

STATUS OF ALCOHOL IN OTTAWA



Let's Continue the Conversation

NOVEMBER 2016



Acronyms

* Interpret with caution – high sampling variability

AAF Alcohol Attributable Fraction

AAH Alcohol Attributable Hospitalization

AAM Alcohol Attributable Mortality

ACHA-NCHA American College Health Assessment-National College Health Assessment

AGCO Alcohol Gaming Commission of Ontario

ASSET Advanced Syndromic Surveillance and Emergency Triage

AUDIT Alcohol Use Disorders Identification Test

BAC Blood Alcohol Concentration

BCCEWH British Columbia Centre of Excellence for Women's Health

BOH Board of Health

CADUMS Canadian Alcohol and Drug Use Monitoring Survey

CAMH Centre for Addiction and Mental Health

CCSA Canadian Centre on Substance Abuse

CCHS Canadian Community Health Survey

CI Confidence Interval

CYD Check your drinking survey

DALYS Disability adjusted life years

DATIS Drug and Alcohol Treatment Information System

ED Emergency Department

FASD Fetal Alcohol Spectrum Disorder

FY Fiscal year

HBAM Health-Based Allocation Model

LHIN Local Health Integration Network

LCBO Liquor Control Board of Ontario

LLA Liquor License Act

LRADG Low Risk Alcohol Drinking Guidelines

MOHLTC Ministry of Health and Long-Term Care

MTO Ministry of Transportation in Ontario

MVC Motor vehicle collision

NR Not reportable

OPH Ottawa Public Health

OSDUHS Ontario Student Drug Use and Health Survey

PHO Public Health Ontario

PHAC Public Health Agency of Canada

SOP Special Occasions Permit

TIRF Traffic Injury Research Foundation

VQA Vintners Quality Alliance

WHO World Health Organization



Message from Ottawa Public Health's Medical Officer of Health

On behalf of Ottawa Public Health (OPH), I am pleased to provide the *Status of Alcohol in Ottawa: Let's Continue the Conversation* as a contributory document to help stimulate ongoing community discussions of alcohol-related harms in Ottawa. Local evidence helps in the planning and decision making to enhance the health of Ottawa's population. In the spirit of true collaboration, several community partners contributed Ottawa specific data towards this report and I am grateful to all our partners that continue to work with OPH on these issues.

Alcohol-related harms are not simply personal issues for those who drink; they are harms that can affect our whole community. Changing social norms about alcohol use requires a vision, support and collaboration from community partners and all in the community. Our aim is to mobilize Ottawa to move towards a culture of ever more responsible alcohol use within a supportive environment. Responsible drinking means that those who drink know: how much, when and when not, and where and where not to drink. This includes recognizing what the risks of drinking are and how to lower those risks to prevent harming themselves, their families and their community.

Comprehensive health promotion strategies that use a combination of policy and public health interventions have the greatest potential impact for sustainable change to decrease alcohol-related harms. OPH invites multiple sectors, including the broader community and community leaders, policy makers and researchers to come together to discuss and decide upon community needs related to alcohol use and how to address the issues. Encouraging community participation in decisions that affect health enables people to increase control and assume responsibility for improving their own health.

This report, and the resulting discussion, represents a contribution to the Ottawa Board of Health's strategic direction to "Foster Mental Health in our Community", specifically the strategic initiative, *Towards a Culture of Alcohol Moderation*. This initiative aims to create a supportive mental health environment to increase community resiliency by changing the culture of drinking towards moderation to decrease alcohol-related harms.

I invite all Ottawa residents to share this report; our vision is that it will continue the conversation about alcohol-related harms in our community, and what we can do to reduce the harms.

I.G. Levy, MBBCh, MSc, FRCPC, FACPM

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Executive Summary

The Status of Alcohol in Ottawa: *Let's Continue the Conversation* blends local epidemiological data on drinking and alcohol-related harms with local perspectives from the 2016 online “Have Your Say” alcohol survey in order to provide a complete picture of how alcohol affects our community.

This report describes alcohol consumption using Canada's Low-Risk Alcohol Drinking Guidelines as a framework. There are five guidelines, intended as a basis to inform Canadians how to moderate their alcohol consumption to minimize short and long-term health risks. Alcohol-related harms are described using three broad categories: acute and chronic health effects and second-hand effects. Acute health effects are the short-term harms such as alcohol poisoning (intoxication) and injuries. Chronic health effects are diseases such as heart disease, stroke or cancer that are the result of long-term alcohol use. Second-hand effects refer to the financial and social costs from alcohol consumption that harms others (e.g. violence).

Changing the drinking culture in Ottawa will require collaborative efforts from committed local leaders across multiple sectors. This report is meant to foster an evidence-informed dialogue on alcohol in our community about effective health prevention and promotion policies and interventions to decrease alcohol-related harm.

Summary of Findings

ALCOHOL USE

- An estimated 595,000 adults in Ottawa, 83% of the population, drink alcohol (2013–2014).
- Approximately 304,000 adults in Ottawa are considered to be at moderate to high risk of alcohol-related harm (2013–2014).
 - The large numbers of moderate-risk drinkers account for the greater proportion of alcohol-related harm and healthcare and community service costs rather than the relatively small number of high risk drinkers.
- In 2013–2014, 22% of adults (≥ 19 years) exceeded the recommended weekly consumption limits, increasing long-term alcohol-related health risks.
- Close to half of Ottawa adults (39%) drank five or more drinks on one occasion (binge drinking) in the past year, putting them at risk of injury or harm.
- Heavy drinking (frequent binge drinking) increased from 15% in 2000–2001 to 20% in 2013–2014 among adults. Heavy drinking leads to an increased short and long-term health risks.
- 44% of young adults reported heavy drinking in the past year.

- Almost half (47%) of youth (grades 7 to 12) reported consuming alcohol in the past year and 22% binge drank at least once per month. One in four high school students first drank alcohol before grade 9 (24%).
- True alcohol use is likely much higher because in phone surveys Canadians only report about 1/3 of their alcohol consumption compared to per capita alcohol sales.

ACUTE AND CHRONIC EFFECTS

- In Ottawa **every year**, alcohol leads to:
 - 2,060 Ottawa Paramedic Service responses (2015)
 - 6,100 emergency department visits (2013–2015)
 - 1,270 hospitalizations (2013–2015)
 - 140 deaths (2007–2011)
 - 3,553 Ottawa residents treated for alcohol misuse in provincially-funded residential or community-based programs (2014–2015)
- More men suffer acute and chronic effects of alcohol than women because they typically consume more alcohol and drink more often than women.
- Although higher income groups drink more alcohol, people of lower education and income are more at risk of alcohol-related harms.

SECOND-HAND EFFECTS

- In 2013, 12% of Ottawa grade 9 to 12 students reported being injured or injuring someone as a result of their drinking in the past year.
- In Ottawa between 2010 and 2014, there were 1,651 collisions involving alcohol. Almost one quarter (28/122) of fatal motor vehicle collisions during this time involved alcohol.
- In 2013, 90% of sexual assault patients from mass gatherings presenting to The Ottawa Hospital reported consuming alcohol prior to the assault.
- In 2015, there were 4,444 offences in Ottawa where the police officer flagged that alcohol, or alcohol and drugs were a factor in the occurrence. In addition, there were 1,800 calls for service related to complaints of public drunkenness.
- Between 2011 and 2015, 16% (approximately 1,000 every year) of violent crimes were flagged as alcohol-related by Ottawa Police.
- Alcohol costs the Ontario government much more in health care and enforcement than it makes in sales.
- In Ottawa, alcohol costs at least \$24.5 million per year in direct healthcare costs related to paramedic responses, ED visits, hospitalizations and community or residential treatment programs.
- In addition to the highest density of on-premise alcohol outlets (e.g. bars and restaurants), the downtown core also has the highest density of alcohol-related offences and paramedic responses.

1. What is this report about?

Alcohol is the most commonly used psychoactive substance in Ottawa, yet the associated harms are underreported by many in our community.

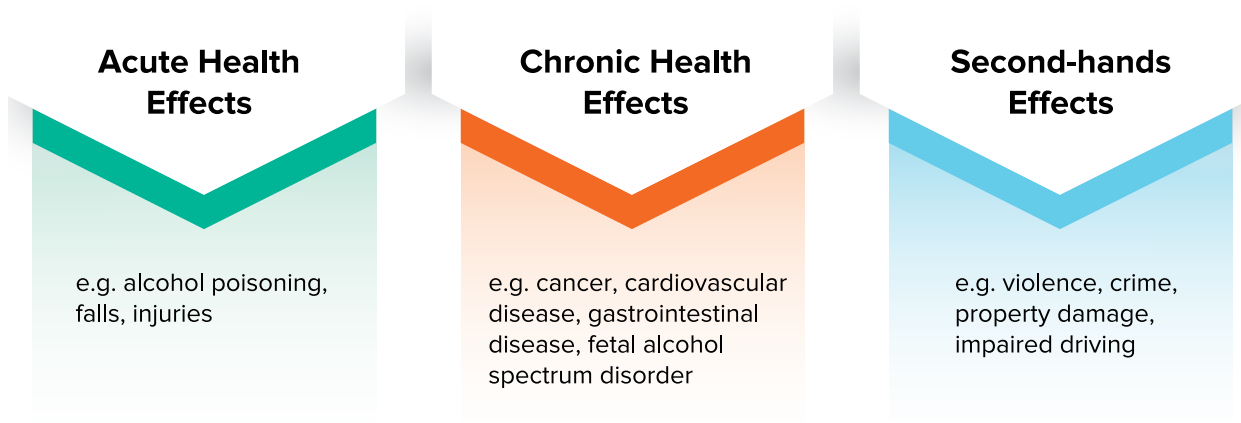
In 2016, Ottawa Public Health (OPH) conducted an online survey of local perspectives on alcohol, called the “Have Your Say” alcohol survey. It collected a multitude of personal stories, stakeholder perspectives and reflections of the impacts of alcohol use. This report has selections of respondent quotes which are blended with local epidemiological data on drinking patterns and alcohol-related harms in Ottawa. When local data are not available, findings from research studies and provincial or national data are used to fill in the gaps. An overview of Ottawa’s demographics can be found in Appendix 2.

This report describes:

- The national and provincial context
- How much and how often people drink in Ottawa
- Acute and chronic alcohol-related effects (e.g. hospitalizations) to people who drink in Ottawa
- Second-hand effects of drinking in Ottawa (e.g. impaired driving)
- The financial and social costs of alcohol due to the above
- What can be done to reduce alcohol-related harm
- Next steps towards a culture of alcohol moderation

Three broad categories to describe alcohol-related harms have been adopted by the Locally Driven Collaborative Project: Addressing Alcohol Consumption and Alcohol related Harms at the local level¹ (Figure 1):

1. Acute health effects: short-term effects such as alcohol poisoning (intoxication) and injuries.
2. Chronic health effects: long-term effects including heart disease, stroke, high blood pressure, liver disease, digestive problems, diabetes, mental health problems, cancer, and fetal alcohol spectrum disorder.^{2,3,4}
3. Second-hand effects: social costs and harms to others including alcohol-related violence, crime, family dysfunction and traffic collisions.

FIGURE 1. Alcohol-related harms defined

Source: Adapted with permission from the Durham Region Health Department, Halton Region Health Department, Region of Waterloo, Public Health, York Region Community and Health Services, Public Health Branch, Locally Driven Collaborative Project Cycle 2, 2014

Note: Examples are not inclusive of all alcohol-related harms.

Alcohol contributes not only to health related consequences such as injury and disease but also social problems for individuals, families and the community. Reframing social norms about alcohol use from a personal issue to a community issue will require a collaborative effort. With community support and collaboration from partners, the aim is to mobilize Ottawa to adopt a culture of drinking in moderation to support lower risk alcohol use.

OPH provided the following definition of a culture of moderation in the “Have Your Say” survey. A culture of moderation means that those who drink will support responsible alcohol use by:

- Knowing how much, when and when not, where and where not to drink
- Recognizing what the risks are and how to lower them
- Doing no harm to themselves, their families or their community.^a

This report will be used as a catalyst for discussing alcohol-related harms in Ottawa and makes the case that these harms are not just personal issues for those who drink, but have repercussions that can affect the whole community.

^a The definition of a culture of moderation has been adapted from [Recommendations for a National Alcohol Strategy 2007](#) and [Changing the Culture of Alcohol Use in Nova Scotia](#)

2. Why talk about alcohol?

Alcohol can cause at least 60 types of diseases and injuries and increases the likelihood of acquiring more than 200 others including several types of cancer, hypertension, cirrhosis of the liver, pancreatitis, mental health conditions and injuries.^{1,2,5,6,7}

Alcohol causes harm because of its toxic effects on the body, the resulting intoxication, and the potential dependence that develops with chronic, heavy use.⁵ Alcohol-related harms are dependent upon the volume (how much) and patterns (how often) of alcohol use. High volume alcohol consumption results in acute intoxication which in turn can lead to personal injury, social problems and violence. While long-term sustained heavy drinking may not cause acute intoxication, cumulative tissue damage and dependence can develop.⁵ Dependence leads to chronic medical problems as well as further acute health and social harms.⁵



“I have been affected by alcohol use in my home when my husband drinks too much and makes rude remarks in front of our friends. I have been affected by alcohol use at sporting events and festivals where someone is loud, rude or inappropriate and makes the event less enjoyable for everyone around them. Sometimes even making threatening remarks. I have been affected when I am taking public transit and there are drunk people on the bus who just take it too far, making myself and others uncomfortable.” (Respondent aged 24 to 44 years)

“I have seen families torn apart by alcohol misuse, have experienced the stressed filled trip to emergency department with a daughter who drank a whole mickey herself- thinking drinking made for a great time with friends; have lost people I love to drinking and driving...” (Respondent aged 45 years and older)



The impacts of alcohol on the health and well-being of our community are extensive. At the hospital, we see the worst of it. Staff in our emergency department must look after inebriated patients who may have fallen or gotten into some form of altercation resulting in injury; our trauma team too often has to look after critically injured patients who have been involved in a motor vehicle accident as a result of alcohol consumption; and our medical team must look after patients who have developed cirrhosis or dementia as a result of long-term drinking. The cost of this care to our system is enormous. However, the more distressing effect is the impact on people's lives. This can be, and often is, devastating to the patient we are treating, to the patient's loved ones, and to innocent bystanders who happen to be at the wrong place at the wrong time. (Dr. Alan J. Forster, MD FRCPC MSc, Vice President, Quality, Performance, and Population Health, The Ottawa Hospital)

Health benefits of alcohol are unclear

Defining the beneficial health effects of alcohol is difficult because risks and benefits can occur simultaneously. There is some evidence to suggest that alcohol may have limited heart health, diabetes prevention (men only) and cholelithiasis prevention (i.e. gall-bladder disease) benefits at low levels of consumption (e.g. one drink every other day), mainly among people over age 45.^{2, 5}

Alcohol benefits are not relevant to all individuals, at all ages or in all situations. While evidence suggests using alcohol within a social context has benefits for low risk drinkers such as being more social, relaxation or positive mood, negative outcomes on other measures of health can occur at the same time.² **One drink** increases the risk of several other chronic diseases and there is no safe level of alcohol consumption when it comes to cancer causation; youth do not benefit from alcohol use at any level.²

Although evidence of the beneficial effects of alcohol is mixed, evidence of its harms when used in excess is not. As such, an analysis of the protective effects of low level alcohol use in Ottawa is not a part of this report. Individuals are advised against starting to drink or drinking more to improve health; physical activity and healthy diet are less risky ways to gain the same reported health benefit of low alcohol use.²

National and Provincial Context

Risky alcohol consumption is associated with substantial health and social harm that cost billions of dollars each year.⁸ There are national and provincial initiatives seeking to promote policies and prevention strategies to reduce the burden associated with alcohol. The 2007 National Alcohol Strategy's *Reducing Alcohol-Related Harm in Canada: Toward a culture of Moderation*^b report outlines 41 recommendations, organized

b Reducing Alcohol-Related Harm in Canada: Towards a Culture of Moderation, Recommendations for a National Alcohol Strategy is available from: <http://www.ccsa.ca/Resource%20Library/ccsa-023876-2007.pdf>

into four broad areas for action. The recommendations underscore the importance of using a comprehensive, collaborative approach within the areas of health promotion, prevention and education, health impacts and treatment, availability of alcohol and safer communities. One of the recommendations was the development of [Canada's Low Risk Alcohol Drinking Guidelines](#) (LRADG) which were released in 2011.⁴ For these guidelines, a drink is defined as shown in Figure 2.

The LRADGs were designed to help Canadians moderate their alcohol consumption and reduce their immediate and long-term alcohol-related harm. The guidelines⁹ presented below, are aimed at adults aged 25 to 65 who drink alcohol. The guidelines aim to reduce risk of long-term impacts, short-term risks, inform when alcohol is contraindicated and advise about alcohol use when pregnant, planning to be pregnant or for breastfeeding women. The fifth guideline is aimed at delaying drinking in young people.

Guideline 1: Reduce long-term alcohol-related health risks

By drinking no more than:

- 10 drinks a week for women, with no more than 2 drinks a day most days
- 15 drinks a week for men, with no more than 3 drinks a day most days
- Plan non-drinking days every week to avoid developing a habit

Guideline 2: Reduce your risk of injury and harm

By drinking no more than:

- 3 drinks (for women) and 4 drinks (for men) on any single occasion

Guideline 3: When to abstain from drinking

Do not drink when:

- Driving a vehicle or using machinery and tools
- Taking medicine or other drugs that interact with alcohol
- Doing any kind of dangerous physical activity
- Living with mental or physical health problems
- Living with alcohol dependence
- Pregnant or planning to be pregnant
- Responsible for the safety of others
- Making important decisions

Guideline 4: Pregnant? Zero is safest

If you are pregnant, planning to become pregnant, or about to breastfeed, the safest choice is not to drink alcohol at all.

Guideline 5: Delay drinking

Teens should speak with their parents about drinking. If they drink, they should:

- Drink only under parental guidance
- Never drink more than 1 to 2 drinks at a time and never more than 1 to 2 times per week

Youth in their late teens to age 24 years should never exceed the daily and weekly limits outlined in Guideline 1.

FIGURE 2. Standard drink size^c



Source: Reproduced with permission from Canadian Centre on Substance Abuse

In June 2013, two reports were released to inform the efforts of public health stakeholders in Ontario and to advance the 2007 National Alcohol Strategy recommendations: *Making the Case: Tools for supporting Local Alcohol Policy in Ontario*^d and [Addressing Alcohol consumption and Alcohol Related Harms at a Local level](http://www.oninjuryresources.ca/downloads/news/LDCP_report_rev_Oct_14_6.pdf).^e The reports provided guidance for local action using a comprehensive approach to decrease alcohol consumption and alcohol-related harms based on seven policy areas. Reducing consumption in the general population can substantially reduce levels of harm and can benefit people with a wide range of drinking patterns, including those who drink very little or not at all.³

Legislative changes to the [Liquor License Act \(LLA\)](#) and the Ontario government’s [in-person discussions](#) held in 2013 by the Alcohol Gaming Commission of Ontario (AGCO) to discuss “modernization to meet the evolving needs of the public and businesses” prompted public health stakeholders to action. The Ontario Public Health Association gathered key stakeholders to collaborate and discuss the need for a health-focused approach to alcohol policy in Ontario. The result was a jointly issued call to the Ontario Ministry of Health and Long-Term Care (MOHLTC) for the development of a provincial alcohol strategy in 2014.

^c CCSA defines a standard drink in the amount of ml/oz. for beer, cooler/cider, wine and distilled alcohol.

^d Making the Case: Tools for supporting Local Alcohol Policy in Ontario pdf is available from: http://www.publichealthontario.ca/en/eRepository/Making_the_Case_2013.pdf

^e Addressing Alcohol Consumption and Alcohol related harms at a local level is available from: http://www.oninjuryresources.ca/downloads/news/LDCP_report_rev_Oct_14_6.pdf

In February 2016 the MOHLTC initiated consultations on a draft province-wide alcohol policy framework for Ontario. Release of the new strategy is pending, however the strategy will build on Ontario's ongoing efforts to encourage healthy, informed choices and raise awareness of the risks associated with alcohol consumption. Dr. Catherine Zah, president and CEO of the Centre for Addiction and Mental Health (CAMH), stated, "Alcohol is one of the leading risk factors for death and disability in Canada. Reducing alcohol related harm requires careful balancing of consumer access and socially responsible sales and distribution. CAMH welcomes an alcohol strategy that will preserve that balance and promote the health of Ontarians."¹⁰

On a national level, the Public Health Agency of Canada (PHAC) released [The Chief Public Health Officer of Canada report on alcohol consumption](#) in February 2016. The report was meant to support public health actions by engaging Canadians in a dialogue about drinking and its risks.²

Public Health Role

OPH is responsible for providing public health programs and services that contribute to the physical, mental and emotional health and well-being of the residents of Ottawa. The Ontario Public Health Standards 2008¹¹ directs Ontario Boards of Health to address alcohol consumption and alcohol-related harms using a comprehensive approach. This approach includes assessment and surveillance; health protection; health promotion and policy development. Health promotion is further defined as public awareness and capacity building of priority populations.^f Strategies to raise awareness and educate, combined with community mobilization, policy and regulatory changes can be a critical factor in a comprehensive approach.⁵

A critical challenge in profiling alcohol as a public health issue is the normalization of alcohol use combined with mixed public perception of health benefits versus alcohol-related harms. However, evidence shows that alcohol policy designed to influence drinking levels and patterns can reduce the burden of death, disease, disability, and social disruption from alcohol.⁵ OPH plans to build upon the community consultations about alcohol-related harms held in Ottawa between 2010 and 2016 (Appendix 3). OPH and Ottawa stakeholders will continue to work towards creating supportive environments by reinforcing elements that enable a cultural shift towards lower risk alcohol use.

^f As quoted in the Ontario Public Health Standards 2008- "priority populations are identified by surveillance, epidemiological, or other research studies. They are those populations that are at risk and for which public health interventions may be reasonably considered to have a substantial impact at the population level."

