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A Report on Alcohol in Wellington, Dufferin, and Guelph

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Executive Summary

For centuries, alcohol has played a significant role in society. While generating some social and economic benefits, alcohol also places significant health, safety, social, and economic burdens on society. This report aims to explore those factors to provide local organizations with information in order to inform planning and service delivery to address alcohol misuse.

Some of the important findings from this report include:

Drinking behaviour of WDG residents:

- 81% of WDG residents report drinking alcohol in the last 12 months. A higher proportion of WDG residents drink compared to all Ontario (72%)
- On average, WDG residents drink between 4 and 5 drinks per week
- 49% of WDG residents reported drinking in excess of at least one of Canada's Low Risk Alcohol Drinking Guidelines (LRADGs)[1]. A higher proportion of WDG residents reported exceeding the LRADGs compared to Ontario (41%)
- Men are more likely to exceed both LRADGs but there has been a 10% increase between 2007-2013 in the proportion of women who report exceeding the special occasion limit

Drinking behaviour of special populations:

Youth

- 22% of grade 7 students and 66% of grade 10 students reported drinking in the last 12 months
- Grade 10 males are more likely to report heavy drinking than females and grade 10 youth in Dufferin are more likely to report heavy drinking than grade 10 students in Wellington and Guelph
- A higher proportion of grade 7 and 10 youth who drink more frequently are at risk of depression compared to youth who drink less frequently

University Students

- 89% of students at the University of Guelph reported drinking within the last 12 months
- 31.1% of students classify as light-infrequent drinkers and 27.5% of students classify as heavy-frequent drinkers

Women of Childbearing Age & Pregnant Women

- Of women of childbearing age (15-44 years old), 86% reported drinking within the last 12 months and 62% reported exceeding the LRADGs in 2013.

[1] Canada's national Low Risk Alcohol Drinking guidelines were created to give Canadians information on how to drink on a low-risk way. This report looks at Guideline #1 (daily and weekly drinking limits) and Guideline #2 only (special occasion limits) only.

- Of the women included in a WDGPH Prebirth Clinic study, 18% reported consuming alcohol during their pregnancy and on 2% of the total sample continued to use alcohol after they became aware of their pregnancy.

Alcohol availability and sales:

- Alcohol availability is concentrated around areas of high population density
- 87% of Guelph residents live within 1.0 kilometers of an alcohol outlet[2] compared to 61% of Dufferin residents and 47% of Wellington residents
- Dufferin County residents purchased the most litres of alcohol per capita (ages 19+) within WDG for all types of alcohol, with Guelph coming in at a very close 2nd in all categories.

Alcohol's impact on health and safety:

- Hospitalizations for diseases caused solely by alcohol have increased by 28% from 2009-2013
- There is no accurate data on the prevalence of fetal alcohol spectrum disorder in the community
- The number of alcohol related charges and impaired driving charges by police forces in Wellington and Dufferin has been declining over the last 5 years
- In 2013, the 25-44 year olds age group received more alcohol related charges than any other age group in Wellington and Dufferin
- No local data is available on the prevalence of violent incidents related to alcohol in WDG

There is much work to be done to address the health and social impacts of high risk alcohol use in WDG. Research, public education, community engagement and healthy public policy development will all play a role in the creation of an alcohol strategy to encourage moderate drinking.

[2] An alcohol outlet is any place that sells alcohol. For the purposes of this report these include: Beer stores & LCBO stores, breweries, wineries, brew and ferment on premise establishments, off-site winery retail stores, and licensed establishments (e.g. restaurants and bars).

Introduction

For centuries, alcohol has played a significant role in society. People drink to regulate their mood, to celebrate and to socialize, for courage, entertainment, and for taste. Currently, about 72% of adults in Ontario drink alcohol (CCHS, 2012). Alcohol is also big business in Canada. According to Statistics Canada, beer, liquor, and wine stores made $7,153,235,000 in operational revenue in Ontario in 2012 (Statistics Canada, 2012). According to the Survey of Household Spending, Ontario households spent an average of $732 on alcohol per year in 2012 (Statistics Canada, 2012). The production and sale of alcohol also generates revenue for provincial and federal governments through taxation.

There are also costs associated with alcohol. Based on 2002 data, the estimated cost in Canada for health care directly related to alcohol consumption was over $3.3 billion, with indirect costs at $14.6 billion (CAMH, 2013) Alcohol consumption, especially at high-risk levels, has been linked to addiction and mental health issues, chronic diseases, cancer, low birth weight, and fetal alcohol spectrum disorder (CAMH, 2013). Alcohol consumption is the second leading cause of death, disease, and disability worldwide, surpassed only by tobacco in developed countries like Canada (WHO, 2011; WHO, 2010; Rehm et al., 2009).

