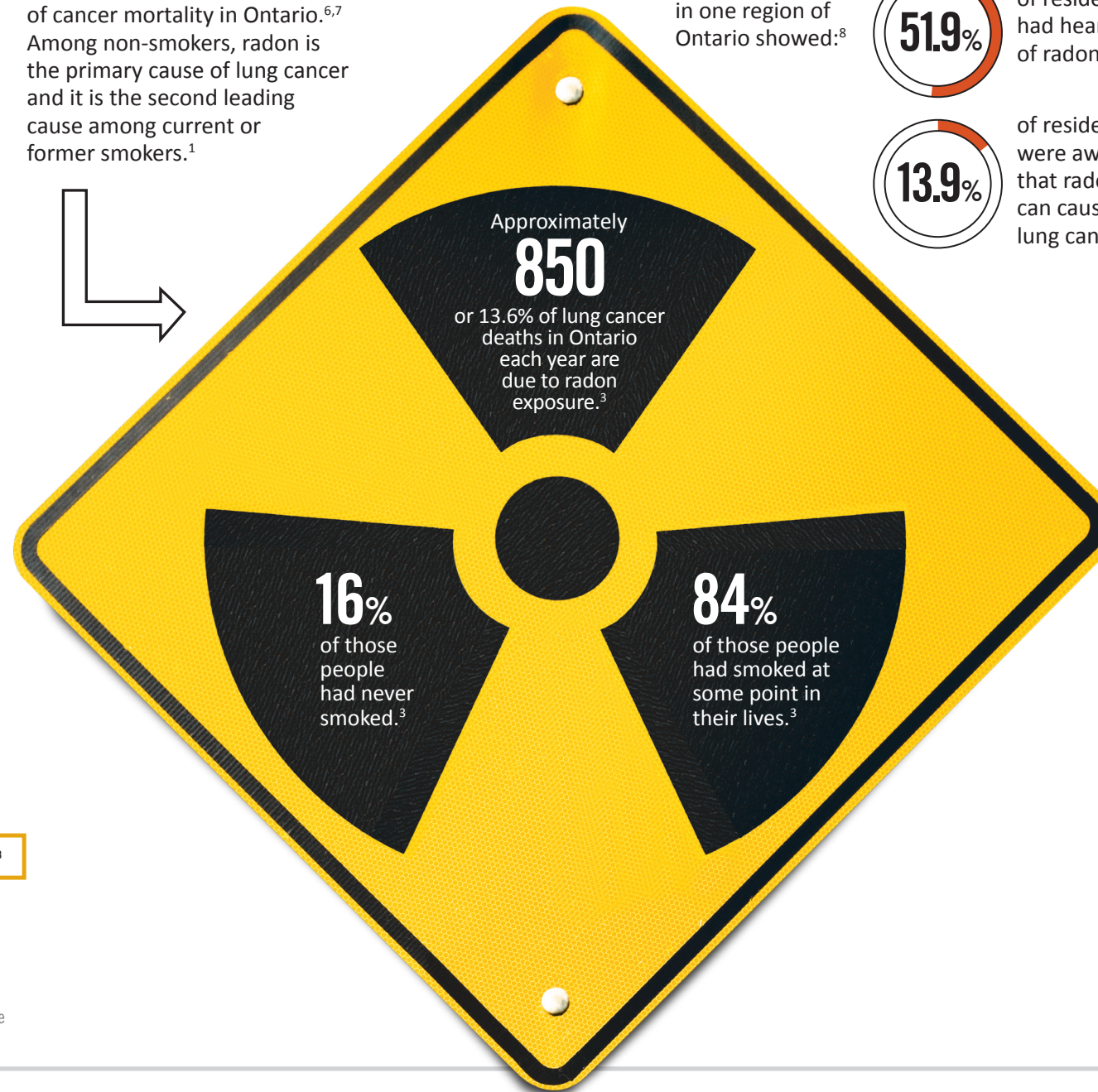
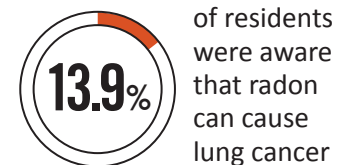
*Lung cancer deaths attributed to radon exposure

RADON RISKS AND REALITIES

Radon is a naturally occurring radioactive gas found in soil, water and outdoor air, and can enter buildings and accumulate in indoor air.¹ Classified as a carcinogen by the International Agency for Research on Cancer, radon is one of the leading causes of lung cancer.² Reducing exposure to indoor radon would result in fewer lung cancers in Ontario.