3. How much and how often are we drinking?

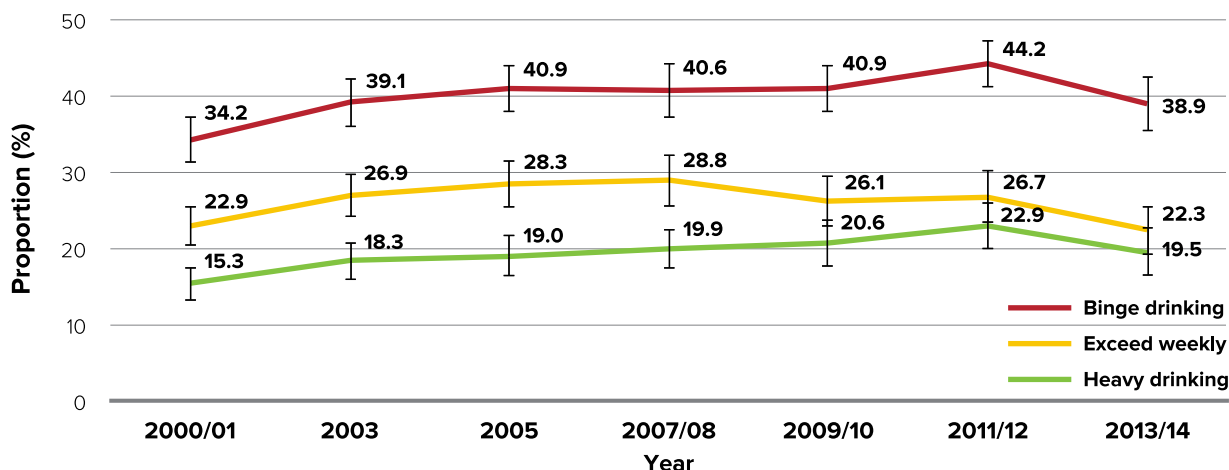
The amount of alcohol consumed and the frequency of consumption are key factors that determine the negative impacts to one's health or to those around them.

For example, a person who frequently drinks a large amount of alcohol will eventually have negative health impacts but could also affect others through social problems. Although the LRADG provide guidance on risky drinking, low risk does not equal no risk.²

- An estimated 595,000 adults in Ottawa, 83% (95%CI: 80%, 85%) of the population, drink alcohol (CCHS, 2013–2014).
- Binge drinking is defined as consuming five or more drinks on a single occasion for males and four or more for females. Heavy drinking is defined as binge drinking at least once a month in the past year.
- Binge drinking is common. In 2013–2014, 39% of Ottawa adults reported binge drinking in the past year (Figure 3).
- About half of those who binge drink do so every month (i.e. heavy drinking). Heavy drinking increased from 15% in 2000–2001 to 20% in 2013–2014.
- The proportion of adults that exceeds weekly limits decreased from 29% in 2007–2008 to 22% in 2013–2014.
- Historically, Ottawa has had higher rates of binge drinking, heavy drinking and exceeding the weekly limits than the rest of Ontario; however, in 2013–2014 there was no significant difference between Ottawa and the rest of Ontario on these indicators. More years are needed to determine if Ottawa's rates will remain similar to Ontario's in the future.

An estimated 595,000 adults in Ottawa, 83% of the population, drink alcohol

FIGURE 3. Percentage of adults (19 years and older) who reported binge drinking, heavy drinking, or exceeding weekly limits of Canada’s LRADG, by year, Ottawa, 2000–2014



Data source: Canadian Community Health Survey 2000 to 2014, Statistics Canada, Share File, Ontario Ministry of Health and Long-Term Care.

Data note: Vertical bars represent 95% confidence intervals.



“Alcohol consumption is part of the enjoyable life in the city. Excessive drinking makes life less enjoyable.” (Respondent aged 45 years and older)

“I enjoy going out for drinks with friends. Sometimes it’s one or two, sometimes it’s a party. We’ve always been safe about where we are drinking and not driving and I think that just comes down to awareness and keeping an eye out for each other.” (Respondent aged 19 to 24 years old)

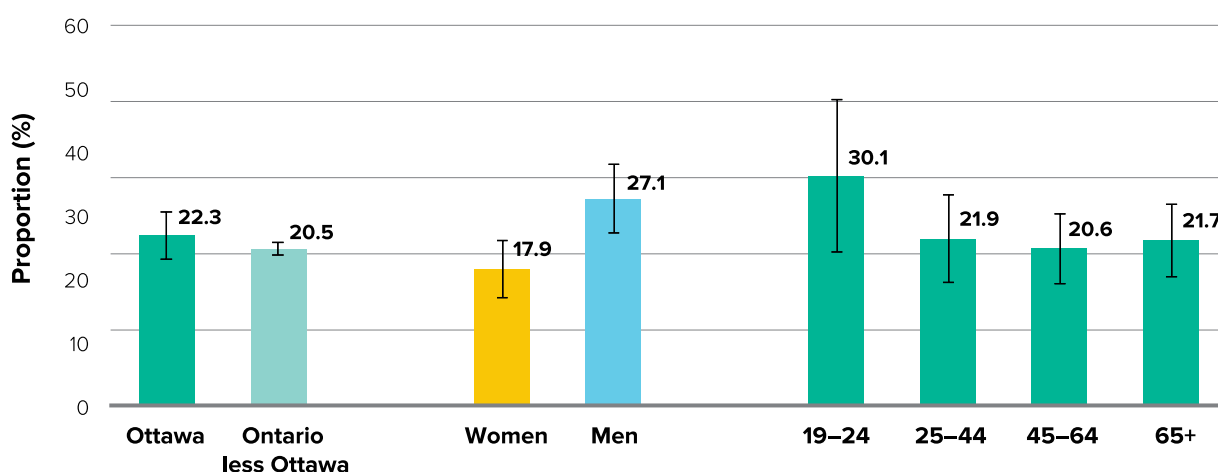
“I have lost family members from alcohol and drug use and abuse. I have witnessed spousal violence due to substance use. The long-term effects last for generations. It can absolutely begin by innocent drinking in youth. When it does, it is extremely difficult to get out of that habit and stunts growth.” (Respondent aged 25 to 44 years old)

Guideline 1: Reduce long-term alcohol-related health risks

This guideline can be measured by looking at how many Ottawans exceed the weekly limits set out in the LRADG.

- 22% of Ottawa adults aged 19 and older reported exceeding the recommended weekly LRADG alcohol limits. This is not significantly different than the rest of Ontario (21%).
- Men are more likely to exceed weekly limits than women.
- Young adults (aged 19–24 years) are more likely to exceed weekly limits than adults aged 25 years and older (Figure 4).

FIGURE 4. Percentage of adults (19 years and older) who exceeded the weekly limits of Canada's LRADG in the past year, by sex and age group, Ottawa, 2013–2014



Data source: Canadian Community Health Survey 2013 to 2014, Statistics Canada, Share File, Ontario Ministry of Health and Long-Term Care.

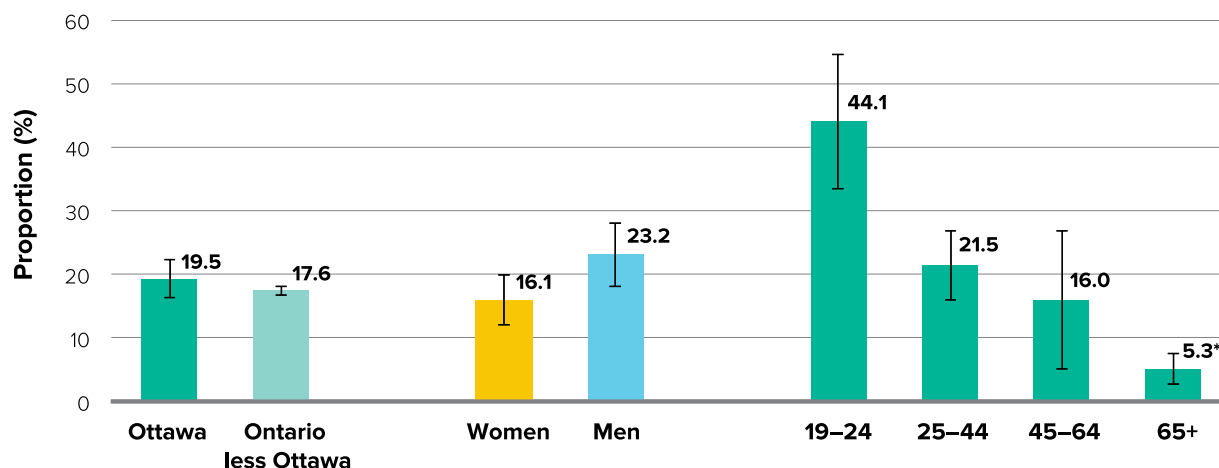
Data note: Vertical bars represent 95% confidence intervals.

Guideline 2. Reduce your risk of injury and harm

Guideline 2 can be measured by looking at local rates of heavy drinking among adults aged 19 years and older who are neither pregnant nor breastfeeding.

- 20% of Ottawa adults aged 19 and older reported heavy drinking in the past year (Figure 5). This is not significantly different than the rest of Ontario (18%).
- Men are more likely to drink heavily than women.
- Heavy drinking in Ottawa peaks in young adults (ages 19–24 years) at 44%.
- Young adults (aged 19–24 years) drink more heavily than adults aged 25 years and older.
- Heavy drinking declines after age 25, but does so more quickly for females than for males (data not shown).

FIGURE 5. Percentage of adults (19 years and older) who reported heavy drinking in the past year, by sex and age group, Ottawa, 2013–2014



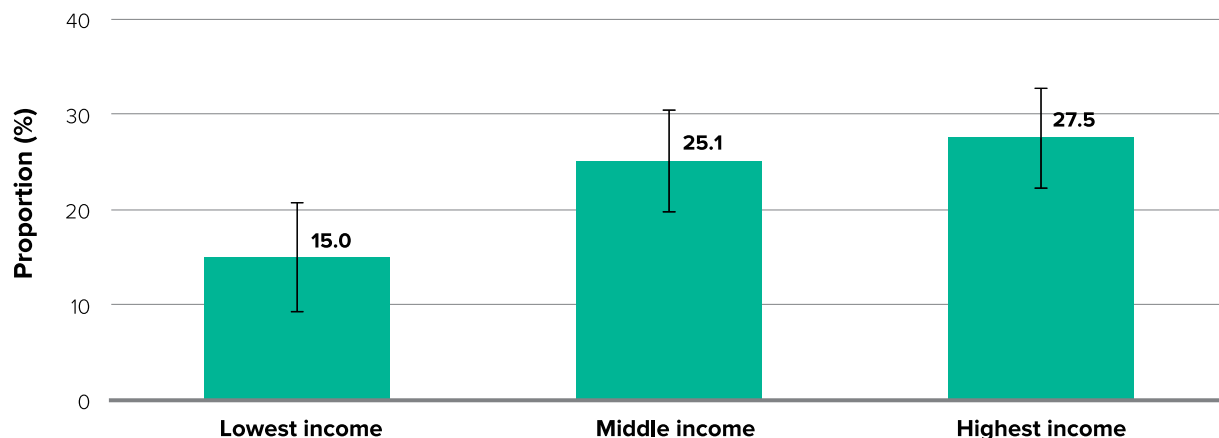
Data source: Canadian Community Health Survey 2013 to 2014, Statistics Canada, Share File, Ontario Ministry of Health and Long-Term Care.

Data note: * = Interpret with caution – high sampling variability. Vertical bars represent 95% confidence intervals.

INCOME

- People in the highest income and middle income groups^g – are more likely to engage in heavy drinking (Figure 6).

FIGURE 6. Percentage of adults (19 years and older) who reported heavy drinking in the past year by income tertile, Ottawa, 2013–2014



Data source: Canadian Community Health Survey 2013 to 2014, Statistics Canada, Share File, Ontario Ministry of Health and Long-Term Care.

Data note: Vertical bars represent 95% confidence intervals.

^g Tertiles divide household income in the population into three equally sized groups (lowest income, middle income and highest income) based on the percentage of the population that falls into each group. Household income is adjusted for family size. For example, the first tertile represents the one third of households with the lowest income per household size and the third tertile represents the one third of households with the highest income per household size.

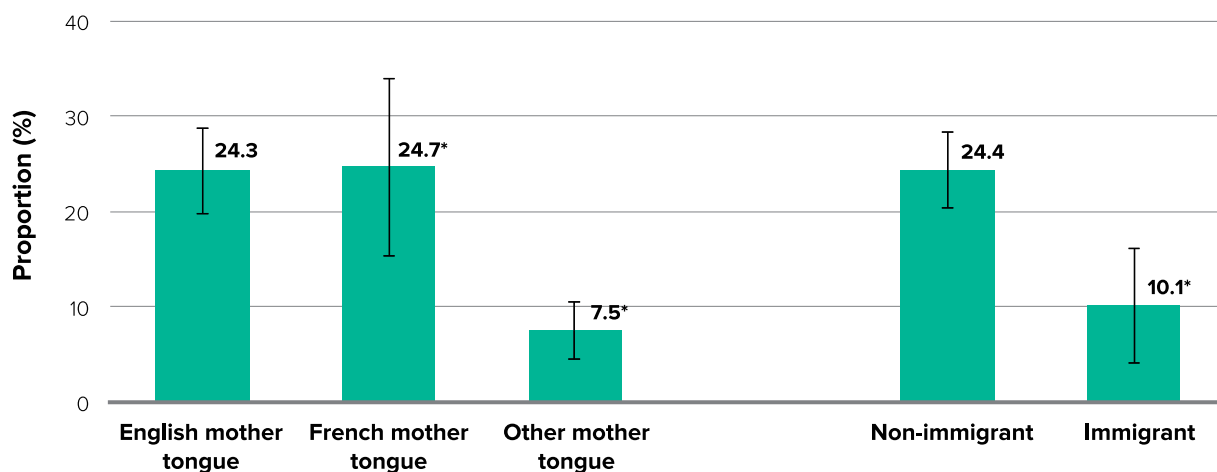
Although higher income groups drink more alcohol, people of lower education and income are more at risk of alcohol-related harms

Higher levels of education and income are typically associated with many healthy behaviours and good overall health and well-being.¹² Despite having greater access and opportunity to be healthy, higher income groups tend to drink more alcohol than lower income groups.^{13,14} This is opposite to what we see with other unhealthy behaviours such as smoking or low physical activity.

MOTHER TONGUE LANGUAGE AND IMMIGRATION STATUS

- Immigrants and adults with a mother tongue other than English or French are less likely to engage in heavy drinking or exceed the weekly limits (Figure 7).
- Adults with a mother tongue other than English or French were least likely to exceed recommended weekly limits (10%*) compared to those with English (28%) or French mother tongue language (24%).
- Similarly, adults with a mother tongue other than English or French (8%*) were least likely to report heavy drinking in the past year compared to those with English (24%) or French mother tongue language (25%*) in 2013–2014.
- Immigrants (12%*) were less likely to exceed weekly limits than non-immigrants (27%). One in four of non-immigrants (24%) reported heavy drinking in the past year compared to one in ten immigrants (10%*).

FIGURE 7. Percentage of adults (19 years and older) who reported heavy drinking, by mother tongue and immigration status, Ottawa, 2013–2014



Data source: Canadian Community Health Survey 2013 to 2014, Statistics Canada, Share File, Ontario Ministry of Health and Long-Term Care.

Data note: * = Interpret with caution – high sampling variability. Vertical bars represent 95% confidence intervals.

Guideline 3: When to abstain from drinking

Guideline 3 recommends not drinking under situations where alcohol might impair or affect decision making, coordination or alertness, where consumption is contra-indicated, or situations that demand judgement, physical skill, balance and endurance. Data on alcohol consumption during such situations or activities, except for driving, are not collected for Ottawa. Impaired driving statistics are presented in Chapter 5 What are the second-hand effects of alcohol on our community?

Guideline 4: Pregnant? Zero is safest

About five per cent of women in Ontario reported consuming alcohol during their most recent pregnancy when asked in 2007–2008. This has decreased significantly since 2003. However, underreporting likely occurs due to the social unacceptability of consuming alcohol while pregnant. Comparable statistics for Ottawa are too unreliable to report.

Guideline 5: Youth should delay drinking

Youth binge drinking and the related risk of injury and harm warrant heightened attention. Drinking patterns established in adolescence usually increase into young adulthood as alcohol becomes legally accessible.

The 2013 [Ontario Student Drug Use and Health Survey](#) (OSDUHS) oversample provides us with information on drinking among Ottawa youth in grades 7 to 12.¹⁵

In 2013, fewer Ottawa students reported alcohol use than in 2009; however, high risk behaviours such as drinking 5 or more drinks on one occasion (binge drinking) did not change over this time.

ALCOHOL INITIATION

- 24% (95%CI: 19%, 29%) of Ottawa students in grades 9 to 12 reported having used alcohol before grade 9.
- Boys are more likely than girls to start using alcohol before grade 9 (27% (95%CI: 18%, 36%) vs. 21% (95%CI: 14%, 28%)).
- Across Ontario, fewer students are starting to drink alcohol by grade 6. In 2013, just 13% of Ontario 7th-graders had drunk alcohol by grade 6 compared to 31% in 2007, 42% in 2003, and 50% in 1981. Ottawa-specific data are not available.

OVERALL USE

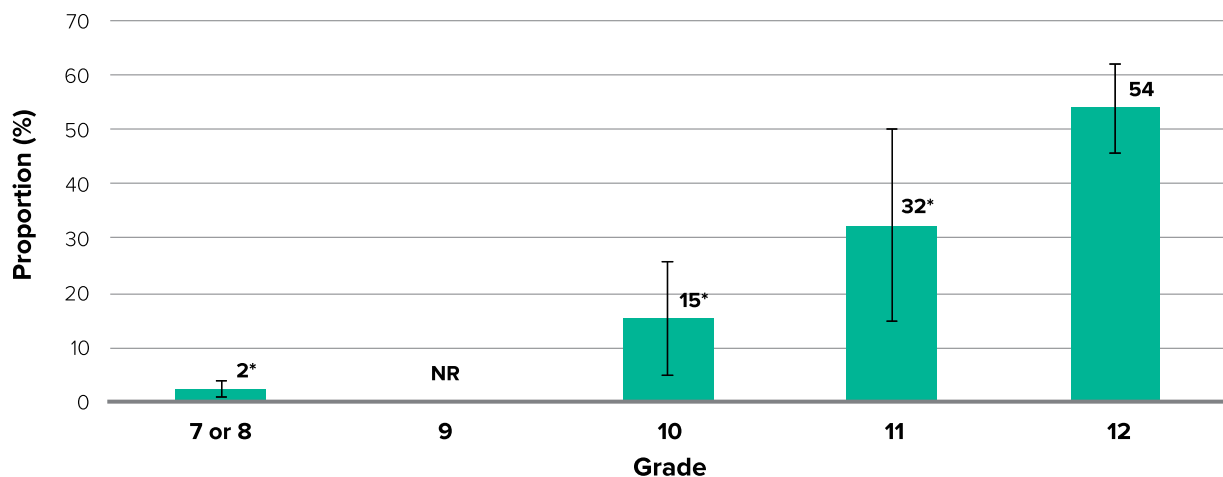
- Overall, 47% (95%CI: 39%, 56%) of grade 7 to 12 students in Ottawa reported drinking alcohol at least once in the past year.
- Older students (grades 9 to 12) were more likely to report drinking alcohol than younger students (grades 7 to 8) (59% (95%CI: 46%, 72%) vs. 17%, (95%CI: 12%, 22%)).
- There is no significant difference between males and females.

BINGE DRINKING

- In 2013, 22% (95%CI: 16%, 28%) of grade 7 to 12 students in Ottawa reported binge drinking^h at least once during the past 4 weeks.
- By grade 12, over half of students reported binge drinking (Figure 8).

47% of youth (grade 7 to 12) report drinking alcohol at least once in the past year and 22% binge drank at least once per month. One in four high school students first drank alcohol before grade 9 (24%).

FIGURE 8. Students who binge drank in the past month by grade, Ottawa, 2013



Data source: Public Health Monitoring of Risk Factors in Ontario-OSDUHS (2013), Centre for Addiction and Mental Health.

Data note: * = Interpret with caution – high sampling variability. NR = Not reportable. Vertical bars represent 95% confidence intervals.

^h Binge drinking was defined in OSDUHS as having 5 or more drinks of alcohol on the same occasion in the past four weeks whereas the LRADG define binge drinking for adults as 4 or more drinks for women and 5 or more for men on one occasion in the past year.

DRUNKENNESS AND MIXING WITH ENERGY DRINKS

- One in five students (20% (95%CI: 16%, 25%)) in grades 7 to 12 reported they had been drunk during the past month.
- One-in-four (25% (95%CI: 19%, 34%)) high school students had drunk alcohol mixed with energy drinks in the past year, which can increase their risk of harm including alcohol poisoning, injury, anxiety and insomnia.¹⁶

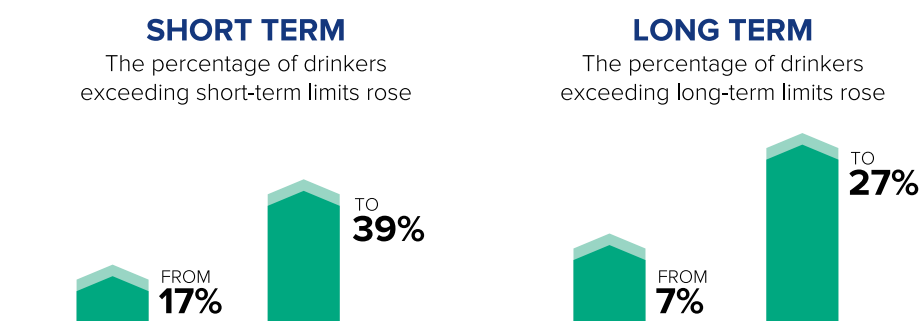
People under-report their alcohol consumption

Self-reported alcohol consumption is significantly lower when compared to per capita alcohol sales.⁸ To account for these self-reported biases in alcohol consumption, a new method called ‘yesterday’s method’ⁱ can be applied to adjust for the under-reporting in the daily and weekly amount consumed.¹⁷ Application of yesterday’s method to Canadian data revealed that young people and low volume drinkers tend to under-report to a greater extent than older and high volume drinkers.

- The percentage of drinkers exceeding the LRADG daily limits would increase from 17% to 39%.
- Non-compliance to the weekly limits among drinkers increased from 7% to 27% (Figure 9).

FIGURE 9. Percentage of drinkers exceeding LRADG adjusting for under-reporting, Canada, 2008–2010

Once we adjusted surveys for underreporting we found...



Source: Adapted with permission from Tim Stockwell, Director, Centre for Addictions Research of British Columbia.

Data note: Short-term limits refer to daily limits (Guideline 2) and long-term refers to weekly limits (Guideline 1). For more information reference Chapter 2.

True alcohol use is likely much higher because in phone surveys Canadians only report about 1/3 of their alcohol consumption compared to per capita alcohol sales.

i The last seven day approach referred to as “Yesterday’s Method” asks subjects how much alcohol they drank on each of the last seven days prior to the survey. In addition the survey method asks specifically how many of each beverage type they drank yesterday. Definitions of a ‘drink’ were provided for each beverage type.