Locally, many organizations have an interest in alcohol use and harm reduction. This report aims to provide those organizations with data about alcohol consumption in Wellington County, Dufferin County, and the City of Guelph in order to inform planning and service delivery. The report will answer three main questions:

1. What are the current drinking patterns of residents in Wellington County, Dufferin County, and the City of Guelph (WDG)?
2. What factors influence the way people in WDG drink alcohol?
3. How is alcohol related to pregnancy, disease, injury, and crime?

Data Sources and Methods

APHEO Indicators

Some indicators for this report were chosen from the list of core indicators recommended by the Association for Public Health Epidemiologists of Ontario (APHEO). APHEO has recognized the need for consistency among health reports (APHEO, n.d.a). Its Core Indicators Working Group (CIWG) has aimed to systematically define and operationalize a core set of health indicators in Ontario, which includes indicators for oral health (APHEO, n.d.a). The CIWG works to ensure the Core Indicators are accurate and up-to-date, and reflect the legislative requirements set in the Ontario Public Health Standards (APHEO, n.d.a).

The two APHEO Chronic Disease And Injury indicators assessed in this report include: (1) the proportion of the population aged 19 and over that exceeds the low-risk alcohol drinking guidelines (LRADGs) (Data Source: Canadian Community Health Survey (CCHS)); and (2) the proportion of adolescents ages 12 to 18 who have consumed alcohol in the past 12 months (Data Source: CCHS).

Drinking Behaviour and Health Data

Data on alcohol drinking behaviour comes from the Canadian Community Health Survey. Canadian Community Health Survey (CCHS) data for 2007 to 2013 are collected from persons aged 12 and over living in private dwellings in the 115 health regions covering all provinces and territories. Excluded from the sampling frame are individuals living on Indian Reserves and on Crown Lands, institutional residents, full-time members of the Canadian Forces, and residents of certain remote regions. The CCHS covers approximately 98% of the Canadian population aged 12 and over. The data for this report came from analysis of the Ontario sharefile for the years 2008 to 2013. It is important to note that all health and behaviour data collected through the CCHS is self-reported, so recall bias, under or over-reporting, and proxy errors may occur.

All reported estimates (percentages) from the CCHS conform to the reporting guidelines described in the 2011 CCHS User Guide (Statistics Canada, 2013). As per these guidelines, all reported estimates whose coefficient of variation (CV) falls within the marginal range ($16.6 \leq CV \leq 33.3$) are considered for general unrestricted release but are accompanied by a notation (^{E}) within its corresponding figure cautioning of its high sampling variability. The remaining reported estimates, which are not accompanied by a CV, can be interpreted with confidence as their CV falls within the acceptable range ($0.0 \leq CV \leq 16.5$). All estimates with a CV within the unacceptable range ($CV > 33.3$) were not included in this report.

Data on youth drinking behaviour and mental health status also comes from the WDG Youth Survey. The WDG Youth Survey was based on a validated tool and conducted with grade 7 and 10 students during the 2011/2012 school year. In total, 3,429 students responded to the survey (2108 grade 7 students and 1235 grade 10 students) with an overall response rate of 55% of grade 7 and 10 students in WDG. French, private, and parochial schools were excluded from the survey.

Data on university student drinking behaviour comes from a University of Guelph report (Townshend, 2013) that details the results of their administration of the Canadian Campus Survey, a validated tool developed by CAMH. The survey was administered between November 27th and December 10th, 2011. The survey was completed by 2,194 undergraduate students for a response rate of 34%. Unfortunately useful comparisons to other schools or a provincial average are not available as the last round of the provincial Canadian Campus Survey was conducted in 2004. More information on the survey can be found in the report (Townshend, 2013).

Alcohol Availability and Sales

Data on alcohol outlets and their locations in WDG was provided to WDGPH by the Alcohol and Gaming Commission of Ontario. The data is current to May 5th, 2014.

Alcohol sales data was provided to WDGPH in dollars and in litres by the Liquor Control Board of Ontario (LCBO) for the April 2012 to March 2013, and April 2013 to March 2014 fiscal years. The LCBO makes up approximately 50% of the alcohol market share in Ontario. Unfortunately no other alcohol retailers (e.g. The Beer Store, off-site wine retailers, etc.) were willing to share their data so this data only provides about half of the picture of alcohol sales in Ontario.

Alcohol and Pregnancy Data

The only local data available on drinking during pregnancy comes from the 2012 Prebirth Clinic Research Study (WDGPH, 2012). Data was collected from pregnant women by Public Health Nurses using paper surveys at prebirth clinic appointment across WDG from January to June of 2012. The study includes information on attendance, demographics, protective and risk factor data, and immediate outcomes of 617 WDGPH prebirth clinic clients. One limitation associated with this study is that social desirability bias is possible due to the sensitive nature of the topic of drinking during pregnancy. Furthermore, the population is not representative of all pregnant women in WDG. The women who attended the prebirth clinics generally reported higher levels of education and protective health behaviours (e.g. food

security) compared to CCHS results from other women of reproductive age in WDG. As such, the results should not be generalized to the population.

