Cancer Care Ontario

2016 Prevention System Quality Index

Technical Appendix

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Issue date: October 2016

Ontario
Cancer Care Ontario

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Modifiable cancer risk factors

Definition

Percentage of Ontario adults* who report:

1. **Inadequate vegetable and fruit consumption:** consuming vegetables (excluding potatoes) and fruit fewer than five times per day;
2. **Physical inactivity during leisure time:** average daily energy expenditure during leisure time physical activities in the past three months of less than 1.5 kcal/kg/day;
3. **Current smoking:** smoking cigarettes daily or occasionally; or
4. **Alcohol consumption in excess of the cancer prevention recommended maximum:** drinking alcohol in excess of the maximum recommended amount for cancer prevention (i.e., >2 drinks per day for men and >1 drink per day for women).

**Adults age 18 and older (inadequate vegetable and fruit consumption, physical inactivity during leisure time), 20 and older (current smoking), or 19 and older (alcohol consumption in excess of the cancer prevention recommended maximum).*

Calculation(s)

Inadequate vegetable and fruit consumption

$$\frac{\text{Weighted number of adults age 18+ consuming vegetables (excluding potatoes) and fruit fewer than five times per day}}{\text{Weighted total population age 18+}} \text{ x100}$$

Physical inactivity during leisure time

$$\frac{\text{Weighted number of adults age 18+ whose average daily energy expenditure in leisure-time physical activities over the past three months is less than 1.5 kcal/kg/day}}{\text{Weighted total population age 18+}} \text{ x100}$$

Current smoking

$$\frac{\text{Weighted number of adults age 20+ who smoke daily or occasionally}}{\text{Weighted total population age 20+}} \text{ x100}$$

Alcohol consumption in excess of the cancer prevention recommended maximum

$$\frac{\text{Weighted number of adults age 19+ who in past week on average exceed the maximum recommended alcohol consumption for cancer prevention}}{\text{Weighted total population age 19+}} \text{ x100}$$

Where:

- The maximum recommended alcohol consumption for men is two drinks per day and for women is one drink per day, as specified by the World Cancer Research Fund and the American Institute for Cancer Research.

Exclusions:

- All calculations exclude respondents in the non-response categories (refusal, don't know, and not stated) for required questions.

Analysis

Trend estimates, age-standardized:

- Estimates were calculated for 2003 and 2005, and annually for 2007–2014.
- Adult estimates were age-standardized to the 2011 Canadian population using the age groups from the Canadian Community Health Survey (CCHS) person-level sampling strategy: 20–29, 30–44, 45–64, 65 and over. Exceptions for the lowest age range include inadequate vegetable and fruit consumption and physical inactivity during leisure time, where 18–29 was used, and alcohol consumption, where 19–29 was used.
- Statistically significant ($p < 0.05$) trends were determined using Microsoft Excel's linear regression analysis data tool.

General analytic notes:

- Bootstrapping techniques were used to obtain variance estimates and 95% confidence intervals of all estimates.[1] Statistics Canada requires estimates with coefficients of variation of 16.6% to 33.3% to be noted with a warning to users to interpret with caution, and estimates with coefficients of variation >33.3% to be suppressed.[2]

Considerations

- The CCHS collects data regarding the frequency of vegetable and fruit consumption rather than the quantity consumed. As a result, no inferences can be made regarding the number of servings of vegetables and fruit consumed per day.
- For vegetable and fruit consumption, starting in 2010, Statistics Canada instituted a change in deriving the variables FVCDTOT and FVCGTOT that involved changing the point during the calculation where values were rounded. Estimates presented here for 2003–2009 are not adjusted to match the new calculation method; however, applying the new method to the 2003 data only resulted in a minimal change to the 2003 estimate and did not change the conclusions regarding the trend over time when comparing to 2012.

Technical Specifications

Survey Questions – Canadian Community Health Survey:

Fruit and vegetable consumption module:

- Included daily consumption of fruit juice, fruit (excluding fruit juice), green salad, potatoes (excluding French fries, fried potatoes or potato chips), carrots and other vegetables (excluding carrots, potatoes or salad).
- Fruit juice consumption was counted only once per day, if multiple servings were consumed in a day.

Physical activities module:

- Based on the derived variable (PACDLTI). This variable categorizes respondents as being "active", "moderately active", or "inactive" in their transportation and leisure time based on the total daily energy expenditure values (kcal/kg/day) calculated for PACDTLE.

Smoking module:

- At the present time, do you smoke cigarettes daily, occasionally or not at all?

Alcohol module:

- Thinking back over the past week, did you have a drink of beer, wine, liquor or any other alcoholic beverage?
- Starting with yesterday, how many drinks did you have? (Question repeated for each day of the past week).

Data Sources

- Canadian Community Health Survey full survey waves 2003, 2005, and half-survey annual waves 2007–2014. Statistics Canada, Ontario Share File, Ontario Ministry of Health and Long-Term Care.

Data Availability and Limitations

- The CCHS is a population-based cross-sectional survey conducted by Statistics Canada. The survey is representative of approximately 97% of the Canadian population age 12+, but excludes individuals living on Indian Reserves and on Crown Lands, institutional residents, full-time members of the Canadian Forces, and residents of certain remote regions.[2]
- CCHS general surveys were administered every two years prior to 2007. Since 2007, CCHS has been administered annually, where two years of data are considered one full cycle.
- CCHS data on modifiable risk factors are self-reported. Respondents of self-reported surveys tend to under-report behaviours that are socially undesirable or unhealthy (e.g., alcohol and tobacco use, sedentary activities) and over-report behaviours that are socially desirable (e.g., physical activity, vegetable and fruit consumption).

References

1. Statistics Canada. Bootvar: User Guide (Bootvar 3.1 – SAS version). Ottawa, Ontario; 2015. Available from: http://prod.library.utoronto.ca/datalib/codebooks/cstdli/gss/gss18/sasbootdoc_eng.pdf (accessed 2016 Jun 9).
2. Statistics Canada. "Canadian Community Health Survey (CCHS) Annual Component." Definitions, data sources and methods. (Updated 2016 Jun 24). Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3226 (accessed 2016 Jun 9).

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Tobacco

Tax as a percentage of tobacco retail price

Definition

The percentage of the total retail price for a carton of 200 cigarettes that is accounted for by excise and sales taxes levied on tobacco, by provinces and territories.

Calculation

Tax as a percentage of tobacco retail price

$$\frac{\text{Total tobacco taxes on a carton of 200 cigarettes}}{\text{Average total retail price of a carton of 200 cigarettes}} \text{x}100$$

Numerator includes:

- Federal Tobacco Excise Duty, Provincial/Territorial Tobacco Excise Tax, Provincial/Territorial Sales Tax, Harmonized Sales Tax (or Federal Goods and Services Tax)

Denominator includes:

- Average total retail price = average pre-tax price of a carton of 200 cigarettes + Federal Excise + Provincial Excise + Government Sales Tax Rate * (pre-tax price + Provincial Excise)

Analysis

- Data regarding average pre-tax price of a carton of 200 cigarettes, total tobacco taxes on a carton of 200 cigarettes and average total retail price of a carton of 200 cigarettes as of April 19, 2016, were obtained online from the Non-Smokers' Rights Association/Smoking and Health Action Foundation.
- Tobacco taxes as a percentage of total retail price were calculated by province/territory.

Considerations

- In Canada, tobacco taxes are a composite of federal and provincial/territorial excise and sales taxes. Excise and sales taxes are collected by Non-Smokers' Rights Association/Smoking and Health Action Foundation from federal, provincial and territorial budgets and other official sources.
- Taxes (PST/HST/GST) are levied on the average total retail price of a carton of 200 cigarettes.

Technical Specifications

- The average pre-tax price of a carton of 200 cigarettes, determined by Non-Smokers' Rights Association/Smoking and Health Action Foundation using the Consumer Price Index (CPI) and CPI inter-city indexes of consumer price levels from Statistics Canada, varies across the country and over time. Pre-tax prices are not made publicly available. They are calculated by

subtracting the known total tobacco taxes from the total retail tobacco prices.

- Based on Statistics Canada's calculations for the CPI, a national average retail price of $99.11 for 200 cigarettes was used.
- Detailed methodology for calculations is available upon request from the the Non-Smokers' Rights Association/Smoking and Health Action Foundation.

Data Sources

- Tobacco Tax rates, 2016. Ontario Ministry of Finance. Available from https://www.ontario.ca/taxes-and-benefits/tobacco-tax-rates (accessed 2016 April 22).
- Cigarette Prices in Canada, April 19, 2016. Non-Smokers' Rights Association/Smoking and Health Action Foundation. Available from: http://www.nsra-adnf.ca/cms/index.cfm?group_id=2624 (accessed 2016 Apr 20).

Data Availability and Limitations

- Excise tax increases are dependent on both federal and provincial action.
- The inter-city index, calculated by Statistics Canada and used to estimate tobacco retail prices across provinces and territories, is limited to 11 cities, in 10 provinces. Data are not provided for the territories; tobacco retail prices for territories are calculated by the Non-Smokers' Rights Association/Smoking and Health Action Foundation. Data on tobacco prices in convenience stores and gas stations are not collected as part of the inter-city index. Note that the price for a single pack of 20 cigarettes purchased individually is not necessarily the equivalent of one tenth the price of a carton.

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Exposure to second-hand smoke

Definition

Percentage of non-smoking adults (age 20+) or adolescents (ages 12–19) in Ontario, who were regularly (every day or almost every day) exposed to second-hand smoke in their home, in a private vehicle or in public places (e.g., outside of bars, restaurants, shopping malls, arenas).

Calculations

Second-hand smoke exposure in the home

$$\frac{\text{Weighted number of non-smokers age 20+ exposed to second-hand smoke in the home}}{\text{Weighted total population of non-smokers age 20+}} \text{ x100}$$

$$\frac{\text{Weighted number of non-smokers ages 12–19 exposed to second-hand smoke in the home}}{\text{Weighted total population of non-smokers ages 12–19}} \text{ x100}$$

Second-hand smoke exposure in a vehicle

$$\frac{\text{Weighted number of non-smokers age 20+ exposed to second-hand smoke in a vehicle}}{\text{Weighted total population of non-smokers age 20+}} \text{ x100}$$

$$\frac{\text{Weighted number of non-smokers ages 12–19 exposed to second-hand smoke in a vehicle}}{\text{Weighted total population of non-smokers ages 12–19}} \text{ x100}$$

Second-hand smoke exposure in public places

$$\frac{\text{Weighted number of non-smokers age 20+ exposed to second-hand smoke in public places}}{\text{Weighted total population of non-smokers age 20+}} \text{x100}$$

$$\frac{\text{Weighted number of non-smokers ages 12–19 exposed to second-hand smoke in public places}}{\text{Weighted total population of non-smokers ages 12–19}} \text{x100}$$

Exclusions:

- All calculations exclude respondents in the non-response categories (refusal, don't know, and not stated) for required questions.

Analysis

Trend estimates for adults (age 20+), age-standardized:

- Calculated for each location of exposure (home, vehicles and public places) for 2003 and 2005, and annually for 2007–2014.
- Estimates were age-standardized using the 2011 Canadian population as the standard.
- Statistically significant ($p < 0.05$) trends were determined using Microsoft Excel's linear regression analysis data tool and validated with the Joinpoint Regression Program, Version 4.2.0.2.

