



Burden of Health Conditions Attributable to Smoking and Alcohol by Public Health Unit in Ontario: Technical Appendix

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Data sources and extraction

COVID-19 Pandemic

An examination of the impact of COVID-19 on smoking and alcohol attributable harms was not possible in this report because data were only available up to 2019 at the time of analysis.

Canadian Community Health Survey

The Canadian Community Health Survey is a population-based, cross-sectional survey conducted by Statistics Canada. It collects information on health status, health care use and determinants of health for the Canadian population.

Data availability and limitations

The Canadian Community Health Survey is administered on an annual basis. Every cycle contains two years of data, but annual components with one year of data are available as well. At the time of analysis, the most recent Canadian Community Health Survey data was for 2017. Analyses in this report averaged data from Canadian Community Health Survey Ontario Share Files from 2015, 2016 and 2017.

The Canadian Community Health Survey is representative of approximately 97 per cent of the Canadian population age 12 and older, but excludes people living on Reserves and other Aboriginal settlements and Crown Lands, institutional residents, children aged 12-17 that are living in foster care, fulltime members of the Canadian Forces and residents of certain remote regions.

People in Ontario who do not have a phone number (home or mobile) are excluded from the Canadian Community Health Survey, which results in underestimation of risk factor prevalence in some of the most vulnerable populations, including people who are experiencing homelessness.

The sex terms that are used in this data source (male, female, men and women) and that are reflected in the report do not represent the full gender diversity found in Ontario's population.

Variables analyzed from the Canadian Community Health Survey

- ONT_ID (record identifier)
- ADM_YOI (year of interview)
- WTS_S (share weight)
- DHH_AGE (age)
- DHH_SEX (sex)
- GEODVHR4 (health region)

-
- ALC_005 (had a drink during lifetime)
 - ALC_010 (drank alcohol during past 12 months)
 - ALC_015 (frequency of drinking alcohol during past 12 months)
 - ALC_020 (frequency of binge drinking during past 12 months)
 - ALWDVWKY (number of drinks consumed during past week)
 - SMKDVSTY (smoking status)

Vital Statistics – Death

The Vital Statistics – Death database contains administrative, clinical and demographic data for deaths in Canada. Ontario data are provided by the Office of the Registrar General.

Data availability and limitations

At the time of analysis, 2018 was the most recent calendar year that death data were available. This report uses data from 2014 to 2018 to calculate average annual estimates.

The sex terms that are used in this data source (male, female, men and women) and that are reflected in the report do not represent the full gender diversity found in Ontario’s population.

Variables extracted from Vital Statistics – Death

- DTH_CALCULATED_AGE (age at death)
- DTH_DEATH_YY (year of death)
- DTH_ORIG_DTH_ICD_CD (cause of death)
- DTH_SEX_CD (sex)
- PHU (public health unit)

Discharge Abstract Database

The [Discharge Abstract Database](#) contains administrative, clinical and demographic data for inpatient acute care hospital discharges in Canada. Ontario data are provided by the Canadian Institute for Health Information and distributed by the Ontario Ministry of Health through IntelliHEALTH. Data for the current report were extracted from the Inpatient Discharges database in IntelliHEALTH.

Data availability

At the time of analysis, 2019 was the most recent calendar year that inpatient discharge data were available. This report uses data from 2015 to 2019 to calculate average annual estimates.

Hospitalization data coverage is high, as assessed annually by the Canadian Institute for Health Information. Data quality control and special studies are also performed by the Canadian Institute for Health Information (see the [Data Quality Documentation, Discharge Abstract Database—Multi-Year Information](#) report).

The sex terms that are used in this data source (male, female, men and women) and that are reflected in the report do not represent the full gender diversity found in Ontario's population.

Variables extracted from IntelliHealth

- DAD Key (Discharge Abstract Database unique identifier)
- Patient PHU Code (patient's residence public health unit)
- CYear (calendar year)
- Patient Sex Code (sex)
- Admit Age (age at admission)
- All Dx Type Code (all diagnosis type code)
- All Dx Type (all diagnosis type)
- All Dx Occurrence Number (orders diagnoses within same visit)
- All Dx Code (3 char) (all diagnosis code, first three characters)
- All Dx Code (4 char) (all diagnosis code, first four characters)
- MRDx Code (4 char) (main diagnosis code, first four characters)

Ontario Mental Health Reporting System

The [Ontario Mental Health Reporting System](#) contains administrative, clinical and demographic data for inpatient acute care mental health hospital discharges in Canada. Ontario data are provided by the Canadian Institute for Health Information and distributed by the Ontario Ministry of Health through IntelliHEALTH. Data for the current report were extracted from the Ontario Mental Health Reporting System Assessment, Treatment and Diagnosis database in IntelliHEALTH.

Data availability

At the time of analysis, 2019 was the most recent calendar year that inpatient discharge data were available. However, data in the Ontario Mental Health Reporting System from 2019 and later use a different coding system for mental health diagnoses. Specifically, the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) Psychiatric Dx A, used from 2019 onward, contained codes that were different from the DSM-5 Psychiatric Dx A (Retired 2019) and the DSM-IV Axis I Primary Dx codes. Therefore, this report uses data from 2014 to 2018 to ensure consistency in DSM coding when calculating average annual estimates.

The sex terms that are used in this data source (male, female, men and women) and that are reflected in the report do not represent the full gender diversity found in Ontario's population.

Variables extracted from IntelliHealth

- Row number
- Admit CYear (calendar year of admission)
- Dschg CYear (calendar year of discharge)

-
- Episode Key (unique identifier)
 - Patient PHU (patient’s residence public health unit)
 - Age at Admission (age)
 - Sex Type (sex)
 - DSM-5 Psychiatric Dx A (new DSM-5 diagnosis codes beginning in 2019)
 - DSM-5 Psychiatric Dx A (Retired 2019) (DSM-5 diagnosis codes retired in 2019)
 - DSM-IV Axis I Primary Dx (DSM-IV diagnosis codes used prior to DSM-5)

National Ambulatory Care Reporting System

The [National Ambulatory Care Reporting System](#) contains administrative, clinical and demographic data for emergency department visits in Canada. Ontario data are provided by the Canadian Institute for Health Information and distributed by the Ontario Ministry of Health through IntelliHEALTH. Data for the current report were extracted from the Ambulatory Visits database in IntelliHEALTH.