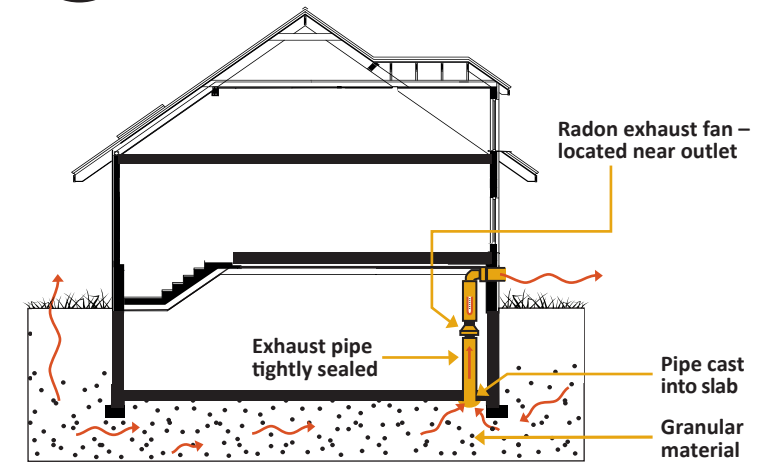
Lung cancer is the leading cause of cancer mortality in Ontario.^{6,7} Among non-smokers, radon is the primary cause of lung cancer and it is the second leading cause among current or former smokers.¹

A survey conducted in one region of Ontario showed:⁸



RADON AND BUILDINGS

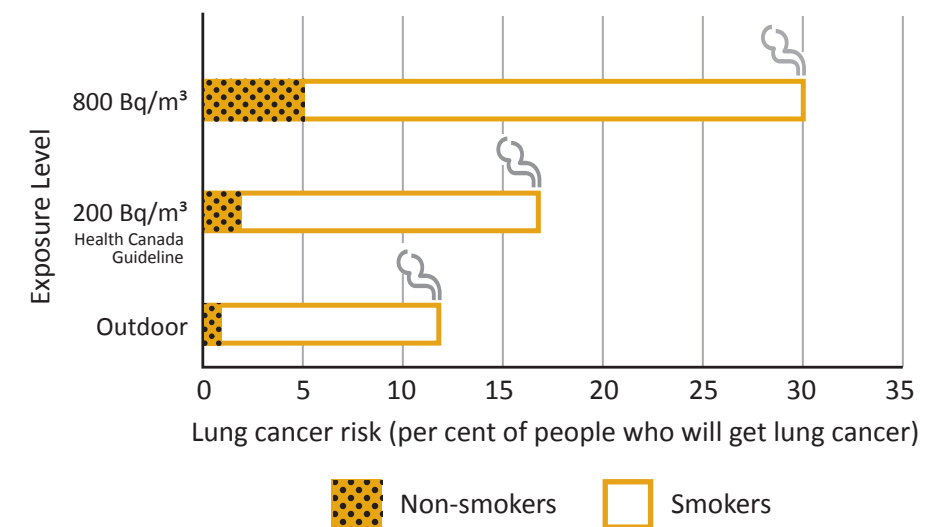
- Radon can enter a building through cracks and holes in the foundation and will accumulate in enclosed spaces.⁹
- Highest radon concentrations in buildings are found below the second floor.
- Changes to building code requirements could produce structures with radon levels well below the current action level.
- There are effective ways to test for radon and reduce indoor levels.⁹



Reproduced with permission from the Minister of Health, 2014⁹

SMOKING AND RADON: WORSE TOGETHER

Estimated per cent of people who will get lung cancer by lifetime exposure to radon at the following levels, Ontario, 2006⁵



