



CITY OF HAMILTON COMMUNITY ALCOHOL REPORT 2016



Hamilton

MESSAGE FROM THE MEDICAL OFFICER OF HEALTH



On behalf of Public Health Services, I am pleased to present the City of Hamilton's Community Alcohol Report. Alcohol is a part of our everyday lives: close to 80 per cent of us drink. We drink at social events, milestone occasions, or just to relax. Alcohol is easy to access; available at local LCBOs, grocery stores and farmer's markets. But while alcohol is often treated as a regular commodity, it is important to remember it is a drug associated with health risks and social harms to individuals, families, friends and our community.

Problematic alcohol use is one of the largest risk-factors for death, disease and disability in high income countries such as Canada. This report encourages us to take notice of these negative effects in our community and urges us to remember that the impact from problematic alcohol use is not limited to just the individual who is 'drinking'.

Many people underestimate the amount of alcohol they drink. Canada has low-risk drinking guidelines to encourage safer drinking. While an understanding of how, when, and how much, we should drink is necessary, there is more we can do – as individuals and as a community. We need comprehensive policies and programs that promote and protect our community's health and safety.

This report raises our awareness of the issues created by alcohol use by presenting data on what is happening in Hamilton. This data can help all of us address alcohol-related harms in Hamilton. We need to start by questioning our social norms, changing our culture of drinking, and creating policies that improve access to opportunities, housing, employment and health care.

Information from this report will be used to inform a comprehensive drug strategy for the City of Hamilton. We are working with other organizations and individuals to create a drug strategy that is based on four integrated parts – prevention, harm reduction, treatment and enforcement. We recognize that problematic drug, alcohol and substance misuse requires a comprehensive strategy in order to successfully reduce the harms of alcohol and other drugs and to achieve our City's vision to be the best place to raise a child and age successfully.

Together we can improve the health of Hamiltonians and move toward a culture of moderation.

A handwritten signature in black ink that reads "E. Richardson". The signature is written in a cursive, flowing style.

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We would like to thank our community partners who provided consultation and/or contributed data towards this report:

Alcohol and Gambling Commission of Ontario (AGCO)

Alcoholics Anonymous

Alternatives for Youth

Alcohol, Drug and Gambling Services

Business Improvement Area Coordinators

City of Hamilton Licensing and By-Law Services

De dwa da dehs nye>s Aboriginal Health Centre in Hamilton

Hamilton Health Sciences

Hamilton Paramedic Services

Hamilton Planning and Economic Development

Hamilton Police Service

Hamilton Regional Indian Centre

McMaster University, and

North Hamilton Community Health Centre.

EXECUTIVE SUMMARY:

Alcohol is regularly consumed by many Canadians. This is no different in Hamilton, Ontario. The purpose of a community alcohol report is to increase knowledge of the impacts of alcohol in a community. This report looks at trends of alcohol consumption within Hamilton and discusses strategies to reduce the harm caused by alcohol on an individual and societal level.

- The Canadian Low-Risk Alcohol Drinking Guidelines (LRADGs) provide maximum limits to lower the short- and long-term risks related to alcohol use. Short-term harms refer to injuries and acute illnesses that can result from excessive alcohol consumption on a single occasion, otherwise known as binge drinking. Long-term risks result from alcohol consumption over several years.
- According to 2013-2014 data, 43% of Hamiltonians reported drinking above the LRADGs, and 8.5% of Hamiltonians reported drinking alcohol every day. In Hamilton, men tend to drink more alcohol than women. The more education a person has, the more likely they are to exceed safe drinking guidelines. The more money a person makes translates to a higher amount of alcohol consumed. Younger adults tend to binge drink more frequently than older adults. Established Canadians tend to exceed LRADGs more than new-comers to Canada.
- The health consequences for individuals include: liver disease, cardiovascular disease, increased risk of cancer, gastrointestinal diseases, giving birth to a low birth weight baby, neurological degeneration, mental illness, and increased risk of diabetes. Between 2011 and 2013, 900 hospitalizations per year were attributable to alcohol use in Hamilton. From September 2015 until August 2016, Hamilton Paramedic Service received 1519 calls due to alcohol intoxication. Alcohol-related costs to the healthcare system are expensive. There are also significant costs to taxpayers for policing alcohol-related issues.
- Social consequences of binge drinking include: increased crime and violence, injuries, housing issues, financial instability, school and work related problems, and poor social functioning. Fetal alcohol spectrum disorder (FASD) is a brain-based injury that happens as a result of alcohol use during pregnancy. This is a preventable condition that has individual health and social implications. Despite knowing about the health consequences of high alcohol consumption, the Ontario government is increasing access to alcohol through continuing expansion of alcohol sales in grocery stores, online sales through the Liquor Control Board of Ontario (LCBO), and wine sales in farmer's markets. Alcohol is readily available throughout the city.

- To balance the health and social costs of alcohol with economic benefits, there is a need for a strategy that encompasses government, health and community organizations, business, educational organizations, and citizens. Highlighting the implications of alcohol use within Hamilton is a first-step to reduce the social and health consequences of alcohol use. We need to work together to achieve this.

INTRODUCTION

Many Canadians drink alcohol. Alcohol is often involved in social occasions and celebrations. Jobs are created and maintained through its production and supply. Most Hamiltonians drink alcohol within moderation. However, a high number of Hamiltonians drink alcohol at excessive levels and in harmful patterns, with consequences for individuals, families and our community.

Despite knowledge of the health harms and societal costs from alcohol misuse, prevention and control efforts in Canada and other countries throughout the world are often given low priority by government and community agencies.¹ In recent years, the Ontario provincial government introduced several policies and programs that increased alcohol availability in the community.²⁻⁶ At the same time, amendments to regulations under the Liquor License Act have become more relaxed.⁷ Increased availability is known to increase alcohol consumption.⁸

To address alcohol-related harms in Hamilton, a comprehensive and coordinated approach is needed. The issues related to alcohol misuse and the impact it has on the community are complicated. Action involving partners across all levels and departments of government, health and community agencies, educational institutions, not-for-profit organizations, local businesses and the community at large are needed to reduce the harmful impact of alcohol in Hamilton. There is a need to develop both population and individual based programs specific for priority groups including youth.⁸ These programs should advocate for policies that promote and protect the community's health and safety. Collective community action is the only way to move forward.

The purpose of the community alcohol report is to create awareness of the impact of alcohol in a community.⁹ A community alcohol report positions alcohol as an important health topic, and helps start conversations in communities on how to work together to increase health and safety.