Alcohol-related risk

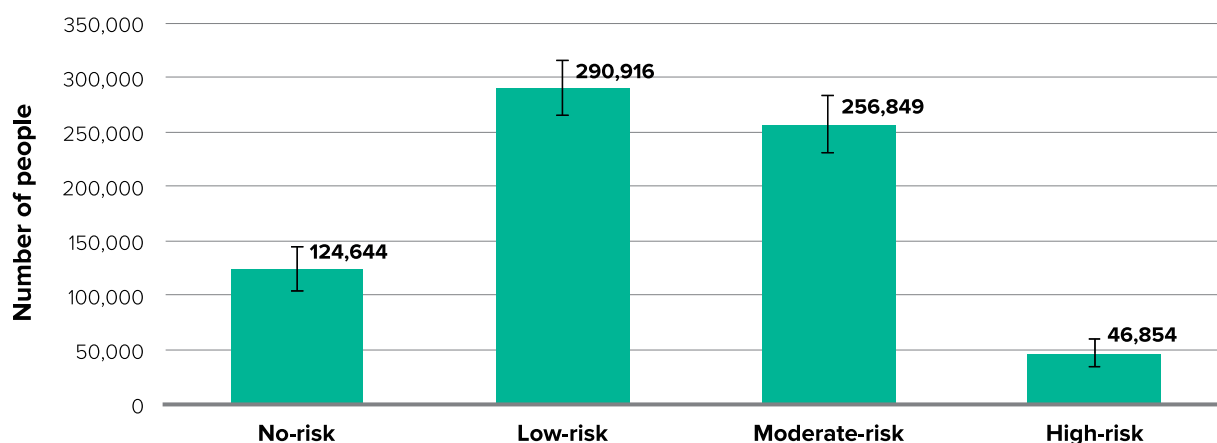
Thomas and colleagues¹⁸ categorize alcohol-related risk as follows:

- No risk = no alcohol use in past year;
- Low risk = no binge drinking in past year;
- Moderate risk = binge drinking three times or less a month in past year, and;
- High risk = binge drinking weekly or more often in past year.

Approximately 304,000 adults in Ottawa (42% of adults) are considered to be at moderate to high risk of alcohol-related harm. There are 5.5 times as many moderate risk drinkers as high risk drinkers in Ottawa (Figure 10). The large numbers of moderate-risk drinkers account for the greater proportion of alcohol-related harm and healthcare and community service costs rather than the relatively small number of high risk drinkers.⁵ Although moderate risk drinkers are at lower individual risk than high-risk drinkers, they cause more alcohol-related harm due to their greater numbers.^{18,19}

The large numbers of moderate-risk drinkers account for the greater proportion of alcohol-related harm and healthcare and community service costs rather than the relatively small number of high risk drinkers

FIGURE 10. Distribution of alcohol-related risk among adults (19 years and older), Ottawa, 2013–2014



Data source: Canadian Community Health Survey 2013 to 2014, Statistics Canada, Share File, Ontario Ministry of Health and Long-Term Care.

Data note: Vertical bars represent 95% confidence intervals.

Population-based prevention efforts focus on shifting the community norm to lower the large number of moderate risk drinkers, thus decreasing the impact and costs.¹⁸ Although smaller in number, high-risk alcohol drinkers must be addressed as well to effectively reduce alcohol-related harm in the community.¹⁸

● ● ● —————

“Alcohol has affected me because I have an alcoholic mother who believes that because she doesn’t start drinking at 8am or swig Listerine from under the sink she doesn’t have a problem. Binge drinking has been a problem for me where I have hurt myself and others around me.” (Respondent aged 24 to 44 years)

.....

“Regular consumption (1-2 glasses a day) of alcohol at home has caused negative relationships in the family. Not because of getting drunk but because over the long run, it’s been a de-motivator for exercise, reduced libido in the marriage, and irritability.” (Respondent aged 45 years and older)

.....

“ I became dependent (still functional at work, home etc., no arrests or job loss or anything of that nature) but I reached a point where I wanted to stop and needed assistance... I’ve known many people in recovery who have suffered greatly because of alcoholism, including several suicides.” (Respondent aged 45 years and older)

4.

What are the acute and chronic health effects of alcohol on the individual?

Alcohol related-health effects can be classified as acute or chronic. Acute health effects are short-term such as alcohol poisoning (intoxication) and injuries.

The presence of alcohol in the body increases the probability and severity of sustaining an injury.²⁰ The risk of injuries to the drinker and to others increases with increasing alcohol consumption.^{2,21}

Long-term alcohol use can lead to chronic health effects such as heart disease, stroke, high blood pressure, liver disease, digestive problems, diabetes, mental health problems, cancer, and fetal alcohol spectrum disorder.^{2,3,4} Most long-term health effects of alcohol use are related to the amount consumed. Mental illness and alcohol consumption are linked. Alcohol is a major risk factor for several mental illnesses; however, some mental illnesses precede heavy drinking.²²

● ● ● —————

“I used to work in a pub when I was 18–19. Heavy drinking was encouraged by coworkers after our shifts (most kitchen lifestyles seem to be like that). We would go out most nights to drink. It began taking a toll on my mental well being. It made me become depressed and anxious. Now I work in a different environment and enjoy the occasional drink on the odd weekend and I feel much better.” (Respondent aged 19 to 24)

.....

“...drunk driver struck by my vehicle...I was hit from behind in the downtown area. This time there was extensive damage to my vehicle and my backseat passenger sustained injuries.” (Respondent aged 19 to 24 years)

.....

“I work in a hospital (ICU), so much money is spent saving people who have almost killed their livers or who drink so much they are poisoned and need advanced medical care. To restart over again. In ER, the drunk get dropped off there....to sober up etc.... The alcohol level is so high they are almost unconscious...” (Respondent aged 45 years and older)



“Having to take care of teens at parties who binge drink and are too scared to go to a hospital because they don’t want their parents to find out. Very unsafe and risky. Peer pressure and cultural norms can also play very negatively in the way people interact with alcohol”

(Respondent aged to 18 years)

“I am living in a seniors’ hi-rise...two male tenants get in a fist fight in the elevator with other tenants present; one tenant was so intoxicated that when she tried to exit the building she missed the door and drove on her scooter through the window on the right side of the door.”

(Respondent aged 45 years and older)



“People don’t take overconsumption of alcohol seriously until it affects them or a loved one. People need to be more accountable for their actions.”

(Natasha Gallimore, Inspector, Alcohol Gaming Commission of Ontario)

Methodology

Data on paramedic responses, emergency department (ED) visits, hospitalizations and deaths were used to quantify the acute and chronic health effects of alcohol on individuals in Ottawa.

Paramedic data include responses where the chief complaint or the paramedics’ assessment of the situation was alcohol intoxication or alcohol ingestion. It does not include the many other calls where alcohol was a factor, such as injuries due to falling while drunk.

Alcohol-attributable ED visits is a measure that describes illness and injuries that were completely (100%) attributable to alcohol, such as alcohol poisoning or alcohol abuse. This measure does not capture ED visits that were partially attributable to alcohol such as those for chronic diseases where alcohol is a contributory factor. Therefore, it underestimates the true burden of alcohol on ED visits.

The alcohol-related diagnosis the physician makes at the end of the ED visit can be divided into four groups. The third would be considered an acute effect while 1, 2, and 4 are chronic effects.

1. Mental health conditions (e.g. alcohol use disorder, alcohol withdrawal)
2. Chronic disease (e.g. alcoholic liver disease, alcoholic gastritis)
3. Alcohol poisoning (i.e. intoxication)
4. Fetal alcohol spectrum disorder (FASD)

Alcohol-attributable hospitalization (AAH) is a measure that describes serious illness attributed to alcohol. Alcohol consumption is considered a contributing factor for all injuries included and some injuries were completely (100%) attributable to alcohol (e.g., alcohol poisoning). Some neuropsychiatric (referred to as mental health) and chronic conditions such as alcoholic psychosis, alcohol dependence and alcoholic gastritis are 100% attributable to alcohol.

For most chronic conditions, however, alcohol is a contributory factor and measures of the fraction of cases attributable to alcohol were used to estimate the full impact of alcohol on the health of people in Ottawa. For example, 15% of hypertension hospitalizations are due to alcohol consumption. The AAH numbers presented here are only a portion of the far-reaching effects of alcohol in Ottawa. The effects are derived in part from self-reported alcohol consumption, which underestimates consumption. For 100% attributable conditions, all ages were used; however, for partially attributable conditions, only those aged 15 to 69 years could be included due to methodological limitations. As a result, the estimate of morbidity is likely higher.^{23,24}

This report uses the International Classification of Disease (ICD-10)⁶ codes. For partially attributable conditions, this report used the attributable fractions.²⁵

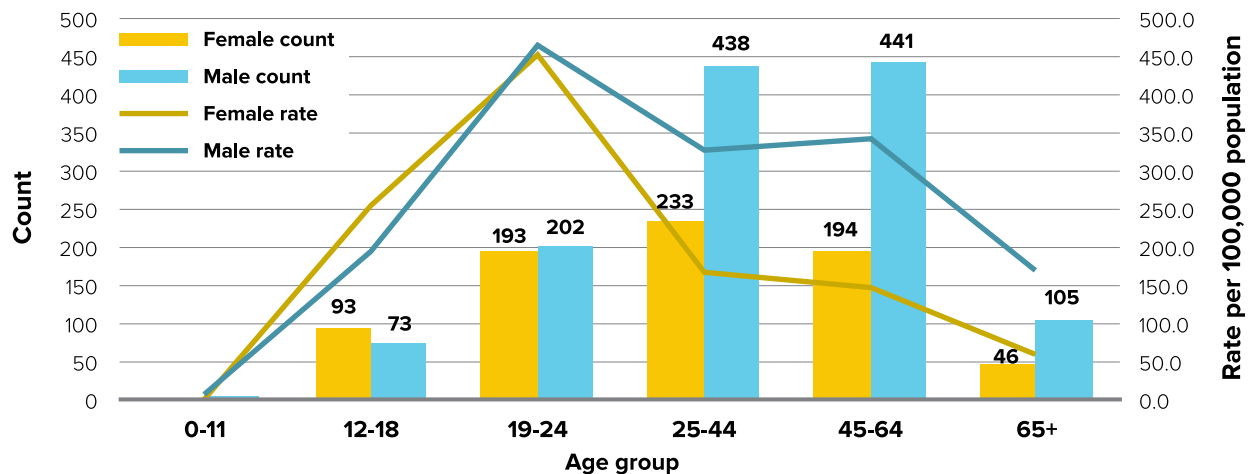
Similar to the AAH, alcohol-attributable mortality (AAM) describes how many deaths (rather than hospitalizations) occur in a population that can be attributed to alcohol use. For 100% attributable conditions, all ages were used; however, for partially attributable conditions, only those aged 15 to 69 years could be included due to methodological limitations. As a result, the estimate of mortality is likely higher.^{23,24}

Paramedic responses

In 2015, the Ottawa Paramedic Service responded to 2,060 calls directly attributable to alcohol.

- Males accounted for a higher number and rate of alcohol-related paramedic responses compared to females, especially among those aged 25 and older (Figure 11).
- Young adults aged 19 to 24 years represented the highest rate of alcohol-related paramedic responses – this age group had the highest rates for both men and women. However, men aged 25 to 64 years contributed the highest number of calls (879).

FIGURE 11. Counts and rates of alcohol-related paramedic responses by age group and sex, Ottawa, 2015

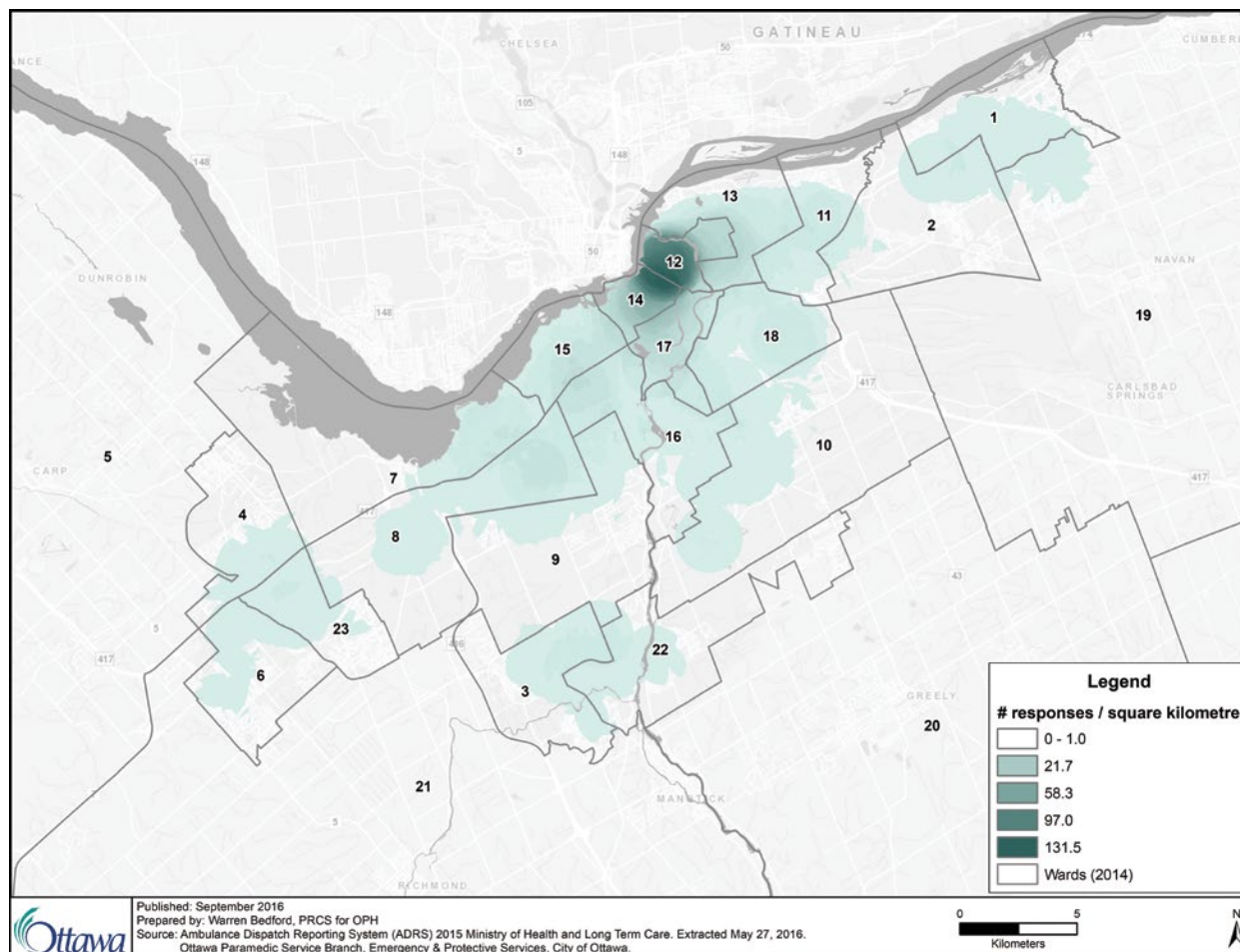


Data source: Ambulance Dispatch Reporting System (ADRS) 2015 Ministry of Health and Long Term Care. Extracted May 27, 2016. Ottawa Paramedic Service Branch, Emergency & Protective Services, City of Ottawa.

Location is based on where the patient is assessed, which may or may not be the same as the patient's place of residence. Not all patients assessed by a paramedic are transferred to an emergency department and a paramedic's assessment may not align with the discharge diagnosis of an emergency department physician.

Paramedic responses are concentrated in the downtown core of Ottawa, but with some responses in most wards (Figure 12). Darker shading indicates a higher number of alcohol-related incidents per square kilometre. The highest density of responses for 2015 was 131.5 responses per square kilometre.

FIGURE 12. Point density ward map of paramedic responses for alcohol-related calls per square kilometre, Ottawa, 2015



Data source: Ambulance Dispatch Reporting System (ADRS) 2015 Ministry of Health and Long-Term Care. Extracted May 27, 2016. Ottawa Paramedic Service Branch, Emergency & Protective Services, City of Ottawa.

Data notes: Refer to Appendix 4 for ward names that correspond to the ward numbers.

The map does not take into account the population per square kilometre, so the higher density in the downtown core may be due to higher population density in that area.

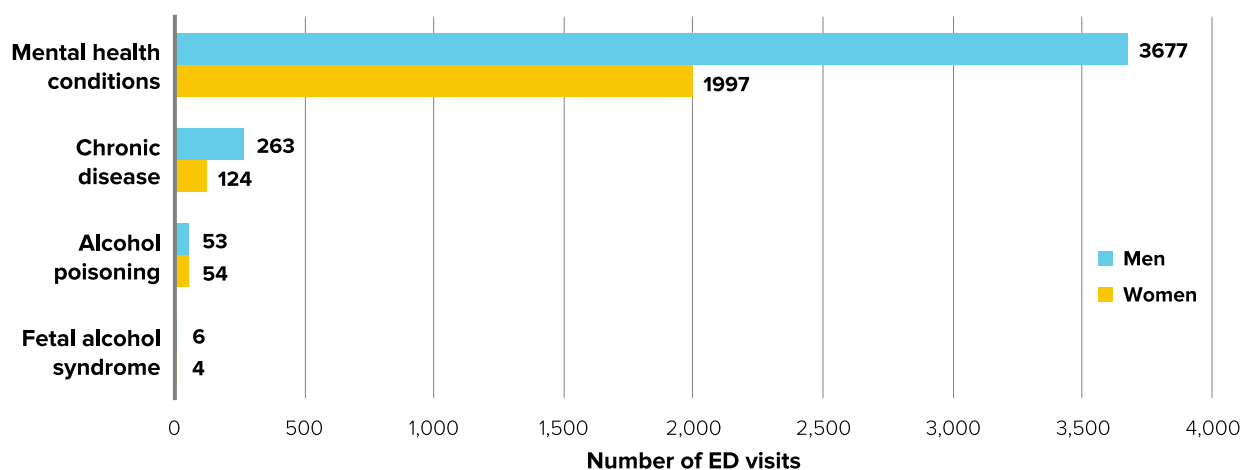
“Paramedics see the full spectrum of the impacts of alcohol abuse every day. These impacts range from individual alcohol poisonings (intoxication) and traumatic injuries to long-term health risks such as stroke and heart disease. Paramedics as well see on a first hand basis the devastation of impaired driving on families and communities. We support increasing the awareness of the consequences of alcohol misuse and advocate for a culture of moderation. We look forward to collaborating with Ottawa Public Health and community agencies to help create a supportive health environment that will decrease alcohol related harms in our community.” (Peter Kelly, Acting Chief, Ottawa Paramedic Service)

Emergency department visits

On average (2013–2015), there were approximately 6,100 ED visits per year due to alcohol.

- Mental health conditions are the leading cause of ED visits due to alcohol (Figure 13).
- Men had 1.8 times as many ED visits due to alcohol than women (3,931 per year vs. 2,149 per year).

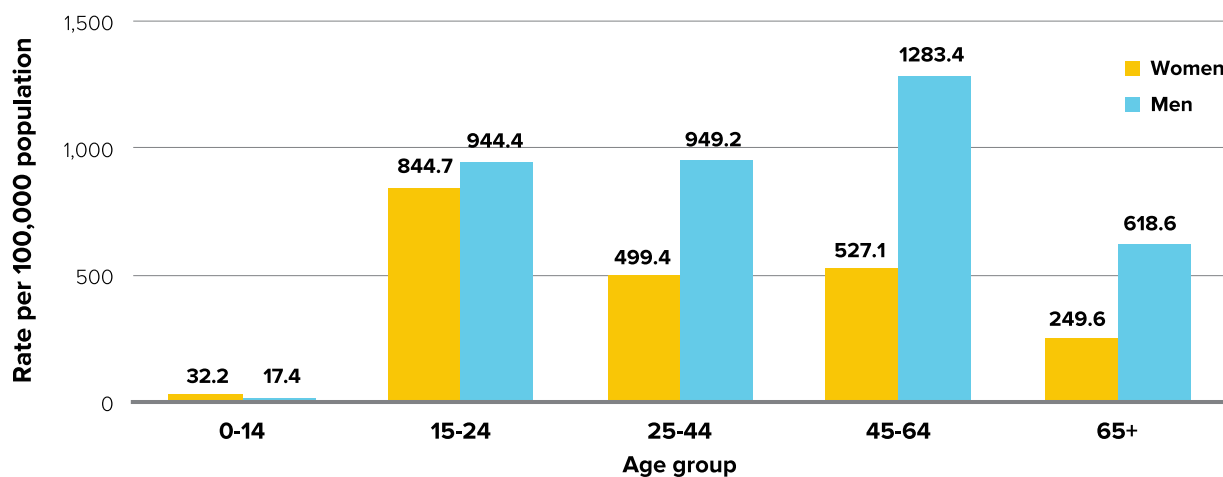
FIGURE 13. Annual number of 100% alcohol-attributable ED visits by diagnosis and sex, Ottawa, 2013–2015 average



Data source: Ambulatory Emergency External Cause 2013 to 2015 calendar years, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO. Extracted April 15, 2016.

- Men have higher rates of alcohol-attributable ED visits than women (Figure 14).
- The highest rate overall is seen among men aged 45 to 64 years, but among women the highest rate is among those aged 15 to 24 years.

FIGURE 14. Age-specific rate of 100% alcohol-attributable ED visits by sex, 2013–2015, Ottawa



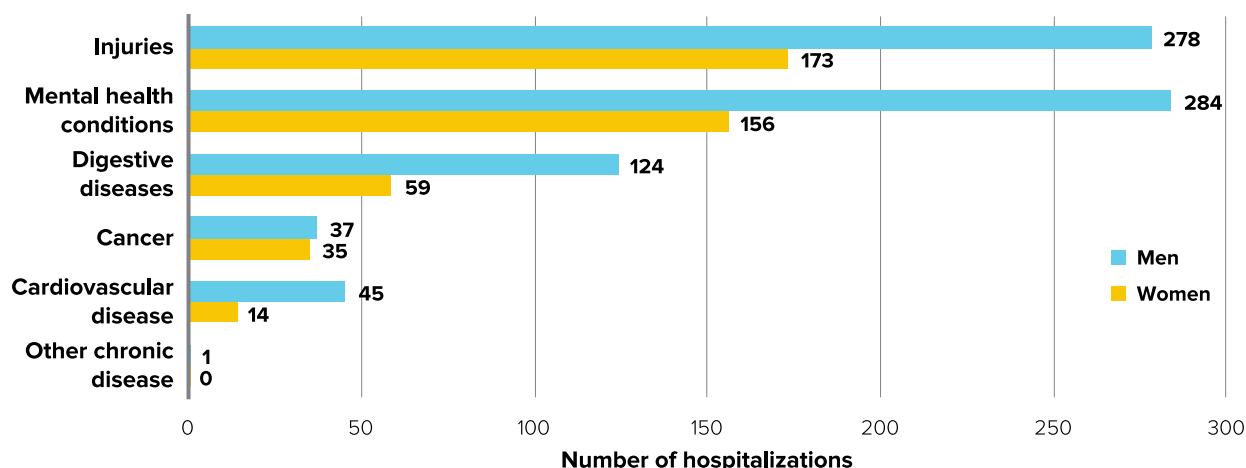
Data source: Ambulatory Emergency External Cause 2013 to 2015 calendar years, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO. Extracted April 15, 2016.