1. World Health Organization. WHO handbook on indoor radon: a public health perspective. Geneva, Switzerland: WHO; 2009 [cited 2013 Oct 28]. Available from: http://whqlibdoc.who.int/publications/2009/9789241547673_eng.pdf 2. Committee on Health Risks of Exposure to Radon (BEIR VI). National Research Council. Health effects of exposure to radon: BEIR VI. Washington, DC: National Academies Press; 1999 [cited 2013 Oct 28]. Available from: http://www.nap.edu/catalog.php?record_id=5499 3. 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 [cited 2013 Oct 28];24(11):2013-20. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3824583/pdf/10552_2013_Article_278.pdf 4. 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 [cited 2013 Oct 28]. Available from: http://www.hc-sc.gc.ca/ewh-semt/alt_formats/pdf/radiation/radon/survey-sondage-eng.pdf 5. 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. 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 6. Cancer Care Ontario. Cancer in Ontario: overview, a statistical report. Toronto, ON: Queen's Printer for Ontario; 2010 [cited 2013 Oct 28]. Available from: <https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=81843> 7. Canadian Cancer Society's Advisory Committee on Cancer Statistics. Canadian cancer statistics 2013. Toronto, ON: Canadian Cancer Society; 2013 [cited 2013 Oct 28]. Available from: <http://www.cancer.ca/~media/cancer.ca/CWW/publications/Canadian%20Cancer%20Statistics/canadian-cancer-statistics-2013-EN.pdf> 8. Data source: Rapid Risk Factor Surveillance System (September 2012 - December 2012). Institute for Social Research, York University. Extracted 2013 Apr 29 9. Health Canada. Radon: reduction guide for Canadians. Ottawa, ON: Health Canada; 2013 [cited 2013 Dec 23]. Available from: http://www.hc-sc.gc.ca/ewh-semt/alt_formats/pdf/pubs/radiation/radon_canadians-canadiens/radon_canadians-canadiens-eng.pdf

IDENTIFYING RESPIRATORY VIRUSES

Identification of respiratory viruses, including influenza, helps us manage individual cases as well as institutional outbreaks. Reports using laboratory and surveillance data inform us about respiratory virus activity in the population.^{1,2}



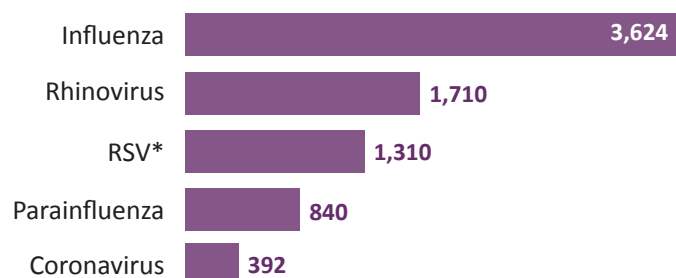
Laboratory testing: Specimens are tested for respiratory viruses using various laboratory methods to confirm a diagnosis.³



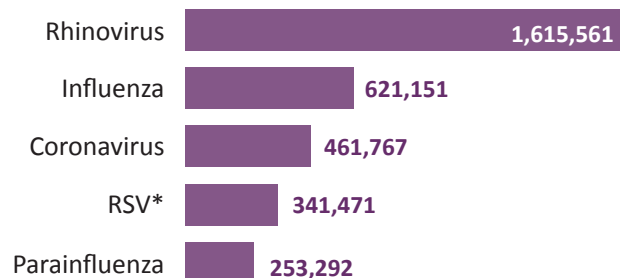
Syndromic surveillance: Existing health-related data independent of a confirmed diagnosis is used to enable early detection and investigation of clusters of illnesses.⁴

RESPIRATORY VIRUSES AND ONTARIANS

Estimated health-adjusted life years lost annually due to respiratory viruses, Ontario⁵