Data availability

At the time of analysis, 2019 was the most recent calendar year that ambulatory visits data were available. This report uses data from 2015 to 2019 to calculate average annual estimates.

Ambulatory visit data coverage is high and is assessed annually by the Canadian Institute for Health Information. Data quality control and special studies are also performed by the Canadian Institute for Health Information (see the [Data Quality Documentation, National Ambulatory Care Reporting System Current-Year Information 2019–2020](#) report).

The sex terms that are used in this data source (male, female, men and women) and that are reflected in the report do not represent the full gender diversity found in Ontario’s population.

Variables extracted from IntelliHealth

- Row number
- NACRS Key (National Ambulatory Care Reporting System unique identifier)
- Patient PHU (patient’s residence public health unit)
- CYear (calendar year)
- Patient Sex (sex)
- Age (yrs) (age)
- All Dx Type Code (all diagnosis type code)
- All Dx Code (3 char) (all diagnosis code, first three characters)
- All Dx Code (4 char) (all diagnosis code, first four characters)
- MPDx Code (4 char) (main diagnosis code, first four characters)

Per-capita alcohol consumption data

Per capita consumption (litres of ethanol) for the Ontario-wide population age 15 and older was calculated using alcohol sales data from Statistics Canada, and was adjusted using data on unrecorded consumption and tourist consumption from the World Health Organization. A correction factor was applied to account for per capita consumption under-coverage.

Data availability

Annual recorded alcohol sales in Ontario in litres per capita for people age 15 and older came from Statistics Canada's [Table 10-10-0010-01 Sales of alcoholic beverages types by liquor authorities and other retail outlets, by value, volume, and absolute volume](#). Data from 2014/2015 to 2019/2020 were used.

Annual estimated unrecorded alcohol consumption in Canada in litres per capita for people age 15 and older came from the World Health Organization's Global Health Observatory: [Alcohol, unrecorded per capita \(15+\) consumption \(in litres of pure alcohol\) with 95%CI](#). Data from 2019 were used.

Annual estimated tourist alcohol consumption in Canada in litres per capita for people age 15 and older came from the World Health Organization's Global Health Observatory: [Alcohol, tourist consumption \(in litres of pure alcohol\)](#). Data from 2019 were used.

The correction factor was a value recommended in the InterMAHP guide, which was based on recommendations from the World Health Organization.

Prevalence of smoking

Current smoking, people (age 20 and older)

Definition

Self-reported daily or occasional cigarette smoking, age 20 and older in Ontario, 2015 to 2017.

Current smoking status assigned when SMKDVSTY = 01 or 02.

Indicator aligns with the Association of Public Health Epidemiologists in Ontario Indicator, the Public Health Ontario [Self-Reported Smoking Snapshot](#) and Ontario Health's [Ontario Cancer Profiles](#).

Calculation

$$\left(\frac{\text{Weighted number of people age 20+ who report smoking daily or occasionally}}{\text{Weighted total number of people age 20+}} \right) \times 100$$

Exclusions

Respondents in the non-response categories (refusal, don't know, and not stated) for any of the listed questions were excluded from the analysis.

Data sources

Canadian Community Health Survey, 2015/2016 cycle, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Canadian Community Health Survey, 2017, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Former smoking, people (age 20 and older)

Definition

Self-reported former daily or occasional cigarette smoking (non-smoker now), age 20 and older in Ontario, 2015 to 2017.

Current smoking status assigned when SMKDVSTY = 03 or 04.

Indicator aligns with the Association of Public Health Epidemiologists in Ontario [Smoking Status Core Indicator](#) and the Public Health Ontario [Self-Reported Smoking Snapshot](#).

Calculation

$$\left(\frac{\text{Weighted number of people age 20+ who reported former daily or occasional smoking}}{\text{Weighted total number of people age 20+}} \right) \times 100$$

Exclusions

Respondents in the non-response categories (refusal, don't know, and not stated) for any of the listed questions were excluded from the analysis.

Data sources

Canadian Community Health Survey, 2015/2016 cycle, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Canadian Community Health Survey, 2017, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Never smoking, people (age 20 and older)

Definition

Self-reported never smoking, age 20 and older in Ontario, 2015 to 2017.

Current smoking status assigned when SMKDVSTY = 05 or 06.

Calculations

Ontario

$$\left(\frac{\text{Weighted number of people age 20+ who report never smoking}}{\text{Weighted total number of people age 20+}} \right) \times 100$$

Exclusions

Respondents in the non-response categories (refusal, don't know, and not stated) for any of the listed questions were excluded from the analysis.

Data sources

Canadian Community Health Survey, 2015/2016 cycle, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Canadian Community Health Survey, 2017, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Smoking attributable outcomes

Relative risks and International Classification of Diseases, Tenth Revision (ICD-10) codes

Table 1: Relative risks by smoking status and age group in people age 35 and older, United States (including ICD-10 codes)

Males, current smoking

Condition	Age 35–54	Age 55–64	Age 65–74	Age ≥75
Lung cancer (C33–C44)	14.33	19.03	28.29	22.51
Other cancers (C00–C16, C18–C20, C26.0, C22, C25, C32, C53, C64–C65, C67, C92.0)	1.74	1.86	2.35	2.18
Coronary heart disease (I20–I25)	3.88	2.99	2.76	1.98
Other heart disease (I00–I09, I11, I13, I26–I51)	—	—	2.22	1.66
Cerebrovascular disease (I60–I69)	—	—	2.17	1.48
Other vascular diseases (I70–I78)	—	—	7.25	4.93
Diabetes mellitus (E10–E14)	—	—	1.5	1
Other cardiovascular diseases	2.4	2.51	—	—

Condition	Age 35–54	Age 55–64	Age 65–74	Age ≥75
Tuberculosis (A15–A19), influenza (J10–J11), pneumonia (J12–J18), bronchitis (J40–J42), emphysema (J43)	—	—	2.58	1.62
Chronic obstructive pulmonary disease (J44)	—	—	29.69	23.01
Influenza, pneumonia, tuberculosis, chronic obstructive pulmonary disease (A15–A19, J10–J18, J40–J42, J43–J44)	4.47	15.17	—	—
All causes	2.55	2.97	3.02	2.4