Hospitalizations

Each year, alcohol use results in at least 1,270 hospitalizations in Ottawa (2013–2015) (Figure 15). This represents 120 (10%) more annual hospitalizations than in 2008–2010.

- Men account for 63% of the alcohol-related hospitalizations.
- Injuries (e.g. alcohol-related falls) and mental health conditions such as alcohol psychoses and alcohol dependence were the leading cause of alcohol-related hospitalization at 36% (451 hospitalizations) and 35% (440 hospitalizations) of alcohol-related hospitalizations, respectively.
- Digestive diseases, the majority of which are liver cirrhosis, contributed to 14% (165 hospitalizations) of alcohol-related hospitalizations, while cancer contributed 6% (70 hospitalizations), and cardiovascular disease 5% (59 hospitalizations).
- Every year in Ottawa, approximately 66 infants are hospitalized for low birth weight attributed to maternal alcohol use during pregnancy.

FIGURE 15. Annual number of alcohol-attributable hospitalizations by diagnosis and sex, Ottawa, 2013–2015 average



Data source: Inpatient Discharges 2013–2015 calendar years, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 12, 2016. Ontario Mental Health Reporting System 2013–2015, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 12, 2016. Canadian Community Health Survey 2013 to 2014, Statistics Canada, Share File, Ontario Ministry of Health and Long-Term Care.

Data note: For 100% attributable conditions, all ages were used; however, for partially attributable conditions, only those aged 15 to 69 years were included.

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“My family has been affected. I have an aunt and uncle who are alcoholics...But every year their addiction got worse and worse. They have both suffered brain and liver damage and have been in the hospital with overdoses several times. It’s so sad to see, but on most days they refuse that they have a problem and say that they are in control.” (Respondent aged 25 to 44 years)

“Yes I have family members who suffer from alcoholism which started in their teenage years. They themselves turned to alcohol as a coping mechanism not realizing they had a mental illness that went undiagnosed. Since alcohol was easy for them to access and socially accepted it progressed over years into a serious addiction.” (Respondent aged 45 years and older)

“My father was an alcoholic and my mother an enabler. Warning signs were there but ignored by many and as a child I didn’t know better until I got older... I binge drank as a teen often.” (Respondent aged 25 to 44 years)

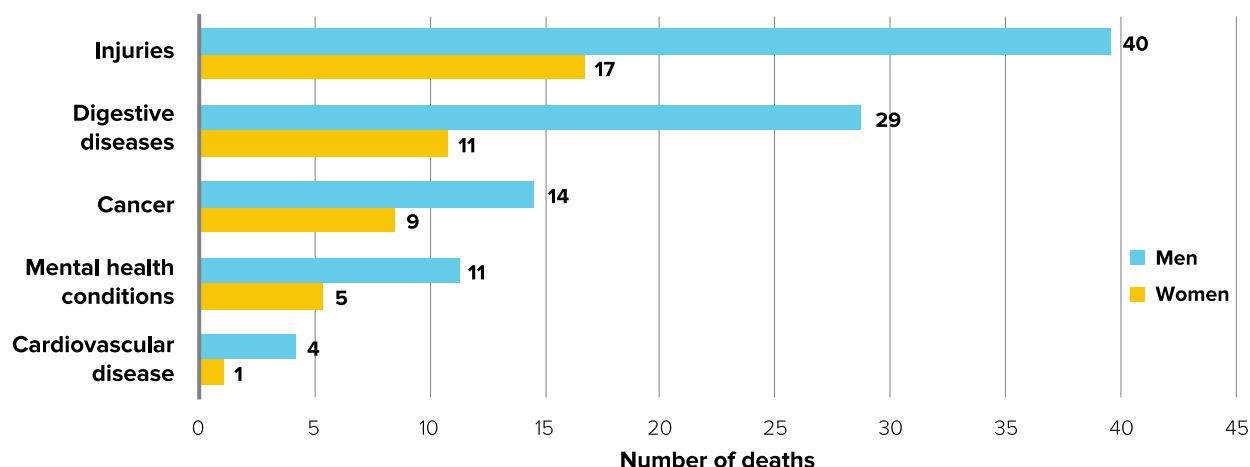
“... work with adults who have a dependency on alcohol and/or drugs. The wait times are very long and they don’t have much support from the time they make their decision to seek help. More mental health support services and accommodations need to be put in place to address mental health issues that often lead to substance use.” (Respondent aged 45 years and older)

Death

Every year in Ottawa, alcohol use results in at least 140 deaths (2007–2011) (Figure 16). This represents 5 (4%) more annual deaths than in 2005–2009; however, three years of data overlap which likely diminishes the increase.

- Men account for 70% of alcohol-related deaths.
- Injuries (e.g. alcohol-related suicide, motor vehicle collisions, or falls) were the leading cause of alcohol-related death at 40% (56 deaths).
- Digestive diseases, the majority of which are liver cirrhosis contributed to 28% (40 deaths), while cancer contributed to 16% (22 deaths), mental health conditions, including alcohol dependence, psychoses and depression, contributed 12% (17 deaths) and cardiovascular disease 4% (5 deaths).

FIGURE 16. Annual number of alcohol-attributable deaths by diagnosis and sex, Ottawa, 2007–2011 average



Data source: Ontario Mortality Data 2007–2011, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO. Date Extracted: September 13, 2016.

Data note: For 100% attributable conditions, all ages were used; however, for partially attributable conditions, only those aged 15 to 69 years were included.

If the population across Canada complied with the LRADG, the number of alcohol-related deaths would be reduced by approximately 4,600 per year.²⁶ In Ottawa, this would represent approximately 120 fewer deaths annually.

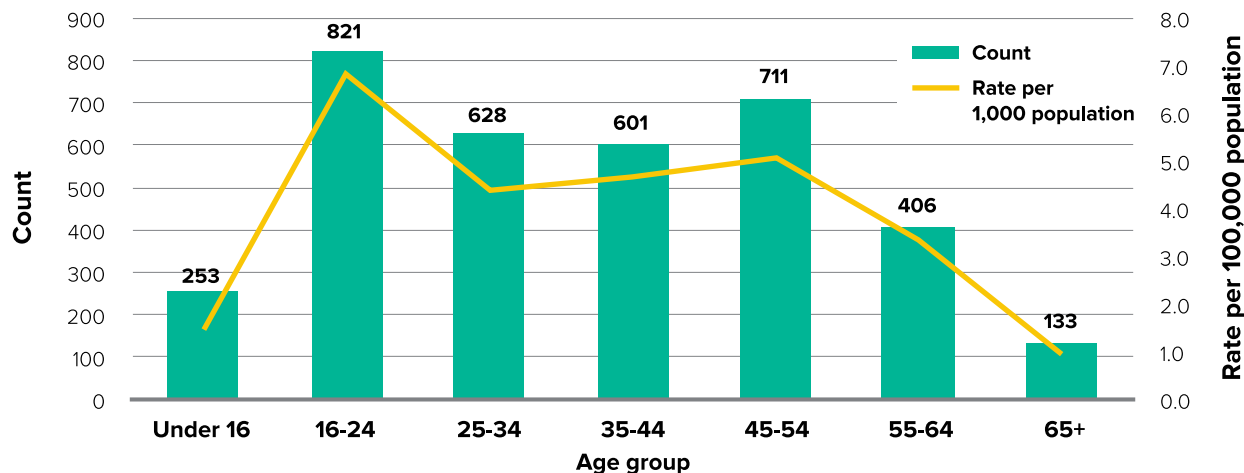
“...family member passed away early in life from health complications due to chronic alcoholism, never seeking treatment. The other continues to battle with having sought treatment, been through residential treatment, suffered relapses through the process, and felt the guilt and shame, anxiety and depression that accompanies the illness...” (Respondent aged 45 years and older)

“As a Paramedic I see the abuses of alcohol on a daily basis in terms of fatalities in auto crashes. I also see how alcoholism leads to violent beatings and the destruction of families.” (Respondent aged 45 years and older)

Alcohol misuse treatment

A total of 3,553 Ottawa residents were treated for alcohol misuse in fiscal year 2014–2015 (FY)^j. Sixty-percent (60%) of those were men. Although all age groups were represented, those aged 16 to 24 years old had the highest rate of alcohol misuse treatment (6.8 per 1,000) (Figure 17).

FIGURE 17. Count and rate per 1,000 of individuals in treatment for alcohol misuse by age group, Ottawa, 2014–2015 FY



Data source: Drug and Alcohol Treatment Information System (DATIS), Central Database. 2014–2015 FY. Date extracted June 3, 2016.

^j Includes those treated in at least one Ministry of Health and Long-Term Care funded substance abuse program.

Alcohol and chronic disease

- Alcohol is a Type 1 carcinogen.^{2,27} A recent review of epidemiological evidence supports a causal association between alcohol consumption and cancers at seven sites in the body: pharynx, larynx, esophagus, liver, colon, rectum and female breast. Connor's review⁷ substantiated the relationship between consumption rates and impacts and some gender differences.
- Evidence reveals the dose related effects of alcohol on the cardiovascular system however questions are being raised as to the benefit of low-moderate alcohol use.² Recent literature reviews weaken the evidence claiming moderate drinking protects against cardiovascular disease.^{2,7} Heavy drinking is still linked to cardiovascular disease such as coronary heart disease, heart failure, stroke and hypertension.²

Fetal alcohol spectrum disorder

Fetal alcohol spectrum disorder (FASD) is a lifelong chronic disorder that is a leading known cause of preventable developmental disability in Canada. According to Chief Public Health Officer's report, approximately 3,000 babies are born with FASD annually and over 330,000 people are affected with this lifelong disability in Canada.² Evidence supports that the volume of alcohol women drank before they were pregnant and being in an abusive relationship are predictors of drinking alcohol during pregnancy.²⁸ Any type of alcohol exposure can harm the fetus. The evidence suggests that almost 50% of all pregnancies are unplanned. Zero alcohol is the safest choice at any time during pregnancy or when planning to become pregnant.^{2,9,28}



“Women are drinking more and even as much as men, and binge drinking is common as well as drinking before going to a party and drinking to get drunk. Awareness that binge drinking may cause FASD and that the fetus may be affected before women know they are pregnant is lacking. Men also have a role in FASD prevention as drinking partners.”

(Respondent 45 years and older)

“My adopted son has FASD. It's an enormous burden for him as well as his family.” (Respondent aged 45 years and older)

“As a social worker, I have worked with adolescents who have FASD. It is such a challenge to help other see that they have a brain issue. It is very sad when outcomes are poor.” (Respondent aged 25 to 44 years)

“I have family members with severe alcohol addiction. A daughter with FASD and possibly an affected grandchild. I also work in the field of addiction and see what damage drinking does to families and communities.”

(Respondent aged 45 years and older)

5.

What are the second-hand effects of alcohol on our community?

When an individual consumes alcohol, harm that is felt by others in their family and community is known as second-hand effects.

These second-hand effects are often associated with heavy or binge drinking and include, but are not limited to: violence, emotional or physical abuse, risky sexual behaviour, impaired driving, and impacts to community services such as hospitals, policing and treatment agencies.^{2,5} According to the Chief Medical Officer's report, there is an increased risk for partner violence, negative interactions, aggression, and child abuse and neglect linked to heavy use of alcohol.^{2,7}



“I have had a neighbour start a fire in our building whilst intoxicated, I have called the police several times for domestic disturbances involving alcohol, have seen drunk drivers on the highway, called the police twice when I have come across individuals who have passed out in unsafe places while intoxicated.” (Respondent aged 25 to 44 years)

“I was abused by an alcoholic partner. He was so scary and unpredictable when he drank. My life revolved around his addiction. Months after he shoved me to the ground in a parking lot, I finally ended things...” (Respondent aged 25 to 44 years)

“I grew up in an alcoholic family... My self esteem was seriously damaged by the drunken comments made to me by my drunken parents. I became an alcoholic at a young age when I was encouraged to become the drinking partner of my mother...” (Respondent aged 45 years and older)

Violence

Intoxication alone does not cause violence. Alcohol may encourage aggression or violence by disrupting normal brain function; however, other factors such as the social environment influence behaviour.^{2,29} The 2012 Canadian Alcohol and Drug Use Monitoring Survey (CADUMS) revealed one in seven (14.2%) of Canadians aged 15 years and older experienced harms as a result of another person's drinking. Although local data are not available, applying this proportion to Ottawa's population would mean 116,000 people over age 15 have experienced harms as a result of another person's drinking. Verbal abuse (8.9%) is most common, followed by being emotionally hurt or neglected (7.1%) and feeling threatened (6.3%), while being physically hurt was experienced by 2.2%.³⁰

In 2013, 12% of Ottawa grade 9 to 12 students reported being injured or injuring someone as a result of their drinking in the past year.³¹

Hazardous or harmful drinking puts young people at risk for current or future physical and social problems. The OSDUHS assessed the extent of hazardous or harmful drinking among students using a screening questionnaire called the Alcohol Use Disorders Identification Test (AUDIT), which was developed by the World Health Organization to measure heavy drinking and alcohol-related problems.

- Among Ottawa high school students, 18%* (95% CI: 11%, 25%) reported drinking at levels identified as hazardous or harmful. About 12%*^k (14%, 26%) reported being injured or injuring someone as a result of their drinking in the past year.³¹

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"I was hit in the face by a drunk guy. I was walking by a crowd that went insane. The guy hit me instead of his "friend"... I wore a huge bruise on my face for weeks. The police never caught him." (Respondent aged 25 to 44 years)

.....

"I am afraid to take the bus after 9:00 pm, especially on Friday and Saturday nights because of binge drinkers. I have been harassed and I have witnessed numerous fights on public transportation. Vomit is almost always present on late night bus trips. I also do not feel safe being in areas such as The Market on nights when binge drinking is present because of harassment and violence." (Respondent aged 25 to 44)

The majority of alcohol-fueled partner violence is men against women however violence is also committed by women towards men and within same sex relationships.^{2,29}

k * Use with caution – high sampling variability.

● ● ●

“My ex-husband used excess alcohol and would become violent when I wouldn’t drink with him or keep up with him. He thought the perfect weekend was about how drunk we could get on Friday and Saturday and then spend Sunday recovering. It was a waste of time that we could have used in other more reasonable activities. It also created a bad example for the children.” (Respondent 45 years and older)

“... I have gotten beaten up by a drunk guy while walking my dogs cause he thought I was his wife” (Respondent 19 to 24 years old)

“My father was an alcoholic. My mom remarried another alcoholic, who beat her in front of me. When she escaped that, her oldest son my brother became an alcoholic. He has degraded and belittled me with his alcohol use and has also used violence towards me and my siblings. Then I met my common law partner who was in rehab for alcohol 5 years ago. It nearly destroyed his life. ...he couldn’t stop drinking...alcohol poisoning (he almost died) He blacked out and said horrible things. He also vomited all over our house. Alcohol scares me, and I still have a hard time understanding why it’s legal. I hate alcohol as it’s ruined too many lives.” (Respondent aged 25 to 44 years)

Sexual assault

When alcohol or drugs are used to compromise a person’s ability to consent to sexual activity and non-consensual sexual activity occurs, this is called a drug-facilitated sexual assault. Statistics Canada reports women are eleven times more likely than men to be victims of sexual offences.³² The investigation citing Du Mont³³ for possible drug facilitated sexual assault among 882 people found 97% were female who presented at hospital based sexual assault centres in Ontario between 2009/2010. The Du Mont’s findings suggests that approximately a fifth of sexual assaults are drug facilitated and that there are a variety of drugs, including alcohol, used by perpetrators to incapacitate their victims.³³

Sexual assault often is underreported therefore is difficult to assess what is the true incidence rate.³⁴ According to the Ontario’s Women’s Directorate sexual assault is a gendered crime whereas 81% of the victims are women and 99% of the perpetrators are men.³² Alcohol is a common factor in sexual assault. Women are more likely than men to experience injuries in cases of sexual assault.³² Sexual assault occurs most often to women between the ages of 18 and 30 years, usually occurs in the victim’s home and the assailant is known to the victim between 60% and 85% of the time.³⁵

A review of 204 cases for sexual assault presenting at The Ottawa Hospital between January and December 2013 were studied for factors associated with assaults occurring at mass gathering.³⁵ The following was revealed:

- 90% of patients from the mass gatherings/festivals reported voluntarily consuming alcohol or drugs, as compared to 60% in control group
- 60% of the mass gatherings patients thought that they had been drugged prior to their assault by having something slipped into their drink and only a third of mass gatherings patients knew their attacker.



“I was sexually assaulted at a party while heavily under the influence. I don’t remember many details but remember enough to know what happened... I didn’t know what to do and froze, out of fear and confusion. It was a close friend...” (Respondent aged 19 to 24 years old)



“The majority of our sexual assault patients – both from mass gatherings and not – were intoxicated, either by their own choice or by being slipped something. Situations like this could have been avoided by watching your drinks and not accepting drinks from unknown people, including water bottles. All festivals/event organizers/hosts should undertake bystander intervention so that they can recognize when someone is dangerously intoxicated or in need of help.” (Dr. Kari Sampsel M.D., Emergency Physician, The Ottawa Hospital)

Impaired driving

Alcohol impairs one’s ability to drive and is the major risk factor for fatalities and injuries.⁵ According to the literature, the relative risk of experiencing a serious injury from a motor vehicle collision (MVC) increases by 500% (5 times) after consuming five drinks and the relative risk of experiencing a non-motor vehicle related injury increases by over 200%.^{19,20,36} Nationally, motor vehicle crashes are the leading cause of death among 16 to 25 year olds, and alcohol and/or drug impairment is a factor in 55% of those crashes and more 19-year-olds die or are seriously injured than any other age group.³⁷ In Ontario in 2013, drinking and driving claimed 110 lives, representing nearly one-quarter of all road fatalities that year.³⁸

In Ottawa between 2010 and 2014, there were 1651 collisions involving alcohol. Almost one quarter (28/122) of fatal motor vehicle collisions during this time involved alcohol.



“...Everyone in the neighbourhood knows that two neighbours will be driving drunk after work or supper. Even our kids joke about staying out of their way as they drive by. I often wonder how this normalizing will impact the younger people on the street.” (Respondent aged 25 to 44 years)

“My cousin, her husband and one child were killed by a drunk driving! Their two other children were thrown from the car! They survived! They suffered physical and mental troubles their whole lives because of this!!” (Respondent aged 45 years and older)

“I was addicted to alcohol. I started out as a binge drinker and drove drunk many times over the 20 plus years I drank... Alcohol is easily accessible (especially now that it is available in grocery stores) which makes it harder for people with addictions.” (Respondent aged 25 to 44 years)

“... work with adults who have been convicted of impaired driving.. DUI (loss of freedom, criminal record, family strains/tensions, financial problems...did not know that I could get a DUI after only drinking 1-2 drinks, or that I could get a DUI (Care and Control charge) when I am not even in my car.” (Respondent aged 45 years and older)



“Drivers have a responsibility to plan a way home if they are drinking whether it is staying over, taking a cab or having a designated driver, ‘DD’ and friends also have a responsibility to make sure their friends don’t drive while impaired.” (Constable Rheal Levac, Ontario Provincial Police, Ottawa)

According to the Traffic Injury Research Foundation pedestrians who consume alcohol also contribute to the alcohol-fatal crash problem in Canada each year.³⁹ In 2011, approximately 40% of fatally injured pedestrians had been drinking.⁴⁰

In Canada, the legal blood alcohol concentration (BAC) limit is 0.08, but as low as 0.02 impairs driving abilities; at 0.04 to 0.05 BAC there is a clear relationship between crash risk and alcohol.³⁹ Data from the Ontario Ministry of Transportation illustrate the magnitude of the drinking and driving problem in Ottawa:

- In Ottawa between 2010 and 2014, there were 1,651 collisions involving alcohol (Table 1).
- Almost one quarter (28/122) of Ottawa fatal MVCs involved alcohol. The proportion of fatal MVCs involving alcohol appeared to drop in 2014 (3%) compared to previous years, but these numbers are still preliminary.
- In 2014, 2.2% of all MVCs in Ottawa (288 out of 13,281) involved driver alcohol use and this was nearly significantly fewer ($p=0.05$) than in 2010 (2.5%, 376 out of 14,881 MVCs involved driver alcohol use).
- Male drivers were involved in more alcohol-related MVCs than females.
- In 2014, 39% of collisions involving alcohol occurred on roads with a speed limit less than 60 km/h, 49% occurred on roads with a speed limit between 60 km/h and 90 km/h, and 12% occurred on roads with a speed limit of 100 km/h.

TABLE 1. Number of alcohol-related motor vehicle collisions in Ottawa, 2010 to 2014

YEAR	FATAL ALCOHOL-RELATED COLLISIONS [NUMBER (% OF ALL TYPES OF FATAL COLLISIONS)]	TOTAL ALCOHOL-RELATED COLLISIONS [NUMBER (% OF ALL TYPES OF COLLISIONS)]
2010	7 (21%)	376 (2.5%)
2011	9 (39%)	353 (2.3%)
2012	5 (26%)	326 (2.2%)
2013	6 (33%)	308 (2.2%)
2014*	1 (3.4%)	288 (2.2%)
5-year total	28 (23%)	1,651 (2.3%)

Data source: Alcohol-related motor vehicle collisions in Ottawa, 2010 to 2014. Ministry of Transportation, Ontario. Extracted August 29, 2016.

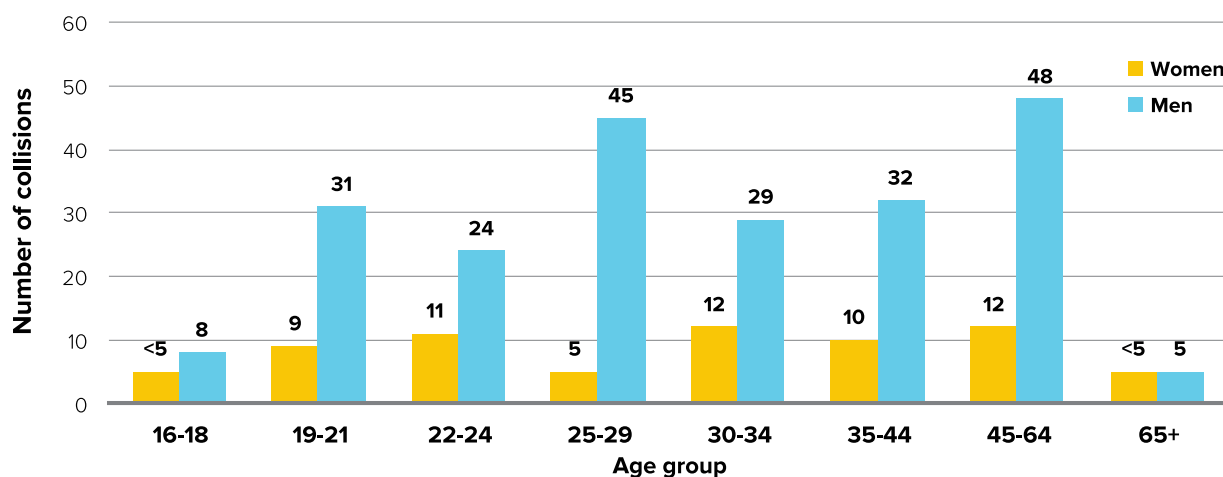
Data note: *Data for 2014 are preliminary. Alcohol-related includes collisions where a driver had been drinking, had ability impaired alcohol > 0.08 or had ability impaired alcohol. See Glossary for definitions.