Estimated average annual incidence of respiratory viruses, Ontario⁵

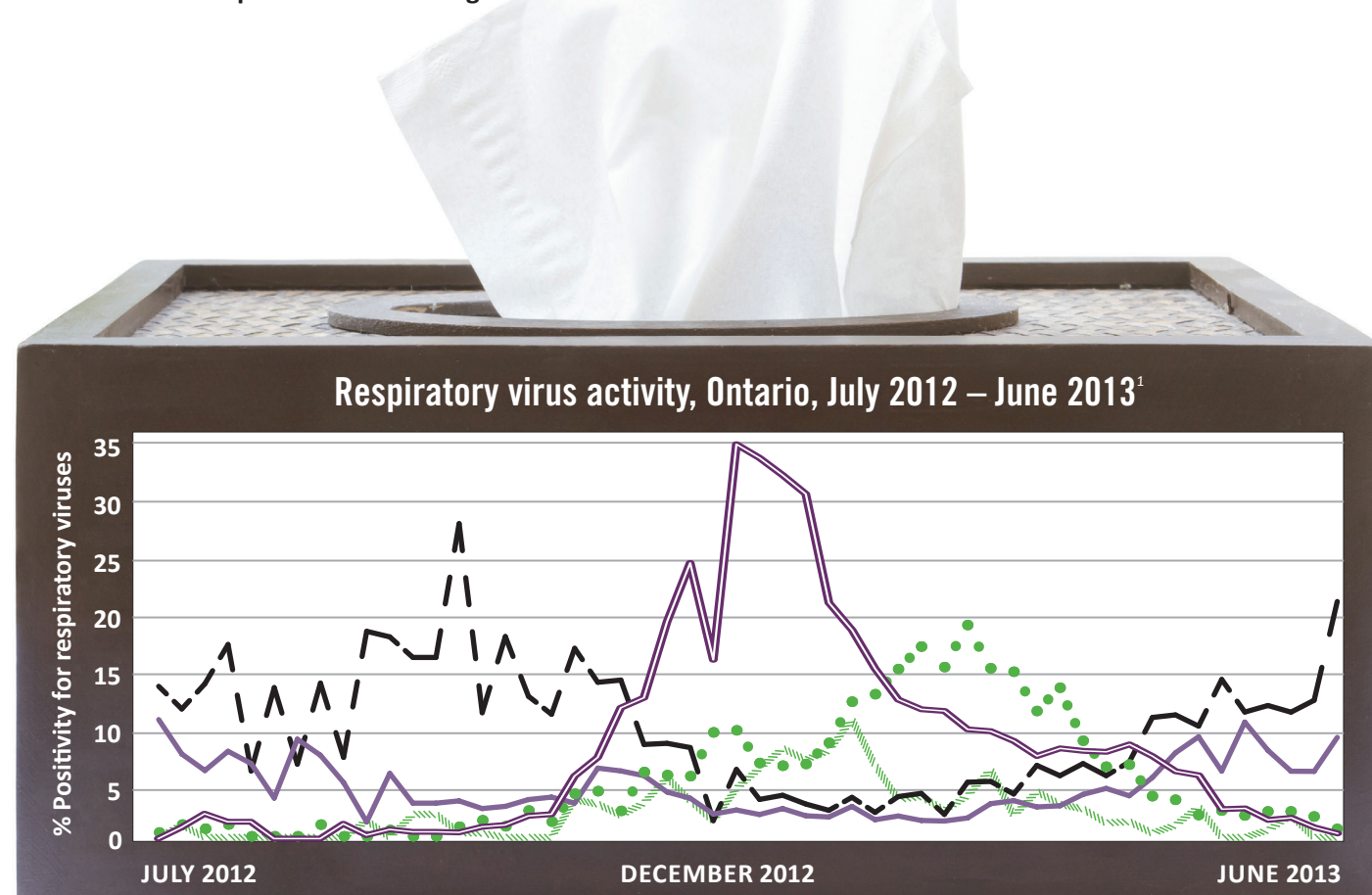


*Respiratory syncytial virus

RESPIRATORY VIRUSES

MORE THAN A WINTER WORRY

While influenza remains a significant threat to the health of Ontarians, a number of other respiratory viruses cause disease and illness throughout the year. Understanding respiratory viruses that pose a health threat allows for better clinical and public health management.



Per cent positivity reflects the percentage of specimens with a positive result among those submitted for lab testing. This gives an indication of the dominant types of respiratory viruses circulating at that point in time.

CONSIDER OTHER RESPIRATORY VIRUSES

Many respiratory viruses share common symptoms. Seasonal reports detailing the activity of certain viruses are important tools to avoid misdiagnosis.

These symptoms include:⁷⁻¹⁰

- Fever
- Cough
- Sneezing
- Sore throat
- Runny nose
- Headache

This group of respiratory viruses causes similar complications, including:

- Acute bronchitis
- Bronchiolitis
- Upper respiratory tract infection
- Pneumonia
- Ear infection

TAKE PRECAUTIONS



The influenza vaccine is the best way to prevent illness from the influenza virus. Get vaccinated in the fall before influenza season starts.

No vaccine or anti-viral medications for non-influenza viruses exist. Personal protective measures remain essential in preventing disease spread.



Cough or sneeze into sleeve



Clean your hands



Remain home if ill



Respiratory virus infections place an economic burden on Ontario, including cost of treatment and lost productivity at work and at school.