Trend estimates for adolescents (ages 12–19), unadjusted:

- Calculated for each location of exposure (home, vehicles and public places) for 2003 and 2005, and annually for 2007–2014.
- Statistically significant ($p < 0.05$) trends were determined using Microsoft Excel's linear regression analysis data tool and validated with the Joinpoint Regression Program, Version 4.2.0.2.

Estimates by socio-demographic factors, age-standardized:

- Calculated for non-smoking adults (age 30+) for each location of exposure (home, vehicles and public places) for 2012–2014 combined, by selected socio-demographic factor: urban/rural residence; income quintile; education; and immigration status.
- Estimates were age-standardized using the 2011 Canadian population as the standard.
- Statistically significant differences in prevalence estimates between categories of a given socio-demographic factor were tested by comparing the absolute difference between two estimates with the square root of the sum of the margin of error (i.e., the upper 95% confidence limit minus the estimate) squared for each estimate being compared. If the difference between the estimates was greater than the square root of the sum of the squares of the two margins of error, the estimates were considered significantly different (approximately $p < 0.05$).
- Socio-demographic factors were compared against the following reference variables: *urban areas* for analyses by urban/rural residence, *income quintile 5 (Q5)* for analyses by income quintile, *post-secondary graduate* for analyses by education status and *Canadian-born* for analyses by immigration status.

General analytic notes:

- Bootstrapping techniques were used to obtain variance estimates and 95% confidence intervals of all estimates.[1] Statistics Canada requires estimates with coefficients of variation of 16.6% to 33.3% to be noted with a warning to users to interpret with caution, and estimates with coefficients of variation >33.3% to be suppressed.[2]

Considerations

Analysis by socio-demographic factors:

- Socio-demographic factors were analyzed for adults age 30+ to restrict the sample to those who have likely completed their education and reached their adult socio-demographic status.
- Pooled data (2012–2014 combined) was used to increase the survey sample to a size that is acceptable for the release of indicators stratified by socio-demographic characteristics without introducing a high degree of sampling variability.
- The selected socio-demographic factors were chosen for this analysis based on the availability and quality of the data from the Canadian Community Health Survey (CCHS) and the evidence suggesting an association between the risk factor and the socio-demographic variable. These factors were defined as follows:
    - *Urban/rural residence:* Respondents living within any census metropolitan area (CMA) or census agglomeration (CA) were considered "urban residents" and those living outside of any CMA or CA were classified as "rural residents."
    - *Income quintile:* Sorts respondents' derived household income into quintiles based on the ratio of household income to the low-income cut-off (LICO) for the household size and community. Starting in 2011, Statistics Canada imputed all missing household incomes to account for the one-third of missing responses to the income question.
    - *Education:* Highest level of education attained by the respondent, according to three categories: less than secondary school graduation, secondary school graduation or some post-secondary education, and post-secondary graduation.
    - *Immigration status:* Distinguishes immigrants, according to time since immigration, from the Canadian-born population based on three categories: Canadian-born, immigrant >10 years in Canada and immigrant ≤10 years in Canada. The years since immigration refers to the first time the respondent arrived in Canada (excluding holidays) to live as a landed immigrant, by claiming refugee status, with a work permit or with a study permit.

Technical Specifications

Survey Questions – Canadian Community Health Survey:

Smoking module:

- Including both household members and regular visitors, does anyone smoke inside your home every day or almost every day?
- In the past month, were you exposed to second-hand smoke every day or almost every day in a car or other private vehicle?
- In the past month, were you exposed to second-hand smoke every day or almost every day in public places (such as bars, restaurants, shopping malls, arenas, bingo halls, bowling alleys)?

Data Sources

- Canadian Community Health Survey full survey waves 2003, 2005, and half-survey annual waves 2007–2014. Statistics Canada, Ontario Share File, Ontario Ministry of Health and Long-Term Care.

Data Availability and Limitations

- The CCHS is a population-based cross-sectional survey conducted by Statistics Canada. The survey is representative of approximately 97% of the Canadian population age 12+, but excludes individuals living on Indian Reserves and on Crown Lands, institutional residents, full-time members of the Canadian Forces, and residents of certain remote regions.[2]
- CCHS general surveys were administered every two years prior to 2007. Since 2007, CCHS has been administered annually, where two years of data are considered one full cycle.
- CCHS data are self-reported. Respondents of self-reported surveys tend to under-report behaviours that are socially undesirable or unhealthy (e.g., alcohol and tobacco use, sedentary activities) and over-report behaviours that are socially desirable (e.g., physical activity, vegetable and fruit consumption).

References

1. Statistics Canada. Bootvar: User Guide (Bootvar 3.1 – SAS version). Ottawa, Ontario; 2015. Available from: http://prod.library.utoronto.ca/datalib/codebooks/cstdli/gss/gss18/sasbootdoc_eng.pdf (accessed 2016 Jun 9).
2. Statistics Canada. "Canadian Community Health Survey (CCHS) Annual component." Definitions, data sources and methods. (Updated 2016 Jun 24). Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3226 (accessed 2016 Jun 9).

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Long-term smoking cessation

Definition

Percentage of adult (age 20+) recent daily smokers (daily smokers one to two years ago) in Ontario who have quit smoking completely for at least one year.

Calculation

Smoking Cessation rate

$$\frac{\text{Weighted number of adults age 20+ who were daily smokers one to two years ago who have quit smoking completely for one to less than two years}}{\text{Weighted total population of daily smokers age 20+ who were daily smokers one to two years ago}} \text{x100}$$

Numerator includes:

- Daily smokers who had smoked 100 cigarettes or more in their lifetime, were smoking cigarettes daily one to two years ago, and who indicated they quit smoking completely one to less than two years ago.

Denominator includes:

- Daily smokers who were smoking cigarettes daily one to two years ago and had smoked 100 cigarettes or more in their lifetime.

Exclusions:

- Calculation excludes respondents in the non-response categories (refusal, don't know, and not stated) for required questions.
- Smokers who quit smoking completely more than two years ago, respondents who have never smoked a whole cigarette, and respondents who have not smoked a total of 100 cigarettes or more in their lifetime were excluded from the population.

Analysis

Trend estimates, age-standardized:

- Calculated for males, females and both sexes combined for 2005 and annually for 2007–2014.
- Statistically significant ($p < 0.05$) trends were determined using Microsoft Excel's linear regression analysis data tool.

General analytic notes:

- Bootstrapping techniques were used to obtain variance estimates and 95% confidence intervals of all estimates.[1] Statistics Canada requires estimates with coefficients of variation of 16.6% to 33.3% to be noted with a warning to users to interpret with caution, and estimates with coefficients of variation >33.3% to be suppressed.[2]

Considerations

- To provide an estimate of successful smoking cessation that is sensitive to tobacco-related policy changes within Ontario over time, and to account for the high relapse rate experienced by recent quitters, calculation of the numerator for a given year includes only respondents who indicated they quit smoking completely one to less than two years ago.

Technical Specifications

Survey Questions – Canadian Community Health Survey:

Smoking module:

- Questions regarding smoking status (SMKDSTY) and the number of years since former smokers completely quit daily smoking (SMKDSTP).

Data Sources

- Canadian Community Health Survey full survey waves 2005, and half-survey annual waves 2007–2014. Statistics Canada, Ontario Share File, Ontario Ministry of Health and Long-Term Care.

Data Availability and Limitations

- The CCHS is a population-based cross-sectional survey conducted by Statistics Canada. The survey is representative of approximately 97% of the Canadian population age 12+, but excludes individuals living on Indian Reserves and on Crown Lands, institutional residents, full-time members of the Canadian Forces, and residents of certain remote regions.[2]
- CCHS general surveys were administered every two years prior to 2007. Since 2007, CCHS has been administered annually, where two years of data are considered one full cycle.
- CCHS data are self-reported. Respondents of self-reported surveys tend to under-report behaviours that are socially undesirable or unhealthy (e.g., alcohol and tobacco use, sedentary activities) and over-report behaviours that are socially desirable (e.g., physical activity, vegetable and fruit consumption).
- The criteria used to identify former daily smokers in the CCHS cycle 3.1 (2005) or later are not comparable to earlier cycles of the survey. Therefore smoking cessation data from prior to 2005 were excluded from the calculation of this indicator.

References

1. Statistics Canada. Bootvar: User Guide (Bootvar 3.1 – SAS version). Ottawa, Ontario; 2015. Available from: http://prod.library.utoronto.ca/datalib/codebooks/cstdli/gss/gss18/sasbootdoc_eng.pdf (accessed 2016 Jun 9).
2. Statistics Canada. "Canadian Community Health Survey (CCHS) Annual Component." Definitions, data sources and methods. (Updated 2016 Jun 24). Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3226 (accessed 2016 Jun 9).

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Physician-led smoking cessation counselling

Definition

Percentage of adult smokers (age 18+) in Ontario who had at least one consult with a primary care physician (family physician or general practitioner) where a smoking-cessation-related fee code was billed.

Calculation

Physician-led smoking cessation counselling

$$\frac{\text{Number of adult smokers age 18+ with at least one consult with a primary care provider where a smoking cessation fee schedule code was billed}}{\text{Total population of adult smokers age 18+ years}} \text{ x100}$$

Numerator:

- Includes all adults (age 18+) with a valid health card number who reside in Ontario and who, in the past year, had a consult with a primary care provider (i.e., family physician or general practitioner licensed to practice in Ontario) where at least one smoking cessation fee schedule code was billed through the Ontario Health Insurance Plan (OHIP).
- Excludes Workplace Safety and Insurance Board and Telemedicine claims.
- Calculated by summing the number of unique health card numbers associated with one or more smoking cessation fee schedule codes during the indicated year.

Denominator:

- Includes adults (age 18+) who are categorized as smokers based on their responses to a series of questions in the Canadian Community Health Survey (CCHS). The variable that is derived from the responses to these questions (variable = SMKDSTY) is used to categorize the respondent as a smoker (i.e., if SMKDSTY = 1, 2 or 3, then respondent is a smoker).
- Excludes respondents who did not answer questions used to derive the SMKDSTY variable. (i.e., SMKDSTY = 99 (not stated)).
- Calculated by:
    1. Defining categories: if SMKDSTY = 1, 2 or 3 then smoker; else if SMKDSTY = 4, 5 or 6, non-smoker.
    2. Including only respondents who are age 18+ (DHH_AGE ≥ 18).
    3. Excluding respondents who did not answer the survey question (i.e., SMKDSTY = 99).
    4. Running weighted analysis using the WTS_S variable.
    5. Determining the number of smokers in Ontario and in each public health unit by multiplying the smoking rate by the population aged 18+.

Analysis

- Trend estimates for the percentage of adult smokers (age 18+) in Ontario who had a physician consult for smoking cessation, 2008–2014, were examined. Microsoft Excel's linear regression analysis data tool was used to determine whether the trend was significant ($p < 0.05$).
- Estimates by public health unit were examined.

Considerations

- Fee billing codes, definitions, and corresponding billing values in Ontario are detailed in the Schedule of Benefits and New Fee Codes, available online from the Ministry of Health and Long-Term Care.
- Using the OHIP Approved Claims File requires aggregating data by patient, physician, and service date to determine unique visits.
- To determine the public health unit of patients, the patient postal code on December 31 of the respective year was extracted from Registered Persons Database and linked to the public health unit using the Postal Code Conversion File.
- The values for Ontario do not equal the sum of the public health units because they include patients who had invalid or missing postal codes.
- Smoking cessation counselling may be provided by primary care providers during appointments regarding other health concerns; however only smoking cessation consults that are billed using fee schedule codes E079, K039 or Q042 are included in the numerator.