Males, former smoking

Condition	Age 35–54	Age 55–64	Age 65–74	Age ≥75
Lung cancer (C33–C44)	4.4	4.57	7.79	6.46
Other cancers (C00–C16, C18–C20, C26.0, C22, C25, C32, C53, C64–C65, C67, C92.0)	1.36	1.31	1.49	1.46
Coronary heart disease (I20–I25)	1.83	1.52	1.58	1.32
Other heart disease (I00–I09, I11, I13, I26–I51)	—	—	1.32	1.15
Cerebrovascular disease (I60–I69)	—	—	1.23	1.12
Other vascular diseases (I70–I78)	—	—	2.2	1.72
Diabetes mellitus (E10–E14)	—	—	1.53	1.06
Other cardiovascular diseases	1.07	1.51	—	—
Tuberculosis (A15–A19), influenza (J10–J11), pneumonia (J12–J18), bronchitis (J40–J42), emphysema (J43)	—	—	1.62	1.42
Chronic obstructive pulmonary disease (J44)	—	—	8.13	6.55
Influenza, pneumonia, tuberculosis, chronic obstructive pulmonary disease (A15–A19, J10–J18, J40–J42, J43–J44)	2.22	3.98	—	—
All causes	1.33	1.47	1.57	1.41

Females, current smoking

Condition	Age 35–54	Age 55–64	Age 65–74	Age ≥75
Lung cancer	13.3	18.95	23.65	23.08
Other cancers	1.28	2.08	2.06	1.93
Coronary heart disease	4.98	3.25	3.29	2.25
Other heart disease	—	—	1.85	1.75
Cerebrovascular disease	—	—	2.27	1.7
Other vascular diseases	—	—	6.81	5.77

Condition	Age 35–54	Age 55–64	Age 65–74	Age ≥75
Diabetes mellitus	—	—	1.54	1.1
Other cardiovascular diseases	2.44	1.98	—	—
Influenza, pneumonia, tuberculosis	—	—	1.75	2.06
Chronic obstructive pulmonary disease	—	—	38.89	20.96
Influenza, pneumonia, tuberculosis, chronic obstructive pulmonary disease	6.43	9	—	—
All causes	1.79	2.63	2.87	2.47

Females, former smoking

Condition	Age 35–54	Age 55–64	Age 65–74	Age ≥75
Lung cancer	2.64	5	6.8	6.38
Other cancers	1.24	1.28	1.26	1.27
Coronary heart disease	2.23	1.21	1.56	1.42
Other heart disease	—	—	1.29	1.32
Cerebrovascular disease	—	—	1.24	1.1
Other vascular diseases	—	—	2.26	2.02
Diabetes mellitus	—	—	1.29	1.06
Other cardiovascular diseases	1	1.1	—	—
Influenza, pneumonia, tuberculosis	—	—	1.28	1.21
Chronic obstructive pulmonary disease	—	—	15.72	7.06
Influenza, pneumonia, tuberculosis, chronic obstructive pulmonary disease	1.85	4.84	—	—
All causes	1.22	1.34	1.53	1.43

Source: U.S. Department of Health and Human Services. The health consequences of smoking—50 years of progress: a report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2014;17.

Deaths

Definition

Deaths with main cause as a condition related to smoking, calendar years 2014 to 2018 (see Table 1).

Exclusions

Records were excluded if they were missing age, or if sex was missing or other (i.e., not female or male). For public health unit-level counts, records missing public health unit were excluded.

Calculation

Number of deaths were counted by public health unit (where appropriate), age group (35 to 54, 55 to 64, 65 to 74, 75 and older), sex (male, female) and condition. Annual number of deaths was calculated by averaging calendar years 2014 to 2018.

Classification method

- All deaths were classified according to primary cause of death.

Data sources

Death (Vital Statistics – Death) 2014 to 2018, Office of the Registrar General.

Inpatient hospitalizations

Definition

Hospitalizations for smoking attributable conditions, calendar years 2015 to 2019 using Discharge Abstract Database data (see Table 1).

Exclusions

Records were excluded if they were missing patient age, or if patient sex was missing or other (i.e., not female or male). For public health unit-level counts, records missing public health unit were excluded.

Calculation

Number of hospitalizations were counted by public health unit (where appropriate), age group (35 to 54, 55 to 64, 65 to 74, 75 and older), sex (male, female) and condition. Annual number of hospitalizations from the Discharge Abstract Database were calculated by averaging calendar years 2015 to 2019.

Classification method

- Only one diagnosis per visit was counted.
- All hospitalizations were classified according to primary diagnosis (i.e., MRDx).

Data sources

Inpatient Discharges, Discharge Abstract Database, Ontario Ministry of Health, IntelliHEALTH ONTARIO, Extracted May 2021.

Emergency department visits

Definition

Emergency department visits for smoking attributable conditions, calendar years 2015 to 2019 using National Ambulatory Care Reporting System data (see Table 1).

Exclusions

Records were excluded if they were missing patient age, or if patient sex was missing or other (i.e., not female or male). For public health unit-level counts, records missing public health unit were excluded.

Calculation

Number of emergency department visits were counted by public health unit (where appropriate), age group (35 to 54, 55 to 64, 65 to 74, 75 and older), sex (male, female) and condition. Annual number of emergency department visits was calculated by averaging calendar years 2015 to 2019.

Classification method

- Only one diagnosis per visit was counted.
- All emergency department visits were classified according to primary diagnosis (i.e., MPDx Code in the National Ambulatory Care Reporting System).

Data sources

Emergency Department Visits, National Ambulatory Care Reporting System 2015 to 2019, Ontario Ministry of Health, IntelliHEALTH ONTARIO, Extracted May 2021.

Smoking data analysis

Canadian Community Health Survey Prevalence Data

Reported prevalence rates with 95 per cent confidence intervals were calculated using SAS 9.4 with bootstrapping (1,000 replicates). Years 2015, 2016 and 2017 were weighted equally.

Smoking attributable fraction calculation

- Lung cancer includes malignant neoplasm of trachea, bronchus and lung (C33–C34).
- Other cancers include malignant neoplasm of lip and oral cavity (C00–C14), esophagus (C15), stomach (C16), colon and rectum (C18–C20, C26.0), liver (C22), pancreas (C25), larynx (C32), cervix uteri (C53), kidney and renal pelvis (C64–C65), urinary bladder (C67) and acute myeloblastic leukemia (C92.0).
- Cardiovascular diseases include ischemic heart disease (I20–I25), other heart disease (I00–I09, I11, I13, I26–I51), cerebrovascular disease (I60–I69), atherosclerosis (I70), aortic aneurysm (I71), other arterial disease (I72–I78).
- Diabetes mellitus (E10–E14).