5-20%

Per cent of employees in Canada that took any sick leave due to influenza in any given season over the past decade⁶



Employees with lower incomes and less job security are more likely to attend work while sick.¹¹

1. 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> 2. Public Health Ontario. Laboratory respiratory pathogen surveillance reports [Internet]. Toronto, ON: Ontario Agency for Health Protection and Promotion; c2014. Available from: <http://www.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/PHO-Laboratories-surveillance-updates.aspx> 3. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Labstrack – May 2013: Influenza and other respiratory viral testing algorithm for spring and summer 2013 (May 21, 2013 to October 31, 2013). Toronto, ON: Queen's Printer for Ontario; 2013. Available From: http://www.publichealthontario.ca/en/eRepository/LAB_SD_076_Influenza_respiratory_viral_testing.pdf 4. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Provincial Infectious Diseases Advisory Committee. Syndromic surveillance discussion paper. Toronto, ON: Queen's Printer for Ontario; 2012. Available from: http://www.publichealthontario.ca/en/eRepository/PIDAC_SyndromicSurveillance_DiscussionPaper_ENG_2013.pdf 5. Kwong JC, Crowcroft NS, Campitelli MA, Ratnasingham S, Daneman N, Deeks SL, et al. Ontario Burden of Infectious Disease Study (ONBIDS): An OAHPP/ICES report. Toronto: Ontario Agency for Health Protection and Promotion, Institute for Clinical Evaluative Sciences; 2010. Available from: http://www.publichealthontario.ca/en/eRepository/ONBIDS_Report_ma18.pdf 6. Schanzer DL, Zheng H, Gilmore J. Statistical estimates of absenteeism attributable to seasonal and pandemic influenza from the Canadian Labour Force Survey. BMC Infect Dis. 2011;11:90. Available from: <http://www.biomedcentral.com/1471-2334/11/90> 7. Qazi S. Respiratory disease, acute viral. In: Heymann DL, editor. Control of communicable diseases manual. 19th ed. Washington, D.C.: American Public Health Association; 2008. p. 515-520. 8. National Center for Immunization and Respiratory Diseases, Division of Viral Diseases. Respiratory syncytial virus infection (RSV) [Internet]. Atlanta, GA: Centers for Disease Control and Prevention; 2013 Dec 2. Available from: <http://www.cdc.gov/rsv/> 9. National Center for Immunization and Respiratory Diseases, Division of Viral Diseases. Human parainfluenza viruses (HPIVs) [Internet]. Atlanta, GA: Centers for Disease Control and Prevention; 2012 Nov 5. Available from: <http://www.cdc.gov/parainfluenza/> 10. Public Health Agency of Canada. Rhinovirus: Pathogen safety data sheet – infectious agent [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2011 Apr 19. Available from: <http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/rhinovirus-eng.php> 11. Aronsson G, Gustafson K, Dallner M. Sick but yet at work. An empirical study of sickness presenteeism. J Epidemiol Community Health 2000;54:502-509. Available from: <http://jech.bmj.com/content/54/7/502.full>

For more information, visit:
publichealthontario.ca

April 24, 2014

VULNERABLE ROAD USERS

Rates of injury and death due to road traffic collisions have declined in Canada¹ and Ontario² over the past four decades.

	Injury*	Death*
1964	202.5	5.3
2010	69.8	0.6

*Rate per 10,000 licensed drivers of road traffic injury and death in Ontario.²

In 2010, 579 Ontarians died due to road traffic collisions.²

Pedestrians and bicyclists are at high risk of road traffic injury and death.

While the rate of emergency department visits for road traffic injury in Ontario has decreased overall, this is not the case for pedestrians and bicyclists.³

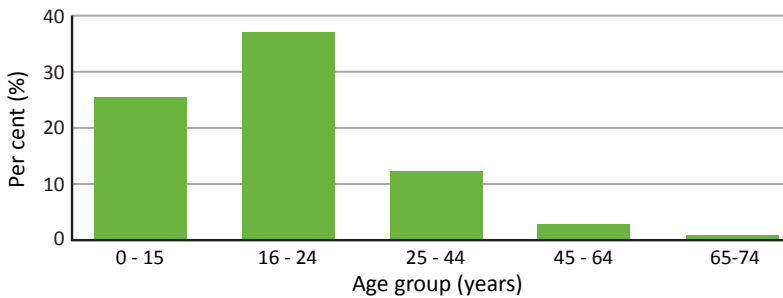
Number of emergency department visits in 2012:



YOUNG DRIVERS

Road traffic collisions are the leading cause of injury-related death among 16-24 year olds in Ontario, accounting for 37.0% of preventable deaths.