Technical Specifications

- Smoking cessation codes include all professional services that are billed through OHIP and paid through the medical claims payment system with one of the following fee schedule codes:
    - E079 - Initial discussion with patient regarding smoking cessation;
    - K039 - Smoking cessation follow-up visit, or;
    - Q042 - Smoking Cessation Counselling Fee (primary care).

Survey Questions – Canadian Community Health Survey:

Smoking module:

- At the present time, do you smoke cigarettes daily, occasionally or not at all?

Data Sources

- Claims History Database (CHDB). Ministry of Health and Long-Term Care. Extracted October 2012 (for 2007/08, 2008/09, 2009/10, 2010/11); September 2013 (for 2011/12); April 2014 (for 2012/13); and January 2016 (for 2013/14).
- Registered Persons Database (RPDB). Ministry of Health and Long-Term Care. Extracted January 2016.
- Population Estimates and Projections. Ministry of Finance, InteliHealth. Extracted December 2015.

- Canadian Community Health Survey. Statistics Canada, Ontario Share File, Ministry of Health and Long Term Care, 2008–2014.

Data Availability and Limitations

- Data were obtained from the Health Analytics Branch, Ministry of Health and Long-Term Care in January 2016.
- The CCHS is a population-based cross-sectional survey conducted by Statistics Canada. The survey is representative of approximately 97% of the Canadian population age 12+, but excludes individuals living on Indian Reserves and on Crown Lands, institutional residents, full-time members of the Canadian Forces, and residents of certain remote regions.[1]
- CCHS data on modifiable risk factors are self-reported. Respondents of self-reported surveys tend to under-report behaviours that are socially undesirable or unhealthy (e.g., alcohol and tobacco use, sedentary activities) and over-report behaviours that are socially desirable (e.g., physical activity, vegetable and fruit consumption).

References

1. Statistics Canada. "Canadian Community Health Survey (CCHS) Annual Component." Definitions, data sources and methods. (Updated 2016 Jun 24). Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3226 (accessed 2016 Jun 9).

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Alcohol

Minimum retail price of alcohol sold in off-premises alcohol outlets

Definition

The Liquor Control Board of Ontario's (LCBO) minimum retail price of alcohol for sample alcoholic beverage types sold in off-premises alcohol outlets, expressed per standard drink size in Canada (17.05 mL of alcohol).

Calculation

Minimum price per standard drink

1. Calculate *number of standard drink units* per volume of sample beverage type.
    a. For the types of alcoholic beverages priced by volume of beverage (e.g., 750 mL bottle of table wine), calculate the number of standard drink units per volume of sample beverage type as follows:

$$\frac{\text{Total alcohol content of sample beverage type in mL}}{\text{17.05 mL}}$$

    Where:
    - Total alcohol content of sample beverage type in mL = mL of beverage type multiplied by the alcohol by volume (e.g., 750 mL table wine at 12.5 per cent alcohol = 93.75 mL of alcohol).

    b. For the types of alcoholic beverages priced by litre of absolute alcohol (LAA), the number of standard drink units are calculated by dividing 1000 mL by 17.05 mL (58.65 standard drink units).

2. Calculate *minimum price per standard drink*:

$$\frac{\text{LCBO minimum retail price per volume of sample beverage type or per LAA}}{\text{Number of standard drink units per volume of sample beverage}}$$

Analysis

- Calculated for the following commonly purchased alcoholic beverage types for the year 2016: spirits, table wine (Ontario and imported), non-draft beer and coolers.

Considerations

- In Ontario, the Liquor Control Act requires that the LCBO set minimum retail prices for alcohol sold in off-premises outlets no lower than what is established in its regulation on

minimum pricing. This regulation includes a calculation to adjust for changes in Consumer Price Index (CPI).

- The LCBO's minimum retail prices are updated annually and apply to all alcohol sold in off-premises outlets.
- The LCBO lists its minimum retail prices by volume of beverage for some types of beverages and by litre of absolute alcohol for other types of beverages.
- Minimum prices per standard drink are not consistently higher for beverages that have higher alcohol content. The minimum prices for most beverages presented in this indicator are based on the volume of the beverage. Beers, coolers and similar beverages that contain 5.6% or more alcohol by volume are the only type of beverages that have minimum prices set per litre of absolute alcohol contained in a product.
- A standard Canadian drink contains 17.05 mL of alcohol (ethanol). Common beverage sizes for alcoholic beverages containing approximately 17.05 mL of alcohol are 43 mL (1.5 oz) of spirits at 40 per cent alcohol, 142 mL (5 oz) of wine at 12 per cent alcohol, and 341 mL (12 oz) of beer or coolers at 5 per cent alcohol.
- Coolers include spirit coolers, beer coolers and wine coolers.
- Alcohol retail prices are also impacted by brand and source of an alcoholic beverage.
- Analysis does not include draft beer, bottled/draft cider, fortified wine, sake or liqueurs.
- Off-premises alcohol retail outlets include: Agency Stores, Brewers Retail (The Beer Store), farmers' markets, ferment-on-premise outlets, off-site wineries, on-site wineries, on-site breweries, on-site distilleries, LCBO stores and grocery outlets.
- On-premises outlets (e.g., bars and restaurants) are subject to separate minimum pricing regulations under the Liquor License Act. There is no minimum pricing regulation for ferment-on-premises outlets.

Technical Specifications

- Minimum retail prices include taxes and container deposits. Container deposit rates in 2016: $0.10 for a container greater than 100 mL and less than or equal to 630 mL; $0.20 for a container greater than 630 mL; and $0.00 for a container less than or equal to 100 mL.
- Giesbrecht et al. provide the framework for analysis of minimum pricing per standard drink.[1]

Data Sources

- Pricing updates January 2016 revised - Jan. Attachment 1 - MRP index factor 2016. Liquor Control Board of Ontario. Toronto: LCBO; 2016. [Updated 2016 Jan 12]. Available from: http://www.doingbusinesswithlcbo.com/tro/Forms-Documents/LettersToTheTrade/Downloads/Attachment%201%20-%20MRP%20Index%20Factor%202016.xls (accessed 2016 Apr 1).

References

1. Giesbrecht N, Wettlaufer A, April N, Asbridge M, Cukier S, Mann R et al. Strategies to reduce alcohol-related harms and costs in Canada: a comparison of provincial policies. Toronto: Centre for Addiction and Mental Health; 2013.

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Private off-premises alcohol outlets

Definition

The percentage of off-premises alcohol retail outlets (i.e., outlets that sell alcohol for consumption off site) that are privately, rather than publicly owned, in Ontario.

Calculation

Percentage of off-premises alcohol retail outlets that are privately owned

$$\frac{\text{Number of off-premises alcohol retail outlets that are privately owned}}{\text{Total number of off-premises alcohol retail outlets}} \text{x}100$$

Numerator includes:

- Privately owned off-premises alcohol outlets: Agency Stores, Brewers Retail (The Beer Store), farmers' markets, ferment-on-premises locations, off-site wineries, on-site wineries, on-site breweries, on-site distilleries and grocery stores.

Denominator includes:

- Off-premises alcohol outlets: outlets included in the numerator, in addition to Liquor Control Board of Ontario (LCBO) stores.

Analysis

- Calculated as of January 2016, by public health unit.
- The percent change (relative change in the percentage of privately owned off-premises alcohol outlets from October 2014 to December 2015/January 2016) was calculated for Ontario and for each public health unit.

Considerations

- Off-premises, publicly owned alcohol outlets include LCBO stores only. Agency Stores are private retail outlets authorized under the LCBO Agency Store Program to sell alcoholic beverages with other goods in rural areas.
- On-premises alcohol outlets refer to bars or restaurants that sell alcohol for consumption on site.

Technical Specifications

- Address lists of off-premises alcohol outlets were obtained in November 2015 and January 2016 from the Alcohol and Gaming Commission of Ontario (AGCO) and in January 2016 from the LCBO.
- To identify the public health unit of off-premises alcohol outlets (by type) in Ontario, the outlet locations were geographically located (geocoded) using the World Geocode Service (ArcGIS Online) in ArcGIS 10.3.1. Outlet addresses were geocoded by street address (98.2%),

street name (0.5%) or, when address was invalid or unmatchable, by postal code (0.2%) or town (0.3%) or manually using web searches (0.7%).
- The number of privately owned off-premises alcohol outlets, and the total number of off-premises alcohol retail outlets were aggregated at the public health unit level. The percentage of public off-premises alcohol retail outlets was then calculated for each public health unit.
- Giesbrecht et al. provides the framework for this analysis.[1]

Data Sources

- Lists of off-site wineries, onsite wineries, Brewers Retail (The Beer Store), on-site breweries and on-site distilleries [2015 Nov 23]; ferment-on-premises [2015 Dec 21]; farmers' markets [2016 Jan 14]; Grocery stores [2016 Jan 26]. Alcohol and Gaming Commission of Ontario, e-mail to cslistings@agco.ca [2015 Oct 27].
- List of Agency Stores. Liquor Control Board of Canada. (Updated 2016 Jan 11). Available from: http://www.doingbusinesswithlcbo.com/sdre/AgencyStores/AgencyStoreList.shtml (accessed 2016 Jun 9).
- List of LCBO Stores. Liquor Control Board of Canada. (Updated 2016 Jan 11). Available from: http://www.doingbusinesswithlcbo.com/tro/Forms-Documents/Documents/Documents.shtml (accessed 2016 Jun 9).
- Statistics Canada Health Region boundary files. 2007 updates. Available from: http://www.statcan.gc.ca/pub/82-402-x/2009001/rg-eng.htm#arcinfo

Data Availability and Limitations

- Analysis excludes duty-free outlets.

References

1. Giesbrecht N, Wettlaufer A, April N, Asbridge M, Cukier S, Mann R et al. Strategies to reduce alcohol-related harms and costs in Canada: a comparison of provincial policies. Toronto: Centre for Addiction and Mental Health; 2013.

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Alcohol outlet density (on- and off-premises)

Definition

The number of on-premises or off-premises alcohol retail outlets (both publicly and privately owned) per 10,000 people age 15+ in Ontario.

Calculation

Density of on-premises alcohol retail outlets

$$\frac{\text{Number of on-premises alcohol retail outlets}}{\text{Ontario population age 15+ years}} \text{ x10,000}$$

Numerator includes:

- All on-premises alcohol retail outlets (bars or restaurants that sell alcohol for consumption on site).

Density of off-premises alcohol retail outlets

$$\frac{\text{Number of off-premises alcohol retail outlets}}{\text{Ontario population age 15+ years}} \text{ x10,000}$$

Numerator includes:

- All private and publicly owned off-premises alcohol retail outlets (Agency Stores, Brewers Retail (The Beer Store), farmers' markets, ferment-on-premise outlets, off-site wineries, on-site wineries, on-site breweries, on-site distilleries, Liquor Control Board of Ontario (LCBO) Stores and grocery outlets).

Analysis

- The densities of on-premises and off-premises alcohol outlets as of December 2015/January 2016 were calculated for Ontario, and for each public health unit.
- The percent change (relative change in the densities of on- and off-premises alcohol outlets from October 2014 to December 2015/January 2016) was calculated for Ontario and for each public health unit.

Considerations

- On-premises alcohol outlets are establishments that sell alcohol for consumption on site. Off-premises alcohol outlets include retail stores that sell alcohol for consumption off site.
- Off-premises, publicly owned alcohol outlets include LCBO stores only. Agency Stores are private retail outlets authorized under the LCBO Agency Store Program to sell alcoholic beverages with other goods in rural areas.
- Privately owned alcohol outlets include: Agency Stores, Brewers Retail (The Beer Store), farmers' markets, ferment-on-premises locations, off-site wineries, on-site wineries, on-site breweries, on-site distilleries, grocery stores and on-premises outlets.
- Population estimates are for 2015 and do not correspond to the month for outlet listings.