National rates on drinking during pregnancy are only available from the 1993-2008 National Longitudinal Survey of Children and Youth (NCSLY), as reported in *Perinatal Health Indicators for Canada* (PHAC, 2013). The NCSLY is a long-term study of Canadian children and parents that covers their development and well-being from birth to early adulthood. Only biological mothers who had given birth within the last two years were included in the study. Limitations of this data include:

- the exclusion of pregnancies that led to stillbirths and infant deaths could lead to an underestimation of alcohol consumption since alcohol consumption during pregnancy is associated with a higher risk of stillbirth
- the potential for social desirability bias due to the sensitive nature of the topic
- data is only available at the provincial level so no local data is available

Hospitalization Data

Data on hospitalizations due to alcohol were retrieved from the National Ambulatory Care Reporting System (NACRS) through IntelliHEALTH Ontario. This database contains information on scheduled and unscheduled emergency department, day surgery, dialysis clinic, cardiac catheterization clinic, and oncology clinic visits across Canada. The data used for this report includes the number of distinct visits per year for patients that presented with an 100% alcohol attributable disease as the main problem (MPDx) deemed to be the clinically significant reason for the patient's visit, identified by an ICD-10 CA code. When multiple problems are considered to be the main reason, the MPDx is the one that is responsible for the greatest use of hospital resources (Ministry of Health and Long Term Care, 2010).

Some limitations associated with the NACRS dataset include:

- Since the MPDx is the only diagnosis information available in the NACRS database, data is not available for patients that visited with 100% alcohol attributable diseases that were secondary reasons for their visit and thus not classified as the MPDx
- The numbers from NACRS are likely an underestimate of the true burden of alcohol related disease in WDG. Not all cases are captured in the NACRS system because there are many health care options in WDG (e.g. family doctors, walk-in clinics, etc.). Since there is no consistent mechanism that determines where people seek treatment for certain illnesses, one person could seek treatment at an emergency department and be included in NACRS while another could seek treatment from a family doctor and not get included.

Data on in-patient admissions to adult mental health beds was acquired from the Ontario Mental Health Reporting System (OMHRS) through IntelliHEALTH Ontario. This database contains clinical, administrative, and resource information on all adult inpatient mental health beds in Ontario. This only includes publicly funded beds. The data used for this report includes the number of distinct admissions for patients that presented with an 100% alcohol attributable disease, classified by DSM-IV code.

Limitations of the OMHRS data source include:

- Because, OMHRS only includes information on adult inpatient mental health beds in Ontario the database is missing any information on private treatment facilities such as the Homewood Health Centre in Guelph.
- Data from pediatric mental health beds is not included in OMHRS
- OMHRS does not include data on admissions to acute care beds where the primary diagnosis is a mental health issue

Alcohol and Crime Data

Data on the number of charges for alcohol-related crimes under the Liquor License Act and Criminal Code of Canada were provided to WDGPH by the Ontario Provincial Police, the Orangeville Police, and the Shelburne Police. Percent changes in crime between 2009 and 2013 were then calculated separately for each police force.

Some limitations of the police data sources include:

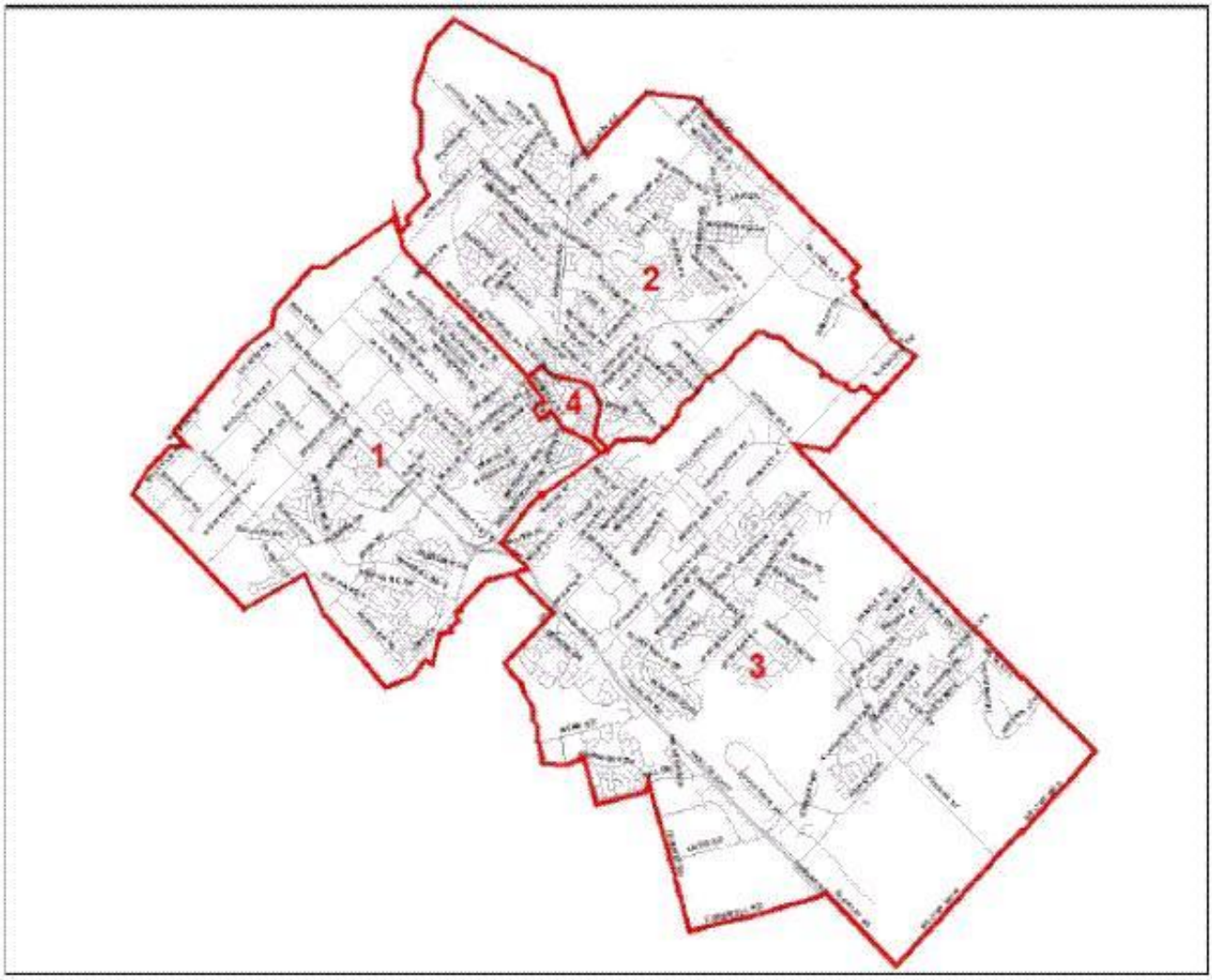
- Data is only reflective of charges laid and therefore does not include crimes that were not caught, or alcohol-related incidents where charges are not laid. As such, the number of charges may not be truly reflective of the amount of alcohol-related crime happening in a community.
- Data is not comparable across regions as the police forces serve different populations with different resources and priorities

Guelph Police data was obtained from the Guelph Crime Mapping system available on the Guelph Police Website. The only available data through that system is for calls for service. As such, not every call results in a crime or charge. Calls for service data was extracted for liquor offenses, intoxicated persons, and impaired driving for each policing zone from 2009-2013. The four policing zones in Guelph are shown in **Figure 1.** Calls for service for each type of offenses were recorded in an excel spreadsheet and totals were produced for each year and each zone. Percent change in calls for service between 2009 and 2013 was also calculated for each type of offence.

Some limitations of the Guelph Police data source include:

- The data is based on preliminary information provided to police by the reporting parties and may not have been verified
- The data does not include any occurrences that don't come through as calls for service
- The crime classification of the occurrence may have changed over time based upon additional investigation or the possibility of mechanical or human error
- Intoxicated persons and impaired driving calls could include substances other than alcohol

Figure 1: Policing zones in Guelph



Source: Guelph Police, 2013

A Profile of Wellington-Dufferin-Guelph

Wellington-Dufferin-Guelph Public Health (WDGPH) is one of 36 local health departments in Ontario. The area served by WDGPH is located in southwestern Ontario, approximately 100 km west of Toronto, and comprises two counties: Wellington County and Dufferin County. The municipality of the City of Guelph is geographically located within Wellington County *(See Figure 2)*. In this report, the area served by WDGPH is referred to as Wellington-Dufferin-Guelph (WDG).

Figure 2: Municipalities in Wellington-Dufferin-Guelph, southwestern Ontario

The mandate of WDGPH is to improve the health of the population through activities that promote health, protect health, and prevent disease and injury. Wellington-Dufferin-Guelph Public Health is an essential community health service with dedicated staff that focus on promoting and protecting the health of the community. WDGPH offers programs and services and advocate for healthy public policies that:

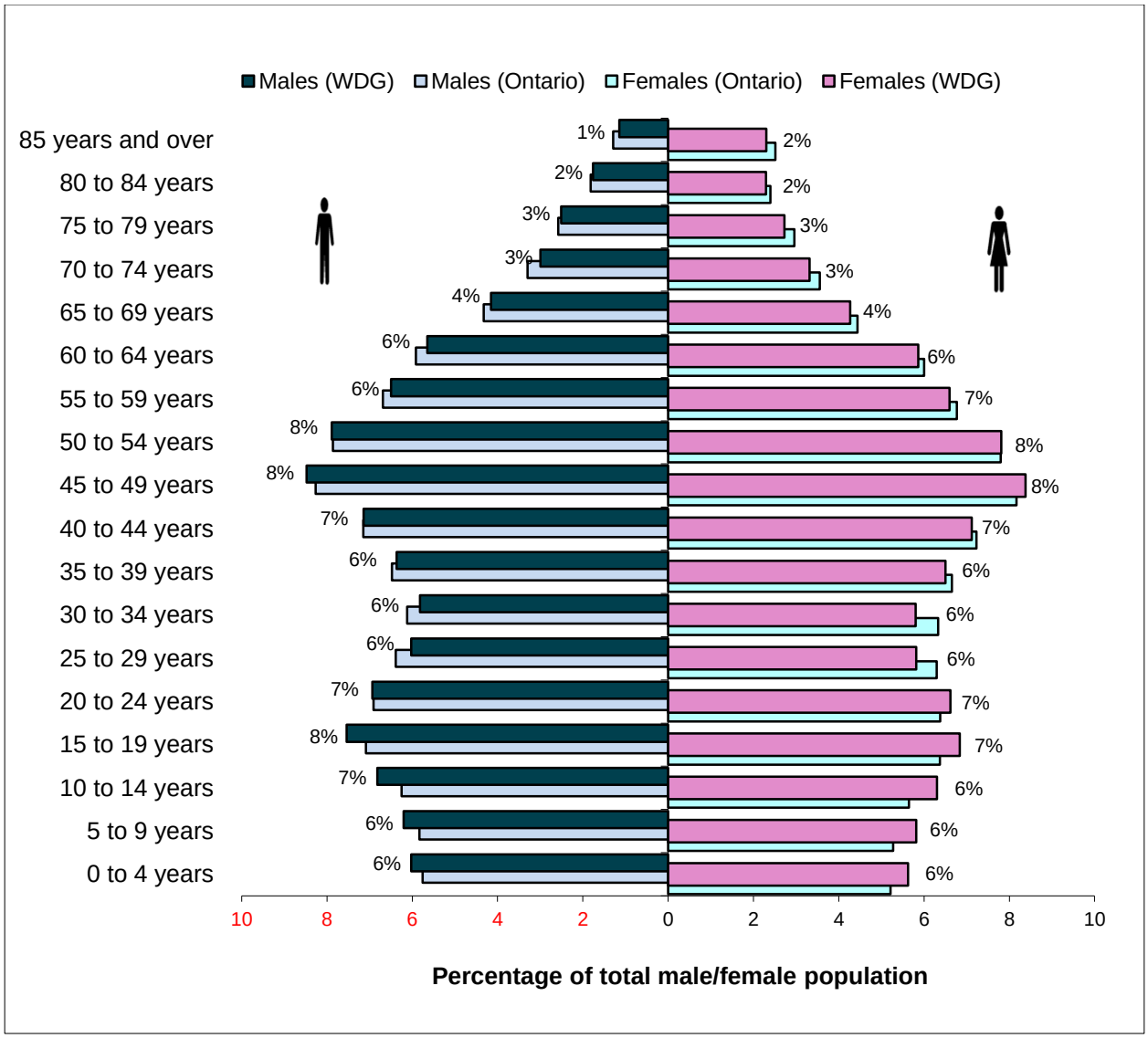
- Promote healthy infant and child development, responsive parenting, healthy lifestyles, and positive mental, reproductive, sexual, and dental health.
- Protect the community from communicable and infectious diseases, and environmental hazards such as contaminated food and water.
- Prevent disease and injuries.

Table 1 summarizes the sociodemographic details of WDG compared to Ontario.

Table 1: Sociodemographic profile of WDG, compared to Ontario

Indicator	Wellington-Dufferin-Guelph	Ontario
Population (Census 2011, Statistics Canada)	265,240	12,851,820
Geographical Profile :		
Percentage of geographical area that is rural (Census 2011, Statistics Canada)	98% (97.53%)	N/A
Percentage of geographical area that is urban (Census 2011, Statistics Canada)	2% (2.47%)	N/A
Population Profile (Census 2011, Statistics Canada)	46% of the population lives in urban areas	N/A
Population Growth (from 2006-2011) (Census 2011, Statistics Canada)	4.1% increase	5.7% increase
Projected Population Growth from 2011 to 2016 (Census 2006, Statistics Canada)	6.1% increase to 295,000 residents	N/A
Diversity:		
Immigrant Status (National Household Survey 2011, Statistics Canada)	15.7%	28.5%
Percentage increase of new immigrants from 2001-2006 compared with 1996-2001 (Census 2006, Statistics Canada)	24%	N/A
Visible minority population (National Household Survey 2011, Statistics Canada)	9.0%	25.9%
Largest visible minority groups (National Household Survey 2011, Statistics Canada)	South Asian, Chinese, Southeast Asian, Black, Filipino	South Asian, Chinese, Black, Filipino, and Latin American
Education (Census 2006, Statistics Canada)	47.7% of the population aged 15 years and older has completed post-secondary education*	52.7% of the population aged 15 years and older has completed post-secondary education*
Percentage of Population With No Knowledge of Official Languages (Census 2011, Statistics Canada)	0.8%	2.3%
Median 2005 Family Income After Tax (Census 2006, Statistics Canada)	$65,284	$63,441
Unemployment Rate (2012, 15yr+) (CANSIM Table 109-5324, Statistics Canada 2013)	5.1%	7.8%
Percentage of Children <6 years of age Living in Low-income Households (Census 2006, Statistics Canada)	6.8%	14.8%