Saturday at 2:00 AM is the day and time in Ottawa with the highest number of collisions involving impaired drivers. October is the month with the most collisions involving an impaired driver.⁴¹

Zador claimed that young and inexperienced drivers are more affected by lower levels of alcohol than older more experienced drivers.⁴² The legal drinking age in Ontario is 19 years and drivers under the age of 22 must have a blood-alcohol level of zero when driving.⁴³ In Ottawa in 2014, there were eight alcohol-related MVCs among male drivers aged 16 to 18 years and less than five alcohol-related MVCs for females aged 16 to 18 years (Figure 18).

- There were 31 alcohol-related MVCs among male drivers aged 19 to 21 years and 9 among female drivers aged 19 to 21 years.
- Male drivers aged 25 to 29 years (45 in 2014) and 30 to 34 years (29 in 2014) also have a high number of alcohol-related MVCs.

FIGURE 18. Number of alcohol-related motor vehicle collisions by age and sex, Ottawa, 2014



Data source: Alcohol-related motor vehicle collisions in Ottawa, 2010 to 2014. Ministry of Transportation, Ontario. Extracted August 29, 2016.

Data note: Data for 2014 is preliminary. Alcohol-related includes collisions where a driver had been drinking, had ability impaired alcohol > 0.08 or had ability impaired alcohol.

Youth who drink and drive, or allow themselves to be driven by a drunk driver, are more likely to be involved in a car crash.⁴⁴

- In 2013, 4% (95%CI: 3%, 5%) of 10th through 12th graders with a G-Class driver's licence in Ontario reported they had driven within an hour of consuming two or more alcoholic drinks at least once during the past year. This provincial estimate has declined significantly from 12% (95%CI: 10%, 14%) in 2009 (PMO-OSDUHS, 2013). The Ottawa estimate is too unreliable to report for 2013.
- Among Ottawa high school students, 19% (95%CI: 15%, 23%) had ridden in a vehicle with an intoxicated driver at least once in the past year (PMO-OSDUHS, 2013).

“Every year, hundreds of people are killed and thousands are injured in impaired driving crashes, affecting not only those in the crashes but all of their families, friends as well. While we can put a number on the financial and social costs of impaired driving, it is impossible to quantify the loss and grief caused by this violent crime.” (Kathy Gagnier, Former president, Mothers Against Drunk Driving [MADD] Ottawa Chapter)

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“Ontario has the lowest impaired driving offence rate in Canada. This is due in part to our tough laws and strong working relationship with our road safety and injury prevention partners. We continue to support the great work of our partners across the Province to prevent alcohol-related tragedies through ongoing campaigns that aim to raise awareness about alcohol-impaired driving and that focus on changing drinking and driving behaviour.” (Melanie Trottier, Co-ordinator Road Safety Programs, Eastern Ontario, Ministry of Transportation of Ontario)

Alcohol-related crime

There is a connection between alcohol and criminal behaviour.⁴⁵ Alcohol has the ability to lower inhibitions, impair judgment and encourage aggressive tendencies.

Between 2011 and 2015, 16% (approximately 1,000 every year) of violent crimes were flagged as alcohol-related by Ottawa Police.

According to data from the Ottawa Police Service^{46,47}:

- In 2015, there were 4,444 offences¹ in Ottawa where the police officer flagged that alcohol, or alcohol and drugs were a factor in the occurrence. This flag does not specify who was drinking the alcohol; it could be the victim, the complainant, the owner or the subject of the police mobile response. In addition, there were 1,800 calls for service related to complaints of public drunkenness.
- Between 2011 and 2015, there was an average of 385 alcohol-related offences a month. The highest number of alcohol-related offences was consistently in July, whereas the lowest numbers were in January and February.
- Saturday and Sunday were the most common days of the week for alcohol-related offences.

TYPE OF OCCURRENCE

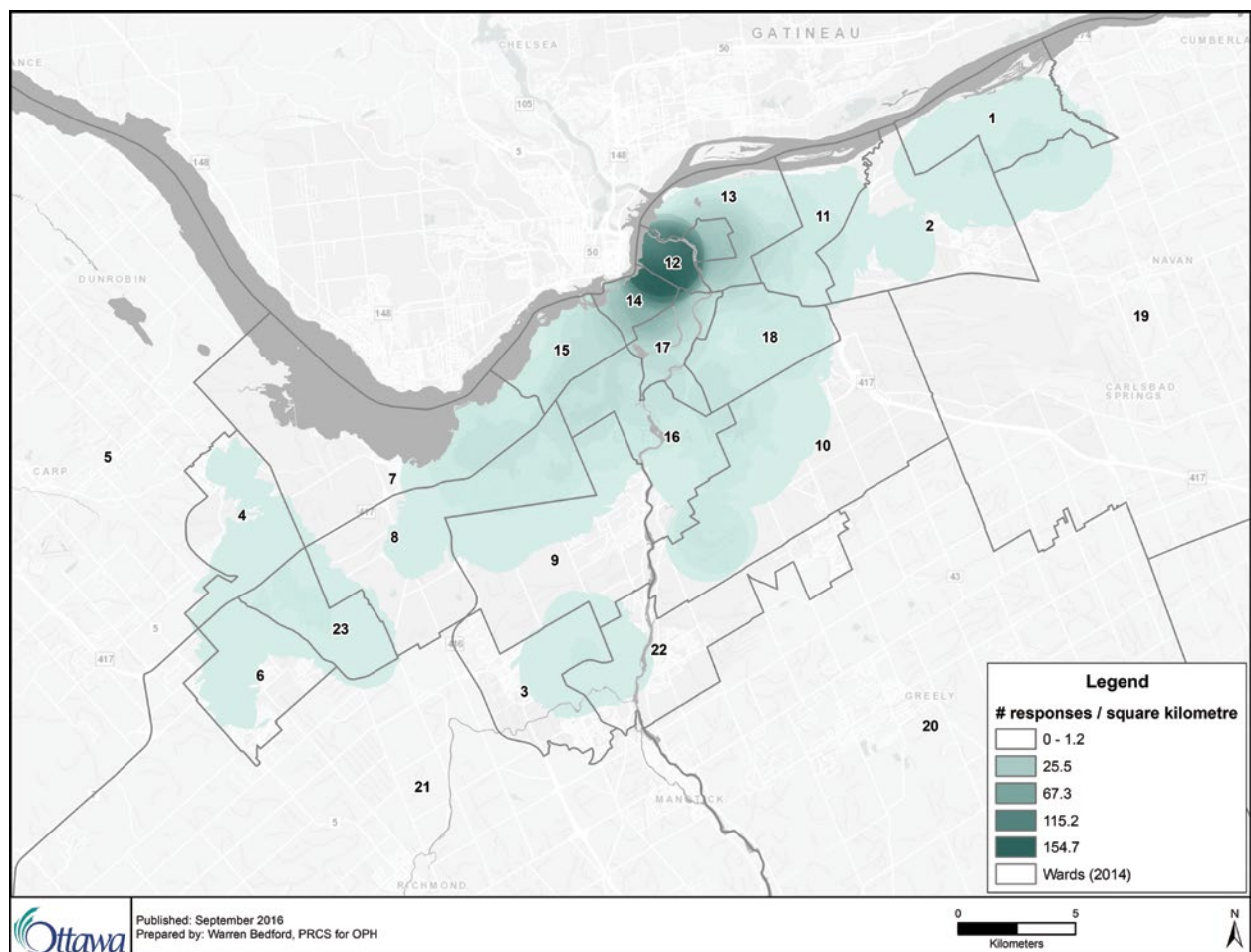
- Between 2011 and 2015, 30% of the alcohol-related offences were predominantly interpersonal disputes (e.g. with a partner), drunkenness or cases related to the Mental Health Act; 21% were violent crimes (i.e. use or threat of force to harm another person, e.g. assaults); 17% were traffic offences (e.g. impaired driving); 12% were related to the Liquor Licence Act (e.g. selling liquor without a licence, open liquor in a vehicle); 9% were crimes against property (e.g. theft, break and enter, or mischief); and 8% were breaches of undertaking, recognizance or probation.
- Over the 5 year period, 5% of all offences were flagged as alcohol-related. Among all violent crimes, 16% (approximately 1,000 every year) were flagged as alcohol-related.

¹ This report examined all offences that were reported to the Ottawa Police that were flagged as alcohol-related between 2011 and 2015 for which a police report was made. Approximately 32% of calls for service result in a report being submitted.

LOCATION

Alcohol-related offences reported to Ottawa Police were concentrated in the downtown core of Ottawa, but with some responses in most wards (Figure 19). Darker shading indicates a higher number of alcohol-related offences per square kilometre. The highest density of offences for 2015 was 154.7 responses per square kilometre.

FIGURE 19. Point density ward map of alcohol-related offences (excluding traffic offences) reported to the Ottawa Police, Ottawa, 2015



Data source: Offences with an alcohol, or alcohol and drug study flag, 2015. Records Management System, Ottawa Police Service. Extracted September 14, 2016.

Data notes: Refer to Appendix 4 for ward names that correspond to the ward numbers. Represents 3,718 offences; traffic offences were excluded to avoid biasing the distribution of offences to major roadways. The map does not take into account the population per square kilometre, so the higher density in the downtown core may be due to higher population density in that area.

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“The devastation of families and communities caused by the misuse of alcohol is witnessed firsthand by our members. A significant portion of police work is influenced by the overconsumption of alcohol whether that is domestic violence, sexual assaults, impaired driving or public disorder. Our solutions are focused on collaborating with many other community agencies to try and educate and mitigate the negative impact, while recognizing the social acceptance of alcohol consumption. We work closely with bar and restaurant staff to raise awareness on the consequences of over serving patrons. We encourage parents to have informed discussions and be positive role models to end this harmful cycle.” (Jill Skinner, Deputy Chief, Ottawa Police Services)

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“Kids broke into our house to steal alcohol, then paddled, drunk, down rapids. Kids were ok, parents covered it up so boys were not charged. Only led to bigger problems for these boys later on.... Need families to understand reporting them will get then help... Need programming to help families.” (Respondent aged 25-44 years old)

.....

“My home was broken into by an individual who was drinking and on drugs while I was in the home. Due to improper lighting of the area, the individual could not be visually identified...We need more lighting.” (Respondent aged 45 years and older)

.....

“...led us to experience an intruder in our home two years ago which was a terrifying experience. It leads to a feeling of living in an unsafe environment.” (Respondent aged 45 years and older)

6. Who is more at risk of harm?

There are specific populations who are more likely to experience harms related to alcohol use, either due to physiological differences in how alcohol is metabolized or related to the social determinants of health.²¹

Alcohol initiation is linked to social factors such as adverse family conditions including low levels of parental supervision and single-parent families.⁴⁸

Although higher income groups drink more alcohol, people of lower education and income are more at risk of alcohol-related harms.^{13,14} A person's decision to drink is not solely a personal choice but rather a result of multidimensional influencers such as genetics, psychology and social factors.⁴⁸ Factors such as biology and genetics, age, sex, mental health status, adverse life experiences and social determinants such as income, education, working conditions or personal health and coping skills may lead to the onset of alcohol misuse.⁴⁹

Children

Children are a vulnerable population and early exposure to drinking alcohol increases the risk of problematic drinking in adolescence. Children are influenced by behavioural patterns of alcohol consumption of parents, grandparents and siblings.⁴⁴ Positive protective factors to the adverse effects of alcohol consumption in children and young people include informed and supportive parental guidance about alcohol and a delay in the age of initiation into drinking.⁴⁴

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“Alcohol use is big in my family. It affects relationships between parents and children. Leaving the children feeling unwanted and vulnerable to repeat the same alcoholic lifestyle” (Respondent aged 25 to 44 years)

.....
“I began abusing alcohol at the ripe old age of 12 and continued to do so into my early 20's. It has severely affected my education and my ability to sustain a working income. Many people are worse off for they used alcohol as a gateway to harder drugs such as cigarettes, cocaine, ecstasy and speed.” (Respondent aged 25 to 44 years)

Youth

Alcohol abuse in adolescence poses a particular danger to the emerging brain faculties of executive functioning and long term memory.⁴⁴ Youth are more vulnerable to subtle brain damage and long lasting cognitive deficits following alcohol exposure; alcohol may increase feelings of depression. Heavy and binge drinking by young people can be a mechanism for coping with stress or anxiety.⁴⁴

In Canada, people aged 15–29 years of age experience 33.6% of alcohol-attributable disability-adjusted life years (DALYs), compared to 22.0% in the 45–59 age group. Deaths attributable to alcohol are also increased in this age group due to an increased incidence of motor-vehicle crashes.⁵⁰ In addition, a systematic review of the literature suggests that adolescents who misuse alcohol are more likely to experience injury, often as a result of an assault, or side effects such as appetite changes, weight loss, eczema, headaches and sleep disturbance.⁴⁴

“I was introduced to alcohol at a young age and made many irresponsible decisions and even some criminal acts while under the influence of alcohol. Alcohol use contributed to me getting pregnant at the age of 14, which I ended up deciding to terminate since I was so young and was obviously not mentally, emotionally, physically, or financially ready to raise a child. I have been dealing with the consequences and repercussions of those decisions ever since. Alcohol use also introduced me to drugs and to gang related people, which just caused even more trouble in my life at such a young age. Alcohol contributed to my mental illnesses and made normal day to day tasks almost impossible. Alcohol got in the way of me completing my high school diploma and getting a job. Alcohol inhibited me in so many ways in my life at such a young age and did nothing but bring negativity into my life and practically set me up for failure as an adult.” (Respondent aged 19 to 24 years)

Involvement in drinking games can lead to very high levels of alcohol consumption; delaying the time of a young person’s first drink may reduce the risk of harmful drinking.⁴⁴

- Drinking games were played by 27% (95%CI: 19%, 35%) of high school students in the past month (PMO-OSDUHS, 2013).

Young adults

Unintentional injuries are the leading cause of death and disability among young adults.^{2,5} Given that alcohol is the leading contributing cause to these injuries, regular binge drinking compounds the issues.



“I’m in university... everyone that’s underage drinks. I don’t see it as a problem unless people aren’t being responsible.” (Respondent aged 16 to 18 years old)

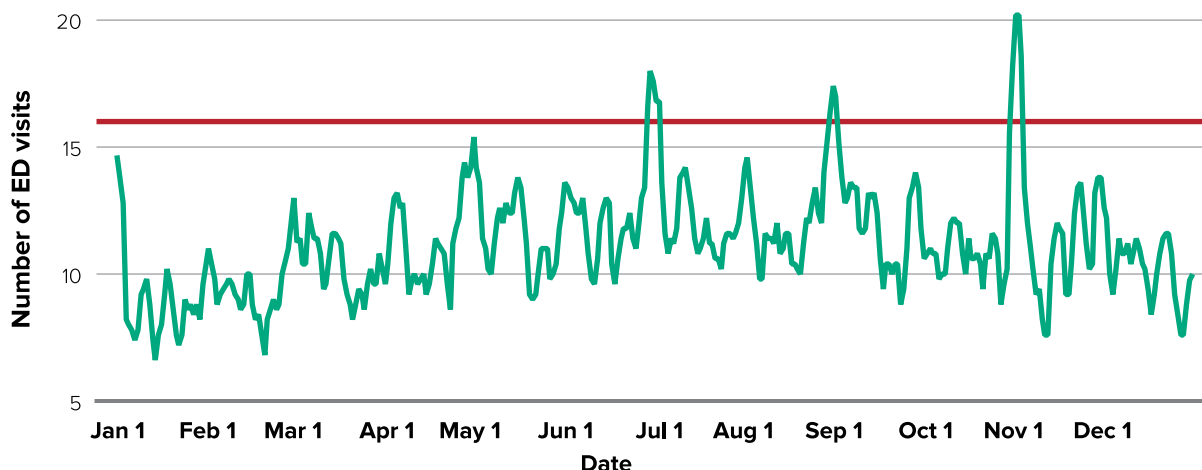
“My brother almost died and was in a coma for many months at the age of 25 because of long term alcohol abuse. He suffered horrific abuse and neglect at the hands of our parents.” (Respondent aged 25 to 44 years)

“Binge drinking in late years of high school and in university caused many problems for my friends. Some had to drop out because their grades were so bad as a result of over use of alcohol.” (Respondent aged 25 to 44 years)

Almost 37% of Ontario university and college students who drank reported they did something to regret and 29% forgot where they were or what they did in the last 12 months when drinking alcohol.⁵¹ Data from two local institutions were not available to OPH at the time of publication.

In Ottawa, Canada Day, the beginning of September (coinciding with “orientation week” and Labour Day weekend), Halloween and New Year’s Eve all show marked increases in ED visits for intoxication. During these times there are between 15 and 20 visits for alcohol poisoning per day, depending on the year, as compared to 7 to 14 visits at other times (Figure 20). Those aged 19 to 24 are at highest risk. The rate of ED visits in this age group is over twice that seen in the 25 to 44 age group (data not shown).

FIGURE 20. 3-year median ED visits for alcohol intoxication, 2013–2015, Ottawa (5-day moving average)



Data source: Advanced Syndromic Surveillance and Emergency Triage (ASSET), 2013–2015, Ottawa Public Health. Data extracted June 30, 2016.

Data note: Horizontal line represents 90th percentile.

A recent review of the evidence confirms adverse consequences of excessive drinking among young adults. According to Newbury-Birch et al⁴⁴ these include:

- a detrimental effect on their short term educational performance
- more likely to miss classes
- more vulnerable to being an victim of crime
- more likely to display aggressive behaviour, although it is likely that other factors such as their personality and family life will play a role
- is associated with engaging in unprotected sex, teenage pregnancy and increased likelihood of having sex at a younger age.
- an increased likelihood of contracting a sexually transmitted disease

Newbury-Birch's systematic review revealed there were positive consequences associated with drinking among young adults including increased feelings of sociability, increased confidence to speak to the opposite sex and means of celebration which is positive.⁴⁴ The exact amount of alcohol consumed was not defined in the review.

Women

Alcohol use impacts women's health differently from men's due to physiological differences. Connor's⁷ recent review confirmed alcohol use and associated chronic disease risks, including breast cancer. Studies suggest women are at increased risk for breast cancer even at one drink per day.² Currie's research⁵² confirmed that women are affected more severely and in a shorter timeframe than men in the following areas:

- reach higher peak blood alcohol concentrations from equal amounts of alcohol per pound of body weight

- experience first signs of chronic illness such as liver disorders, hypertension, anemia, gastrointestinal hemorrhage and ulcers from average duration of excessive drinking
- reproductive physiology is uniquely affected by alcohol misuse i.e. menstrual cycle, fetal development, childbirth, menopause and sexual responsiveness

ALCOHOL AND PREGNANCY

Alcohol exposure during pregnancy can have detrimental effects on the fetus. For more information on FASD see *Chapter 4. What are the health effects of alcohol on the individual?* Consumption of alcohol while pregnant increases the risk of low birth weight and birth weight is considered the most important indicator of a newborn's chance of survival, with low birth weight increasing the risk of perinatal and infant mortality.⁵³ Every year in Ottawa, approximately 66 infants are hospitalized for low birth weight attributed to maternal alcohol use during pregnancy.

Men

There are significant differences in drinking patterns between males and females with gender identified as an influencing factor in relation to consumption patterns.^{2,5} The evidence reveals men who are heavy drinkers are at increased risk for colorectal cancer.² Of all psychoactive substances, alcohol is the substance most clearly shown to increase aggression.⁵ Research has revealed that young adult men are more likely than other demographics groups to be involved in alcohol-related homicides and assaults.⁴⁴

“Several men in my family abuse alcohol frequently. While destroying their bodies they miss family events and things important to the kids. They often spend entire evening’s away bingeing and this leaves children wondering why they periodically leave. My mother has been physically abused by my father while he is using alcohol. The dependence my husband has on alcohol to get through stress, celebrate life’s achievements, holidays, weekends – any excuse you name it – affects us financially, emotionally and as a family.” (Respondent aged 25 to 44 years old)

“To be honest, as a woman, drunk men make me anxious. I have experienced being inappropriately touched, grabbed, blocked, and yelled at by drunk men. Because their judgement is impaired by the alcohol, you never know what they’re going to do/might be capable of (from a simple slap on the backside, to stalking you to your car). They don’t understand the meaning of “no” and “go away.” (Respondent aged 16 to 18 years old)

Older adults

Falls are the leading cause of injury-related hospitalizations among seniors.⁵⁴ The risk for injuries and falls is exacerbated with alcohol. Age changes how the body metabolizes alcohol and for some their tolerance decreases with age. Older adults are more likely to be taking one or more medications that may be dangerous when mixed with alcohol. Alcohol may interact with certain medications to increase the risk of falls by producing changes in awareness, balance and gait.⁵⁵

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“Alcohol is an under identified issue amongst seniors.”

(Sarah Bercier, Executive Director, Council on Aging of Ottawa)

Indigenous peoples

Ottawa is the third-fastest growing urban centre in Canada for First Nations, Inuit and Métis peoples referred to as Indigenous peoples.^{52,56} One study revealed a protective effect of Indigenous cultural practices against substance use disorders. The more urban Indigenous who practiced their culture, the less alcohol, prescription drug, and illicit drug problems they experienced.⁵⁷

More First Nations people in Canada choose not to drink at all compared to the general population; in 2012, one in four (26%) First Nations people aged 15 and older living off reserve reported not consuming alcohol in the past year, compared to one in five (21%) for the total Canadian population.⁵⁸ However, a quarter (26%) of First Nations people reported heavy drinking compared to 20% of the total Canadian population.⁵⁸ Literature reveals alcohol and drug abuse remain the most prevalent types of addictive behaviours in the Indigenous community.^{57,59} The 2015 study^m of the effects of the residential school system on addiction revealed that 95% of the women in the study reported being addicted to alcohol.⁵⁹

m The 2015 feasibility study within the Champlain Local Health Integration Network (LHIN) of Aboriginal women seeking support related to violence consisted of 531 case files taken from 2014; 461 from Minwaashin programs and 70 from the Addictions Counselling Program at Wabano.