Technical Specifications

- Address lists of on-premises and off-premises alcohol outlets were obtained in November 2015 and January 2016 from the Alcohol and Gaming Commission of Ontario (AGCO) and in January 2016 from the LCBO.
- To identify the public health unit of off-premises alcohol outlets (by type) in Ontario, the outlet locations were geographically located (geocoded) using the World Geocode Service (ArcGIS Online) in ArcGIS 10.3.1. Alcohol outlet addresses were geocoded by street address (98.2%), street name (0.5%) or, when address was invalid or unmatchable, by postal code (0.2%) or town (0.3%) or manually using web searches (0.7%).
- Ontario's 2015 population, age 15+ years, by public health unit, was estimated based on the Ministry of Finance's population projection, 2013–2041, based on the 2011 census.
- Giesbrecht et al. provides the framework for this analysis.[1]

Data Sources

- Alcohol and Gaming Commission of Ontario. E-mail to cslistings@agco.ca [2015 Oct 27]; Lists of on-premise locations, off-site wineries, on-site wineries, Brewers Retail (The Beer Store), on-site breweries and on-site distilleries [2015 Nov 23]; ferment-on-premises [2015 Dec 21]; farmers' markets [2016 Jan 14]; Grocery stores [2016 Jan 26].
- Liquor Control Board of Canada. List of Agency Stores. (Updated 2016 Jan 11). Available from: http://www.doingbusinesswithlcbo.com/sdre/AgencyStores/AgencyStoreList.shtml (accessed 2016 Jun 9).
- Liquor Control Board of Canada. List of LCBO Stores. (Updated 2016 Jan 11). Available from: http://www.doingbusinesswithlcbo.com/tro/FormsDocuments/Documents/Documents.shtml (accessed 2016 Jun 9).
- Statistics Canada Health Region boundary files. 2007 updates. Available from: http://www.statcan.gc.ca/pub/82-402-x/2009001/rg-eng.htm#arcinfo
- Ontario Ministry of Finance. 2011 Census-based Ministry of Finance Population Projections (2013-2041) for public health units. Spring 2016 release.

Data Availability and Limitations

- Analysis excludes duty-free outlets.
- Analysis does not account for geographic density, which may vary substantially between public health units.

References

1. Giesbrecht N, Wettlaufer A, April N, Asbridge M, Cukier S, Mann R et al. Strategies to reduce alcohol-related harms and costs in Canada: a comparison of provincial policies. Toronto: Centre for Addiction and Mental Health; 2013.

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Healthy Eating

Household food insecurity

Definition

Percentage of Ontario households that were food insecure in the past 12 months, by level of food insecurity (marginal, moderate or severe).

Calculation

Household food insecurity

$$\frac{\text{Weighted number of marginal, moderate or severe food insecure households}}{\text{Weighted total number of households}} \text{x}100$$

Where:

- Household food insecurity = marginal (limiting food selection or worrying about running out of food); moderate (compromising on food quality and/or quantity); or severe (reducing food consumption or missing meals).

General exclusions:

- All calculations exclude respondents in the non-response categories (refusal, don't know, and not stated) for required questions.

Analysis

Trend estimates:

- Calculated for marginal, moderate and severe food insecurity for 2005 and annually for 2007–2014.
- Statistically significant ($p < 0.05$) trends were determined using the Joinpoint Regression Program, Version 4.2.0.2.

Public health unit estimates:

- Calculated for overall household food insecurity (marginal, moderate and severe combined), for 2012–2014 combined.
- Statistically significant differences in prevalence estimates between public health unit estimates and the Ontario estimate were tested by comparing the absolute difference between the two estimates with the square root of the sum of the margin of error (i.e., the upper 95% confidence limit minus the estimate) squared for each estimate being compared. If the difference between the estimates was greater than the square root of the sum of the squares of the two margins of error, the estimates were considered significantly different (approximately $p < 0.05$).
- Pooled data (2012–2014) were used to increase the survey sample to a size that is acceptable for the release of indicators stratified by geographic regions without introducing a high degree of sampling variability.

Socio-demographic factor estimates:

- Calculated for overall household food insecurity (marginal, moderate and severe combined), in Ontario, 2012–2014 combined, by selected socio-demographic factor: urban/rural residence; income quintile.
- Statistically significant differences in prevalence estimates between categories of a given socio-demographic factor were tested by comparing the absolute difference between the two estimates with the square root of the sum of the margin of error (i.e., the upper 95% confidence limit minus the estimate) squared for each estimate being compared. If the difference between the estimates was greater than the square root of the sum of the squares of the two margins of error, the estimates were considered significantly different (approximately $p < 0.05$).
- Socio-demographic factors were compared against the following reference variables: *urban areas* for analyses by urban/rural residence, and *income quintile 5 (Q5)* for analyses by income quintile.
- Pooled data (2012–2014 combined) were used to increase the survey sample to a size that is acceptable for the release of indicators stratified by socio-demographic factors without introducing a high degree of sampling variability.

General analytic notes:

- Bootstrapping techniques were used to obtain variance estimates and 95% confidence intervals of all estimates.[1] Statistics Canada requires estimates with coefficients of variation of 16.6% to 33.3% to be noted with a warning to users to interpret with caution, and estimates with coefficients of variation >33.3% to be suppressed.[2]

Considerations

Analysis by socio-demographic factors:

- The selected socio-demographic factors were defined as follows:
    - *Urban/rural residence:* Households within any census metropolitan area (CMA) or census agglomeration (CA) were considered "urban" and those outside of any CMA or CA were classified as "rural."
    - *Income quintile:* Sorts respondents' derived household income into quintiles based on the ratio of household income to the low-income cut-off (LICO) for the household size and community. Starting in 2011, Statistics Canada imputed all missing household incomes to account for the one-third of missing responses to the income question.

Technical Specifications

Survey Questions – Canadian Community Health Survey:

Household Food Security Status – modified version (FSCDHFS2):

- The questions ask whether household members were able to afford the food they needed in the past 12 months, by examining whether any member worried about running out of food to not eating for a whole day. Of the 18 questions, ten focus on the experiences of adults, while eight focus on children in the household.

- Statistics Canada calculates food security status with households being classified as "food secure", "moderately food insecure", or "severely food insecure" based on an increasing number of affirmative responses.
- Analysis is based on the household sampling weights from the CCHS, rather than the individual sampling weights.

Food Insecurity Status:

- In addition to Statistics Canada's derivation of food insecurity status, "marginal food insecurity" was also derived to identify individuals who would otherwise be classified as food secure, but may experience food insecurity.[3] Household food insecurity status was based on the number of affirmative responses to the adult/children questions, where:
    - Food secure = 0 adult affirmed responses and 0 child affirmed responses
    - Marginal food insecurity = 1 adult affirmed response or 1 child affirmed response
    - Moderate food insecurity = 2 to 5 adult affirmed responses or 2 to 4 child affirmed responses
    - Severe food insecurity = 6 or more adult affirmed responses or 5 or more child affirmed responses

Data Sources

- Canadian Community Health Survey full survey waves 2005, and half-survey annual waves 2007–2014. Statistics Canada, Ontario Share File, Ontario Ministry of Health and Long-Term Care.

Data Availability and Limitations

- The CCHS is a population-based cross-sectional survey conducted by Statistics Canada. The survey is representative of approximately 97% of the Canadian population age 12+, but excludes individuals living on Indian Reserves and on Crown Lands, institutional residents, full-time members of the Canadian Forces, and residents of certain remote regions.[2]
- CCHS general surveys were administered every two years prior to 2007. Since 2007, CCHS has been administered annually where two years of data are considered one full cycle.
- CCHS data are self-reported. Respondents of self-reported surveys tend to under-report behaviours that are socially undesirable or unhealthy (e.g., alcohol and tobacco use, sedentary activities) and over-report behaviours that are socially desirable (e.g., physical activity, vegetable and fruit consumption).
- CCHS general surveys did not contain the 18-question food security module prior to 2005.

References

1. Statistics Canada. Bootvar: User Guide (Bootvar 3.1 – SAS version). Ottawa, Ontario; 2015. Available from: http://prod.library.utoronto.ca/datalib/codebooks/cstdli/gss/gss18/sasbootdoc_eng.pdf (accessed 2016 Jun 9).
2. Statistics Canada. "Canadian Community Health Survey (CCHS) Annual component." Definitions, data sources and methods. (Updated 2016 Jun 24). Available from:

http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3226 (accessed 2016 Jun 9).
3. Tarasuk, V, Mitchell, A, Dachner, N. Household food insecurity in Canada, 2014. Toronto: Research to identify policy options to reduce food insecurity (PROOF); 2016. Available from: http://proof.utoronto.ca/resources/proof-annual-reports/annual-report-2014/ (accessed 2016 Jun 9).

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Cost of a Nutritious Food Basket

Definition

The cost of a basket of food that represents current nutrition recommendations and average food purchasing patterns.

Analysis

- Nutritious Food Basket (NFB) costs in 2014 and 2015 for Ontario and for each public health unit were obtained from the Health Promotion Performance and Accountability Unit, Ministry of Health and Long-Term Care, in January 2016.
- The annual percent change in the cost of a Nutritious Food Basket in Ontario, between 2014 and 2015, was calculated for Ontario and for each public health unit.

Considerations

- The NFB is a survey tool that measures the cost of basic healthy eating and is representative of current nutritional recommendations and average food purchasing patterns. It is calculated annually (in May) by each public health unit in Ontario by averaging the cost of individual food items across stores, based on the methodology provided by the Standards, Programs and Community Development Branch of the Ministry of Health and Long-Term Care.
- The NFB represents the average weekly cost of basic healthy eating for a reference family of four, which includes: a man and a woman (each aged 31-50 years); a boy (aged 14-18 years), and; a girl (aged 4-8 years).
- The NFB includes 67 food items that span all standard grocery store departments. Items in the NFB reflect the lowest price available in a specified purchase size, regardless of brand. The resulting food basket cost is based on the average cost of each food item from all grocery stores sampled within a public health unit, and not the total cost at any one particular store.
- Food costing can be used to monitor both affordability and accessibility of foods by relating the cost of the food basket to individual and household incomes.[1] NFB data can be used by Boards of Health for program planning, informing policy decisions, and supporting and promoting access to nutritious, safe, personally acceptable foods.
- Comparisons of NFB costs between public health units is inappropriate, since the variety of stores that are available or included in an NFB calculation may vary between public health units. Comparisons should only be made between a given public health unit and the Ontario average, or between the northern and southern averages, although it is noted that geographic and environmental conditions throughout the northern region may vary markedly from the southern region. These differences in geographic and environmental conditions between northern and southern regions may be reflected in the retail prices of food items.[1]
- The northern region is defined as: Algoma, North Bay-Parry Sound District, Northwestern, Porcupine, Sudbury and District, Thunder Bay District and Timiskaming public health units. The remaining 29 public health units make up the southern region.