- Respiratory diseases include tuberculosis (A15–A19), influenza (J10–J11), pneumonia (J12–J18), bronchitis (J40–J42), emphysema (J43) and other chronic obstructive pulmonary disease (J44).
- Population attributable fractions (PAFs) were calculated for each health outcome and each disease type using Levin's formula, with the prevalence of current smoking, the prevalence of former smoking, the disease-specific relative risk for current smoking versus never-smoking, and the disease-specific relative risk of harms for former smoking versus never smoking as inputs.

Levin's formula:

$$PAF = \left(\frac{p(rr-1)}{p(rr-1)+1} \right)$$

- For each disease type associated with tobacco smoking, the PAF was calculated at the provincial level by sex and age group (35 to 54, 55 to 64, 65 to 74, and 75 and older), using age- and sex-specific relative risks and prevalence estimates.
- Age- and sex-specific relative risks for disease subgroups were from The American Cancer Society's Cancer Prevention Study II and pooled data from five large contemporary cohort studies.(1)
- To calculate the total number of smoking attributable deaths for each disease type by public health unit, the provincial age- and sex-specific PAFs were multiplied by the total number of counts in each sex and age group for each public health unit and then summed.

The supplementary tables include estimates of the per cent of total harms (i.e., deaths, hospitalizations or emergency department visits) from all causes that were attributable to smoking. The denominator includes all causes for anyone over age 35.

The per cent of harms in each health condition category that were attributable to smoking were also calculated. To calculate the per cent of harms that were attributable to smoking within each of the four health condition categories, the total count of smoking attributable harms was divided by the count of all harms within that category.

In each of the four condition categories:

Per cent attributable to smoking in each health condition category =

$$\left(\frac{\text{Count of smoking attributable harms within category}}{\text{Count of all harms within category}} \right) \times 100$$

For the health condition specific outcomes, the denominator only includes harms from health conditions that were examined in the analysis (see Table 1). A health condition had to be at least partially attributable to smoking to be included in the health condition specific analyses.

Prevalence of drinking

Current drinking, former drinking, lifetime abstinence (age 15 and older)

Definitions

Current drinking

Self-reported consumption of a drink in the past 12 months, by age group and sex, 2015 to 2017.

Specifically, has had a drink in their lifetime and has had a drink in the past 12 months (ALC_005 = 1 and ALC_010 = 1).

Indicator aligns with national indicator ([Statistics Canada](#) and the [Public Health Agency of Canada](#)) and the [World Health Organization](#).

Former drinking

Self-reported consumption of at least one drink in their lifetime, but no drink in the past 12 months, by age group and sex, 2015 to 2017.

Specifically, has had a drink in their lifetime and has not a drink in the past 12 months (ALC_005 = 1 and ALC_010 = 2). Also equal to 1 – Current drinking – Lifetime abstinence.

Lifetime abstinence

Self-reported never having had a drink in their lifetime, by age group and sex, 2015 to 2017.

Specifically, has not had a drink in their lifetime (ALC_005 = 2).

Calculation example

There are six population subgroups as defined by InterMAHP: males and females age 15 to 34, 35 to 64, and 65 and older.

Current drinking, females age 15 to 34

$$\left(\frac{\text{Weighted number of females age 15 to 34 who had a drink in the past 12 months}}{\text{Weighted total number of females age 15 to 34}} \right)$$

Note: prevalence values are presented as proportions (i.e., 0.50) and not percentages (i.e., 50 per cent).

Prevalence of Current drinking + Former drinking + Lifetime Abstinence = 1, for each age and sex subgroup.

Exclusions

Respondents in the non-response categories (refusal, don't know, and not stated) for any of the listed questions were excluded from the analysis.

Data sources

Canadian Community Health Survey, 2015/2016 cycle, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Canadian Community Health Survey, 2017, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Prevalence of binge drinking (age 15 and older)

Definition

Self-reported binge drinking in the past 12 months, by age group and sex, 2015 to 2017.

Specifically, has consumed five or more (for males), or four or more (for females) drinks on one occasion at least once a month in the past 12 months (ALC_020 = 3, 4, 5 or 6). Binge drinking is also referred to as heavy drinking.

Indicator adapted from national ([Statistics Canada](#)) and provincial ([Association of Public Health Epidemiologists in Ontario](#)) indicators.

Calculation example

There are six population subgroups as defined by InterMAHP: males and females ages 15 to 34, 35 to 64, and 65 and older.

Females age 15 to 34

$$\left(\frac{\text{Weighted number of females age 15 to 34 who binge drank in the past 12 months}}{\text{Weighted total number of females age 15 to 34}} \right)$$

Note: prevalence values are presented as proportions (i.e., 0.50) and not percentages (i.e., 50 per cent).

Exclusions

Respondents in the non-response categories (refusal, don't know, and not stated) for any of the listed questions were excluded from the analysis.

Data sources

Canadian Community Health Survey, 2015/2016 cycle, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Canadian Community Health Survey, 2017, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Exceeding two drinks in the past week (age 19 and older)

Definition

Self-reported alcohol consumption in excess of two drinks in the past week, in people age 19 and older who were not pregnant or breastfeeding, in Ontario, 2015 to 2017.

Alcohol consumption exceeding two drinks in the past week defined as reporting consumption of more than two drinks in the past week (ALWDVWKY > 2).

Calculation

$$\left(\frac{\text{Weighted number of people age 19 + who exceeded 2 drinks in past week}}{\text{Weighted total number of people age 19 +}} \right) \times 100$$

Exclusions

Respondents in the non-response categories (refusal, don't know, and not stated) for any of the 7 days in the past week were excluded from the analysis.

Respondents who are pregnant or breastfeeding were also excluded.

Data sources

Canadian Community Health Survey, 2015/2016 cycle, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Canadian Community Health Survey, 2017, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Relative alcohol consumption

Definition

Self-reported per person alcohol consumption in each of the six age and sex population subgroups, relative to a reference age and sex subgroup, 2015 to 2017.

Specifically, relative average per-person past-week alcohol consumption for each age and sex population subgroups based on ALWDVWKY.

Calculation

There are six population subgroups as defined by InterMAHP: males and females ages 15 to 34, 35 to 64, and 65 and older.