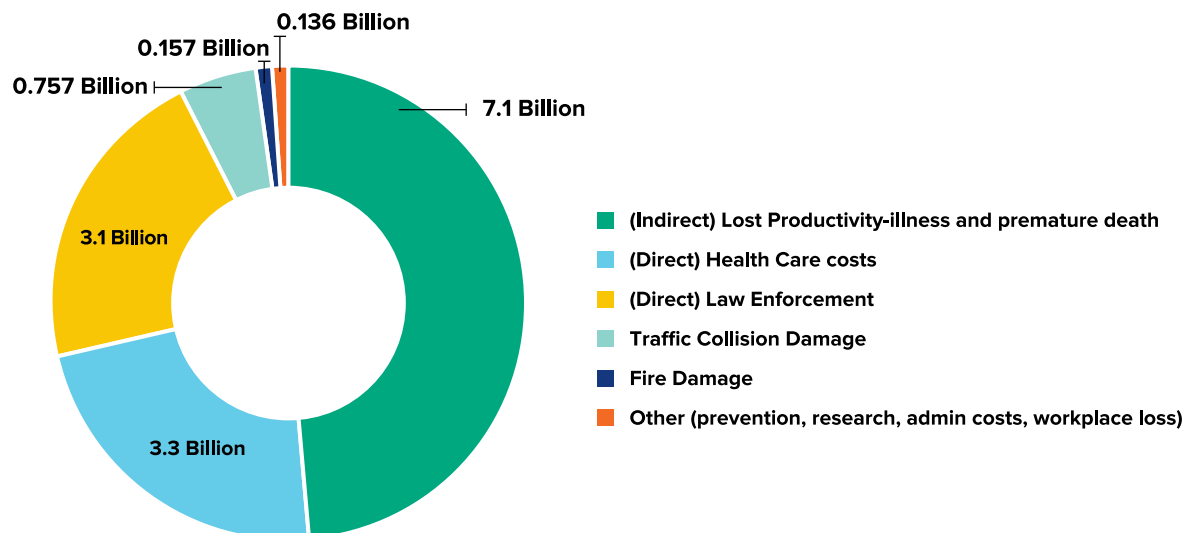
7.

What are the financial and social costs of alcohol?

The financial and social costs of alcohol consumption are referred to as direct and indirect costs.

In 2002, the direct and indirect costs related to alcohol in Canada, totaled \$14.6 billion (breakdown shown in Figure 21). In 2011, Ontario spent \$134 million alone in direct alcohol related healthcare costs.² Alcohol contributed to 50% of the hospitalizations for substance misuse use disorders.²

FIGURE 21. Breakdown of costs (billions of dollars) of alcohol use in Canada, 2002



Data source: Rehm, J., Ballumas, D., Brochu, S., Fischer, B., Gnam, W., Patra, J., Popova, S., Sarnocinska-Hart, A. and Taylor, B. (2006). The Costs of Substance Abuse in Canada 2002. Ottawa, ON: Canadian Centre on Substance Abuse

Direct Costs

Direct costs are government expenses related to enforcement, health care and other functions such as prevention and research. According to Thomas, the estimated 2002 Ontario direct healthcare costs were \$1.2 billion.^{8,25} Despite the fact that Ontario's alcohol sales exceeded two billion dollars in 2002; Ontario still experienced a net loss of approximately \$465 million each year due to direct costs (Table 2).

TABLE 2. Alcohol revenue versus alcohol-related direct costs, Ontario, 2002

MEASURE	DOLLARS
Total Direct Revenue	\$2,025,853,996
Enforcement Costs	\$1,276,440,000
Healthcare Costs	\$1,160,104,734
Other Direct Costs	\$45,700,000
Total Direct Costs	\$2,482,244,734
Revenue Minus Costs	(\$456,390,738)
ON population (2002)	12,068,301
Deficit	(\$38 per capita)

Source: Adapted from Thomas, G. Analysis of beverage alcohol sales in Canada. (Alcohol Price Policy Series: Report 2). Ottawa, ON: Canadian Centre on Substance Abuse 2012

Note: Numbers in red and in parentheses are negative values.

In Ottawa, alcohol costs at least \$24,544,000 per year in direct healthcare costs related to paramedic responses, ED visits, hospitalizations (excluding patients admitted to designated mental health beds) and community or residential treatment programs (Table 3). Other direct (e.g. family doctor visits) and indirect costs for Ottawa are not available at this time.

TABLE 3. Estimate of selected direct health care costs of alcohol, Ottawa, 2015

HEALTHCARE EXPENSE	DOLLARS (ROUNDED TO THE NEAREST THOUSAND)
Paramedic responses	\$515,000
Emergency department visits	\$2,522,000
Hospitalizations	\$13,821,000
Community or residential treatment	\$7,686,000
Total	\$24,544,000

Data sources: Refer to the Data Sources in Appendix 1. **Data note:** Hospitalization costs exclude costs for patients admitted to designated mental health beds and also exclude Ontario Health Insurance Plan physician billing.

Indirect costs

Indirect costs of alcohol-related harms are more difficult to calculate and refer to loss of productivity of the injured person as a result of illness and premature death. These costs are normally incurred by private individuals and companies (e.g. those associated with traffic collisions or losses in the workplace). According to the literature, calculation of indirect costs is dependent upon a variety of assumptions and therefore open to more interpretation. The literature cites researchers used the method to estimate the indirect costs for Canada in 2002 looking at causes of lost productivity of long-term disability, short-term disability (day in bed), short-term disability with reduced activity and premature death to calculate indirect costs.^{24,60}

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“...as a child of a parent who today most likely would be considered an alcoholic although at that time was considered to be a heavy drinker, even though he was able to hold a job. Unfortunately even more directly by a son who is 42 and an alcoholic...partially raised his son for the 1st 6 years of his life and full time for the last 5 years. It has taken a huge toll financially and emotionally...The stress has been tremendous, the concern that we are having to spend our retirement income on a custody case (approx. \$50,000), now have the responsibility of raising and supporting another child through school and university.” (Respondent aged 45 years and older)

“Husband and I began as social drinkers at a young age (teens). Drinking steadily increased over the years and poor judgement/bad decisions followed. At its worst point we were spending \$600+ monthly...over \$7000 yearly! I stopped drinking 8 months ago and husband attends AA. I will never drink again and I love my new life.” (Respondent aged 45 years and older)

“My husband is a severe alcoholic and will likely die from his drinking. I am now separated from him due to his excessive alcohol use and related verbal and physical aggression and infidelity.” (Respondent aged 25 to 44 years)

“My husband is a binge drinker. It’s affecting our relationship because it’s unattractive, unhealthy behavior and I really don’t like that our young children witness his (and his friends’) behaviour. I don’t ever want them to think that it’s normal.” (Respondent aged 25 to 44 years)

“...tamp down on underage drinking, over intoxication, alcohol on school grounds, public places – should be safely and consistently monitored – e.g. Bluesfest jokingly called “Bingefest” ...Stopped going to large events such as Bluesfest with my children due to excessively drunk/disorderly behaviour” (Respondent aged 45 and older)

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“Alcohol is by far the most common drug used by Canadians and hospital costs for stays related to alcohol are ten times that due to opioids, marijuana and cocaine.” (Cheryl Arratoon, Senior Advisor, Strategic Partnerships and Knowledge Mobilization, Canadian Centre on Substance Abuse)

Per capita consumption trends

The level of alcohol consumed in a population is expressed in litres of ethanol (100% pure alcohol) sold per capita. Comparing consumption using a per capita rate from total alcohol sales is more reliable than self-reported consumption. As revealed in Chapter 3, the self-reported consumption rates are significantly lower than the per capita alcohol sales. In 2014–2015 according to total alcohol sales, Ontarians drank \$7.5 million worth of alcoholic beverages from liquor authorities and other retail outlets.⁶¹ This represents 7.3/litresⁿ per capita.⁶² Thomas reveals there is substantial variation in the levels of drinking across provinces due to multiple factors one of which is alcohol preference.¹⁸

Type of beverage

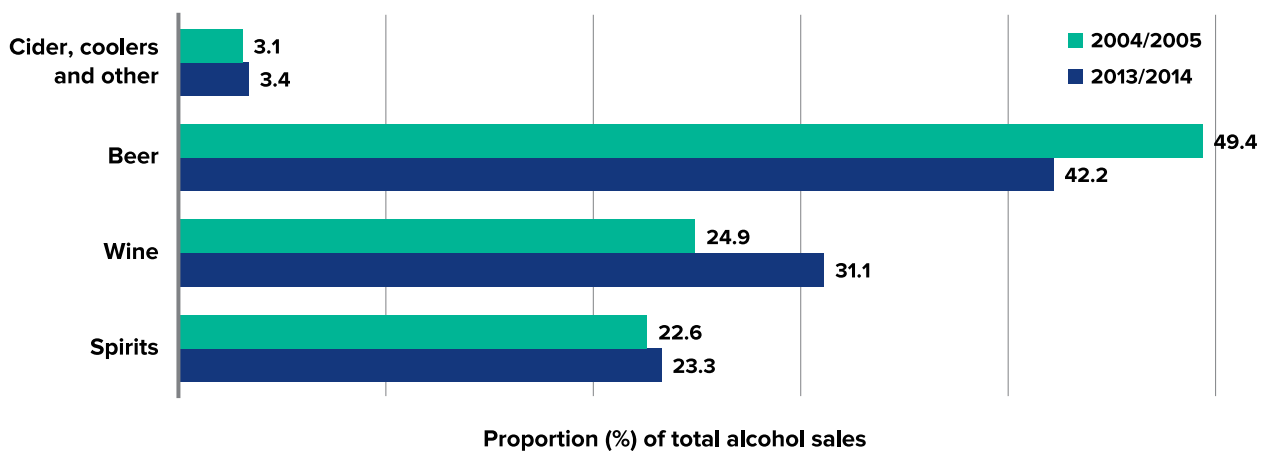
There are many varieties of alcoholic beverages with varying levels of alcohol content. The evidence suggests that the choice of beverage has little impact on most long-term health consequences and drinking patterns and cultural associations are stronger predictors than beverage type of the harmful outcomes.⁵ However, some beverage types have unique problems as described by Giesbrecht and colleagues.⁶³

Drinking spirits is strongly associated with an increased risk of fatal alcohol poisoning and aggressive behaviour. Perceived risk of harm varies by beverage type, which in turn can influence the amount and pattern of alcohol consumed; for example, beer drinkers had lower risk perceptions of drinking and driving and were more likely to become a heavy or excessive drinker than those who preferred wine. Spirits and beer were seen as more intoxicating than wine and population consumption levels were found to have significant correlation with rape rates. Giesbrecht cautioned that the literature has limitations and reinforces that overall consumption levels, drinking patterns and drinking context are potentially as important as type of beverage.⁶³

In Ontario, while the market share for wine, spirits and cider/coolers/other beverages have all increased since 2004, the market share of beer has been declining; however, it still is the largest share (42.2%) (Figure 22). Zhao revealed that the CADUMS self-reported spirits consumption accounted for only 34% of the official sales.^{17,64} Beer and wine self-reports were more accurate however they accounted for only 51% and 62% of alcohol sales, respectively.¹⁷

n Total per capita sales of absolute volume for total per capita sales (litres) Absolute volume of sales of alcoholic beverages is calculated by multiplying the sales volume by the percentage of alcohol content for each product category

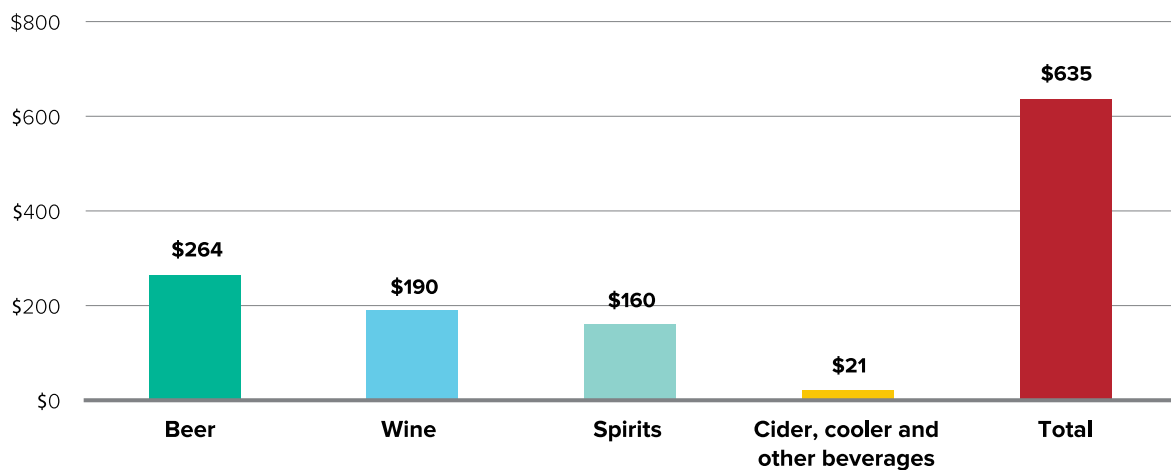
FIGURE 22. Percentage of alcohol sales by beverage category, Ontario, 2004–2005 vs. 2013–2014



Data source: Statistics Canada 2014. Table 183-0023 – Sales and per capita sales of alcoholic beverages by liquor authorities and other retail outlets, by value, volume, and absolute volume, annual, CANSIM (database). Accessed: September 6, 2016.

In terms of amount of money, Ontarians spend on average \$635 dollars a year as compared to the Canadian average of \$696 dollars on alcohol as shown in Figure 23.⁶²

FIGURE 23. How much the average Ontarian spent on alcohol sales/year, 2014–2015



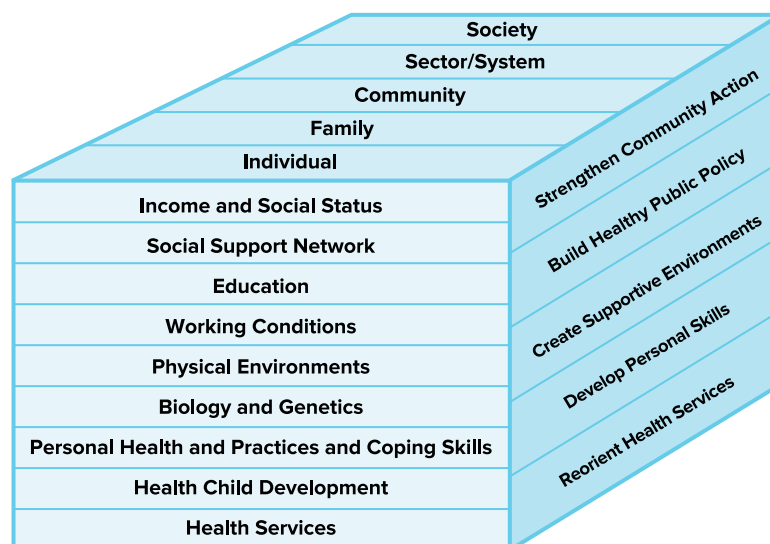
Data source: Statistics Canada 2014. Table 183-0023 – Sales and per capita sales of alcoholic beverages by liquor authorities and other retail outlets, by value, volume, and absolute volume, annual, CANSIM (database). Accessed: July 2016.

8. What can be done to reduce the harms?

Population health model

Evidenced based practice guides OPH's comprehensive approach to address alcohol use. Using a population health model shown in Figure 24, OPH aims to improve the health of the entire community and to reduce health inequities among specific population groups.⁴⁹ PHAC explains the Model as asking three critical questions, which are identified on the three visible faces of the cube.⁴⁹ The question of “what” should be done to improve population health outlines the social determinants of health. The question of “how” refers to the action being taken using comprehensive action strategies, as laid out in the Ottawa Charter for Health Promotion. The third question of “who” (with whom to act) provides guidance on the various levels of which interventions can be directed from individual, through to societal levels. In order to be successful OPH takes into consideration the factors that have a strong influence on the health of the individual.

FIGURE 24. Population health model



Source: Public Health Agency of Canada. Copy of image retrieved from <http://www.phac-aspc.gc.ca/ph-sp/php-psp/php3-eng.php> Reproduced with permission.

A comprehensive approach

To reduce the total alcohol-related harm, it is important to combine targeted interventions, i.e. for heavy drinkers, with a population-wide approach to address the large number of people who occasionally drink in ways increasing their risk of harm.⁶⁰

Using a multidimensional strategy to address alcohol-related harm combines policy and interventions for a comprehensive approach^{1,5,65} Policy measures of taxation and pricing are the most effective however additional policies such as regulating the availability of alcohol and altering the drinking context are effective means to reduce alcohol-related harms.^{5,60}

Policy interventions

Alcohol policies play a vital role in the reduction of harm and health risks. It is essential that policy makers are aware of the impacts of alcohol on individuals, communities and society. There are seven evidence-based policy approaches that are effective in reducing alcohol-related harms. The seven (7) policy approaches are 1) regulating physical availability of alcohol, 2) alcohol taxes and price control, 3) marketing restrictions, 4) drink and driving countermeasures and prevention, 5) modifying the drinking context, 6) education and persuasion strategies and 7) providing treatment and early intervention services.^{1,5,66 67}

Although policy areas can be implemented in isolation of each other, they are more effective if implemented as part of a larger intervention. For example, policy interventions to reduce the issue of impaired driving within a community through programs such as “reduce impaired driving everywhere” (RIDE) check-points and/or administrative licence suspensions (i.e. those that do not require conviction and take effect at roadside) have the most population level impact.³⁶ The drinking driving countermeasures that target high risk groups of drivers, such as the zero BAC requirements for drivers less than 22 years, have successfully reduced drinking and driving behaviour.⁴²

ALCOHOL AVAILABILITY

There is strong national and international evidence linking alcohol availability, consumption and harm: increased availability leads to increased rates of drinking, resulting in increased harm.^{4,5,21} Furthermore, increased density of alcohol outlets^o, extended hours and days of sale are associated with increased consumption (particularly among youth and young adults) resulting in increased alcohol-related harms and costs to the government.^{5,63} Policy measures to reduce alcohol-related harms will have to address both on-premise (e.g. bars and restaurants) and off-premise (e.g. liquor stores and beer stores) alcohol availability.⁵

According to AGCO, in Ottawa:^p

- Between 2010 and 2016 the number of licensed established increased from 1087 to 1230.
- During the same time, the number of manufacturer’s licences increased from 6 to 31, whereas the number of ferment on premise facilities (i.e. brew-your-own wine and beer producers) has decreased from 36 to 25.

^o An alcohol outlet is a location that is licensed to sell alcohol to the buyer to drink there (on-premises outlets, such as bars or restaurants) or elsewhere (off-premises outlets, such as liquor stores or grocery stores). Density refers to the number of alcohol outlets in a given area.

^p May include less than 5% on the outskirts of Ottawa.

- Alcohol can be bought off-premise from 153 locations: 39 LCBOs, 29 off-site wine sales (e.g. Wine Rack), 21 beer stores, 8 grocery stores, 22 breweries, 8 wineries, 1 distillery, 25 ferment on premise (e.g. wine and beer produced) and 9 Farmer's markets (Ontario-grown Vintners Quality Alliance (VQA) wine only).
- In 2010, there were 3,418 special occasion permits (SOP) issued for Ottawa as compared to 3,496 in 2015. Any event that sells or serves alcohol (e.g. weddings, charity events, receptions) anywhere other than in a licensed establishment or a private place requires a SOP, which is issued through the LCBO.

Eight-in-ten high school students said it would be easy to get alcohol if they wanted some (PMO-OSDUHS, 2013).

Figure 25 shows the areas in Ottawa with the highest density of on-premise (e.g. bars, restaurants) alcohol outlets per 1000 residents aged 19 and older.

The dissemination areas^q in the top two deciles of density are shaded. Darker shading indicates a higher density of on-premise alcohol outlets. The highest density is seen downtown in the ByWard Market area (134.9 on-premise alcohol outlets per 1000 residents aged 19 and older), which is more than double the area with the next highest density (60.9 per 1000 residents aged 19 and older). As mentioned, the downtown core also has the highest density of alcohol-related offences and paramedic responses. Eight of the top ten most dense on-premise alcohol outlet areas fall within the inset displayed in the bottom right corner. The other two included in the top ten are near the intersection of Baseline Road and Merivale Road and in Kanata North (Table 22 in Appendix 5 displays the ranked data for on-premise alcohol outlet density by dissemination area with the ward identified).

The map also shows the number of off-premise (e.g. LCBO, Beer Stores) alcohol outlets by dissemination area, with larger circles indicating more locations. Many of the areas that do not have a high density of on-premise alcohol outlets do have a higher number of off-premise alcohol outlets.

The regulation of alcohol outlet density through zoning by-laws may be a useful tool to reduce excessive alcohol consumption and related harms. Local governments have the power to restrict the density of alcohol outlets. Effective use of alcohol policies can support a culture of alcohol moderation.

q Dissemination areas are small areas made of neighbouring blocks, with a population of 400 to 700 persons. They are defined by Statistics Canada. Dissemination areas with an overall population density less than 100 per km² were excluded.

STATUS OF ALCOHOL IN OTTAWA



Data source: On and off-premise alcohol outlet data, Alcohol and Gaming Commission of Ontario. Extracted October 7, 2016. LCBO locations verified using LCBO store locator: <https://www.lcbo.com/lcbo/store-locator>. Population data, 2011 Census, Statistics Canada.

9. How do we move forward to a culture of alcohol moderation?

Recommendations for actions go well beyond the mandate, capacity and resources of any one organization.

Changing the drinking culture in Ottawa will take collaborative efforts from key players including individuals and community decision makers to ensure sustainable impacts. OPH will seek to bring together multiple sectors from across the broader community to discuss the alcohol issues and how to address them. Participation from committed local leaders and decision makers will be essential for success. OPH has initiated the process of gathering community perspectives about alcohol in Ottawa as part of engaging the community. For sustainable community action, local communities must identify the needs, problems and solutions that are meaningful to them.

Building upon OPH's strategic direction to "Foster Mental Health in our Community" and the subsequent strategic initiative, *Towards a Culture of Alcohol Moderation*, aims to create a supportive mental health environment to increase community resiliency by changing the culture of drinking towards moderation to decrease alcohol-related harms. Using a policy change perspective combined with education, awareness building and supportive environments for health promotion, positive community-wide change can improve the health of people in Ottawa.

OPH proposes a three point community engagement action plan for the next 12 to 18 months. These actions will be completed concurrently: 1. Public Awareness: Disseminate the *Status of Alcohol in Ottawa Report: Let's Continue the Conversation*; 2. Seek opportunities for collaborative action and 3. Adapt best practices to Ottawa. OPH will invite stakeholders to help inform a local assessment of alcohol policy approaches. This will include identifying community strengths as well as strategies that could be enhanced.