CANADA'S LOW-RISK ALCOHOL DRINKING GUIDELINES

The Canadian Low-Risk Alcohol Drinking Guidelines (LRADGs) provide maximum limits to lower the short- and long-term harms related to alcohol use. Short-term harms refer to injuries and acute illnesses that can result from excessive alcohol consumption on a single occasion, otherwise known as binge drinking. Long-term harms result from alcohol consumption over several years.¹⁰

Recommendations for low-risk drinking:¹¹



No more than 10 standard drinks per week

No more than 2 standard drinks a day on most days

Plan non-drinking days every week

On special occasions:
No more than 3 standard drinks on any single occasion



No more than 15 standard drinks per week

No more than 3 standard drinks a day on most days

Plan non-drinking days every week

On special occasions:
No more than 4 standard drinks on any single occasion

Further guidelines outline situations when no alcohol should be consumed such as when operating a vehicle, pregnant, or when mental or physical health problems exist.¹¹

ONE STANDARD DRINK IS EQUAL TO:¹¹



**Beer/
Cider**

341 ml (12 oz.) with
5% alcohol content



Cooler



Wine

142 ml (5oz.)
with 12% alcohol
content

**Distilled
Alcohol**



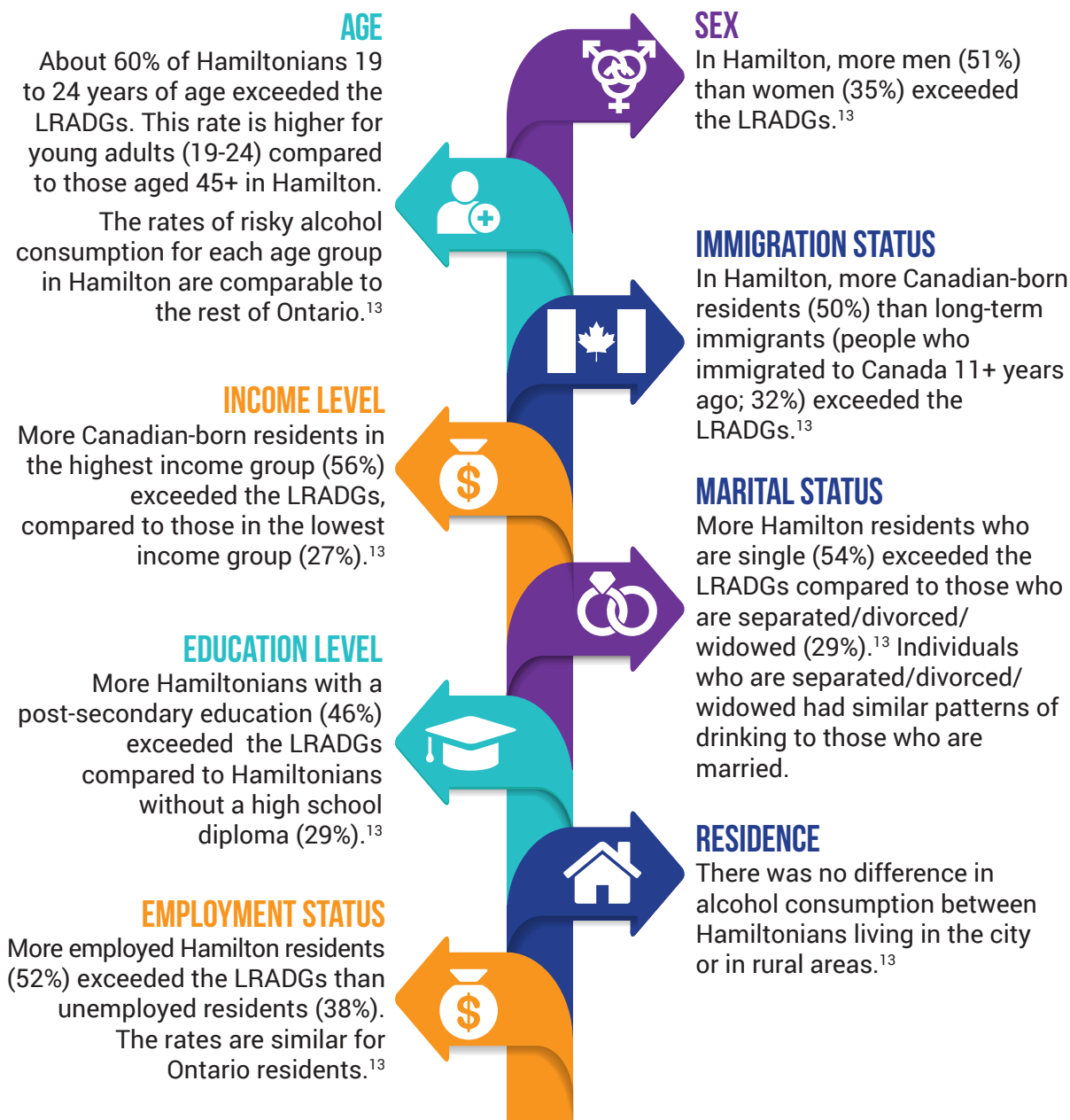
(e.g., rye,
gin, rum,
etc.)

43 ml (1.5 oz.)
with 40% alcohol
content

ALCOHOL IN HAMILTON

Hamilton is home to 536,917 people,¹² who are diverse in age, ethnicity, socioeconomic status, and other factors. These characteristics influence levels of alcohol consumption and potential harms experienced in the community. Rates of drinking above the LRADGs and daily drinking are similar in Hamilton to the rest of Ontario. Between 2013-2014, 43% of Hamiltonians 19 years of age and older reported drinking above the LRADGs. Eight and a half percent (8.5%) also reported drinking alcohol every day in the previous year.¹³

The graphic below highlights factors related to alcohol consumption in Hamilton in 2013-2014.



AVAILABILITY

In 2015, it was estimated that approximately



1.12 billion litres, or about \$7.78 billion, of alcohol were sold in Ontario through the LCBO, The Beer Store, brewer on-site stores, and Ontario winery stores.¹⁹

Throughout Canada, alcohol is largely available and promoted.¹⁴ There is substantial evidence indicating when alcohol is more accessible through longer serving hours and increased number of outlets, that the consumption of alcohol and its related harms also increase.¹⁵⁻¹⁸

In April 2016, an internet search found 68 alcohol retail outlets (i.e. LCBO, The Beer Store, off-site wine retail stores, DIY wine and beer breweries, grocery stores and farmer's markets with alcohol sales) in the City of Hamilton (displayed on the map in Figure 1). About 65% of the Hamilton population live within 1 km, or about a 10 minute walk, of one of these outlets. About 93% of the population lives within 2.5 km, or about a 25 minute walk, of an outlet. Just over 97% of the Hamilton population lives within 5 km of an outlet, which is about a 6 minute drive.^{20, 21} The trend towards increased availability is likely to increase with the provincial government's commitment to license 150 new grocery stores by 2017. Up to 450 alcohol retail outlet stores could eventually be approved. Accessibility has also been facilitated through the 2016 release of an ecommerce platform by the Liquor Control Board of Ontario (LCBO) for home delivery of alcohol ordered online.⁶