Road traffic deaths as a proportion of all deaths from preventable causes by age group, Ontario, 2000-2009⁴



1 in 5 road traffic deaths in 2010 were among those aged 16-24,² which is higher than would be expected given the proportion of licensed drivers in this age group.

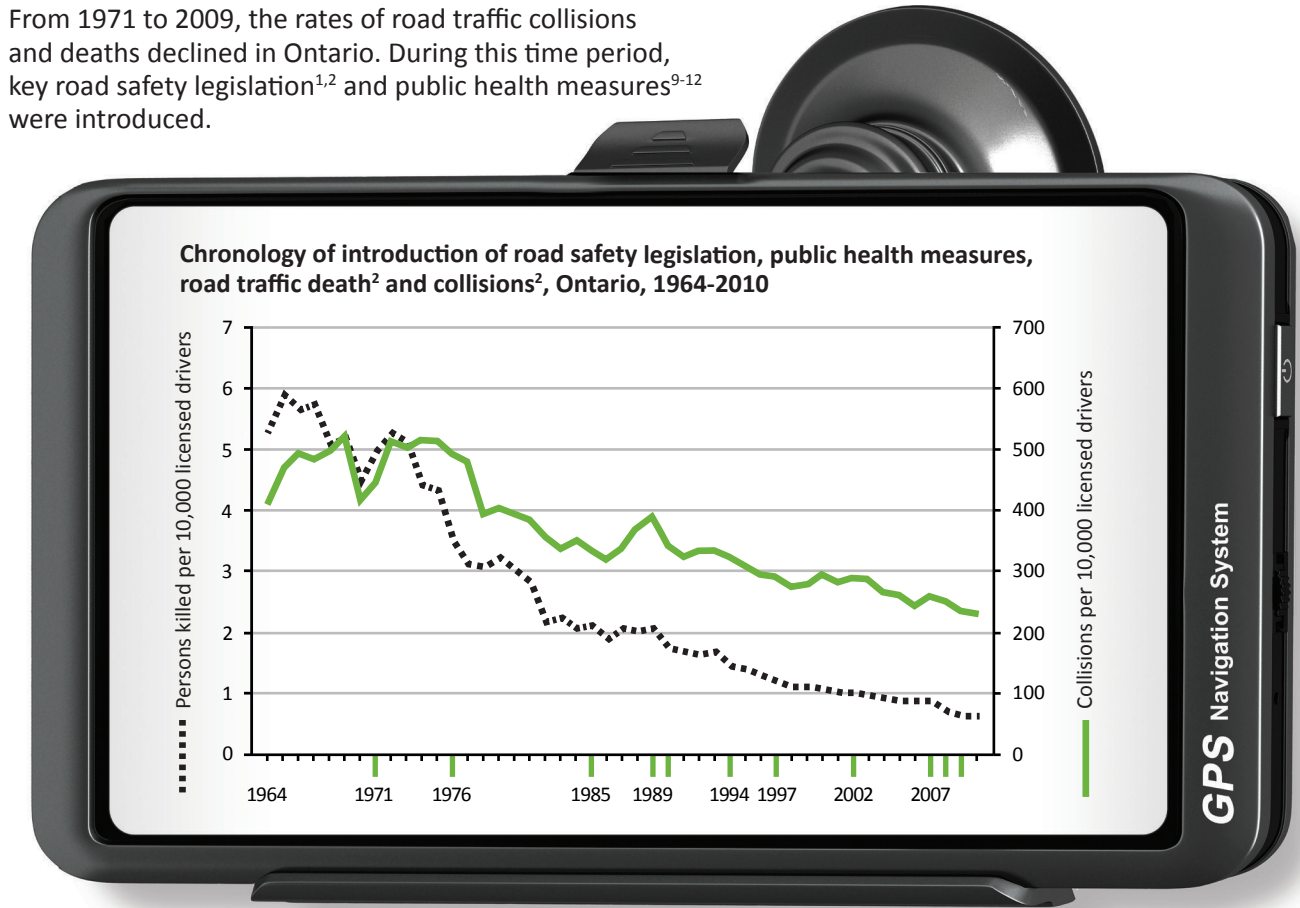
Young males have an increased risk of road traffic injury and death which may be due in part to a higher prevalence of risk-taking behaviour.⁵⁻⁷

ROAD SAFETY

THE JOURNEY AHEAD

Road safety is one of the greatest public health achievements of the 20th century.⁸ Continued effort to identify and address the factors that contribute to collisions is important to improving safety for all road users.