OPH will continue to monitor and report back to the community on the progression towards adopting a culture of drinking in moderation. The indicators will include the following:

1. % of adults and youth who consume alcohol
2. % of population who exceed the LRADGs on a daily and weekly level
3. Rate of 100% alcohol attributable ED visits
4. Rate of 100% alcohol attributable hospital admissions
5. Rate of 100% alcohol attributable deaths
6. Number of collisions where driver alcohol use was involved
7. Number of alcohol-related criminal offences
8. Density of alcohol outlets
9. Progress on local alcohol policy approaches

Glossary

TERM	DESCRIPTION
Ability impaired alcohol over 0.08	Driver had consumed alcohol and upon testing was found to have a blood alcohol level in excess of 0.08 grams of alcohol per 100 millilitres of blood.
Ability impaired alcohol	Driver had consumed sufficient alcohol to warrant being charged with a drinking and driving offence.
Alcohol outlet	A location that is licensed to sell alcohol to the buyer to drink there (on-premises outlets, such as bars or restaurants) or elsewhere (off-premises outlets, such as liquor stores or grocery stores).
Binge drinking	The consumption of five or more drinks on one occasion for males and four or more for females. This definition aligns with the recommended upper levels of consumption in Guideline 2 of Canada's Low Risk Alcohol Drinking Guidelines.
Decile	A decile is a method of splitting up a set of ranked data into 10 equally large subsections. Therefore, as it relates to the density of alcohol outlets by area, the top two deciles would contain the top 20% of all the areas.
Had been drinking	Driver had consumed alcohol but his/her physical condition was not legally impaired.
Heavy drinking	Heavy drinking is defined as binge drinking once a month or more.
Confidence interval	The interval within which the true value of a variable such as a mean, proportion or rate is contained. This is calculated to a 95 per cent probability in this report.
Morbidity	Morbidity refers to any departure from health or well-being, but it often refers to the state of illness, disease or injury in a population.
Risk factor	A factor that is associated with an elevated frequency of occurrence of the disease or condition.
Sampling variability	Sampling variability is the inconsistency among samples drawn from the same population, which can occur as individuals are selected by chance from that population. High sampling variability can indicate that an estimate is not as precise as it could be. Factors that increase sampling variability include a small sample size and an event with low prevalence or a rare condition.
Statistical significance	This term is used to describe an observed difference between groups that is most likely to be a real difference and is unlikely to have occurred by chance. This difference is often calculated to the 95 per cent probability of a true difference being observed.

Appendix 1: Data sources

Ottawa Public Health (OPH) maintains several internal databases to track local data related to alcohol use; access provincial databases and national survey data; collaborates with other organizations to generate primary research; and communicates with local researchers and agencies to obtain complimentary data. Surveillance data are shared with partners via various methods and used to inform OPH programming. The most current data files available were used for the preparation of this report.

Data on paramedic responses to alcohol ingestion or intoxication (2015) were obtained from the Ambulance Dispatch Reporting System by Ottawa Paramedic Service. Emergency department visits were derived from the National Ambulatory Care Reporting System. Hospitalization data were derived from the Discharge Abstract Database (Canadian Institute of Health Information) and the Ontario Mental Health Reporting System, from calendar years 2013 to 2015. Mortality data (2007 to 2011) are from the Vital Statistics database (Office of the Registrar General). For more information on how alcohol-attributable hospitalizations and deaths were calculated, please see the Methodology section of Chapter 4.

The grades 7 through 12 alcohol use data used in this publication came from a representative oversample of Ottawa students (n=1,272) for the 2013 Ontario Student Drug Use and Health Survey (OSDUHS) conducted by the Centre for Addiction and Mental Health and administered by the Institute for Social Research, York University. Its contents and interpretation are solely the responsibility of the author and do not necessarily represent the official view of the Centre for Addiction and Mental Health.

Information on alcohol use among Ottawa adults was obtained from several sources. Prevalence of alcohol use among the general population comes from the Canadian Community Health Survey (CCHS) (2000–2001 to 2013–2014) by Statistics Canada. Data on substance misuse treatment services during fiscal years (FY) 2014–2015 in Ontario were provided by the Drug and Alcohol Treatment Information System (DATIS).

Data on motor vehicle collisions involving alcohol were obtained from the Ontario Ministry of Transportation and Safer Roads Ottawa. Alcohol-related crime data and public drunkenness complaints (2011–2015) were obtained from the Ottawa Police Service. Data on alcohol outlets and special occasion permits (2010–2016) were obtained from the Alcohol and Gaming Commission of Ontario.

Throughout the report, respondent quotes are included from the 2016 online “Have Your Say” Alcohol survey conducted by OPH (n=1,986). The non-random survey explored perspectives on alcohol use in Ottawa. The quotes for this report were selected from an optional question (n=575) that asked, “*Have you been affected by alcohol use in our community? Tell us how.*” The quotes were first selected to align with topic of the section. An attempt was made to select quotes from among the age groups (16 to 19 to 24; 25 to 44 and 45 years and older).

Where additional evidence was needed, recent peer-reviewed systematic literature reviews, reputable government publications (e.g. the Chief Health Officer’s Report on Alcohol Consumption in Canada) and seminal publications (e.g. Alcohol: No Ordinary Commodity by Babor and colleagues) were used.

The local direct healthcare costs were calculated from multiple sources as follows:

- Paramedic responses: based on a cost of \$250 per hour for a paramedic crew in an ambulance with two paramedics and equipment, and an assumption that the average alcohol-related call is one hour (Kelly, P, Acting Chief, Ottawa Paramedic Service, email communication, 2016 Oct 7).
- Emergency department visits: based on average Ontario Health Insurance Plan physician billing (Poirier S, Analyst, Case Costing and Statistical Reporting, Financial Services, The Ottawa Hospital, email communication, 2016 Oct 3) and weighted hospital and case-specific costs based on the 2014–2015 Health-Based Allocation Model (HBAM) from the Health Data Branch Web Portal of the Ministry of Health and Long-term Care.
- Hospitalizations: based on the weighted hospital and case-specific costs based on the 2014–2015 HBAM from the Health Data Branch Web Portal of the Ministry of Health and Long-term Care. Hospital costs were calculated for 100% alcohol attributable conditions as well as partially attributable conditions. For the partially attributable conditions, the costs were calculated based on the appropriate attributable fraction for the age, sex and condition. Hospitalization costs exclude costs for patients admitted to designated mental health beds and also exclude Ontario Health Insurance Plan physician billing.
- Community or residential treatment: based on the 2015–2016 FY substance use programs in the Ottawa area funded by the Ministry of Health and Long-term Care (Rod Olfert, Champlain LHIN, email communication, May 20, 2016), where alcohol was the presenting substance in 2014–2015 FY in DATIS (Claudio Rocca, DATIS, email communication, 2016 April 14).

Data Limitations

The ultimate target for prevention efforts is to reduce deaths and disabilities from chronic disease (including mental illness and addiction) and injury. However, deaths make up a very small part of the overall impact that chronic diseases and injuries have on the population. For every death, there are many more hospitalizations, emergency department visits and injuries that are not accounted for, having been treated outside of the traditional health care system.

The morbidity and mortality data captured in this report (paramedic calls, hospitalization and deaths) under-represent the true burden of alcohol use in Ottawa because many diseases and injuries go unreported. The morbidity and mortality data in this report should be considered separately. Persons who are admitted to hospital and die while in hospital are not removed from the hospitalization data. Thus, it would not be appropriate to add together hospitalization and death data as presented in this report. Paramedic data in this report are based on the number of incidents, rather than the number of paramedic teams who document attending the scene. Paramedic data include anyone for whom Ottawa Paramedic Service completed an Ambulance Call report even if they are not residents of Ottawa, while emergency department visits and hospitalizations represent injuries sustained by Ottawa residents anywhere in Ontario (i.e. the event may have occurred outside of the Ottawa area). Mortality data represent Ottawa residents who died regardless of location.

Police data on alcohol-related offences include offences for which Ottawa Police Service submitted a report even if the subject is not a resident of Ottawa. The alcohol study flag does not specify who was drinking the alcohol; it could be the victim, the complainant, the owner or the subject of the police mobile response. Furthermore, the study flag is filled-in at the discretion of the officer and therefore may under-represent the incidents involving alcohol.

Direct health care costs are estimates only and likely under-represent the true costs because, for example, family doctor visits were not included.

Data from all surveys (OSDUHS, CCHS, and Have Your Say Alcohol survey) are based on self-reports and are subject to recall bias and social desirability bias.

Appendix 2: Ottawa demographics

Ottawa spans a large geographic area of 2,790 square kilometres, and includes a range of urban, suburban and rural communities.⁶⁸ The Ontario Ministry of Health and Long-Term Care projection for Ottawa's population in 2016 is 971,723.⁶⁹ In 2011, the median age in Ottawa was 39 years: 38 for men and 40 for women.⁶⁸

Among Ottawa residents aged 25 to 64, 7% have no certificate, diploma or degree; 19% have a high school diploma or equivalent; and 75% have a postsecondary certificate, diploma or degree.⁷⁰

Ottawa's median after-tax household income was highest for couples with children (\$105,400), followed by couples without children (\$80,400), lone parents (\$52,100), and persons living alone or with non relatives only (\$33,200). 12% of individuals in private households in Ottawa were considered low income in 2011.^{70,71}

In Ottawa, 23% of households spend 30% or more of their income on shelter.⁷⁰ This puts them at risk of not having enough money left to pay for food and other basic human needs, or for adequate childcare, access to recreation and education, and other resources that promote health and well-being.

Sixty percent of Ottawa residents speak English only, 37% speak both French and English, 1.5% speak French only, and 1.5% speak neither official language. English is the most common single language spoken in the home (79%), followed by French (10%). Eleven per cent of residents most commonly speak a non-official language in the home. Among this 11%, the most commonly spoken non-official languages are Cantonese, Mandarin, and Chinese language not specified (19%), Arabic (18%), Spanish (6%), and Vietnamese (4%).⁷⁰

Two percent (18,200) of Ottawa's population identified as Aboriginal, that is, First Nations (North American Indian), Métis or Inuk (Inuit) and/or those who reported Registered or Treaty Indian status in the 2011 Census. Most Ottawans with Aboriginal status identify as First Nations (57%) or Métis (35%). Ottawa is becoming an increasingly diverse city. Almost 1 in 4 (24%) residents self-identify as a visible minority. Seventy-five per cent of the population of Ottawa was born in Canada. Four per cent of Ottawa residents are recent immigrants (those who immigrated in the past five years).⁷⁰

Among Ottawa residents aged 12 and older, 63% (95%CI: 60%, 65%) rate their health as excellent or very good and 70% (95%CI: 66%, 73%) rate their mental health as excellent or very good (CCHS, 2013/14).

Appendix 3: Alcohol and the community: Framing the issue

Surveillance

In 2012, the Substance Misuse in Ottawa: Technical Report³¹ was initiated in response to an inquiry by an Ottawa Public Health board of health member, which resulted in OPH undertaking an epidemiological scan of substance misuse in Ottawa. This involved a review of local programs and services as well as OPH's framework to address substance misuse. The Technical Report provided an epidemiological overview of alcohol use. Alcohol misuse is a significant burden in Ottawa which has Ottawa Public Health (OPH) continuing to strengthen efforts with a goal of reducing problem drinking and its associated harms.

Community Consultations

Alcohol, when consumed in moderate to high quantities can facilitate high risk behaviours and lead to injuries. Unfortunately, alcohol leads to a greater burden of illness and deaths than other drugs, and for the last several years, the drinking habits of Ottawa residents have been found to be consistently higher than the provincial average.³¹ Ottawa Public Health (OPH) wanted to hear the stories behind these numbers which resulted in OPH conducting surveys and consultations to understand how community members have been affected by alcohol either from personal drinking, or someone else's drinking.

Community consultation in 2010/11 aimed to assess adult's perceptions and awareness of the relationship between alcohol and chronic diseases, with a focus on cancer, and the Low Risk Alcohol Drinking Guidelines.

The fall of 2015 consultation assessed public perception about the impact of alcohol use in Ottawa. The initial 2015 survey had over 500 intercept surveys completed with adults 19 years of age or older. The top concerns identified were violence, binge drinking, drunk driving and underage drinking. To better understand the fall survey results a bilingual, online convenience survey was created called "Have your Say".

In 2016, the "Have Your Say" alcohol survey was implemented between February 1st to March 14th. Close to two thousand people who live, work or study in Ottawa shared their opinions and personal stories about alcohol. The stories were about personal experiences, or how others such as friends, families, and strangers have been affected by alcohol. Economic status, education level or gender were not included in this survey.

During the 2008–2009, 2010–2011 and 2012–2013 school years, OPH worked with the Centre for Addiction and Mental Health (CAMH) to study Ottawa students in grades 7 through 12, using the Ontario Student Drug Use and Health Survey (OSDUHS). The OSDUHS surveys a random sample of students in grades 7 through 12 who are enrolled in any of the four publicly funded school systems. A representative sample of 1,200 Ottawa students completed the survey in 2009, 1,015 in 2011 and 1,272 in 2013.

Stakeholder Consultation

In 2010–2011, OPH conducted an internal review of alcohol programming in light of the rising profile among stakeholders, other health units and supported by the literature addressing alcohol-related harms with a comprehensive approach. In 2013, OPH engaged post-secondary stakeholders to address alcohol among young adults. The goal was to reduce harmful and excessive consumption of alcohol.

The 2015–2016 stakeholder consultations revealed continuing concern about alcohol-related harm. There is agreement that attitudinal change is needed to change behaviour to decrease the social harms endured by someone other than the drinker. There is consensus that a variety of interventions and partnerships must be used to build community capacity and achieve successful behaviour change to support a community drinking culture of moderation. Further community consultations will be needed to determine a plan of action to reduce alcohol-related harm.

Appendix 4: Wards

TABLE 4. Population by ward, Ottawa

WARD NUMBER	WARD NAME	2011 POPULATION
1	Orleans	47,670
2	Innes	38,310
3	Barrhaven	46,475
4	Kanata North	34,470
5	West Carleton-March	23,055
6	Stittsville	26,455
7	Bay	43,935
8	College	50,795
9	Knoxdale-Merivale	38,380
10	Gloucester-Southgate	47,860
11	Beacon Hill-Cyrville	33,155
12	Rideau-Vanier	41,105
13	Rideau-Rockcliffe	37,075
14	Somerset	35,110
15	Kitchissippi	37,920
16	River	45,795
17	Capital	34,490
18	Alta Vista	44,050
19	Cumberland	43,375
20	Osgoode	24,445
21	Rideau-Goulbourn	24,530
22	Gloucester-South Nepean	41,620
23	Kanata South	43,315

Appendix 5: Data tables for figures

TABLE 5. Data for Figure 3. Percentage of adults (19 years and older) who reported binge drinking, heavy drinking, or exceeding weekly limits of Canada's LRADG, by year, Ottawa, 2000–2014

YEAR	BINGE DRINKING	95% CONFIDENCE INTERVAL	HEAVY DRINKING	95% CONFIDENCE INTERVAL	EXCEED WEEKLY LIMITS	95% CONFIDENCE INTERVAL
2000/01	34.2	2.9	15.3	2.1	22.9	2.6
2003	39.1	3.1	18.3	2.4	26.9	2.7
2005	40.9	3.0	19.0	2.7	28.3	3.0
2007/08	40.6	3.5	19.9	2.6	28.8	3.3
2009/10	40.9	3.0	20.6	3.0	26.1	3.3
2011/12	44.2	3.1	22.9	3.0	26.7	3.4
2013/14	38.9	3.6	19.5	3.0	22.3	3.1

TABLE 6. Data for Figure 4. Percentage of adults (19 years and older) who exceeded the weekly limits of Canada's LRADG in the past year, by sex and age group, Ottawa, 2013–2014

GROUP	PERCENT	95% CONFIDENCE INTERVAL
Ottawa	22.3	3.1
Ontario less Ottawa	20.5	0.8
Women	17.9	3.8
Men	27.1	4.5
19–24	30.1	10.1
25–44	21.9	5.7
45–64	20.6	4.6
65+	21.7	4.8

TABLE 7. Data for Figure 5. Percentage of adults (19 years and older) who reported heavy drinking in the past year, by sex and age group, Ottawa, 2013–2014

GROUP	PERCENT	95% CONFIDENCE INTERVAL
Ottawa	19.5	3.0
Ontario less Ottawa	17.6	0.7
Women	16.1	4.0
Men	23.2	5.0
19–24	44.1	10.6
25–44	21.5	5.5
45–64	16.0	10.9
65+	5.3*	2.4

TABLE 8. Data for Figure 6. Percentage of adults (19 years and older) who reported heavy drinking in the past year by income tertile, Ottawa, 2013–2014

TERTILE	PERCENT	95% CONFIDENCE INTERVAL
Lowest income	15.0	5.8
Middle income	25.1	5.3
Highest income	27.5	5.3

TABLE 9. Data for Figure 7. Percentage of adults (19 years and older) who reported heavy drinking, by mother tongue and immigration status, Ottawa, 2013–2014

GROUP	HEAVY DRINKING	95% CONFIDENCE INTERVAL	EXCEED WEEKLY LIMITS	95% CONFIDENCE INTERVAL
English mother tongue	24.3	4.5	28.2	4.6
French mother tongue	24.7*	9.3	23.7	6.0
Other mother tongue	7.5*	3.0	10.2*	3.9
Non-immigrant	24.4	4.0	27.3	3.7
Immigrant	10.1*	6.0	11.6*	3.9

TABLE 10. Data for Figure 8. Students who binge drank in the past month by grade, Ottawa, 2013

GRADE	PERCENT	95% CONFIDENCE INTERVAL
7 or 8	2*	1.4
9	NR	NR
10	15*	10.4
11	32*	17.7
12	54	8.2

TABLE 11. Data for Figure 10. Distribution of alcohol-related risk among adults (19 years and older), Ottawa, 2013–2014

RISK CATEGORY	NUMBER OF ADULTS	95% CI
No-risk	124,644	20,463.3
Low-risk	290,916	25,603.8
Moderate-risk	256,849	26,522.4
High-risk	46,854	12,652.47

TABLE 12. Data for Figure 11. Counts and rates of alcohol-related paramedic responses by age group and sex, Ottawa, 2015

AGE CATEGORY (YEARS)	MALE COUNT	FEMALE COUNT	MALE RATE PER 100,000	FEMALE RATE PER 100,000
0–11	4	0	6.5	0.0
12–18	73	93	193.8	253.4
19–24	202	193	463.9	452.5
25–44	438	233	327.5	167.5
45–64	441	194	341.7	146.7
>=65	105	46	168.9	59.1

TABLE 13. Data for Figure 13. Annual number of 100% alcohol-attributable ED visits by diagnosis and sex, Ottawa, 2013–2015 average

SEX	MENTAL HEALTH	CHRONIC DISEASE	ALCOHOL POISONING	FETAL ALCOHOL SYNDROME	TOTAL
Female	1,997	124	54	4	2,149
Male	3,677	263	53	6	3,931
Total	5,674	388	107	10	6,081

TABLE 14. Data for Figure 14. Age-specific rate of 100% alcohol-attributable ED visits by sex, 2013–2015, Ottawa

AGE CATEGORY (YEARS)	FEMALE RATE PER 100,000	MALE RATE PER 100,000
0–14	32.2	17.4
15–24	844.7	944.4
25–44	499.4	949.2
45–64	527.1	1,283.4
65+	249.6	618.6

TABLE 15. Data for Figure 15. Annual number of alcohol-attributable hospitalizations by diagnosis and sex, Ottawa, 2013–2015 average

DIAGNOSIS	MALE	FEMALE
Injuries	278	173
Mental health conditions	284	156
Digestive diseases	124	59
Cancer	37	35
Cardiovascular disease	45	14
Other chronic disease	1	0

TABLE 16. Data for Figure 16. Annual number of alcohol-attributable deaths by diagnosis and sex, Ottawa, 2007–2011 average

DIAGNOSIS	MALE	FEMALE
Injuries	40	17
Digestive diseases	29	11
Cancer	14	9
Mental health conditions	11	5
Cardiovascular disease	4	1
Other chronic disease	0	0
Total	98	42

TABLE 17. Data for Figure 17. Count and rate per 1,000 of individuals in treatment for alcohol misuse by age group, Ottawa, 2014–2015 FY

AGE CATEGORY (YEARS)	COUNT	RATE PER 1,000
Under 16	253	1.5
16–24	821	6.8
25–34	628	4.4
35–44	601	4.7
45–54	711	5.1
55–64	406	3.4
65 and over	133	1.0

TABLE 18. Data for Figure 18. Number of alcohol-related motor vehicle collisions by age and sex, Ottawa, 2014

AGE GROUP (YEARS)	MALE	FEMALE
16–18	8	<5
19–21	31	9
22–24	24	11
25–29	45	5
30–34	29	12
35–44	32	10
45–64	48	12
65+	5	<5

TABLE 19. Data for Figure 21. Breakdown of costs (dollars) of alcohol use in Canada, 2002

TYPE OF COST	COSTS OF ALCOHOL (BILLIONS OF DOLLARS)
(Indirect) Lost Productivity -illness and premature death	7.1
(Direct) Health Care costs	3.3
(Direct) Law Enforcement costs.	3.1
Traffic Collision Damage	0.757
Fire Damage	0.156
Other (prevention, research, admin costs, workplace loss)	0.136
Total	14.6

TABLE 20. Data for Figure 22. Percentage of alcohol sales by beverage category, Ontario, 2004–2005 vs. 2013–2014

TYPE OF BEVERAGE	2004/2005	2013/2014
Spirits	22.6	23.3
Wine	24.9	31.1
Beer	49.4	42.2
Cider, coolers and other	3.1	3.4

TABLE 21. Data for Figure 23. How much the average Ontarian spent on alcohol sales/year, 2014–2015

TYPE OF BEVERAGE	DOLLARS SPENT ON ALCOHOL
Beer	\$264
Wine	\$190
Spirits	\$160
Cider, cooler and other	\$21
Total	\$635

TABLE 22. Data for Figure 25. Map of density of licensed on-premise alcohol outlets per 1000 residents aged 19 and older by dissemination area in the top two deciles, and number of off-premise alcohol outlets by dissemination area, 2015