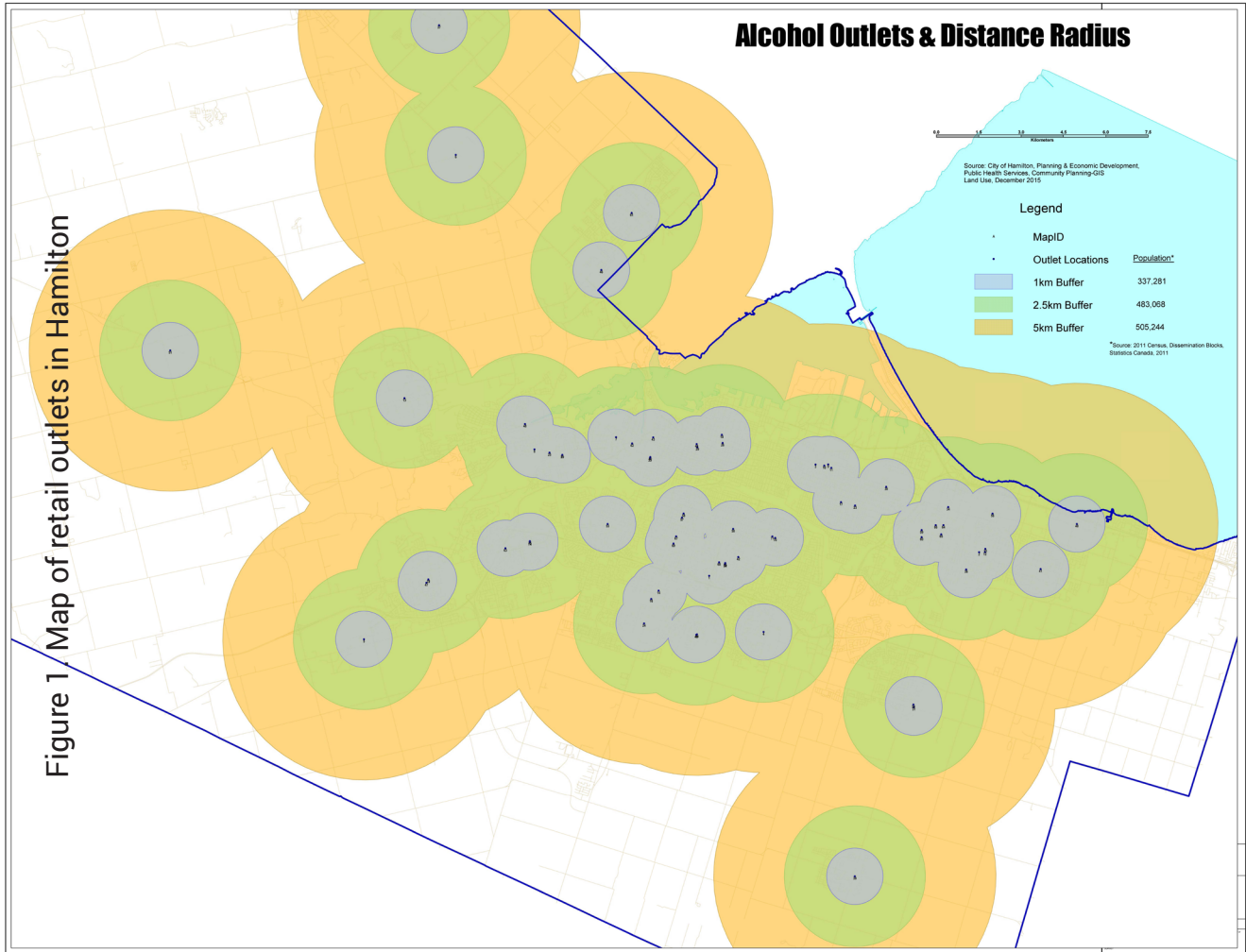


Figure 1 / Map of retail outlets in Hamilton

Figure 1. Map of retail outlets in Hamilton

In April 2016, there were 666 onsite licensed alcohol establishments in the City of Hamilton.²²

GROUPS AT HIGHER RISK OF EXPERIENCING ALCOHOL-RELATED HARMS

In general, the more challenges a person has, the more likely that person is to develop alcohol related problems as a result of using alcohol.²³ Both the social determinants of health and life challenges impact drinking patterns and the risk for alcohol-related harms.^{14, 23}

While there are many groups at risk of experiencing alcohol-related harms, this report focuses on two groups: 1) youth and young adults, and 2) pregnant women.

Examples of the social determinants of health include age, sex, genetics, socioeconomic status, occupation, mental health status and physical health.

Examples of life challenges include poor academic performance, unemployment, stressful life events, discrimination and social exclusion.^{14,23}

YOUTH

Youth (12-20 years of age) drinking patterns are typically different than adults. Most youth drink less often than adults, but binge drink when they do.^{16,24-26} This, among other factors, makes the likelihood of harm much higher in youth than adults.^{16,25} Certain smaller groups within youth have an even higher risk of alcohol misuse related to their life experiences and environment. This includes youth:

- who are street-involved
- in legal custody
- experience mental illness and mental health challenges
- who have been sexually-abused
- LGBTQ youth
- who identify as indigenous.²⁷



The earlier youth initiate alcohol use, the more likely they are to drink excessively, drink regularly, and experience alcohol-related harm.²⁵

Alcohol use among youth can result in health and social problems including:

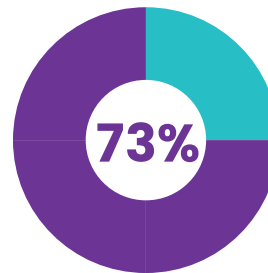
- Problems with alcohol later in life^{14, 24-26,28-30}
- Brain impairment, due to continued brain development into the mid-to-late 20's^{14, 24-26,30-32}
- Mental health challenges and mental illness, such as depressive disorders and anxiety^{27, 30}
- Effects on social relationships;^{14, 28,29}
- Challenges in school^{14,26,29,30}
- Other drug use, like tobacco and illicit drugs^{14,29,30}
- Engaging in or being victim to aggression and violence²⁴⁻³⁰
- High-risk behaviours, such as unplanned or unprotected sex,²⁵⁻³⁰ criminal activity,²⁴⁻²⁹ driving while intoxicated or riding with a driver who is intoxicated^{24,26,29}

Canada's LRADGs recommend young people delay alcohol use for as long as possible and discuss drinking with their parents. If youth do decide to drink alcohol, they should limit their consumption to no more than one or two drinks on any occasion and no more than once or twice per week.²⁴

In 2015, among youth in grades 9-12 from Hamilton, Niagara, Haldimand, and Brant:



55%
reported drinking
in the past year³³



73%
said it was very easy or
fairly easy to get alcohol³³



1 in 4
reported consuming
5+ drinks on one or
more occasion in the
past year³³



18%
rode with a driver
who had consumed
alcohol in
the past year³³



In **2015–2016**, Alternatives for Youth (AY), a youth-serving substance misuse counselling service, provided alcohol related services to **575** Hamilton youth.³⁴ This represents about **84%** of the total number of youth who accessed AY's services.³⁴

POST-SECONDARY STUDENTS

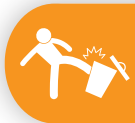
Moving from high school to college or university is a transition period for youth often associated with risky drinking behaviours. While a large portion of post-secondary students go to college/university with some experience with alcohol, half of post-secondary students who binge drink begin this behaviour in college/university.³⁵ Binge drinking among post-secondary students is a concern in Canada as students engaging in risky drinking are vulnerable to additional alcohol-related harms, including:



Impact on **academic performance**, such as missing class, falling behind with school work and lower grades



Effects on **social relationships**



Increase in **risk-taking behaviours**, such as unplanned sexual activity, failure to use protection during sex, violence, and vandalism



Poor health³⁵

Alcohol misuse affects more than the individual student who engages in risky drinking. Students are more likely to experience the second hand effects of alcohol consumption at schools where binge drinking is more common. This includes disruption of sleep and/or study by those who were drinking, property damage, and verbal, physical or sexual violence.³⁵

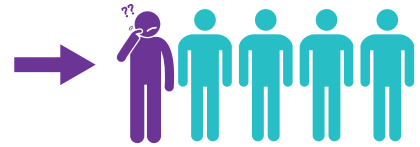
In Hamilton...

McMaster University students were recently asked how many alcoholic drinks they consumed at the last party they attended. About 30% report binge drinking (consuming 5 drinks or more).³⁶ This compares to 34% of Canadian students who reported binge drinking the last time they were at a party in a 2016 survey of 43,780 students from 41 Canadian colleges and universities.³⁷

About 1 in 4 (26%) students reported that within the last year, they did something while drinking alcohol that they later regretted.³⁶



About 1 in 5 (19%) have forgotten where they were or what they did while they were drinking.³⁶



Just under 3% of students reported that alcohol use had affected their school performance in some way.³⁶



In 2016

Techniques McMaster University Students reported using to reduce alcohol-related harms



...always or most of the time they were drinking.³⁶

PREGNANT WOMEN

Any amount of alcohol consumption during pregnancy can harm an unborn baby's brain development causing permanent physical, mental and behavioural disabilities; this is known as Fetal Alcohol Spectrum Disorder (FASD).^{10,38-40} FASD has been estimated to occur in nine of every 1000 births, or in about 1% of births.^{16,42} Other risks of prenatal alcohol exposure include having a baby that is low birth weight, miscarriage, stillbirth, and sudden infant death.^{39,43}

Individuals with FASD experience significant cognitive, behavioural and emotional challenges that increase the likelihood of poor outcomes later in life, including school failure/drop out,^{14,38,41,43} difficulties with employment,^{14,38,44} involvement with the law,^{14,38,41,43,44} mental health and substance misuse problems^{14,38,41,44} and trouble living independently.^{38,41,44}

These consequences increase the cost for society in terms of appropriate health care, law enforcement, housing, long-term care, special education, and productivity loss due to disability and premature mortality. The total estimated cost of FASD for Canada in 2013 was \$1.8 billion.³⁸

These costs are preventable if alcohol is avoided during pregnancy.^{42, 43} The chance of FASD is especially high with heavy and frequent drinking, however there is no known safe amount of alcohol consumption during pregnancy.^{10,14,39,40,45}



FASD is the most common cause of avoidable developmental disability in Canada.^{14,38,41,44,45}

Cost of FASD



In 2013, the total estimated cost of FASD for Canada in 2013 was \$1.8 billion.³⁸

In Hamilton...

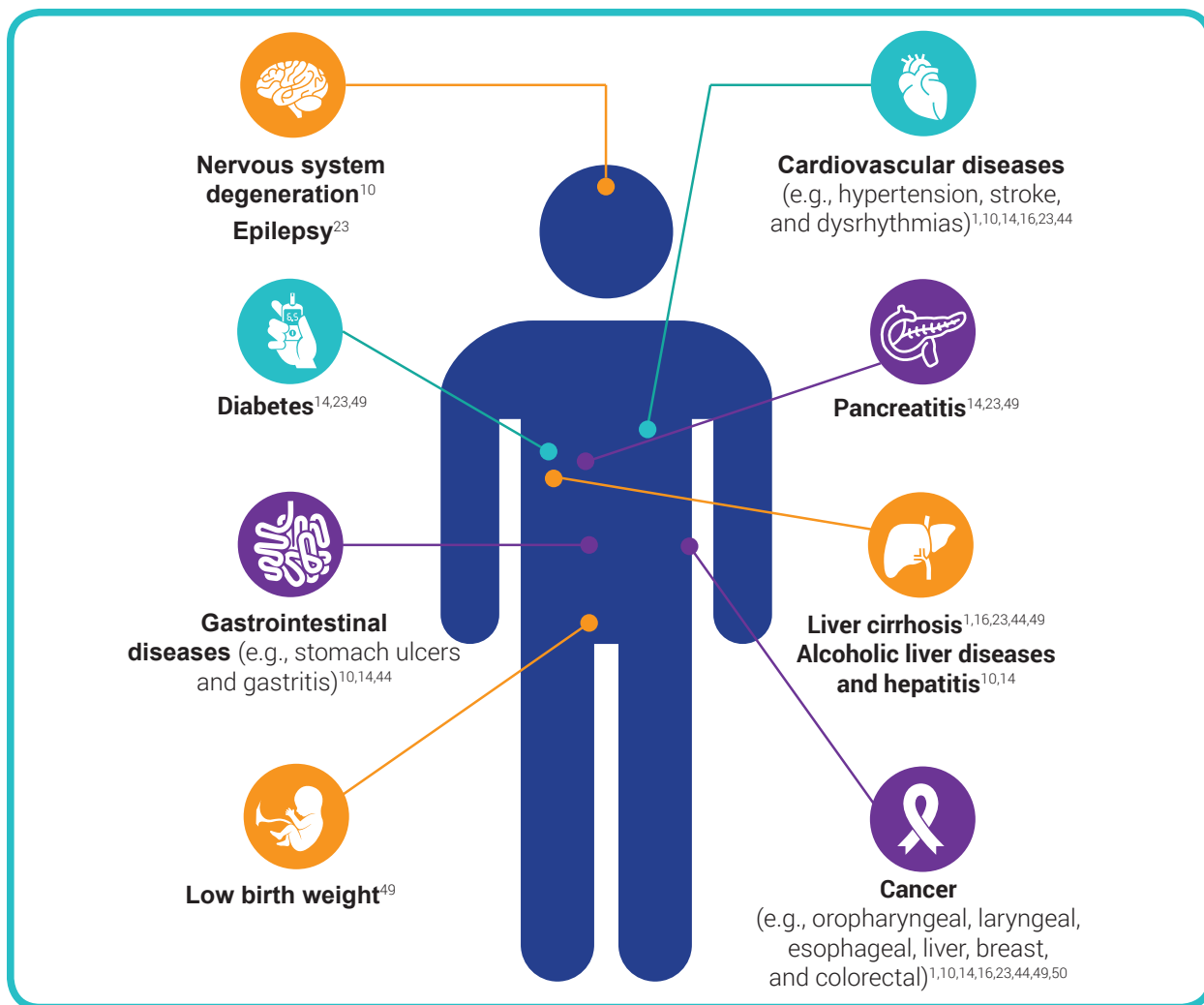
In 2016, nearly 3% (2.9%) of mothers in Hamilton reported they consumed alcohol during their last pregnancy; this is higher than the 2016 provincial rate of 2.3%.⁴⁶