Relative alcohol consumption was calculated as the average number of past-week drinks for each age and sex subgroup, divided by average number of past-week drinks for the males age 35 to 64 subgroup. The resulting ratio is a measure of relative consumption, using males age 35 to 64 as the reference group. Males age 35 to 64 were chosen because they had the highest prevalence of current drinking; however, any age and sex subgroup can be chosen as the reference or denominator.

For example, if using males ages 35 to 64 as reference or denominator:

Relative consumption, females age 15 to 34

$$\left(\frac{\text{Weighted mean drinks in the past week for females age 15 to 34}}{\text{Weighted mean drinks in the past week for males age 35 to 64}} \right)$$

Relative consumption, females age 35 to 64

$$\left(\frac{\text{Weighted mean drinks in the past week for females age 35 to 64}}{\text{Weighted mean drinks in the past week for males age 35 to 64}} \right)$$

Repeat for all six age and sex subgroups.

Exclusions

Respondents in the non-response categories (refusal, don't know, and not stated) for any of the listed questions were excluded from the analysis.

Data sources

Canadian Community Health Survey, 2015/2016 cycle, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Canadian Community Health Survey, 2017, Statistics Canada, Ontario Share File, Distributed by Ontario Ministry of Health.

Per-capita alcohol consumption

Definition

Per capita consumption (litres of ethanol) for the population age 15 and older.

Based on recorded alcohol sales, adjusted for estimates of unrecorded consumption and tourist consumption.

Calculation

- Annual recorded alcohol sales in Ontario, litres per capita for people age 15 and older.
 - For deaths, average across 2014/2015 + 2015/2016 + 2016/2017 + 2017/2018 + 2018/2019:
(7.3 + 7.5 + 7.7 + 7.7 + 7.5) / 5
 - For hospitalizations and emergency department visits, average across 2015/2016 + 2016/2017 + 2017/2018 + 2018/2019 + 2019/2020:
(7.5 + 7.7 + 7.7 + 7.5 + 7.6) / 5
- Annual estimate unrecorded alcohol consumption in Canada, litres per capita for people age 15 and older, 2019: 0.9.
- Annual estimate tourist alcohol consumption in Canada, litres per capita for people age 15 and older, 2019: -0.1.

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- Therefore, per-capita consumption calculated as $(7.3 + 7.5 + 7.7 + 7.7 + 7.5) / 5 + 0.9 - 0.1 = 8.3$ for deaths and $(7.5 + 7.7 + 7.7 + 7.5 + 7.6) / 5 + 0.9 - 0.1 = 8.4$ for hospitalizations and emergency department visits.

Data sources

- Statistics Canada. [Table 10-10-0010-01 Sales of alcoholic beverages types by liquor authorities and other retail outlets, by value, volume, and absolute volume.](#)
- World Health Organization. Global Health Observatory. [Alcohol, unrecorded per capita \(15+\) consumption \(in litres of pure alcohol\) with 95%CI.](#)
- World Health Organization. Global Health Observatory. [Alcohol, tourist consumption \(in litres of pure alcohol\).](#)

Other inputs

Correction factor

Correction factor is 0.8. Used recommended value from InterMAHP, based on recommendations from the World Health Organization. Data source: The InterMAHP user guide, [InterMAHP: A comprehensive guide to the estimation of alcohol-attributable morbidity and mortality](#) (version 1.0, December 2017).

Population estimates

Population estimates for the average year from 2014 to 2018 (i.e., sum of populations for each year from 2014 to 2018 divided by five) were used for deaths. Population estimates for the average year from 2015 to 2019 (i.e., sum of populations for each year from 2015 to 2019 divided by five) were used for hospitalizations and emergency department visits.

Data sources

Population Projection, 2017 to 2041, Ontario Ministry of Health, IntelliHEALTH ONTARIO, Extracted November 2019.

Alcohol attributable outcomes

ICD-10 Codes

Table 2. Alcohol attributable outcomes (adapted from Table 1 of the [InterMAHP User Guide](#))

Condition	IM #	ICD-10 codes/DSM codes(Primary Dx)	ICD-10 codes (External)
Communicable diseases	—	—	—
Tuberculosis	11	A15–A19	—
Human immunodeficiency virus	12	B20-B24, Z21	—
Lower respiratory tract infections	13	J09–J22	—
Cancer	—	—	—
Oral cavity and pharynx cancer	21	C00–C05, C08–C10, C12–C14, D00.0	—
Esophageal cancer, squamous cell carcinoma	22	C15, D00.1 (portional only)	—
Colorectal cancer	23	C18–C21, D01.0–D01.4	—
Liver cancer	24	C22, D01.5	—
Pancreatic cancer	25	C25, D01.7	—
Laryngeal cancer	26	C32, D02.0	—
Breast cancer	27	C50, D05	—
Endocrine conditions	—	—	—
Diabetes mellitus, type 2	31	E11, E13, E14	—
Alcohol-induced pseudo-Cushing’s syndrome	32	E24.4	—
Mental and behavioural conditions due to psychoactive substance use*	—	—	—
Alcoholic psychoses (also includes intoxication, withdrawal, amnesic syndrome, other mental and behavioural disorders)	41	F10.0, F10.3–F10.9	—
Alcohol intoxication		30300 DSM code	
Alcohol intoxication or withdrawal delirium		29100 DSM code	
Alcohol withdrawal		29181 DSM code	

Condition	IM #	ICD-10 codes/DSM codes(Primary Dx)	ICD-10 codes (External)
Alcohol-induced psychotic disorder, with delusions		29150 DSM code	
Alcohol-induced psychotic disorder, with hallucinations		29130 DSM code	
Alcohol-induced persisting amnestic disorder		29110 DSM code	
Alcohol-induced persisting dementia		29120 DSM code	
Alcohol-induced sleep disorder		29182 DSM code	
Alcohol-induced anxiety/mood disorder or sexual dysfunction		29189 DSM code	
Alcohol-related disorder not otherwise specified		29190 DSM code	
Alcohol abuse	42	F10.1	—
Alcohol abuse		30500 DSM code	
Alcohol dependence syndrome	43	F10.2	—
Alcohol dependence		30390 DSM code	
Neurological conditions*	—	—	—
Degeneration of the nervous system due to alcohol	44	G31.2	—
Epilepsy	45	G40, G41	—
Alcoholic polyneuropathy	46	G62.1	—
Alcoholic myopathy	47	G72.1	—
Cardiovascular conditions	—	—	—
Hypertension	51	I10–I15	—
Ischaemic heart disease	52	I20–I25	—
Alcoholic cardiomyopathy	53	I42.6	—
Atrial fibrillation and cardiac arrhythmia	54	I47–I49	—
Haemorrhagic stroke	55	I60–I62, I69.0–I69.2	—
Ischaemic stroke	56	I63–I67, I69.3–I69.4	—
Oesophageal varices	57	I85	—
Digestive conditions	—	—	—
Alcoholic gastritis	61	K29.2	—
Liver cirrhosis	62	K70, K74	—
Acute pancreatitis	63	K85.0–K85.1, K85.8–K85.9	—
Chronic pancreatitis	64	K86.1–K86.9	—
Alcohol-induced pancreatitis	65	K85.2, K86.0	—
Motor vehicle collisions	—	—	—
Motor vehicle collisions	71	—	V1**, Y85.0