Figure 3: Age-sex distribution of WDG population compared to Ontario population, 2011 census



Source: Statistics Canada; 2011 Census. Data labels (WDG percentages) rounded to zero decimal places

Alcohol Use

This section of the report will describe the alcohol use patterns of residents in WDG.

General Population

In 2013, 81% of WDG residents surveyed reported drinking alcohol in the last 12 months. **Table 2** displays drinking rates in WDG and Ontario by gender, age, and geography. Drinking in the last 12 months in WDG does not vary significantly by gender despite the fact that in Ontario the proportion of men who reported drinking in the last 12 months is significantly higher than the proportion of women who reported it. There are also no significant differences in reported drinking within the last 12 months by geography within WDG but all WDG geographies have significantly higher reported rates than Ontario. Drinking in the past 12 months is significantly higher in WDG than Ontario overall and specifically for 25-44 year olds and people aged 65 and older.

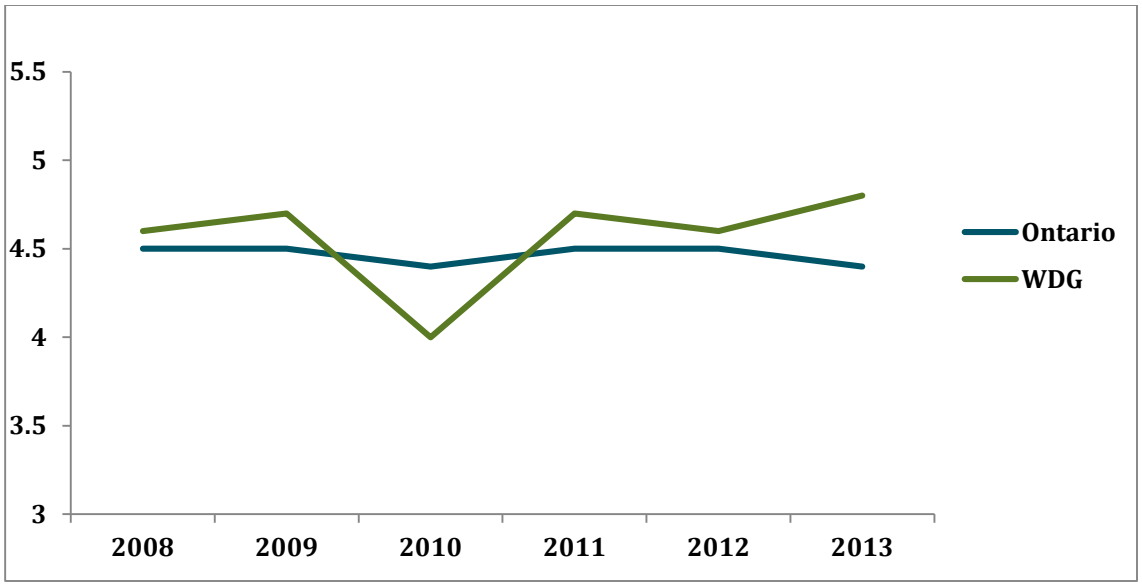
Table 2: Proportion of the population in WDG and Ontario who reported drinking within the past 12 months by gender, age, and geography, 2013

		WDG	Ontario
Total		81%**	72%**
Gender	Men	85%	77%
	Women	78%	68%
Age	<19	44%E	33%
	19-24	88%	84%
	25-44	90%**	79%**
	45-64	84%	76%
	65+	76%**	68%**
Geography	Wellington	79%	72%
	Dufferin	81%	72%
	Guelph	83%	72%

E= High sampling variability is associated with this estimate
**= Significant difference between WDG and Ontario
Source: CCHS, 2013

Figure 4 below displays average weekly alcohol consumption by number of drinks for self-reported drinkers in WDG and Ontario from 2008-2012. Over the last 5 years, rates have remained stable between an average of 4 to 5 drinks per week for Ontario and WDG residents.

Figure 4: Average number of drinks consumed per week for drinkers in WDG and Ontario from 2008-2013



Source: CCHS, 2008-2013

Compliance with the National Low Risk Alcohol Drinking Guidelines

Canada's National Low-Risk Alcohol Drinking Guidelines (LRADGs) were developed to give Canadians who choose to drink information on how to drink in a low risk way.