HEALTH AND SOCIAL HARMS

Alcohol has been estimated to be directly or indirectly involved in 10% of all deaths in Ontario.⁴⁸ Alcohol use is linked to at least 60 different types of diseases and injuries, and is a contributing factor in over 200 other conditions.^{14,16,23,44} Among the diseases associated with alcohol are various types of cancer. Alcohol is classified as a known human carcinogen (a substance that has been shown to be capable to cause cancer).¹⁴ There is no “safe limit” of alcohol consumption to prevent cancer. For instance, one drink per day may increase the risk for breast cancer.¹⁴

The chronic diseases and health harms highlighted below are linked to alcohol consumption. The likelihood of most of these conditions increases with higher frequency and quantity of use, dangerous patterns of consumption like binge drinking, and with the addition of other risk factors such as tobacco smoking.^{14,15,47}



Heavy drinking is associated with a number of other health and social harms to individuals, families, friends and the community.

HARMS TO INDIVIDUALS:



HARMS TO FAMILY, FRIENDS AND THE COMMUNITY:



Crime and legal problems^{8-10,14-16,23,49}



Property damage^{9,10,23}



Family problems (e.g., marriage problems, domestic violence, and child neglect and abuse)^{8-10,23,44,49}



MVCs and fatalities related to drunk driving^{1,14-16, 23,44,49}



Homicides^{14,23,44}



Verbal abuse^{16,44}



Increased law enforcement costs^{9,10,14,16,23,49}

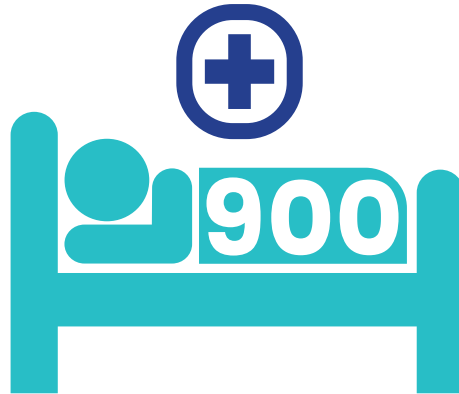


Violence, including physical and sexual assaults^{1,9,10,14-16,23,44,49}

HEALTH AND SOCIAL HARMS IN HAMILTON

The health and social harms of excessive alcohol consumption are illustrated in our city's data, highlighted in the boxes below.

Between 2011 and 2013, approximately



hospitalizations per year were attributable to alcohol in the City of Hamilton.⁵¹⁻⁵³

From September 2015 to August 2016, Hamilton Paramedic Service received



calls due to intoxication;⁵⁴ this represents 3% of total calls.⁵⁴

In Ontario, an ambulance trip is estimated to cost



These alcohol-related calls result in significant costs to the healthcare system, and in turn to the public.

In 2015-2016,



just under 600 individuals accessed services at Alcohol, Drug and Gambling Services related to concerns over alcohol alone,



while another almost 300 individuals were seen with both alcohol and drug concerns.⁵⁶

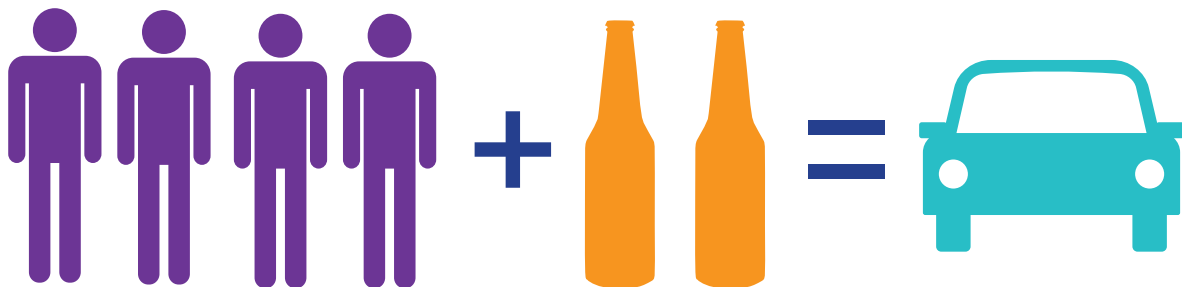
(ADGS is just one of several treatment agencies in the City of Hamilton).

In 2015,



the Drug and Alcohol Helpline received over 400 alcohol-related calls.⁵⁷

Just over 4% of drivers



in the City of Hamilton reported driving within an hour of consuming 2 or more alcoholic drinks in the previous year.¹³ In 2015, 763 charges related to impaired motor vehicle collisions were laid.⁵⁸



There are significant costs associated with policing entertainment districts. In 2014, over \$100,000 dollars were spent on enforcement in Hess Village.⁵⁹

Alcohol-Related Offences & Enforcement	Number of Responses by Hamilton Police Services (2015) ⁶⁰
Liquor License Act Offences (e.g. providing/selling alcohol without a license; providing/selling alcohol to minor/intoxicated person; public intoxication; driving a vehicle with an unsealed alcoholic beverage, etc.) ⁶¹	406
Disturbances on Licensed Premises	219
Barcheck (ie. walk-through of a licensed premise, not as a result of a complaint)	264

COMMUNITY RESPONSE

a. A role for us all

We all have a role to play in reducing the negative impact alcohol can have on ourselves, our children and our community. Addressing the problematic use of alcohol requires a coordinated and comprehensive approach between government, health and community agencies, educational institutions, local businesses and residents.

Reading this report and understanding how alcohol can affect us and how it is impacting our society is a first step we can all take. Past surveys suggest most Canadians were not aware that alcohol is linked to cancer and other harmful effects.¹⁴

Following Canada's low-risk alcohol drinking guidelines is another way we can take care of ourselves and our loved ones.