Technical Specifications

- The 67 standard food items included in the NFB calculation include the following:
  - *Dairy products and eggs:* milk, cheese (x3), yogurt, eggs, margarine;
  - *Meat:* chicken, beef (x3), pork (x2);
  - *Produce items:* cantaloupe, apples, bananas, grapes, oranges, pears, sweet potato, carrot, broccoli, sweet pepper, potatoes, rutabagas, cabbage, cucumber, celery, romaine lettuce, iceberg lettuce, mushrooms, onions, tomatoes;
  - *Bakery items:* white bread, whole wheat bread, whole wheat pita, rolls;
  - *Frozen foods:* fish fillets, beans, mixed vegetables, peas, orange juice concentrate, strawberries;
  - *Canned, Packaged and Dry Foods:* beans, tuna, salmon, peaches, corn, tomatoes, apple juice, tomato juice, bran cereal, oat cereal, oatmeal, white flour, whole wheat flour, raisins, lentils, plain cookies, crackers, peanut butter, vegetable oil, salad dressing (x2), pasta, rice, peanuts.
- Although miscellaneous foods used in meal preparation (e.g., spices, seasonings, condiments, baking supplies, soup, coffee and tea) are not included in the 67 standard food items, 5% is added to the cost of the food basket to account for the cost of such items.
- The NFB calculation excludes the cost of commonly purchased non-food items that may be purchased at grocery stores (e.g., laundry detergent, toilet paper, soap, etc.)
- Details regarding methodology available in the *Nutritious Food Basket Guidance Document*.[1]

Data Sources

- Nutritious Food Basket Reports, 2014-2015. Health Promotion Performance and Accountability Unit, Ministry of Health and Long-Term Care, e-mail. [January 26, 2016].

Data Availability and Limitations

- The mix of stores and the approach to store selection may be quite different between public health units, making comparisons between public health units inappropriate.
- The NFB was newly defined in 2009 in terms of: (i) the food items included in the calculation and their corresponding weights, and (ii) the age of members included in a family of four. The average NFB costs presented should not be compared with that of 2008 or earlier.
- The NFB calculation assumes that individuals always buy according to the lowest price (i.e., not necessarily according to need, preference or availability), have access to grocery stores, have the literacy and language skills to source the lowest-price items, and have the time, skills, and ability to prepare meals from individual ingredients. As a result, the NFB likely underestimates the cost of food for some individuals or households.

References

1. Ministry of Health and Long-Term Care. Nutritious Food Basket Guidance Document. Toronto: Queen's Printer for Ontario; 2010. Available from: http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/guidance/nutritiousfoodbasket_gr.pdf (accessed 2016 Jun 9).

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Food literacy development in secondary schools

Definition

Percentage of students in publicly funded secondary schools in Ontario who entered Grade 9 in a given school year and earned at least one credit in a course that included a food literacy component during their secondary school education.

Calculation

Percentage of students who entered Grade 9 in a given school year and earned one or more credits in a course that included a food literacy component

$$\frac{\text{Number of students who entered Grade 9 in a given school year and earned } \geq 1 \text{ credits in a course with a food literacy component any year within five years of beginning Grade 9}}{\text{Total number of students who entered Grade 9 in a given school year}} \times 100$$

Analysis

- Calculated at the provincial level for students who began Grade 9 in the 2005/06, 2006/07, 2007/08, 2008/09/ or 2009/10 school year.

Considerations

- Includes public and publicly funded Roman Catholic elementary and secondary schools (English and French).
- Excludes private schools, publicly funded hospital and provincial schools, care, treatment and correctional facilities, summer, night and adult continuing education day schools.
- Includes students who may or may not have completed secondary school (i.e., earned a secondary school diploma). Includes only active full-time or part-time students in the academic year.
- Student enrolment in Grade 9 (cohort base) was sourced from publicly funded secondary schools, based on year-round submission.
- *Grade* is defined as the latest grade in which the student was enrolled in the academic year.
- To receive a course credit, a student must receive a final course grade of ≥ 50%.
- Course descriptions for Social Sciences and Humanities courses available in the Ontario Ministry of Education's secondary school curriculum document.[1]
- Secondary school courses that teach food literacy require students to demonstrate practical knowledge and literacy, including the ability to develop healthy meal plans for themselves and others and to prepare healthy meals.
- The following courses were not offered prior to the 2013/14 school year, and were therefore only available to students in the 2009/10 cohort for this analysis: HFC3M, HFC3E, HFA4U, HFA4C, HFL4E and HPD4C.
- Excludes courses offered through the Specialist High Skills Majors program, offered by some secondary schools within Ontario. Specialist High Skills Majors programs that are offered to secondary students in Grades 11 and 12 may include hospitality and tourism, food

processing, or health and wellness. Students participating in these specialist programs may take courses or training related to cooking or food handling.

Technical Specifications

- Secondary school courses with a food literacy component include:
    - Food and Nutrition, Grade 9 or 10, Open (HFN1O/HFN2O)
    - Individual and Family Living, Grade 9 or 10, Open (HIF1O/HIF2O)
    - Food and Nutrition Sciences, Grade 12, University/College Preparation (HFA4M)
    - Exploring Family Studies, Grade 9 or 10, Open (HIF1O/2O)
    - Food and Nutrition, Grade 9 or 10, Open (HFN1O/2O)
    - Food and Culture, Grade 11, University/College Preparation (HFC3M)
    - Food and Culture, Grade 11, Workplace Preparation (HFC3E)
    - Nutrition and Health, Grade 12, University Preparation (HFA4U)
    - Nutrition and Health, Grade 12, College Preparation (HFA4C)
    - Food and Healthy Living, Grade 12, Workplace Preparation (HFL4E)
    - Working with Infants and Young Children, Grade 11, College Preparation (HPW3C)
    - Raising Healthy Children, Grade 11, Open (HPC3O)
    - Working with School-Age Children and Adolescents, Grade 12, College Preparation (HPD4C)

Data Sources

- Data as reported by schools in the Ontario School Information System (OnSIS), (2005/06 to 2012/13 school year). Ministry of Education.

Data Availability and Limitations

- Data were obtained from the Dissemination and Reporting Unit, Ministry of Education, in March 2016.
- The data used in these analyses come from the Ministry of Education's Ontario School Information System, and are primarily used for administrative purposes.

References

1. Ontario Ministry of Education. The Ontario Curriculum: Secondary. Social Sciences and Humanities; 2013. Available from: http://www.edu.gov.on.ca/eng/curriculum/secondary/ssciences.html (accessed 2016 Jun 9).

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Physical Activity

Use of active transportation to or from work and school

Definition

Percentage of trips taken to or from work by adults (age 19+) that included active transportation, and percentage of trips taken to or from school by youth (ages 11–18) that included active transportation.

Calculation

Percentage of trips taken by adults to or from work that included active transportation

$$\frac{\text{Number of trips taken to or from work by adults age 19+ that included active transportation}}{\text{Total number of trips to or from work by adults age 19+}} \text{ x100}$$

Percentage of trips taken by youth to or from school that included active transportation

$$\frac{\text{Number of trips taken to or from school by youth ages 11–18 that included active transportation}}{\text{Total number of trips to or from work by youth ages 11-18}} \text{ x100}$$

Where:

- Active transportation = walking or cycling

Numerator includes:

- Trips (any distance) where active transportation was used as the *only mode of transportation* to travel directly to or from work or school; and
- Trips (any distance) where active transportation was used *to travel to or from public transit* as part of commuting to or from work or school.

Denominator includes:

- Trips (any distance) where cycling, walking, public transit, automobile/motorcycle (driver or passenger), school bus, or taxi (passenger) were used to get to or from work or school.

Analysis

- The overall percentage of trips taken by adults to or from work that included active transportation was calculated for all regions surveyed in the Greater Golden Horseshoe, and by region, for 2011.
- The overall percentage of trips taken by youth to or from school that included active transportation was calculated for all regions surveyed in the Greater Golden Horseshoe, and by region, for 2011.

- For both adults and youth, the percentage of trips where active transportation was used as the *only mode of transportation* to travel directly to or from work or school, and the percentage of trips where walking or cycling were used *to travel to or from public transit* as part of commuting to or from work or school were calculated separately and summed after.
- Statistically significant differences were determined by examining the 95% confidence intervals of both estimates; non-overlapping confidence intervals were used to indicate a statistically significant difference between the estimates of a region and all regions surveyed.

Considerations

- The Transportation Tomorrow Survey asks respondents about all trips taken by each member of a household on the previous weekday, the origin and destination for each trip and the mode of transportation.
- Data include trips of any distance that were directly to/from work or school, or directly to/from public transit as part of commuting to/from work or school (i.e., no intermediate stops were made). Data excludes active transportation that did not involve commuting directly between the respondent's primary residence and work or school.
- Numerator excludes any non-active transportation or active transportation for which the primary mode was not walking, cycling, or public transit, due to limited data availability (e.g., manual wheelchairs).
- All counts are based on the volume of trips (not the number of persons or number of households where someone made the trip).
- Age restrictions for school-based trips were applied to align with the survey's restriction on data collection for individuals under the age of 11 and to exclude respondents age 19+, who were assumed to have completed secondary school.
- For work-based trips, the age of respondents was restricted to 19+, with the assumption that this group would have completed secondary school and was primarily working, even though some respondents in this group may have been walking or cycling to/from school (i.e., post-secondary education).
- Some regions included in the Transportation Tomorrow survey are predominantly rural, where using active transportation may not be feasible for a variety of reasons. For example, large geographic areas may make active transportation impractical, walking and cycling routes may be unsafe, underdeveloped or non-existent, or public transit (which is often used in combination with active transportation) may be limited or non-existent.

Technical Specifications

- Data includes all Greater Golden Horseshoe regions within Southern Ontario, except Northumberland and Haldimand.

Data Sources

- Transportation Tomorrow Survey, 2011. Data Management Group, University of Toronto.

Data Availability and Limitations

- Data were obtained from the Data Management Group, University of Toronto, in February 2016.
- The Transportation Tomorrow Survey is conducted every five years.
- The Transportation Tomorrow Survey is intended to facilitate transportation planning rather than to assess active transportation behaviours.
- Expanding the number of regions surveyed in Ontario on the use of active transportation would inform planning at the provincial and municipal levels. The Transportation Tomorrow Survey looked at urban travel by members of households in all Greater Golden Horseshoe regions, except Northumberland and Haldimand. Regions included in the Transportation Tomorrow Survey represent 66% of Ontario's population (Data Management Group, University of Toronto, Personal Communication, February 19, 2016). However there is no comparable data set for regions in the rest of Ontario.
- Respondents are asked about trips taken the previous day; therefore, data may not be representative of respondents' typical modes of travel.

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Health and physical education specialist teachers in schools

Definition

Percentage of publicly funded elementary or secondary schools with full- and/or part-time health and physical education (HPE) specialist teachers.

Calculation

Percentage of elementary or secondary schools with part-time HPE specialist teachers

$$\frac{\text{Number of schools with >0 to <1.0 full-time equivalent HPE specialist teachers}}{\text{Total number of schools}} \text{x100}$$

Percentage of elementary or secondary schools with full-time HPE specialist teachers

$$\frac{\text{Number of schools with ≥1.0 full-time equivalent HPE specialist teachers}}{\text{Total number of schools}} \text{x100}$$

Analysis

Trend

- Percentage of publicly funded elementary and secondary schools with full- and part-time HPE specialist teachers calculated at the provincial level for each of the following academic years: 2006/07, 2007/08, 2008/09, 2009/10, 2010/11, 2011/12 and 2012/13.
- Statistically significant ($p < 0.05$) trends were determined using Microsoft Excel's linear regression analysis data tool.