RANKING	DISSEMINATION AREA	WARD	ON-PREMISE DENSITY PER 1,000 PEOPLE 19 AND OLDER	NUMBER OF OFF-PREMISE ALCOHOL OUTLETS
1	35061788	12 Rideau-Vanier	134.9	1
2	35060338	14 Somerset	60.9	1
3	35061789	12 Rideau-Vanier	60.8	0
4	35060305	17 Capital	52.2	1
5	35061097	9 Knoxdale-Merivale	35.8	1
6	35060408	14 Somerset	34.5	0
7	35061790	12 Rideau-Vanier	27.4	2
8	35061871	15 Kitchissippi	27.4	0
9	35061761	15 Kitchissippi	25.7	0
10	35061578	4 Kanata North	23.1	1
11	35060836	21 Rideau-Goulburn	22.5	3
12	35061715	14 Somerset	21.8	0
13	35060871	10 Gloucester-Southgate	21.5	1
14	35060339	14 Somerset	21.5	0
15	35061762	15 Kitchissippi	21.4	0
16	35060347	14 Somerset	20.6	0
17	35061766	14 Somerset	20.4	0
18	35061818	4 Kanata North	19	3
19	35061710	14 Somerset	18.3	1
20	35060407	14 Somerset	17.9	2
21	35060648	7 Bay	17.6	0
22	35061325	2 Innes	16.7	0
23	35060251	12 Rideau-Vanier	16.3	0
24	35060622	8 College	16.2	3
25	35061870	15 Kitchissippi	16	0
26	35061763	14 Somerset	16	0
27	35060579	9 Knoxdale-Merivale	15.6	0
28	35061699	18 Alta Vista	14.6	0

RANKING	DISSEMINATION AREA	WARD	ON-PREMISE DENSITY PER 1,000 PEOPLE 19 AND OLDER	NUMBER OF OFF-PREMISE ALCOHOL OUTLETS
29	35060346	14 Somerset	14.3	1
30	35060224	13 Rideau-Rockcliffe	14.3	0
31	35060348	14 Somerset	14.1	0
32	35061793	12 Rideau-Vanier	14	0
33	35060391	15 Kitchissippi	13.6	1
34	35061716	14 Somerset	13.3	0
35	35061361	11 Beacon Hill-Cyrville	13.1	0
36	35060196	12 Rideau-Vanier	12.9	0
37	35061293	18 Alta Vista	12.9	2
38	35060306	17 Capital	12.8	1
39	35061653	17 Capital	12.8	0
40	35061864	15 Kitchissippi	12.2	0
41	35061723	12 Rideau-Vanier	11.6	0
42	35061711	14 Somerset	11.5	2
43	35061090	15 Kitchissippi	11.1	1
44	35061188	7 Bay	10.9	0
45	35060709	23 Kanata South	10.7	0
46	35061749	15 Kitchissippi	10.7	0
47	35061863	15 Kitchissippi	10.5	0
48	35061713	14 Somerset	10.3	0
49	35060393	15 Kitchissippi	10.3	0
50	35061347	12 Rideau-Vanier	10.3	0
51	35060310	17 Capital	10.1	0
52	35061627	17 Capital	10.1	1
53	35060192	12 Rideau-Vanier	10	0
54	35061767	14 Somerset	10	0
55	35060989	13 Rideau-Rockcliffe	9.6	1
56	35060582	9 Knoxdale-Merivale	9.5	0
57	35061613	17 Capital	9.5	0
58	35060135	11 Beacon Hill-Cyrville	9.4	2

RANKING	DISSEMINATION AREA	WARD	ON-PREMISE DENSITY PER 1,000 PEOPLE 19 AND OLDER	NUMBER OF OFF-PREMISE ALCOHOL OUTLETS
59	35060458	8 College	9.2	0
60	35060354	14 Somerset	9.1	1
61	35061700	17 Capital	9	0
62	35061771	14 Somerset	9	0
63	35060573	9 Knoxdale-Merivale	8.9	4
64	35061750	15 Kitchissippi	8.7	0
65	35060399	14 Somerset	8.6	0
66	35060412	15 Kitchissippi	8.5	0

References

1. Durham Region Health Department, Halton Region Health Department, Region of Waterloo, Public Health, York Region Community and Health Services, Public Health Branch. (2014). Cycle 2 Locally Driven Collaborative Project: Addressing Consumption and Alcohol-Related Harms at the Local Level; A resource for public health professionals in Ontario. Ontario http://www.oninjuryresources.ca/downloads/workgroups/ldcpalcohol/LDCP_report_rev_Oct_14_6.pdf
2. Public Health Agency of Canada. The Chief Health Officer's Report on the State of Public Health in Canada 2015. Alcohol Consumption in Canada. Ottawa, Ontario, 2016 Available from: <http://healthycanadians.gc.ca/publications/department-ministere/state-public-health-alcohol-2015-etat-sante-publique-alcool/index-eng.php>
3. CAMH Health Promotion Resource Centre and Public Health Ontario. Making the case: Tools for Supporting Local Alcohol Policy in Ontario. Toronto, Ontario: Centre for Addiction and Mental Health and Public Health Ontario; 2013
4. Butt P, Beirness D, Gliksman L, Paradis C, Stockwell T. Alcohol and health in Canada: A summary of evidence and guidelines for low-risk drinking. An independent report prepared for the National Alcohol Strategy Advisory Committee and the Canadian Centre For Substance Abuse, Ottawa, Canada. 2010 Nov 3. Available from: <http://www.ccsa.ca/Resource%20Library/2011-Summary-of-Evidence-and-Guidelines-for-Low-Risk%20Drinking-en.pdf> [accessed July 2016]
5. Babor, T., Caetano, R., Casswell, S., Edwards, G., Giesbrecht, N. et al. Alcohol: no ordinary commodity: research and public policy. Oxford University Press; 2010 Feb 25.
6. Patra J, Taylor B, Rehm JT, Baliunas D, Popova S. Substance-attributable morbidity and mortality changes to Canada's epidemiological profile: measurable differences over a ten-year period. Canadian Journal of Public Health/Revue Canadienne de Sante'e Publique. 2007 May 1:228-34.
7. Connor J. Alcohol consumption as a cause of cancer. Addiction. 2016 Jan 1. Available from: doi: 10.1111/add.13477
8. Thomas G. Analysis of beverage alcohol sales in Canada. (Alcohol Price Policy Series: Report 2) Ottawa, Ontario: Canadian Centre on Substance Abuse Available from: <http://www.ccsa.ca/Resource%20Library/CCSA-Analysis-Alcohol-Sales-Policies-Canada-2012-en.pdf>
9. Canadian Centre on Substance Abuse. Canada's Low-Risk Alcohol Drinking Guidelines Ottawa, Ontario 2011 Available from: <http://www.ccsa.ca/Resource%20Library/2012-Canada-Low-Risk-Alcohol-Drinking-Guidelines-Brochure-en.pdf> [accessed June 2016]
10. Government of Ontario, News Release. Ontario Developing Policy to Support Responsible Alcohol Use 2015 Toronto, Ontario: Queens Printer for Ontario Available from <https://news.ontario.ca/opo/en/2015/12/ontario-developing-policy-to-support-responsible-alcohol-use.html>

11. Government of Ontario, Ministry of Health and Long-Term Care Ontario public health standards 2008. Revised May 2016. Toronto, Ontario: Queen's Printer for Ontario Available from: http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/ophs_2008.pdf
12. Marmot MG, Allen J, Goldblatt P, Boyce T, McNeish D, Grady M, Geddes I. Fair society, healthy lives: Strategic review of health inequalities in England post-2010.
13. Collins SE. Associations Between Socioeconomic Factors and Alcohol Outcomes. Alcohol research: current reviews. 2016;38(1):83
14. Jones L, Bates G, McCoy E, Bellis MA. Relationship between alcohol-attributable disease and socio-economic status, and the role of alcohol consumption in this relationship: a systematic review and meta-analysis. BMC public health. 2015 Apr 18;15(1):1. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4409704/>
15. Ottawa Public Health. Youth Facts: Alcohol Consumption Ottawa Student Drug Use and Health Report Ottawa, Ontario 2014. Available from http://documents.ottawa.ca/sites/documents.ottawa.ca/files/documents/osdhus_alcohol_en.pdf [accessed July 2016]
16. O'Brien MC, McCoy TP, Rhodes SD, Wagoner A, Wolfson M. Caffeinated cocktails: energy drink consumption, high risk drinking, and alcohol related consequences among college students. Academic Emergency Medicine. 2008 May 1;15(5):453-60. Available from: <http://onlinelibrary.wiley.com/doi/10.1111/j.1553-2712.2008.00085.x/full>
17. Zhao J, Stockwell T, Thomas G. An adaptation of the Yesterday Method to correct for under-reporting of alcohol consumption and estimate compliance with Canadian low-risk drinking guidelines. Can J Public Health. 2015 Apr 29;106(4):204-9.
18. Thomas G. Levels and patterns of alcohol use in Canada. (Alcohol Price Policy Series: Report 1) Ottawa, Ontario: Canadian Centre on Substance Abuse 2012 Available from: <http://www.ccsa.ca/Resource%20Library/CCSA-Patterns-Alcohol-Use-Policy-Canada-2012-en.pdf>
19. Thomas G. Myths and Facts about Alcohol. Grey Bruce Health Unit, Ontario 2011 Available from: http://www.southwesthealthline.ca/healthlibrary_docs/MythsFactsAboutAlcohol.pdf
20. Blomberg RD, Peck RC, Moskowitz H, Burns M, Fiorentino D. Crash risk of alcohol involved driving: A case-control study 2005. Available from: <http://www.dunlapandassociatesinc.com/crashriskofalcoholinvolveddriving.pdf> [accessed July 2016]
21. World Health Organization. Global Status Report on Alcohol and Health. Geneva 2014 Available from: http://apps.who.int/iris/bitstream/10665/112736/1/9789240692763_eng.pdf?ua=1
22. Patel V, Flisher AJ, Hetrick S, McGorry P. Mental health of young people: a global public-health challenge. The Lancet. 2007 Apr 20;369(9569):1302-13. Available from: https://www.researchgate.net/profile/Sarah_Hetrick/publication/6394806_Mental_Health_of_Young_People_A_Global_Public-Health_Challenge/links/0fcfd5062609e066ea000000.pdf
23. Gmel G, Rehm J. Measuring alcohol consumption. Contemp. Drug Probs.. 2004;31:467. Available from: <http://pubs.niaaa.nih.gov/publications/AssessingAlcohol/sobell.pdf>
24. Rehm J, Patra J, Popova S. Alcohol attributable mortality and potential years of life lost in Canada 2001: implications for prevention and policy. Addiction. 2006 Mar 1;101(3):373-84.

25. Rehm J, Baliunas D, Brochu S, Fischer B, Gnam W, Patra J, Popova S, Sarnocinska-Hart A, Taylor B, Adlaf E, Recel M. The costs of substance abuse in Canada 2002. Ottawa: Canadian Centre on Substance Abuse. 2006 Mar:1-4.
26. Stockwell TI, Butt P, Beirness D, Gliksman L, Paradis C. The basis for Canada's new low-risk drinking guidelines: A relative risk approach to estimating hazardous levels and patterns of alcohol use. *Drug and alcohol review*. 2012 Mar 1;31(2):126-34. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/21954872> [Accessed on July 2016]
27. Testino G, Leone S, Patussi V, Balbinot P, Fanucchi T, Sumberaz A, Scafato E and Borro P. (2016) Alcohol Consumption and Cancer: A literature Search and a Proposal *Ann Public Health Res* 3 (1): 1036 Available from: <https://www.jsimedcentral.com/PublicHealth/publichealth-3-1036.pdf>
28. British Columbia Centre of Excellence for Women's Health. Substance Use and Pregnancy Infographic series. 2016 Available from: <http://bccewh.bc.ca/wp-content/uploads/2016/04/Infographics-Alcohol-and-Pregnancy-English.pdf> [accessed July 2016]
29. Heung C, LeMar J, Rempel B. Alcohol and community-based violence: a review of evidence and control policies. *Clinical Review*. 2011;8(1):29-34. Available from: http://www.mumj.org/Issues/v8_2011/articles/v8_29.pdf
30. Government of Canada, Health Canada. Canadian Alcohol and Drug Use Monitoring Survey: Summary of results for 2012 Available from: http://www.hc-sc.gc.ca/hc-ps/drugs-droques/stat/_2012/summary-sommaire-eng.php [accessed July 2016]
31. Ottawa Public Health. Substance Misuse in Ottawa: Technical Report. March 2013. Ottawa, Ontario 2014 Available from <http://ottawa.ca/calendar/ottawa/citycouncil/obh/2013/03-18/Report%20C%20-%20Supporting%20Document%20-%20EN.pdf>
32. Government of Ontario, Women's Directorate Statistics: Sexual Violence Toronto, Ontario: Queen's Printer for Ontario 2015 Available from: http://www.women.gov.on.ca/owd/english/ending-violence/sexual_violence.shtml [accessed August 2016]
33. Sex Information and Education Council of Canada. Sexual Health Issue Brief- Sexual Assault in Canada: Legal Definitions, Statistic and Frontline Response 2015 Available from: http://sieccan.org/wp/wp-content/uploads/2015/01/SIECCAN-Sexual-Health-Issue-Brief_Sexual-Assault.pdf [accessed September 2016]
34. Benoit C, Shumka L, Phillips R, Kennedy M, Belle-Isle L. Issue brief: Sexual violence against women in Canada. 2015 Available from: <https://www.princeedwardisland.ca/sites/default/files/publications/issue-brief-en.pdf>
35. Sampsel K, Godbout J, Leach T, Taljaard M, Calder L. Characteristics associated with sexual assaults at mass gatherings. *Emergency medicine journal*. 2015 Aug 27;emermed-2015. Available from: <http://m.emj.bmj.com/content/early/2015/08/27/emermed-2015-204689>
36. Byrne PA, Ma T, Elzohairy Y. Vehicle impoundments improve drinking and driving licence suspension outcomes: large-scale evidence from Ontario. *Accident Analysis & Prevention*. 2016 Oct 31;95:125-31.
37. Chamberlain EA, Solomon RM. Youth and impaired driving in Canada: Opportunities for progress. Toronto: MADD Canada. 2006 Jul 7. Available from: http://www.madd.ca/media/docs/youth_and_impaired_driving_may_2006.pdf [Accessed July 2016]

38. Ma T, Byrne PA, Bhatti JA, Elzohairy Y. Program design for incentivizing ignition interlock installation for alcohol-impaired drivers: the Ontario approach. *Accident Analysis & Prevention*. 2016 Oct 31;95:27-32.
39. Traffic Injury Research Foundation of Canada. Alcohol and Drug Crash Problem in Canada Ottawa, Ontario: Traffic Injury Research Foundation of Canada 2012 Available from: http://www.ccmta.ca/images/publications/pdf/2012_Alcohol_Drug_Crash_Problem_Report_ENG.pdf
40. Government of Canada, Ministry of Transportation. Road Safety in Canada: 2011 Ottawa, Ontario 2011 Available from: <http://www.tc.gc.ca/media/documents/roadsafety/tp15145e.pdf>
41. Safer Roads Ottawa. Review of collisions involving impaired drivers. City of Ottawa 2010-2014. Ottawa, Ontario 2016.
42. Byrne PA, Ma T, Mann RE, Elzohairy Y. Evaluation of the general deterrence capacity of recently implemented (2009–2010) low and Zero BAC requirements for drivers in Ontario. *Accident Analysis & Prevention*. 2016 Mar 31;88:56-67.
43. Government of Ontario, Ministry of Transportation. Web: Driver's Handbook: Other ways to lose your licence, alcohol Ottawa, Ontario. 2013 Available from: <http://www.mto.gov.on.ca/english/dandv/driver/handbook/section4.8.2.shtml> [Accessed August 2016]
44. [Newbury-Birch, D.](#), [Walker, J.](#), [Avery, L.](#), [Beyer, F.](#), [Brown, N.](#), [Jackson, K.](#), [Lock, C. A.](#), [McGovern, R.](#), [Kaner, E.](#), [Gilvarry, E.](#), [McArdle, P.](#), [Ramesh, V.](#) and [Stewart, S.](#) Impact of alcohol consumption on young people: A systematic review of published reviews. 2009 Available from: <http://dera.ioe.ac.uk/11355/1/DCSF-RR067.pdf>
45. Brochu S, Cousineau MM, Gillet M, Cournoyer LG, Pernanen K, Motiuk L. Drugs, alcohol, and criminal behaviour: A profile of inmates in Canadian federal institutions 2001. Available from: http://www.csc-scc.gc.ca/research/forum/e133/133h_e.pdf [accessed July 2016]
46. Ottawa Police Services. Calls for service for complaints of public drunkenness, 2011-2015. Computer Aided Dispatch database, Ottawa Police Service. Extracted September 14, 2016. (2016b)
47. Ottawa Police Services Offences with an alcohol study flag, 2011-2015. Records Management System database, Ottawa Police Service. Extracted September 14, 2016. (2016a)
48. Galea S, Nandi A, Vlahov D. The social epidemiology of substance use. *Epidemiologic reviews*. 2004 Jul 1;26(1):36-52. DOI: 10.1093/epirev/mxh007 Available from: <http://epirev.oxfordjournals.org/content/26/1/36.full.pdf+html>
49. Public Health Agency of Canada. Population health promotion: An integrated model of population health and health promotion. Ottawa, Ontario 2001 Dec 8, Available from: <http://www.phac-aspc.gc.ca/ph-sp/php-psp/php3-eng.php> [accessed July 2016]
50. Canadian Public Health Association. Too high a cost: a public health approach to alcohol policy in Canada. Canadian Public Health Association; 2011. Available from: http://www.cpha.ca/uploads/positions/position-paper-alcohol_e.pdf [accessed June 2016]
51. American College Health Association. American College Health Association-National College Health Assessment II: Ontario Canada Reference Group Executive Summary Spring 2016. Hanover, MD: American College Health Association; 2016.

52. Currie, C. Addictive Disorders among urban aboriginal Canadians What promotes risk? What predicts Resilience? Executive Summary Alberta Canada Available from: <http://research4children.com/data/documents/ExecutiveSummary09DOCCurrie.pdf> [accessed July 2016]
53. Government of Ontario, Ministry of Health and Long-Term Care) Initial Report on Public Health Low Birth Weight Toronto, Ontario: Queen's Printers for Ontario 2016 Available from: http://www.health.gov.on.ca/en/public/publications/pubhealth/init_report/lbw.html
54. Public Health Agency of Canada. Seniors' Falls in Canada second report. Ottawa, Ontario 2014 Available from: http://www.phac-aspc.gc.ca/seniors-aines/publications/public/injury-blessure/seniors_falls-chutes_aines/assets/pdf/seniors_falls-chutes_aines-eng.pdf
55. Éduc'alcool. Alcohol and Health Alcohol and Seniors Quebec, Canada 2016 Available from: http://educalcool.qc.ca/wp-content/uploads/2011/12/Alcohol_and_health_3.pdf
56. City of Ottawa Equity an Inclusion Lens Diversity Snapshot Aboriginal Peoples First Nations, Inuit, Métis. Ottawa, Ontario 2011. Available from: <http://www.cawi-ivtf.org/sites/default/files/publications/ds-aboriginal.pdf> [accessed on July 2016]
57. Chansonneuve D. A residential addictions treatment facility for Aboriginal women and their children in the city of Ottawa: A feasibility study-Final report. 2008 Available from: <http://minlodge.com/images/Feasibility%20Study.pdf> [accessed August 2016]
58. Statistics Canada. Social determinants of health for the off-reserve First Nations population, 15 years of age and older, 2012 Catalogue no. 89-653-X2016009 Version Updated April 12, 2016. Ottawa Retrieved from <http://www.statcan.gc.ca/pub/89-653-x/89-653-x2016010-eng.htm>
59. Interlocus Group Inc. Updated Feasibility Study For a Residential Addictions Treatment Facility For Women and Children Across The Champlain LHIN Interlocus Group Inc. Ottawa, Ontario. June 2015 Available from: <http://www.minlodge.com/admin/library/UpdatedFeasibilityStudyTreatmentCentre.pdf>
60. Canadian Centre on Substance Abuse Alcohol Price Policy series: Reducing harm to Canadians. Ottawa, Ontario 2012. Available from: <http://www.ccsa.ca/Resource%20Library/CCSA-Alcohol-Price-Policy-Brief-Canada-2012-en.pdf> [accessed June 2016]
61. Statistics Canada. *Table 183-0023 – Sales and per capita sales of alcoholic beverages by liquor authorities and other retail outlets, by value, volume, and absolute volume, annual*, CANSIM (2014). Retrieved July 2016 from <http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=1830023>
62. Statistics Canada. Table 183-0023 Sales of alcoholic beverages per capita, 15 years and older, March 31, 2014. CANSIM. Retrieved from <http://www.statcan.gc.ca/daily-quotidien/150504/cg-a001-eng.htm>
63. Giesbrecht N, Stockwell T, Kendall P, Strang R, Thomas G. Alcohol in Canada: reducing the toll through focused interventions and public health policies. Canadian Medical Association Journal. 2011 Mar 8;183(4):450-5. doi: 10.1503/cmaj.100825 Available from: <http://www.cmaj.ca/content/early/2011/02/07/cmaj.100825.full.pdf+html>
64. Stockwell T, Zhao J, Macdonald S. Who under-reports their alcohol consumption in telephone surveys and by how much? An application of the 'yesterday method' in a national Canadian substance use survey. Addiction. 2014 Oct 1;109(10):1657-66.
65. Fleming R. Alcohol: no ordinary commodity--a summary of the second edition. 2010 Available from: <http://onlinelibrary.wiley.com/doi/10.1111/j.1360-0443.2010.02945.x/pdf>

66. World Health Organization. Evidence for the effectiveness and cost-effectiveness of interventions to reduce alcohol-related harm. Regional Office for Europe 2009
Available from: http://www.euro.who.int/_data/assets/pdf_file/0020/43319/E92823.pdf
67. Anderson P, Chisholm D, Fuhr DC. Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. *The Lancet*. 2009 Jul 3;373(9682):2234-46. Available from: http://www.who.int/choice/publications/p_2009_CE_Alcohol_Lancet.pdf [accessed July 2016]
68. Statistics Canada. Ottawa, Ontario (Code 3506008) and Ontario (Code 35) (table). Census Profile. 2011 Census. Statistics Canada Catalogue no. 98-316-XWE. Ottawa. Released October 24, 2012. [cited 2016 Aug 29]. 2012 Available from: <http://www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/index.cfm?Lang=E>.
69. Population Projections 2016, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, Date Extracted August 29, 2016.
70. Statistics Canada. Ottawa, CV, Ontario (Code 3506008) (table). National Household Survey (NHS) Profile. 2011 National Household Survey. Statistics Canada Catalogue no. 99-004-XWE. Ottawa. Released September 11, 2013. [cited 2016 Aug 29]. (2013a). Available from: <http://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/prof/index.cfm?Lang=E>
71. Statistics Canada. NHS Focus on Geography Series – Ottawa. National Household Survey. Statistics Canada Catalogue no. 99-010-X2011005. Ottawa. Released May 8, 2013. (2013b). Available from: <https://www12.statcan.gc.ca/nhs-enm/2011/as-sa/fogs-spg/Pages/FOG.cfm?lang=E&level=4&GeoCode=3506008>



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