From 1971 to 2009, the rates of road traffic collisions and deaths declined in Ontario. During this time period, key road safety legislation^{1,2} and public health measures⁹⁻¹² were introduced.



- 1971:** Seatbelts required in all new vehicles in Canada¹
- 1976:** Ontario first in North America to pass seatbelt law^{13,14}
- 1985:** Tougher penalties for impaired driving in Canada^{1,15}
- 1989:** Public health mandate revised to support road safety among adolescents⁹
- 1990:** Daytime running lights required in all new vehicles^{1,16}
- 1994:** Graduated licensing program introduced^{2,17}
- 1997:** Public health mandate revised to support crash reduction¹⁰
- 2002:** Chief Medical Officer of Health report calls for measures to reduce road traffic injury and death¹¹

- 2007:** Increased sanctions for street racing and aggressive driving^{2,18}
New sanctions for drivers with blood alcohol concentrations (BAC) between 0.05 and 0.08¹⁸
- 2008:** Increased sentences for impaired driving in Canada^{1,19}
New Ontario Public Health Standards address road safety¹²
- 2009:** New and young drivers must maintain a zero blood alcohol concentration (BAC)^{2,20}
Hand-held cell phone use while driving banned^{1,2,21,22}
Electronic speed limiters required in most large trucks to cap speed at 105 kph^{2,23}

CONTINUED THREATS TO ROAD SAFETY



Distracted driving



Not wearing seatbelts



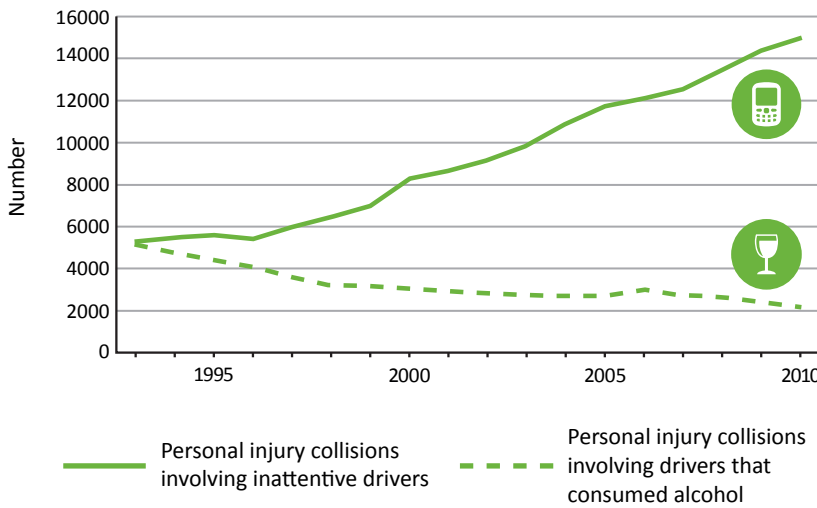
Impaired driving

DISTRACTED DRIVING

Distracted or inattentive driving occurs when a driver voluntarily diverts attention to a task other than driving,^{24,25} e.g., eating or talking on a phone. Distracted driving increases the risk of road traffic collision.²⁴⁻²⁶

Cell phone use, whether hand-held or hands-free, is a common driver distraction associated with an increased risk of road traffic collision.²⁴⁻²⁶

Number of road traffic collisions resulting in personal injury* in which drivers consumed alcohol or were inattentive†, Ontario, 1993-2010²⁷



*Personal injury includes major (required hospitalization), minor (required treatment in an emergency department), and minimal (required no formal treatment) injuries.²⁷

†Inattentive: operating a motor vehicle without due care and attention or placing less than full concentration on driving, e.g., changing radio stations, consuming food, reading, talking on phone or two-way radio, using headphones.²⁷

The proportion of Ontarians that have reported using a cell phone while driving has increased in Ontario²⁸

2003 = 41.6%

2009/2010 = 48.8%

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