By public health unit

- Percentage of publicly funded elementary and secondary schools with full- and part-time HPE specialist teachers calculated by public health unit for the 2012/13 school year.
- The ratio of students to HPE specialist teachers, by public health unit, was calculated by dividing the student headcount (i.e., total number of students per school) by the total full-time equivalent (FTE) value for each elementary and secondary school, aggregating these results at the public health unit level, and then dividing by the total number of elementary or secondary schools within that public health unit. Schools without HPE specialist teachers were excluded from the ratio analysis.

Considerations

- Includes public and publicly funded Roman Catholic elementary and secondary schools (English and French); teachers on Letter of Permission and Temporary Letter of Approval.
- Excludes private schools, publicly funded hospital and provincial schools, care, treatment and correctional facilities, summer, night and adult continuing education day schools; teachers on leave and long-term occasional teachers; principals and vice-principals.

- The FTEs of specialized teachers who were assigned to teach at least one HPE subject/class is based on the total number of teaching hours per week, where:
    - 25 teaching hours per week = 1.0 FTE
    - 12.5 teaching hours per week = 0.5 FTE
- ≥1.0 FTE per school does not necessarily mean there are one or more full-time specialist teachers, since two or more part-time specialist teachers may account for ≥1.0 FTE.
- There are currently no standardized criteria for HPE specialists in Ontario; however, the majority of specialist teachers in Ontario have taken specialized training recognized by the Ontario College of Teachers or have a university background in physical education. Data regarding the number of HPE teachers are reported by schools to the Ministry of Education.

Technical Specifications

- To identify the public health unit of each elementary and secondary school, schools were geographically located (geocoded) using ArcGIS 10.3.1 and its North America Geocode Service. Elementary school addresses were geocoded by street address (98.7%), street name (0.4%) town (0.1%) or manually using web searches (0.8%). Secondary school addresses were geocoded by street address (97.8%), street name (0.9%) or manually using web searches (1.3%).
- Elementary schools were defined in this analysis to include junior kindergarten to Grade 8.

Data Sources

- Data on school addresses, number of HPE teachers, and student headcounts obtained from the Ministry of Education, as reported by schools in the Ontario School Information System: March submission for 2006/07 school year, October submission for 2007/08-2013/14 school year.
- Data on the total number of publicly funded elementary and secondary schools obtained from the Ministry of Education, Education Facts Publication. (http://www.edu.gov.on.ca/eng/educationFacts.html). Data for 2006/07 to 2009/10 school year available from: http://www.edu.gov.on.ca/eng/general/elemsec/quickfacts/2009-10/quickFacts09_10.pdf (accessed 2015 Apr 22). Data for 2011/12 and 2012/13 school year available from: http://www.edu.gov.on.ca/eng/general/elemsec/quickfacts/2012-13/quickFacts12_13.pdf (accessed 2015 Apr 22).
- Statistics Canada Health Region boundary files. 2007 updates. Available from: http://www.statcan.gc.ca/pub/82-402-x/2009001/rg-eng.htm#arcinfo

Data Availability and Limitations

- Data regarding the number of elementary and secondary schools, and the number of full- and/or part-time HPE specialist teachers were obtained from the Dissemination and Reporting Unit, Ministry of Education, in January 2016.
- Teacher and school data prior to 2006/07 school year are from a different collection system and are not strictly comparable to data for the 2006/07 school year or later.
- The data used in these analyses come from the Ministry of Education's Ontario School Information System and are primarily used for administrative purposes.

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Enrolment in health and physical education

Definition

Percentage of students in publicly funded secondary schools in Ontario who earned one or more health and physical education (HPE) credits during a given school year, by grade.

Calculation

Percentage of secondary students who earned one or more credits in an HPE course

$$\frac{\text{Number of students who earned} \geq 1 \text{ credits in HPE courses}}{\text{Total number students}} \text{ x100}$$

Analysis

- Calculated at the provincial level by academic grade (9, 10, 11 or 12) for the 2005/06, 2006/07, 2007/08, 2008/09, 2009/10, 2010/11, 2011/12, 2012/13 and 2013/14 school years.

Considerations

- Includes public and publicly funded Roman Catholic elementary and secondary schools (English and French).
- Excludes private schools, publicly funded hospital and provincial schools, care, treatment and correctional facilities, summer, night and adult continuing education day schools.
- *Grade* is defined as the latest grade in which the student was enrolled in the academic year.
- Data include only active full-time or part-time students in the academic year.
- To receive a course credit, a student must receive a final course grade of ≥ 50%.
- Students are required to earn at least one HPE credit to receive their Ontario Secondary School Diploma. The majority of students earn this credit during Grade 9.
- Some Grade 11- and 12-level HPE credits do not have a physical activity requirement because they are focused on health or physiology.[1]

Technical Specifications

- The secondary HPE curriculum comprises four physical activity courses, one in each of Grades 9 through 12, and three specialized destination courses in Grades 11 and 12.
    - *Healthy Active Living Education (HALE) courses include:*
        - HALE, Grade 9, Open (PPL10)
        - HALE, Grade 10, Open (PPL20)
        - HALE, Grade 11, Open (PPL30)
        - HALE, Grade 12, Open (PPL40)
    - *Specialized destination courses include:*
        - Health for Life, Grade 11 (PPZ3C), a college preparation course
        - Introductory Kinesiology, Grade 12 (PSK4U), a university preparation course
        - Recreation and Healthy Active Living Leadership, Grade 12 (PLF4M), a university/college preparation course
- Course codes and descriptions for HPE courses may change from one school year to the next.

Data Sources

- Data as reported by schools in the Ontario School Information System (OnSIS), (2005/06 to 2013/14). Ministry of Education.

Data Availability and Limitations

- Data were obtained from the Dissemination and Reporting Unit, Ministry of Education, in December 2015.
- Data are reported annually by schools to the Ministry of Education's Ontario School Information System (OnSIS). The 2013/14 school year is the most recent time period for which data are available.
- The data used in these analyses come from the Ministry of Education's Ontario School Information System, which are primarily used for administrative purposes.
- Course achievement data prior to 2005/06 are from a different collection system and are not strictly comparable to data for school year 2005/06 or later.

References

1. Ontario Ministry of Education. The Ontario Curriculum Grades 9 to 12: Health and Physical Education; 2015. Available from: http://www.edu.gov.on.ca/eng/curriculum/secondary/health9to12.pdf (accessed 2016 Jun 9).

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Ultraviolet Radiation (UVR)

Shade policies in local municipalities

Definition

The number of local municipalities in Ontario with populations of 100,000 or more that have shade policies, and the strength of these policies, categorized as *strong*, *moderate, limited* or *not included*.

Calculation

- Planning policy documents for each of the local municipalities, as well as any additional documentation sent via e-mail from the municipalities (where applicable) were reviewed. Statements related to shade policies were identified, and the overall strength of shade policies in each local municipality were assessed and categorized, as follows:
    - *Strong shade policies:* Guidelines that the municipality follows when evaluating plans for developing or redeveloping sites state that shade *should be provided* for a *broad* range of municipally *and* privately owned sites.
    - *Moderate shade policies:* Guidelines that the municipality follows when evaluating plans for developing or redeveloping sites state that shade *should be provided* for only a *few* types of municipally *and/or* privately owned sites.
    - *Limited shade policies:* Guidelines that the municipality follows when evaluating plans for developing or redeveloping sites state that shade *should be considered* for one or more type of municipally *and/or* privately owned sites, but it is not essential.
    - *Shade policy not included:* A statement on the provision of shade is *not included* in guidelines found in planning policy documents at the present time for the local municipality.
- Each of the local municipalities was contacted via e-mail to confirm the information that was retrieved from the web, and to obtain any additional relevant policies in their municipalities that relate to shade.

Analysis

- Assessed as of January 2016 for each of the following 26 local municipalities: Ajax, Barrie, Brampton, Burlington, Cambridge, Chatham-Kent, Greater Sudbury, Guelph, Hamilton, Kingston, Kitchener, London, Markham, Milton, Mississauga, Oakville, Oshawa, Ottawa, Richmond Hill, St. Catharines, Thunder Bay, Toronto, Vaughan, Waterloo, Whitby and Windsor.

Considerations

- In Ontario, municipalities establish guidelines that are used when evaluating plans for developing or redeveloping a site. These guidelines are found in planning policy documents, such as official plans and urban design guidelines. Statements on the provision of shade

("shade policies") may be included in these guidelines. Guidelines can apply to both municipally and privately owned sites.
- Only shade policies that have been adopted by the local council and approved by the Ontario Municipal Board, if required, are included in this indicator.
- This assessment of shade policies may not reflect how well the policies are implemented and the actual availability of shade in each municipality.
- Municipal shade policies do not require projects to be undertaken for the sole purpose of increasing the availability of shade. In the planning policy documents reviewed, where a shade policy was identified, shade was identified only as an element to be incorporated into plans for new developments or redevelopments and in ongoing municipal landscaping (e.g., shade trees).
- For feasibility purposes, analysis was limited to local municipalities with populations of 100,000 or more. The 26 local municipalities that met this threshold based on February 2016 population estimates, accounted for 68% of Ontario's population.

Technical Specifications

- Local municipalities' homepages on the web were visited to identify official plans, urban design guidelines and master plans.
- Search terms used in review of planning documents: "shade," "shading," "solar" (i.e., for solar protection).
- Additional search in Google using search terms + "site:[local municipality's homepage on the Internet]" (e.g., shade OR shading OR solar site:hamilton.ca).

Data Sources

- Municipal planning documents (e.g., official plans, urban design guidelines, site plan control by-laws) posted on the web and additional documents sent via email from the municipality for each of the 26 Ontario local municipalities with populations of 100,000 or greater, 2016:

1. Town of Ajax. Town of Ajax Official Plan. Office consolidation January 5, 2015. Ajax, ON: Town of Ajax; 2015.
2. Town of Ajax. Bylaw number 11-2014 Site Plan Control Bylaw. Ajax, ON: Town of Ajax; 2014.
3. City of Barrie. The City of Barrie Official Plan. Office consolidation March 2014. Barrie, ON: City of Barrie; 2014.
4. City of Brampton. November 2013 consolidation of the City of Brampton 2006 Official Plan. Brampton, ON: City of Brampton; 2013.
5. City of Brampton, City of Vaughan and Town of Richmond Hill. Measuring the sustainability performance of new development. Final comprehensive report. Prepared for the Cities of Brampton, Vaughan and Town of Richmond Hill by Halsall Associates. Brampton, ON: City of Brampton, City of Vaughan and Town of Richmond Hill; 2013.
6. City of Burlington. Urban Forest Management Plan 2011-2030. Burlington, ON: City of Burlington; 2010 Jul.