Parental drinking is linked to alcohol use in youth. As parents, our beliefs, attitudes and rules towards alcohol inform the way our children view and engage with this substance.¹⁴

As family and friends we have the opportunity to revise social expectations and reduce peer pressure we place on others. We can provide social support to those who need it. When we throw or attend a party we can plan and encourage safe transportation to and from events where alcohol is served.

We can also promote, encourage and host family friendly alcohol-free events.

We need to remind ourselves to treat those in our community who are impacted by alcohol with compassion and work towards reducing the stigma attached to mental health and addiction.

b. City of Hamilton, Hamilton Public Health Services

Although we all have a role to play in modifying the drinking environment, the 'choice' to drink is less of a choice than a response to life experiences and opportunities we may or may not have.



that in 2011

Hamilton developed a Municipal Alcohol Policy (MAP) to guide how to responsibly run an event, which includes alcohol, when hosted on City property?

<https://www.hamilton.ca/life-events/hosting-events/municipal-alcohol-policy>⁶²

We know that policies that improve the social determinants of health such as education, employment and housing, also improve health outcomes.⁶³

The City of Hamilton has developed and is continuing to develop and advocate for plans and policies in partnership with other agencies to address the many issues related to alcohol use in our area. The City of Hamilton is also continuing to monitor and evaluate indicators and trends in our city.

Information from this report will be used to help us develop a comprehensive drug strategy for the City of Hamilton. We are working with other organizations and individuals to create a drug strategy that is based on four integrated parts – prevention, harm reduction, treatment and enforcement. We recognize that all of these parts need to be addressed to successfully reduce the harms of alcohol and other drugs.

Substance-Use Related Support Services in Hamilton

For more information about options in Hamilton, talk to your doctor or:

- Contact ConnexOntario's Drug & Alcohol Helpline at **1-800-565-8603** or **www.connexontario.ca** or **www.drugandalcoholhelpline.ca**

Agencies in Hamilton

- Alcohol, Drug and Gambling Services: **905-546-3606** (for individuals 23 years and older) or **www.hamilton.ca/adgs**
- Alternatives for Youth: **905-527-4469** (for individuals 12-22 years old & their families) or **<https://ay.on.ca/>**

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DATA NOTES

A. Canadian Community Health Survey – Ontario Ministry of Health & Long-Term Care ^(13,53)

The Canadian Community Health Survey (CCHS) collects information on health status and determinants, and health care utilization. It surveys a large sample of respondents 12 years of age and older living in private dwellings. The CCHS covers approximately 98% of the Canadian population aged 12 and over.

95% Confidence Intervals

Confidence intervals (CIs) are presented for CCHS data. The prevalence of a trait in the actual population is likely to be somewhat different than the estimate derived from the CCHS sample. CIs provide a range that one can be relatively (95%) certain that the actual population prevalence falls within. Estimates that have wider CIs are less reliable than estimates that have narrower CIs.

CIs also assist with identifying groups in the population that are 'different' from each other. If the CIs around two estimates do not overlap, then it can be assumed that they represent populations that actually differ from each other in terms of a trait. If the CIs overlap, the populations are deemed to be the same (even though the actual estimate may be somewhat different).

Canadian Guidelines for Low-Risk Alcohol Drinking (LRADG)

LRADG #1 and/or #2 refers the Canadian Guidelines for Low-Risk Alcohol Drinking (LRADG).¹

Guideline #1: To reduce long-term health risks (chronic disease)

- Males: 0 - 3 standard* drinks per day. No more than 15 standard drinks per week.
- Females: 0 - 2 standard* drinks per day. No more than 10 standard drinks per week.
- Always have some non-drinking days per week to minimize tolerance and habit formation.

Guideline #2: Maximum special occasion alcohol consumption to reduce short-term risks (injury or acute effects associated with excess alcohol consumption)

- Males: 4 standard* drinks in one day in any 3 hour period
- Females: 3 standard* drinks in one day in any 3 hour period

*Standard drink - quantities of different alcoholic beverages that contain roughly the

same amount of alcohol. The Canadian Centre on Substance Abuse (CCSA) defines one standard drink as 17.05 ml or 13.45 g of pure alcohol. This is roughly equivalent to:

- 341 mL (12 oz.) bottle of 5% beer, cider or cooler
- 142 mL (5 oz.) glass of 12% wine
- 43 mL (1.5 oz) shot of 49% spirits

Please note this indicator excludes those who are pregnant or breastfeeding, and missing responses (not stated, don't know, refused).

Note: the Association of Public Health Epidemiologists in Ontario (APHEO) recommended definition for this indicator is different than the Ministry of Health and Long-term Care Accountability Agreement Indicator (AAI).

¹Canadian Centre on Substance Abuse [homepage on the Internet]. Ottawa: Canadian Centre on Substance Abuse; 2012 Dec 17 [cited 2013 Apr 24]. Canada's low-risk alcohol drinking guidelines. Available from: <http://www.ccsa.ca/eng/priorities/alcohol/canada-low-risk-alcohol-drinking-guidelines/pages/default.aspx>.

Household Income

Household income data are separated into deciles which provide a relative measure of each household income to the household incomes of other respondents. For these analyses these deciles were then grouped into 3 categories: the lowest 30% (low income), middle 40% (mid income) and highest 30% (high income) income groups.

Employment Status

Employment status is categorized based on respondents' reported working status in the week before the interview. Respondents aged less than 15 or more than 75 years old have been excluded from the population. "Employed" includes those that reported having a job and being at work in the last week or were absent from work last week. "Unemployed" refers to those that reported having no job last week. Respondents who reported being permanently unable to work were excluded from the variable.

Education Level

The education level is identified as the highest level of education acquired by the respondent. The variable is categorized as less than secondary school graduation, secondary school graduation no post-secondary education, other post-secondary (includes respondents that did graduate from high school, did receive other education

that could be counted towards a degree, certificate or diploma but did not earn such a degree, certificate or diploma), post-secondary degree (includes trade certificate or diploma, non-university certificate or diploma from a college, cegep, etc - other than trades certificates or diplomas, university certificate or diploma below bachelor's level, bachelor's degree), and university certificate, diploma or degree above bachelor's level.

Marital Status

Marital status is grouped into 3 categories: currently married or in a common-law relationship; separated, divorced or widowed; and single, never married.

Immigration Status

Immigrant status is categorized as "Recent immigrants" (immigrated 10 or less years ago), "long-term immigrants" (immigrated to Canada 11 years ago or longer), and "non-immigrants" (Canadian-born respondents). The variable is based on the length of time in years the respondent reported being in Canada since his/her immigration.