The newest version of the guidelines recommends the following (Butt et al., 2011):

- Guideline #1: Daily and weekly limits
    - Women should limit themselves to 2 drinks a day and 10 drinks a week with no more than 3 drinks on any given day.
    - Men should limit themselves to 3 drinks a day and 15 drinks a week with no more than 4 drinks on any given day
- Guideline #2: Special occasion limits
    - Women should have no more than 3 drinks on a special occasion
    - Men should have no more than 4 drinks on a special occasion
- Guideline #3: Zero is the limit when:
    - Driving, using machinery or tools
    - Taking medication or other drugs
    - Doing dangerous physical activity
    - Living with mental or physical health problems
    - Alcohol dependent
    - Pregnant or planning to be

    - Responsible for the safety of others
    - Making important decisions
- Guideline #4: Zero is safest if:
    - you are pregnant or planning to become pregnant, or are about to breastfeed
- Guideline #5: Delay drinking
    - Youth should try to delay their drinking and should never exceed 1-2 drinks per occasion if they choose to drink

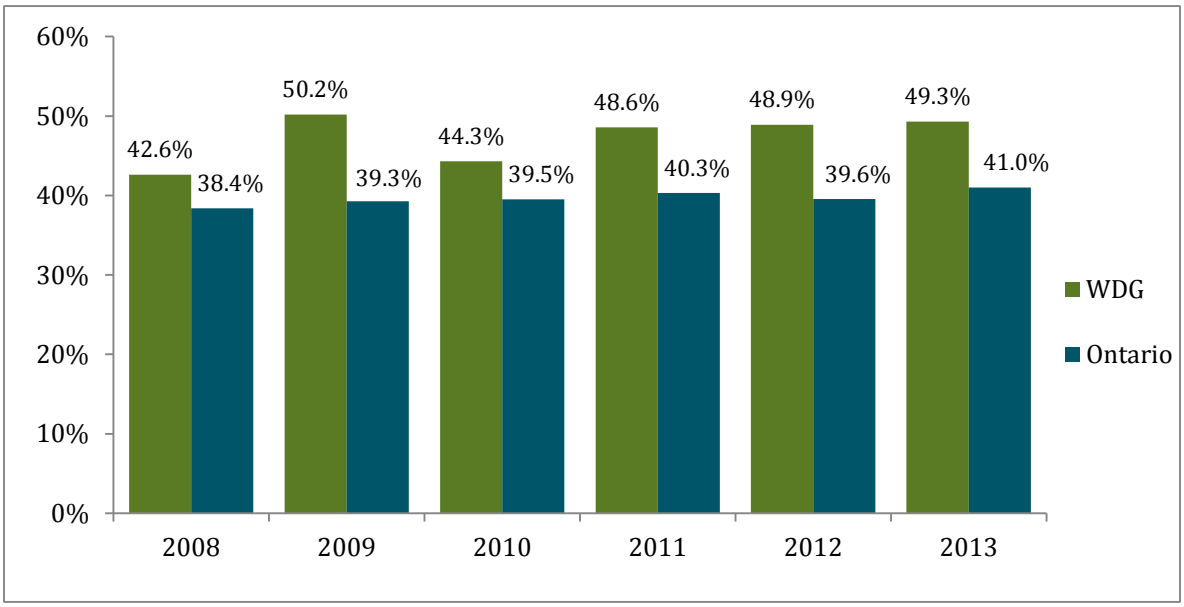
The LRADGs also provide people with advice on how to drink safely, including messages around (Butt et al., 2011):

- Setting drink limits and sticking to them
- Drinking slowly, no more than 2 drinks in any 3 hours.
- Alternating alcoholic and non-alcoholic drinks
- Eating before and while drinking.
- Considering factors like age, body weight and health problems that might suggest lower limits
- Not starting to drink or increasing drinking due to some health benefits

The LRADGs can be used to classify people as high-risk or low-risk drinkers. People who exceed the LRADGs are considered to be at higher-risk of dying prematurely from alcohol-related diseases, such as cancer and pancreatitis, than people who comply with the guidelines.

In 2013 49%, of WDG CCHS respondents over the age of 19 reported drinking in excess of at least one of the low-risk drinking guidelines in the past 12 months. This is significantly higher than the Ontario rate which was 41% in 2013. **Figure 5** displays the trends for exceeding at least one of the LRADGs in WDG and Ontario, from 2008-2013. For each year, a higher proportion of WDG residents reported drinking in excess of the LRADGs compared to residents in all of Ontario.