7. City of Cambridge. Cambridge Official Plan. Cambridge, ON: City of Cambridge; 2014 Apr.
8. Municipality of Chatham-Kent. Chatham-Kent Official Plan: action toward sustainability. Chatham, ON: Municipality of Chatham-Kent; 2015 Oct.
9. City of Greater Sudbury. The City of Greater Sudbury Official Plan. Sudbury, ON: City of Greater Sudbury; 2016 Jan.
10. City of Guelph. The City of Guelph Official Plan 2001: September 2014 consolidation. Guelph, ON: City of Guelph; 2014 Sep.
11. City of Guelph. Official Plan amendment number 48: 5-year review. Guelph, ON: City of Guelph; 2013 Dec.
12. City of Guelph. City of Guelph downtown streetscape manual and built form standards. Section 3.0 built form standards. Guelph, ON: City of Guelph; 2014 Jul.
13. City of Hamilton. Urban Hamilton Official Plan. Chapter B communities. Hamilton, ON: City of Hamilton; 2013 Sep.
14. City of Kingston. Design guidelines for communities. Kingston, ON: City of Kingston; 2015 Oct.
15. City of Kingston. Design guidelines for residential lots. Kingston, ON: City of Kingston; 2015 Oct.
16. City of Kitchener. City of Kitchener Official Plan: a complete and healthy Kitchener. Kitchener, ON: City of Kitchener; 2014 Jun.
17. City of London. Site Plan Control Bylaw. London, ON: City of London; 2015 Sep.
18. City of London. Parks & recreation strategic master plan. London, ON: City of London; 2009.
19. City of Markham. Trees for tomorrow: streetscape manual. Markham, ON: City of Markham; 2009.
20. City of Markham. City of Markham Official Plan. Markham, ON: City of Markham; 2014 Jun.
21. Town of Milton. Town of Milton Official Plan (consolidated August, 2008) December 1997. Milton, ON: Town of Milton; 2008 Aug.
22. City of Mississauga. Mississauga Official Plan consolidation version 8 - October 14, 2015. Mississauga, ON: City of Mississauga; 2015 Oct.
23. Town of Oakville. Livable Oakville: Town of Oakville Official Plan 2009. Office consolidation last updated February 23, 2015. Oakville, ON: Town of Oakville; 2015 Feb.
24. Town of Oakville. Sustainable Design Guidelines, version 1.0. Oakville, ON: Town of Oakville; 2010 Apr.
25. City of Oshawa. Official Plan. Oshawa, ON: City of Oshawa; 2016.
26. City of Ottawa. City of Ottawa Official Plan consolidation. Ottawa: City of Ottawa; 2003 May.
27. Town of Richmond Hill. Richmond Hill Urban Design Guidelines: building a new kind of urban, September 2013. Richmond Hill, ON: Town of Richmond Hill; 2013 Sep.
28. Town of Richmond Hill. Richmond Hill Official Plan: building a new kind of urban. Richmond Hill, ON: Town of Richmond Hill; 2016 Jan.
29. City of St. Catharines. Downtown urban design guidelines. St. Catharines, ON: City of St. Catharines; 2012.

30. City of Thunder Bay. Urban design and landscape guidelines. Thunder Bay, ON: City of Thunder Bay; 2012 Dec.
31. Toronto City Planning. Toronto Official Plan. Toronto: City of Toronto; 2015 Jun.
32. City of Toronto. Toronto Green Standard for new mid to high-rise residential and all non-residential development (Residential apartment buildings 4 storeys and higher and all industrial, commercial and institutional (ICI) buildings). Version 2.0. Toronto: City of Toronto; 2015 Mar.
33. City of Toronto. Toronto Green Standard for new low-rise residential development (5 dwelling units or more). Version 2.0. Toronto: City of Toronto; 2015 Mar.
34. City of Vaughan. Official Plan 2010. July 2015 office consolidation. Vaughan, ON: City of Vaughan; 2015 Jul.
35. City of Waterloo. Official Plan office consolidation October 2014. Waterloo, ON: City of Waterloo; 2014 Oct.
36. City of Waterloo. Urban design manual. Waterloo, ON: City of Waterloo; 2009.
37. City of Windsor. Windsor - Official Plan. Windsor, ON: City of Windsor; 2013 Aug.

Data Availability and Limitations

- Not all municipalities responded to confirm or clarify the information obtained from the web. Unique types of planning documents from these municipalities may have been missed.
- The wording of municipal planning documents can vary considerably between municipalities, making it difficult to compare documents between municipalities.

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Environmental Carcinogens

Radon levels in residences

Definition

Percentage of homes in Ontario with radon concentrations of 100 Bq/m^3 or greater.

Calculation

Percentage of homes in Ontario with radon concentrations of 100 Bq/m^3 or greater

$$\frac{\text{Number of surveyed homes with radon concentrations} \geq 100\ \text{Bq/m}^3}{\text{Total number of surveyed homes}} \times 100$$

Analysis

- Calculated on homes surveyed between 2009 and 2013, for Ontario and by public health unit.
- For comparison and interpretive purposes, the median radon concentrations for all homes surveyed, and the percentage of homes that had radon concentrations at or above 200 Bq/m^3 (the current Government of Canada guideline) were also calculated for Ontario and for each public health unit.
- Population-weighted estimate: the raw results (i.e., percentage of surveyed homes with radon concentrations of 100 Bq/m^3 or greater) from each public health unit, and the population of each public health unit (obtained from 2006 Census data) were used to calculate an estimate of the percentage of Ontario's population living in homes with radon concentrations of 100 Bq/m^3 or greater.

Considerations

- The World Health Organization recommends remedial action at an average annual radon concentration of 100 Bq/m^3, but recognizes that this reference level may not be feasible for all countries due to variations in geological conditions.[1]
- The Government of Canada Radon Guideline recommends that if the average annual radon concentration in a dwelling is higher than 200 Bq/m^3, remedial action should be taken to lower the concentration.[2] Consistent with other provinces, Ontario does not require homeowners to test for radon or to mitigate if high levels are discovered.
- Typical outdoor levels of radon usually range from 10 to 30 Bq/m^3.[3]

Technical Specifications

- Most radon tests were conducted over a period of approximately three months (95.6 days).[4]
- The minimum detection limit for a three-month radon test is 15 Bq/m^3 and for data points below 15 Bq/m^3, a value of 8 Bq/m^3 (roughly half the detection limit) was substituted to allow calculation of medians to be performed. A total of 662 homes in Ontario (16.7% of all

samples) had radon concentrations below 15 Bq/m^3 in the Cross-Canada Survey of Radon Concentrations in Homes, Final Ontario Dataset, 2013.
- For additional details regarding methodology, see the *Cross-Canada Survey of Radon Concentrations in Homes, Final Report*.[4]

Data Sources

- Cross-Canada Survey of Radon Concentrations in Homes, Final Ontario Dataset, 2013. Radiation Protection Bureau, Health Canada.

Data Availability and Limitations

- Data were obtained from the Radiation Protection Bureau, Health Canada, in June 2016 and include the radon concentrations of homes sampled in Ontario between 2009 and 2013.
- The Cross-Canada Survey of Radon Concentrations in Homes was a study conducted by Health Canada's National Radon Program. At present, Health Canada does not collect data regarding radon concentrations on a regular basis.
- Data presented in the 2016 *Prevention System Quality Index* report and supplementary tables may differ from data published in the *Cross-Canada Survey of Radon Concentrations in Homes, Final Report.*[4] After their report was published, Health Canada continued to receive data throughout 2013, and made final adjustments to more accurately align the data with public health unit boundaries.
- Conclusions made based on data from the Cross-Canada Survey of Radon Concentrations in Homes, Final Ontario Dataset, 2013, should be interpreted with caution due to small sample sizes in some public health units. Data are not representative of all homes in a given area; the only way to know if a home has an elevated level of radon is to test, regardless of location.
- Radon testing for the Cross-Canada Survey of Radon Concentrations in Homes was conducted by participants, based on instructions provided by Health Canada. As a result, data collection was not directly supervised.
- Included in the Cross-Canada Survey of Radon Concentrations in Homes were respondents who were homeowners 18 years of age and older who were living in their primary residence. Data excluded renters, people living in apartments or high-rise condominium buildings above the second floor, homes on military bases or on-reserve, and homes on stilts. Data excluded homeowners who planned to move or be away during the proposed timeline of the study.
- Radon testing was conducted during fall/winter, when indoor radon levels tend to be higher, since most homeowners maintain closed windows and doors during these seasons. Participants were instructed to deploy the detector in the lowest lived-in level of the home, where someone spent at least four hours per day.

References

1. World Health Organization. WHO handbook on indoor radon, a public health perspective. Geneva: World Health Organization; 2009.
2. Health Canada. Government of Canada Radon Guideline [Internet]. Ottawa: Health Canada; 2009. (Updated 2009 Nov 24). Available from: http://www.hc-sc.gc.ca/ewh-semt/radiation/radon/guidelines_lignes_directrice-eng.php (accessed 2016 Jun 9).

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 Nov; 24(11): 2013-20.
4. Health Canada. Cross-Canada Survey of Radon Concentrations in Homes, final report. [Internet]. Ottawa: Health Canada; 2012. (Updated 2012 Sep 9). Available from: http://www.hc-sc.gc.ca/ewh-semt/radiation/radon/survey-sondage-eng.php (accessed 2016 Jun 9).

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Fine particulate matter ($PM_{2.5}$) concentrations in outdoor air

Definition

Average annual concentrations of fine particulate matter ($PM_{2.5}$) – respirable particles that are less than 2.5 micrometres in diameter.

Analysis

- Presented for each of the 40 monitoring stations included in the Ontario Continuous Ambient Air Monitoring Network in 2014.

Considerations

- 10 µg/m^3 is the $PM_{2.5}$ reference level set by the Canadian Ambient Air Quality Standards and the World Health Organization's Air Quality Guidelines.
- $PM_{2.5}$ concentrations are generally highest in urban areas and in border communities that are impacted by transboundary pollutants.[1]

Technical Specifications

- $PM_{2.5}$ monitoring instruments operate continuously and produce an average measurement for every hour.
- The Ontario Continuous Ambient Air Monitoring Network is a combination of the following types of air monitoring sites: ambient, roadside, Canadian Ambient Air Quality Standard, and/or National Air Pollution Surveillance. Ambient sites represent the general air quality of an area without any direct influence of local industrial sources.[1] Roadside sites are located within approximately 100 metres of a major roadway with daily traffic volumes greater than 10,000 vehicles per day.[1]

Data Sources

- Air Quality in Ontario 2013 Report. Ontario Ministry of the Environment and Climate Change. Available from http://www.airqualityontario.com/downloads/AirQualityInOntarioReportAndAppendix2013.pdf (accessed 2016 Jun 9).
- Air Quality in Ontario 2014 Report. Ontario Ministry of the Environment and Climate Change. Available from http://www.airqualityontario.com/downloads/AirQualityInOntarioReportAndAppendix2014.pdf (accessed 2016 Jun 9).

Data Availability and Limitations

- In 2013, Ontario upgraded $PM_{2.5}$ monitors across the ambient air monitoring network, from Tapered Element Oscillating Microbalance (TEOM) instruments to Synchronized Hybrid Ambient Real-time Particulate (SHARP) 5030 instruments. As a result, data from 2013 and later are not directly comparable to data collected using the older technology. For additional information, see the Air Quality in Ontario 2014 Report [online]. [1]
- The current air quality monitoring system does not provide sufficient data to reflect variations in concentrations within an urban area that occur due to, for example, the varying

proximity of traffic corridors and other sources of pollution.[2] Additional monitoring and modelling data are required to identify areas of higher $PM_{2.5}$ concentration and exposures at the local level, and possible disparities within a city or community.

References

1. Ministry of Environment and Climate Change. Air Quality in Ontario 2014 Report, 2014. Toronto: Queen's Printer for Ontario; 2016. Available from: http://www.airqualityontario.com/downloads/AirQualityInOntarioReportAndAppendix2014.pdf (accessed 2016 Jun 9).
2. Clean Air Partnership (2015). Collaborative Air Quality Monitoring Strategy: background and opportunities. Toronto: Toronto Public Health, Healthy Public Policy Team; 2015.

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Occupational Exposure

Industrial formaldehyde/nickel use and employment in industries using formaldehyde/nickel

Definition

- The number of industrial manufacturing and mineral processing facilities using formaldehyde, the total amount of formaldehyde used (in tonnes) in facilities using formaldehyde, and the number of employees working at industrial manufacturing and mineral processing facilities using formaldehyde.
- The number of industrial manufacturing and mineral processing facilities using nickel, the total amount of nickel used (in tonnes) in facilities using nickel, and the number of employees working at industrial manufacturing and mineral processing facilities using nickel.