B. Census Profile – Statistics Canada⁽¹²⁾

Census Data

The Census aims to include every adult and child living in Canada on Census Day, as well as those Canadians living abroad on a military base, diplomatic mission or on a Canadian-registered merchant vessel. Individuals with a temporary work, study, or resident permit (and their dependents) are also included in the Census. Statistics Canada is required by law to conduct a Census of Population every five years. Just as Statistics Canada is required by law to conduct a census, respondents are also required by law to complete their census questionnaires. Data from Statistics Canada are randomly rounded to maintain confidentiality. Values are randomly rounded up or down to a multiple of 5 or 10 and as such total values may not match the sum of individual values. Some groups are underrepresented in the Census such as the homeless, young adults, and aboriginal people on reserves.

C. LCBO Annual Report 2014-15 – Liquor Control Board of Ontario⁽¹⁹⁾

The fiscal year 2015 sales figures for Ontario winery stores, the Beer Store (TBS) and brewer on-site stores are unaudited and may understate total sales due to various wineries and brewers not reporting by the time of publication. LCBO beer sales figures include LCBO sales to TBS; of LCBO's total beer sales in litres, 75,967,005 were to TBS. Prior year figures are restated annually to reflect changes in product hierarchy.

The fiscal year 2015 sales figures for Ontario winery stores, the Beer Store (TBS) and brewer on-site stores are unaudited and may understate total sales due to various wineries or brewers not reporting by the time of publication. LCBO beer sales figures

include LCBO sales to TBS; of LCBO's total beer sales, \$326,658,372 were to TBS. Prior year figures are restated annually to reflect changes in product hierarchy.

D. GIS Land Use – City of Hamilton ⁽²⁰⁾

The map of Retail Alcohol Outlets in Hamilton including population residing within 1, 2 & 5 km buffer zones, uses 2011 census data.

In using the smallest census block data, there will still be a lot of population overlap that goes beyond the buffer limits. This will increase estimates by as much as 7% or more. This is the nature of census data.

E. Licensed Establishments – Alcohol and Gaming Commission of Ontario ⁽²²⁾

This summary is based on historical data of licensed establishments and shows how many establishments were active in that given year.

To the best of our knowledge, the information provided in the report is accurate and up-to-date as of April 29, 2016, when the report was prepared; however, the Alcohol and Gaming Commission of Ontario (AGCO) cannot guarantee the accuracy of this information on any specific date. All information provided has been collected and is the property of the AGCO. This information cannot be reproduced without the AGCO's approval.

F. Ontario Student Drug Use and Health Survey (OSDUHS) – Centre for Addiction and Mental Health (CAMH) ⁽³³⁾

The Ontario Student Drug Use and Health Survey (OSDUHS) is a population survey of Ontario students in grades 7 through 12. The OSDUHS began in 1977 and is the longest ongoing school survey in Canada, and one of the longest in the world. This self-administered, anonymous survey is conducted across the province every two years with the purpose of identifying epidemiological trends in student drug use, mental health, physical health, gambling, bullying, and other risk behaviours, as well as identifying risk and protective factors. Typically, the OSDUHS surveys thousands of students in over 150 elementary and secondary schools across Ontario. The survey sample is considered representative of all students in grades 7-12 in publicly funded schools in Ontario (just under one million students).

The OSDUHS began as a drug use survey in 1977, but is now a broader study of adolescent health and well-being. Topics covered include tobacco, alcohol and other drug use and harmful consequences of use, mental health indicators, physical health indicators, health care utilization, body image, gambling and video gaming behaviours and problems, violence and bullying, criminal behaviours, school connectedness, and family life.

The OSDUHS survey is based on scientific, random (probability) sampling methods designed to produce representative samples in which the sampling error can be estimated.

The survey is restricted to adolescent students enrolled in publicly funded schools (note that schools cannot participate without prior school board approval). Excluded by design are out-of-scope groups for which drug use is typically elevated, such as institutionalized youth, school leavers, and homeless/street youth. Enrolled students who do not participate (due to absenteeism or lack of consent) may bias estimates if nonparticipating students differ from participating students on variables of interest. Because the reporting of drug use is based on self-reports, there is an inestimable potential for misestimating drug use caused by intentional (e.g., underreporting) and unintentional errors (e.g., memory and recall errors).

The survey is designed to provide precise estimates of drug use at the provincial level. A single cycle, however, is not designed to provide precise estimates for local (small) geographic areas. Small area analysis, however, can be potentially accommodated by oversampling students or cumulating data across cycles.

Students' answers are only seen by the data entry staff at the Institute for Social Research (ISR), who administers the survey on CAMH's behalf. The answers cannot be connected to individual students or school records. Teachers and principals will not see students' answers.

For more information see: Drug use among Ontario students 1977-2015: Detailed OSDUHS findings (CAMH Research Document Series No. 41) – Centre for Addiction and Mental Health (59) or http://www.camh.ca/en/research/news_and_publications/ontario-student-drug-use-and-health-survey/Pages/default.aspx

G. Drug and Alcohol Treatment Information System (DATIS) – Ministry of Health & Long-Term Care ^(34,56)

Data are based on presenting substance related problems at intake. Youth often present with multiple presenting substance related problems and therefore the number of reported youth accessing services related to the use of alcohol overlaps with that of other reported substance use.

H. American College Health Association - National College Health Assessment (ACHA-NCHA-II) Institutional Data Report – McMaster University ⁽³⁶⁾

This data describes the use of alcohol, the culture of alcohol use, and the consequences of alcohol use as self-determined by students at McMaster University. The NCHA survey was conducted between January 28th, 2016 to February 19th, 2016. Invitations were

sent out to 5500 undergraduate and graduate students and there were 880 respondents (16% response rate). The extracted data is only part of the larger NCHA survey that assessed a wide range of student health issues including but not limited to: alcohol, tobacco, and drug use, sexual health, mental health, nutrition, and personal safety. There was a total of 364 variables, and not every question was required to be answered by the entire group surveyed.

I. Better Outcomes Registry and Network (BORN) ⁽⁴⁶⁾

The Better Outcomes Registry and Network (BORN) Ontario is a maternal-newborn registry by web-based data entry (BORN Information System – BIS). The BORN Information System (BIS) enables the collection of, and access to, data on every birth and young child in Ontario. Sourced from hospitals, labs, midwifery practice groups and clinical programs, the data are collected through a variety of mechanisms including HL7, batch upload, and manual entry. Hospital sites either manually enter data directly into the BIS or upload data from their own databases. Record level information is captured for both the maternal and infant variables. For analysis based on the characteristics of maternal outcomes, data is weighted based on multiple gestation. Data for stillborn births are excluded from the analysis. BORN is comprised of Niday Perinatal Database, Fetal Alert Network, Multiple Marker Screening Program, Ontario Midwifery Program and Newborn Screening Ontario databases.

The rate of any alcohol exposure in pregnancy is expressed as a percentage of the total number of women who gave a birth (live or stillbirth) in calendar years 2010-2011 and geographic location.