Condition	IM #	ICD-10 codes/DSM codes(Primary Dx)	ICD-10 codes (External)
Unintentional injuries	—	—	—
Falls	81	—	W00–W19, Y30
Drowning	82	—	W65–W74
Fires	83	—	X00–X09, Y26
Accidental poisoning by substances other than alcohol	84	T36–T50, T52–T65, T96–T97	X40–X44, X46–X49, Y10–Y14, Y16–Y19
Accidental poisoning by alcohol	85	T51	X45, Y15
Other unintentional injuries	86	—	V2***, W20–W64, W75–W84, X10–X33, Y20, Y22–Y25, Y27–Y29, Y31–Y34, Y85.9, Y86, Y87.2, Y89.9
Intentional injuries	—	—	—
Intentional self-poisoning by substances other than alcohol	91	T36–T50, T52–T65, T96–T97	X60–X64, X66–X69
Intentional self-poisoning by alcohol	92	T51	X65
Other intentional self-harm	93	—	X70–X84, Y87.0
Assault or homicide	94	—	X85–Y09, Y87.1
Other intentional injuries	95	—	Y35, Y89.0

*All neuropsychiatric conditions coded using the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) and DSM-5 were 100 per cent attributable to alcohol and all were grouped into the same category regardless of the specific InterMAHP (IM) number assigned to each condition.

**V1: V02.1, V02.9, V03.1, V03.9, V04.1, V04.9, V09.2, V09.3, V12.3–V12.9, V13.3–V13.9, V14.3–V14.9, V19.4, V19.5, V19.6, V19.9, V20.3–V20.9, V21.3–V21.9, V22.3–V22.9, V23.3–V23.9, V24.3–V24.9, V25.3–V25.9, V26.3–V26.9, V27.3–V27.9, V28.3–V28.9, V29.4, V29.5, V29.6, V29.9, V30.4–V30.9, V31.4–V31.9, V32.4–V32.9, V33.4–V33.9, V34.4–V34.9, V35.4–V35.9, V36.4–V36.9, V37.4–V37.9, V38.4–V38.9, V39.4, V39.5, V39.6, V39.9, V40.4–V40.9, V41.4–V41.9, V42.4–V42.9, V43.4–V43.9, V44.4–V44.9, V45.4–V45.9, V46.4–V46.9, V47.4–V47.9, V48.4–V48.9, V49.4, V49.5, V49.6, V49.9, V50.4–V50.9, V51.4–V51.9, V52.4–V52.9, V53.4–V53.9, V54.4–V54.9, V55.4–V55.9, V56.4–V56.9, V57.4–V57.9, V58.4–V58.9, V59.4, V59.5, V59.6, V59.9, V60.4–V60.9, V61.4–V61.9, V62.4–V62.9, V63.4–V63.9, V64.4–V64.9, V65.4–V65.9, V66.4–V66.9, V67.4–V67.9, V68.4–V68.9, V69.4, V69.5, V69.6, V69.9, V70.4–V70.9, V71.4–V71.9, V72.4–V72.9, V73.4–V73.9, V74.4–V74.9, V75.4–V75.9, V76.4–V76.9, V77.4–V77.9, V78.4–V78.9, V79.4, V79.5, V79.6, V79.9, V80.3, V80.4, V80.5, V81.1, V82.1, V83.4, V84.4, V85.4, V86.0, V86.1, V86.3, V87.0–V87.9, V89.2, V89.3, V89.9

***V2: All other ICD-10 codes beginning with V

Deaths

Definition

Deaths with main cause as a condition attributable to alcohol, calendar years 2014 to 2018 (see Table 2).

Exclusions

Records were excluded if they were missing age, or if sex was missing or other (i.e., not female or male). For public health unit-level counts, records missing public health unit were excluded.

Calculation

Number of deaths were counted by public health unit (where appropriate), age group (15 to 34, 35 to 64, 65 and older), sex (male, female) and condition. Annual number of deaths was calculated by averaging calendar years 2014 to 2018.

Classification method

- All deaths were classified according to primary cause of death.

Data sources

Death (Vital Statistics – Death) 2014 to 2018, Office of the Registrar General.

Inpatient hospitalizations

Definition

Hospitalizations for alcohol attributable conditions, calendar years 2015 to 2019 for Discharge Abstract Database data, calendar years 2014 to 2018 for Ontario Mental Health Reporting System data (neuropsychiatric conditions only) (see Table 2).

Exclusions

Records were excluded if they were missing patient age, or if patient sex was missing or other (i.e., not female or male). For public health unit-level counts, records missing public health unit were excluded.

Calculation

Number of hospitalizations were counted by public health unit (where appropriate), age group (15 to 34, 35 to 64, 65 and older), sex (male, female) and condition. Annual number of hospitalizations from Discharge Abstract Database was calculated by averaging calendar years 2015 to 2019. Annual number of hospitalizations from the Ontario Mental Health Reporting System was calculated by averaging calendar years 2014 to 2018.