Calculation

Number of facilities using formaldehyde/nickel

- Estimate of the total number of facilities in the manufacturing and mineral processing sectors reporting formaldehyde/nickel as manufactured, processed or otherwise used to the National Pollutant Release Inventory (NPRI) equal to or above the threshold of 10 tonnes per year in Ontario.

Formaldehyde/nickel use (tonnes)

- Estimates the total amount of formaldehyde/nickel used (in tonnes) in reporting facilities in the manufacturing and mineral processing sectors by selecting the mid-point value for each facility's reported range of use (e.g., >0 to 1 became 0.5; >1 to 10 tonnes became 5 tonnes; etc.), summing these values across all facilities for each sector and rounding to the nearest 10 using the standard rounding technique.

Number of employees working at facilities using formaldehyde/nickel

- Estimate of the total number of employees working at industrial facilities in the manufacturing and mineral processing sectors reporting formaldehyde/nickel as manufactured, processed or otherwise used to the NPRI equal to or above the threshold of 10 tonnes per year in Ontario.

Analysis

- Calculated separately for formaldehyde and nickel at the provincial level, by industry, 2013.

Considerations

- The Ontario Ministry of the Environment and Climate Change enacted the Toxics Reduction Act (TRA) in 2009, which requires industrial facilities in the manufacturing and mineral

processing sectors to report the use and release of toxic substances, including formaldehyde and nickel, as well as the number of employees working at their facilities.

- Industrial facilities in the manufacturing and mineral processing sectors (NAICS codes: 31-32 and 212) are required to report to the Toxics Reduction Program if a toxic substance is manufactured, processed or otherwise used and is reported to the NPRI.
- The total amounts of formaldehyde and nickel used in Ontario and the number of worksites and employees that use formaldehyde or nickel are higher than what is reported. The TRA only requires industrial facilities in the manufacturing and mineral processing sectors to report on their use of formaldehyde or nickel, and only if the amount manufactured, used or released in the environment is above 10 tonnes per year.[1,2] There is little data on industrial facilities that use or release formaldehyde or nickel below these thresholds, or other sectors that use formaldehyde or nickel.
- The TRA does not require the owners and operators of industrial facilities to measure their employees' exposure to formaldehyde or nickel. As a result, calculations include employees who work at industrial facilities that use formaldehyde/nickel, and who may or may not be directly exposed. Therefore it is not possible to make any inferences regarding the amount of formaldehyde/nickel an employee may be exposed to.

Technical Specifications

- Facilities must report formaldehyde and nickel if they are manufactured, processed or otherwise used in quantities equal to or above 10 tonnes per year in Ontario.[3] Facilities that do not meet the threshold quantity requirements still have to report if the facility's employees work a total of 20,000 hours or more in a given year.[3]
- Use of formaldehyde is reported in intervals of increasing magnitude (e.g., >0 to 1 tonnes; >1 to 10 tonnes; >10 to 100 tonnes; >100 to 1,000 tonnes; >1,000 to 10,000 tonnes; >10,000 to 100,000 tonnes; >100,000 to 1,000,000 tonnes; >1,000,000 tonnes). To calculate estimates of the amount of formaldehyde used, the mid-point value was selected for every facility's reported range of use. These mid-point values were summed for all facilities and analyzed by industrial sector.
- Use of nickel is reported in intervals of increasing magnitude (e.g., >0 to 1 tonnes; >1 to 10 tonnes; >10 to 100 tonnes; >100 to 1,000 tonnes; >1,000 to 10,000 tonnes; >10,000 to 100,000 tonnes; >100,000 to 1,000,000 tonnes; >1,000,000 tonnes). To calculate estimates of the amount of nickel used, the mid-point value was selected for every facility's reported range of use. These mid-point values were summed for all facilities and analyzed by industrial sector.

Data Sources

- Toxics Reduction dataset, 2013. Toxics Reduction Program, Ministry of the Environment and Climate Change. Available from: https://www.ontario.ca/data/toxics-reduction (accessed 2016 Jan 15).

Data Availability and Limitations

- Data are reported annually by industrial facilities in the manufacturing and mineral processing sectors to the Ministry of the Environment and Climate Change, in accordance with the TRA. Data are made publicly available online on the Ministry of Environment and Climate Change's website.
- Reporting formaldehyde and nickel use in ranges of values under the TRA, as opposed to reporting numeric values, poses a significant limitation in establishing data trends for these indicators and could be improved in the future. By requiring facilities to report exact numeric values for the use of substances as opposed to ranges of values, the data could demonstrate more subtle changes in use over time and the success of the Toxics Reduction Program could be more accurately assessed.

References

1. Ministry of the Environment and Climate Change, 2016. Ontario Toxics Reduction Program: A Guide For Regulated Facilities; 2016. Available from: https://www.ontario.ca/page/ontario-toxics-reduction-program-guide-regulated-facilities (accessed 2016 Jun 9).
2. Canadian Environmental Protection Act, 1999. Canada Gazette; 2014. Available from: http://gazette.gc.ca/rp-pr/p1/2014/2014-07-12/html/notice-avis-eng.php#na2 (accessed 2016 Jun 9).
3. Canadian Environmental Protection Act, 1999. Canada Gazette, Part I, 148(28). p.1859; 2014. Available from: http://gazette.gc.ca/rp-pr/p1/2014/2014-07-12/pdf/g1-14828.pdf (accessed 2016 Jun 9).

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Infectious Agents

School-based human papillomavirus (HPV) vaccination coverage

Definition

Vaccination coverage (%) in Ontario for the school-based HPV vaccination program among female Grade 8 students, for a given time period.

Calculation

Vaccination coverage for the school-based HPV vaccination program

$$\frac{\text{Number of complete-for-age female students}}{\text{Total number of female students enrolled}} \text{ x100}$$

Analysis

- Vaccination coverage estimates for the school-based HPV vaccination program are presented for Ontario and by public health unit for the 2012/13 school year.

Considerations

- The Immunization of School Pupils Act and the Ontario Public Health Standards require that public health units maintain immunization records for school pupils and conduct an assessment of immunization at least annually. Data were collected from public health units and analyzed by Public Health Ontario.
- Vaccination coverage is based on the student's vaccination status assessed through the Immunization Records Information System's (IRIS) complete-for-age forecasting logic, which uses a student's date of birth and a specified date (June 30, 2013 for the 2012/13 school year) to capture all vaccinations that have been administered on or before this date.
- A student is considered complete-for-age if the required number of doses of a vaccine for age has been received with the appropriate interval between doses. It is important to note that students who have an incomplete vaccine series but who are not yet overdue for their next dose are also considered complete-for-age using IRIS logic (i.e., included in the numerator).
- HPV vaccine coverage estimates are for female students only. Vaccination coverage for the school-based HPV vaccination program includes those completing the three-dose vaccine series through the program and those not yet overdue for their next dose before the school year ended, or those who did not start the series, but have not yet turned 14 years of age (the age at which they are considered overdue).
- The HPV vaccine reported in this data was administered in a three-dose schedule. As of September 2015, the vaccine is given in two doses.

- Numerator excludes students who were exempted based on medical reasons and religious or conscientious beliefs.[1]

Technical Specifications

- Additional details regarding the methodology used to calculate HPV vaccination coverage are available in the *Immunization coverage report for school pupils: 2012/13 school year* technical report.[1]

Data Sources

- Immunization Records Information System (IRIS), 2012/13. Ministry of Health and Long-Term Care.

Data Availability and Limitations

- The denominators used to assess vaccination coverage of school pupils are established by student demographic information uploaded into the IRIS database by the public health units for schools located within their geographic boundaries. However, the extent to which home-schooled, independent school students, or students who have dropped out of school are captured in the denominator is variable.
- The current data collection system in Ontario does not track those who have received the HPV vaccinations outside of the school-based program, unless parents or guardians provide immunization information to local public health unit staff. These data may therefore underestimate vaccine coverage. A population-based registry is required to track the total number of Ontarians who receive the vaccine.
- Because IRIS coverage reports are based on forecasting logic, they identify the proportion of students who are not yet overdue for a particular immunization, rather than reporting on the proportion of students who have completed an age-appropriate number of doses.
- Data are for the 2012/13 school year; more recent data are not available at this time, because of a transition to a new data collection system (Panorama).

References

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Immunization coverage report for school pupils: 2012-13 school year. Toronto, ON: Queen's Printer for Ontario; 2014. Available from: https://www.publichealthontario.ca/en/eRepository/Immunization_coverage_report_2012-13.pdf (accessed 2016 Jun 9).

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School-based hepatitis B vaccination coverage

Definition

Vaccination coverage (%) in Ontario for the school-based hepatitis B vaccination program among Grade 7 students, for a given time period.

Calculation

Vaccination coverage for the school-based hepatitis B vaccination program

$$\frac{\text{Number of complete-for-age students}}{\text{Total number of students enrolled}} \text{x}100$$

Analysis

- Vaccination coverage estimates for the school-based hepatitis B vaccination program are presented for Ontario and by public health unit for the 2012/13 school year.

Considerations

- The Immunization of School Pupils Act and the Ontario Public Health Standards require that public health units maintain immunization records for school pupils and conduct an assessment of immunization at least annually. Data were collected from public health units and analyzed by Public Health Ontario.
- Vaccination coverage is based on the student's vaccination status assessed through the Immunization Records Information System's (IRIS) complete-for-age forecasting logic, which uses a student's date of birth and a specified date (June 30, 2013 for the 2012/13 school year) to capture all vaccinations that have been administered on or before this date.
- A student is considered complete-for-age if the required number of doses of a vaccine for age has been received with the appropriate interval between doses. It is important to note that students who have an incomplete vaccine series but who are not yet overdue for their next dose are also considered complete-for-age using IRIS logic (i.e., included in the numerator).
- Vaccination coverage for the school-based hepatitis B vaccination program includes those completing the two-dose vaccine series through the program, those who reported that they completed the series prior to entering Grade 7, those not yet overdue for their next dose before the school year ended, or those who did not start the series, but have not yet turned 15 years of age (the age at which they are considered overdue).
- Numerator excludes students who were exempted based on medical reasons and religious or conscientious beliefs.

Technical Specifications

- Additional details regarding the methodology used to calculate hepatitis B vaccination coverage are available in the *Immunization coverage report for school pupils: 2012/13 school year* technical report.[1]

Data Sources

- Immunization Records Information System (IRIS), 2012/13. Ministry of Health and Long-Term Care.

Data Availability and Limitations

- The denominators used to assess vaccination coverage of school pupils are established by student demographic information uploaded into the IRIS database by the public health units for schools located within their geographic boundaries. However, the extent to which home-schooled, independent school students, or students who have dropped out of school are captured in the denominator is variable.
- The current data collection system in Ontario does not track those who have received the hepatitis B vaccinations outside of the school-based program, unless parents or guardians provide immunization information to local public health unit staff. These data may therefore underestimate vaccine coverage. A population-based registry is required to track the total number of Ontarians who receive the vaccine.
- Because IRIS coverage reports are based on forecasting logic, they identify the proportion of students who are not yet overdue for a particular immunization, rather than reporting on the proportion of students who have completed an age-appropriate number of doses.
- Data are for the 2012/13 school year; more recent data are not available at this time, because of a transition to a new data collection system (Panorama).

References

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