- Missing data represents missing values for reported alcohol exposure
- Total number of women includes all women who gave birth (live or still birth) at a hospital or home in Ontario for 2013 and 2014
- Location was defined by maternal residence.
- Data for calendar years 2013 and 2014 was extracted from the BORN BIS.
- Only Ontario residents are included.
- Values with greater than 10% but less than 30% missing data should be interpreted with caution. Missing data was 1.9% and 6.2% for the City of Hamilton and Ontario, respectively in 2013. Missing data was 1.8% and 4.1% for the City of Hamilton and Ontario, respectively in 2014.

Significant difference: 95% CIs derived from the simple computation of the CI for a proportion ($CI_{95\%} = p \pm 1.96 * SEp$). CIs provide a range of values that one can be relatively (95%) certain that the actual population prevalence falls within. Estimates that

have wider CIs are less reliable than estimates that have narrower CIs. If the CIs around two estimates do not overlap, then it can be assumed that they represent populations that actually differ from each other in terms of a trait. If the CIs overlap, the populations are deemed to be the same, even though the actual estimate (e.g. percentage) may be somewhat different.

J. Rapid Risk Factor Surveillance System ⁽⁴⁷⁾ – Institute of Social Research (ISR), York University

RRFSS collects information on perceptions, beliefs and health determinants, behaviours and status from English-speaking Hamilton residents 18 years of age and older living in private dwellings via telephone survey. Prior to 2009, data were collected on a monthly basis for a random sample of approximately 100 adults. In 2009, data collection cycles were converted to four-month collection periods (January to April, May to August and September to December) for a random sample of approximately 400 adults. Since RRFSS only collects information from English-speaking community-dwelling residents 18 years of age and older, resulting data may not represent the opinions of all Hamilton residents. RRFSS data are self-report and, as a result, are subject to error. Individuals may have difficulty accurately recalling their past experiences (e.g. may forget an injury) or may 'adjust' their responses to align with what is seen as socially desirable. There may also be differences between individuals who choose to participate in the survey and those who do not. Unless otherwise stated, RRFSS estimates include 'don't know' and refusal responses in the denominator and so estimates should be interpreted as 'of all individuals from Hamilton surveyed' instead of 'of all those individual from Hamilton who provided information'. Estimates will be conservative when the percentage of missing data is high. In Jan-Mar 2007, information was not stated for 0.3% of Hamilton respondents 18+. "It depends" responses can result from one probe from the telephone interviewer.

K. IntelliHEALTH ONTARIO – Ontario Ministry of Health & Long-term Care ^(51, 52)

The following section describes the method used to calculate or estimate the number of hospitalizations that are alcohol-related. Three pieces of information are needed to calculate the numbers of hospitalizations caused or prevented by alcohol: an estimate of exposure to alcohol (prevalence of alcohol consumption), the sex-specific relative risks of certain diseases and the total number of disease-specific hospitalizations.

1. The prevalence of alcohol consumption is determined using the Canadian Community Health Survey (CCHS). The various alcohol consumption categories used are shown in Table 1. The categories were used based on average volume of alcohol consumed per day, with 10g as the amount of alcohol in a standard drink.¹ Most meta-analyses provide

relative risks for disease and injuries based on these four drinking categories.² A separate simple average approach was used to combine CHHS 2009-10, 2011-12, and 2013-14. CCHS cycles were combined for a more stable estimate of alcohol consumption. While the combined cycle provide a more stable estimate it should be noted that there some estimates for age and sex groups that were of marginal or non-releasable quality as defined by Statistics Canada.

- Estimate annual number is based on a 3 year average
- Alcohol consumption measured by combined CCHS cycles 09-10, 11-12, 13-14 using separate simple average approach and should be interpreted as the average consumption from 2009-2014.

Drinking Categories	Females (Grams of alcohol per day)	Males (Grams of Alcohol per day)
Abstainer or very light drinker	0 - <0.25 g/day	0 - <0.25 g/day
Drinking category I	0.25 - <20 g/day	0.25 - <40 g/day
Drinking category II	20 - <40 g/day	40 - <60 g/day
Drinking category III	40+ g/day	60+ g/day

2. Next, the relative risks were taken from Rehm et al.^{2,3} The relative risk is the ratio of the probability of developing a disease among those exposed to alcohol compared with the probability of those not exposed, or abstainers.

3. Lastly, numbers of chronic diseases, psychiatric conditions, and injuries were obtained from IntelliHEALTH.

These three pieces of information can be used to calculate the alcohol-attributable fractions (AAF). For chronic conditions, AAFs are calculated by combining alcohol consumption and relative risk estimates from meta-analyses. Knowing the AAF (i.e., the percentage of deaths for a certain disease caused (or prevented) by alcohol), it is multiplied by the number of disease-specific hospitalizations to obtain the estimated number of hospitalizations caused by alcohol.

The basic calculation⁴ for AAF is:

$$((\text{Prevalence})(\text{Relative Risk} - 1))/(\text{Prevalence} + (\text{Relative Risk} - 1))$$

Where prevalence is the percentage of the population consuming alcohol at a specified level of average daily consumption within a given timeframe, and relative risk is the

likelihood of death from a particular cause at a specified level of average daily alcohol consumption.⁵

The detailed formula for an AAF calculation² is:

$$AAF = \frac{[\sum_{k=1} P_i(RR - 1)]}{\sum_{k=0} P_i(RR_i - 1) + 1}$$

Where i is the category with usage ($i=1$) or no alcohol ($i=0$), $RR(i)$ is the relative risk at exposure level i compared with no alcohol consumption. $P(i)$ is the prevalence of the i th category of alcohol consumption and k is the highest drinking category (that is, category III).

For more information on the code definitions, calculations used, and data caveats for this indicator please see: <http://core.apheo.ca/index.php?pid=319>

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L. InterDev Data Warehouse – Hamilton Paramedic Service ⁽⁵⁴⁾

This data represents the final problem code of alcohol intoxication that the paramedic assigns to the patient and does not include if alcohol consumption played any sort of role/factor in the events leading to the 911 call for paramedic services.

M. Profile of Contacts Received by the Drug and Alcohol Helpline from Individuals in Hamilton – ConnexOntario Health Services Information ⁽⁵⁷⁾

One, none, or more than one substance may be reported by a contact.

N. CAD calls for service 2014-April 11 2016 YTD - Hamilton Police Service ⁽⁶⁰⁾

Calls for service are generated each time a citizen calls the police for assistance or when the police proactively generate enforcement activity. Information is collected by a computer-aided dispatch (CAD) system and includes the date, time, location and type of call as the citizen or dispatcher interprets it. Not every call for service results in a police incident report and not every police incident report results in an arrest. These incidents provide analysts with a better understanding of crime and disorder in a city or neighborhood, and can help deployment efforts. Call types included in this dataset include: Liquor Licence Act, Disturbance in Licence Premises, Barcheck, Family Trouble (In Progress/Just Occurred), and Domestic (In Progress/Just Occurred) calls for service.



Hamilton

December 2017