Classification method

1. Only one diagnosis per visit was counted.

2. All non-injury hospitalizations were classified according to primary diagnosis (i.e., MRDx Code in the Discharge Abstract Database, DSM-5 Psychiatric Dx A in the Ontario Mental Health Reporting System).
3. Among hospitalizations with a primary diagnosis of alcohol poisoning:
 - a. If the primary diagnosis was poisoning by alcohol (either beverage or non-beverage) and **any** of the diagnoses were Intentional self-poisoning by alcohol (ICD-10 of X65), the visit was coded as this diagnosis (IM=92).
 - b. The remaining hospitalizations with a primary diagnosis of poisoning by alcohol were coded as Accidental poisoning by alcohol (IM=85). Note that if intention was not specified, the poisoning was assumed to be accidental.
4. Among hospitalizations with a primary diagnosis of poisoning by substances other than alcohol:
 - a. If the primary diagnosis was poisoning by substances other than alcohol and **any** of the diagnoses were Intentional self-poisoning by substances other than alcohol (ICD-10 of X60-X64, X66-X69), the visit was coded as this diagnosis (IM=91).
 - b. The remaining diagnoses with a primary diagnosis of poisoning by substances other than alcohol were coded as Accidental poisoning by substances other than alcohol (IM=84). Note that if intention was not specified, the poisoning was assumed to be accidental.
5. The remaining injuries (approximately 30 per cent of all hospitalizations) were classified in the order they appear in Table 2. Among the remaining hospitalizations, if any of the diagnoses were a Motor vehicle collision, the visit was coded as this diagnosis (IM=71).
6. Next, among the remaining hospitalizations, if any of the diagnoses were a Fall, the visit was coded as this diagnosis (IM=81).
7. Next, among the remaining hospitalizations, if any of the diagnoses were a Drowning, the visit was coded as this diagnosis (IM=82).
8. Next, among the remaining hospitalizations, if any of the diagnoses were a Fire, the visit was coded as this diagnosis (IM=83).
9. Next, among the remaining hospitalizations, if any of the diagnoses were Accidental poisoning by substances other than alcohol, the visit was coded as this diagnosis (IM=84). Note that this step only applies to visits where the poisoning was not the primary diagnosis. If poisoning was the primary diagnosis, the visit was already coded according to step 4.b.
10. Next, among the remaining hospitalizations, if any of the diagnoses were Accidental poisoning by alcohol, the visit was coded as this diagnosis (IM=85). Note that this step only applies to visits where the poisoning was not the primary diagnosis. If poisoning was the primary diagnosis, the visit was already coded according to step 3.b.
11. Next, among the remaining hospitalizations, if any of the diagnoses were Other unintentional injury, the visit was coded as this diagnosis (IM=86).
12. Next, among the remaining hospitalizations, if any of the diagnoses were Intentional self-poisoning by substances other than alcohol, the visit was coded as this diagnosis (IM=91). Note that this step only applies to visits where the poisoning was not the primary diagnosis. If poisoning was the primary diagnosis, the visit was already coded according to step 4.a.
13. Next, among the remaining hospitalizations, if any of the diagnoses were Intentional self-poisoning by alcohol, the visit was coded as this diagnosis (IM=92). Note that this step only applies to visits where the poisoning was not the primary diagnosis. If poisoning was the primary diagnosis, the visit was already coded according to step 3.a.

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14. Next, among the remaining hospitalizations, if any of the diagnoses were Other intentional self-harm, the visit was coded as this diagnosis (IM=93).
 15. Next, among the remaining hospitalizations, if any of the diagnoses were Assault/homicide, the visit was coded as this diagnosis (IM=94).
 16. Next, among the remaining hospitalizations, if any of the diagnoses were Other intentional injury, the visit was coded as this diagnosis (IM=95).

Data sources

Inpatient Discharges, Discharge Abstract Database, Ontario Ministry of Health, IntelliHEALTH ONTARIO, Extracted November 2021.

Discharges, Ontario Mental Health Reporting System, Ontario Ministry of Health, IntelliHEALTH ONTARIO, 2014 to 2018, Extracted November 2021.

Emergency department visits

Definition

Emergency department visits for alcohol attributable conditions, calendar years 2015 to 2019 (see Table 2).

Exclusions

Records were excluded if they were missing patient age or sex, if patient age was 14 or younger, or if patient sex was not female or male. For public health unit-level counts, records missing public health unit were excluded.

Calculation

Number of emergency department visits were counted by public health unit (where appropriate), age group (15 to 34, 35 to 64, 65 and older), sex (male, female) and condition. Annual number of emergency department visits was calculated by averaging calendar years 2015 to 2019.

Classification method

1. Only one diagnosis per visit was counted.
2. All non-injury emergency department visits were classified according to primary diagnosis (i.e., MPDx Code in the National Ambulatory Care Reporting System).
3. Among emergency department visits with a primary diagnosis of alcohol poisoning:
 - a. If the primary diagnosis was poisoning by alcohol (either beverage or non-beverage) and **any** of the diagnoses were Intentional self-poisoning by alcohol (ICD-10 of X65), the visit was coded as this diagnosis (IM=92).
 - b. The remaining emergency department visits with a primary diagnosis of poisoning by alcohol were coded as Accidental poisoning by alcohol (IM=85). Note that if intention was not specified, the poisoning was assumed to be accidental.
4. Among emergency department visits with a primary diagnosis of poisoning by substances other than alcohol:

- a. If the primary diagnosis was poisoning by substances other than alcohol and **any** of the diagnoses were Intentional self-poisoning by substances other than alcohol (ICD-10 of X60–X64, X66–X69), the visit was coded as this diagnosis (IM=91).
 - b. The remaining diagnoses with a primary diagnosis of poisoning by substances other than alcohol were coded as Accidental poisoning by substances other than alcohol (IM=84). Note that if intention was not specified, the poisoning was assumed to be accidental.
5. The remaining injuries (approximately 70 per cent of all emergency department visits) were classified in the order they appear in Table 2. Among the remaining emergency department visits, if any of the diagnoses were a Motor vehicle collision, the visit was coded as this diagnosis (IM=71).
6. Next, among the remaining emergency department visits, if any of the diagnoses were a Fall, the visit was coded as this diagnosis (IM=81).
7. Next, among the remaining emergency department visits, if any of the diagnoses were a Drowning, the visit was coded as this diagnosis (IM=82).
8. Next, among the remaining emergency department visits, if any of the diagnoses were a Fire, the visit was coded as this diagnosis (IM=83).
9. Next, among the remaining emergency department visits, if any of the diagnoses were Accidental poisoning by substances other than alcohol, the visit was coded as this diagnosis (IM=84). Note that this step only applies to visits where the poisoning was not the primary diagnosis. If poisoning was the primary diagnosis, the visit was already coded according to step 4.b.
10. Next, among the remaining emergency department visits, if any of the diagnoses were Accidental poisoning by alcohol, the visit was coded as this diagnosis (IM=85). Note that this step only applies to visits where the poisoning was not the primary diagnosis. If poisoning was the primary diagnosis, the visit was already coded according to step 3.b.
11. Next, among the remaining emergency department visits, if any of the diagnoses were Other unintentional injury, the visit was coded as this diagnosis (IM=86).
12. Next, among the remaining emergency department visits, if any of the diagnoses were Intentional self-poisoning by substances other than alcohol, the visit was coded as this diagnosis (IM=91). Note that this step only applies to visits where the poisoning was not the primary diagnosis. If poisoning was the primary diagnosis, the visit was already coded according to step 4.a.
13. Next, among the remaining emergency department visits, if any of the diagnoses were Intentional self-poisoning by alcohol, the visit was coded as this diagnosis (IM=92). Note that this step only applies to visits where the poisoning was not the primary diagnosis. If poisoning was the primary diagnosis, the visit was already coded according to step 3.a.
14. Next, among the remaining emergency department visits, if any of the diagnoses were Other intentional self-harm, the visit was coded as this diagnosis (IM=93).
15. Next, among the remaining emergency department visits, if any of the diagnoses were Assault/homicide, the visit was coded as this diagnosis (IM=94).
16. Next, among the remaining emergency department visits, if any of the diagnoses were Other intentional injury, the visit was coded as this diagnosis (IM=95).

Data sources

Emergency Department Visits, National Ambulatory Care Reporting System 2015 to 2019, Ontario Ministry of Health, IntelliHEALTH ONTARIO, Extracted November 2021.

Alcohol data analysis

Canadian Community Health Survey Prevalence Data

Reported prevalence rates with 95 per cent confidence intervals were calculated using PROC SURVEYFREQ with bootstrapping (1,000 replicates), in SAS 9.4. Years 2015, 2016 and 2017 were weighted equally.

The freely available [International Model of Alcohol Harms and Policies](#) (InterMAHP) tool was used to calculate alcohol attributable harms. The InterMAHP user guide, [InterMAHP: A comprehensive guide to the estimation of alcohol-attributable morbidity and mortality](#) (version 1.0, December 2017), instructed the data inputs used for this report. Details of the data inputs are described below.

InterMAHP settings

Relative risk source: Relative risks used for the 2017 Canadian Substance Use Costs and Harms compiled by the Canadian Centre on Substance Use and Addiction and the Canadian Institute for Substance Use Research. For current drinking, a continuous dose–response relationship between alcohol consumption and relative risk of mortality or morbidity was used in InterMAHP’s calculation of alcohol population attributable fractions; for former drinking, a categorical relative risk estimate was used. The relative risks and the continuous relative risk functions are available in the InterMAHP user guide, [InterMAHP: A comprehensive guide to the estimation of alcohol-attributable morbidity and mortality](#) (version 1.0, December 2017).

Upper limit of consumption: 250 grams of ethanol. This was chosen as the upper limit of consumption based on a recent Canadian study.⁽²⁾ In this study, people with severe alcohol-related problems consumed 250 grams of ethanol per day, on average.

Dose response extrapolation method (default): Linear.

Binge definitions (adjusted to standard drink in Canada): 67.3 grams of ethanol per day for males and 53.8 grams of ethanol per day for females. These were chosen as the thresholds for binge drinking because they correspond with the standard drink definitions used to define binge drinking in Canada. [In Canada, a standard drink contains 13.45 grams of ethanol](#). Therefore, 67.3 grams of ethanol per day corresponds with five standard drinks (13.45 X 5), which is the binge threshold for males, and 53.8 grams of ethanol per day corresponds with four standard drinks (13.45 X 4), which is the binge threshold for females.

Squamous cell carcinoma proportions (default): 0.33 for men, 0.66 for women.

Total alcohol attributable harms and per cent of all attributable harms

Total alcohol attributable harms

To calculate the total number of alcohol attributable harms (i.e., deaths, hospitalizations or emergency department visits) for each of the 44 health conditions in each public health unit, the age- and sex-specific alcohol population attributable fractions (PAFs) were multiplied by the total number of harms in each age and sex group for each public health unit. The 44 health conditions were grouped into nine broader health condition categories. The values for each of the 44 conditions were added together to create a value for each of the nine broader health condition categories.

For each of the 44 health conditions:

$$\text{Total alcohol attributable harms from each health condition} = (\text{PAF assigned to the condition}) \times (\text{Count of all harms from the condition})$$

Per cent of harms attributable to alcohol

The supplementary tables included estimates of the per cent of total harms (i.e., deaths, hospitalizations or emergency department visits) from all causes that were attributable to alcohol. The denominator included all causes for anyone age 15 and older.

In addition, the per cent of harms in each health condition category that were attributable to alcohol were calculated. To calculate the per cent of harms that were attributable to alcohol in each of the nine health condition categories, the total count of alcohol attributable harms was divided by the count of all harms in that category.

In each of the nine condition categories:

$$\text{Per cent attributable to alcohol in each health condition category} = \left(\frac{\text{Count of alcohol attributable harms in category}}{\text{Count of all harms in category}} \right) \times 100$$

For the health condition specific outcomes, the denominator only includes harms from conditions that were included in the analysis (see Table 2). A health condition had to be at least partially attributable to alcohol to be included in the health condition-specific analyses.

Age groups

Alcohol harms were not calculated for the 0 to 14 age group. The data source used for alcohol consumption data did not ask respondents in this age group about alcohol consumption. In the absence of consumption data, InterMAHP provides a mechanism for calculating alcohol attributable harm for people ages 0 to 14. However, the decision was made to exclude this age group due to the very low prevalence of alcohol consumption and the very low number of alcohol attributable harms among children ages 0 to 14.

References

1. National Center for Chronic Disease Prevention Health Promotion, Office on Smoking Health. Reports of the Surgeon General. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Atlanta (GA): Centers for Disease Control and Prevention (US); 2014.
2. Stockwell T, Pauly BB, Chow C, Erickson RA, Kryswaty B, Roemer A, et al. Does managing the consumption of people with severe alcohol dependence reduce harm? A comparison of participants in six Canadian managed alcohol programs with locally recruited controls. *Drug Alcohol Rev.* 2018;37 Suppl 1:S159-s66.

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