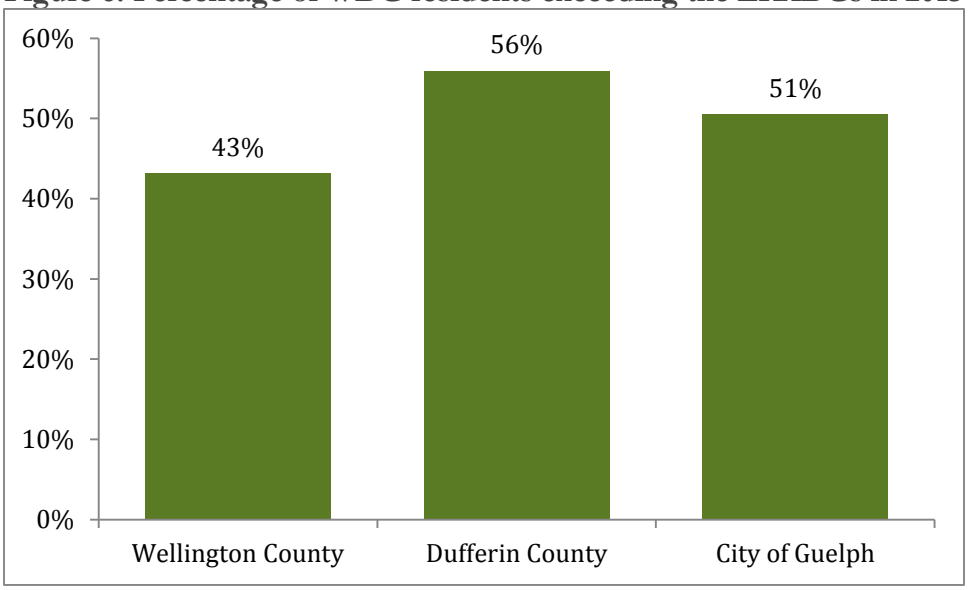
Figure 5: Percentage of WDG residents exceeding at least one of the LRADGs from 2008 to 2013



Source: CCHS, 2008-2013

Figure 6 displays the proportion of WDG residents that reported exceeding at least one of the LRADGs in Guelph, Wellington and Dufferin Counties separately. While the graph shows that more Dufferin residents reported exceeding the LRADGs than residents of Wellington County and the City of Guelph, a statistically significant difference in high-risk drinking between the different geographical areas cannot be reported.

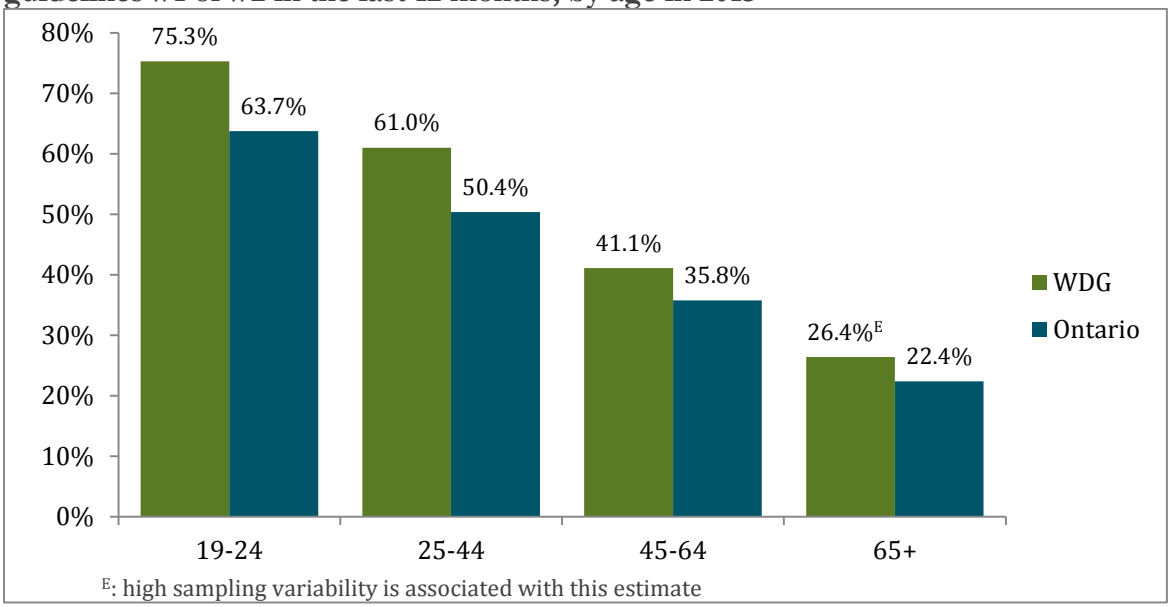
Figure 6: Percentage of WDG residents exceeding the LRADGs in 2013 by geography



Source: CCHS, 2013

Figure 7 displays the percent of WDG respondents who reported drinking in excess of guidelines #1 and #2 in the last 12 months by age in 2013. The graph clearly highlights a relationship between age and higher risk drinking in that high risk drinking declines with age.

Figure 7: Proportion of WDG residents who drank alcohol in excess of low-drinking guidelines #1 or #2 in the last 12 months, by age in 2013

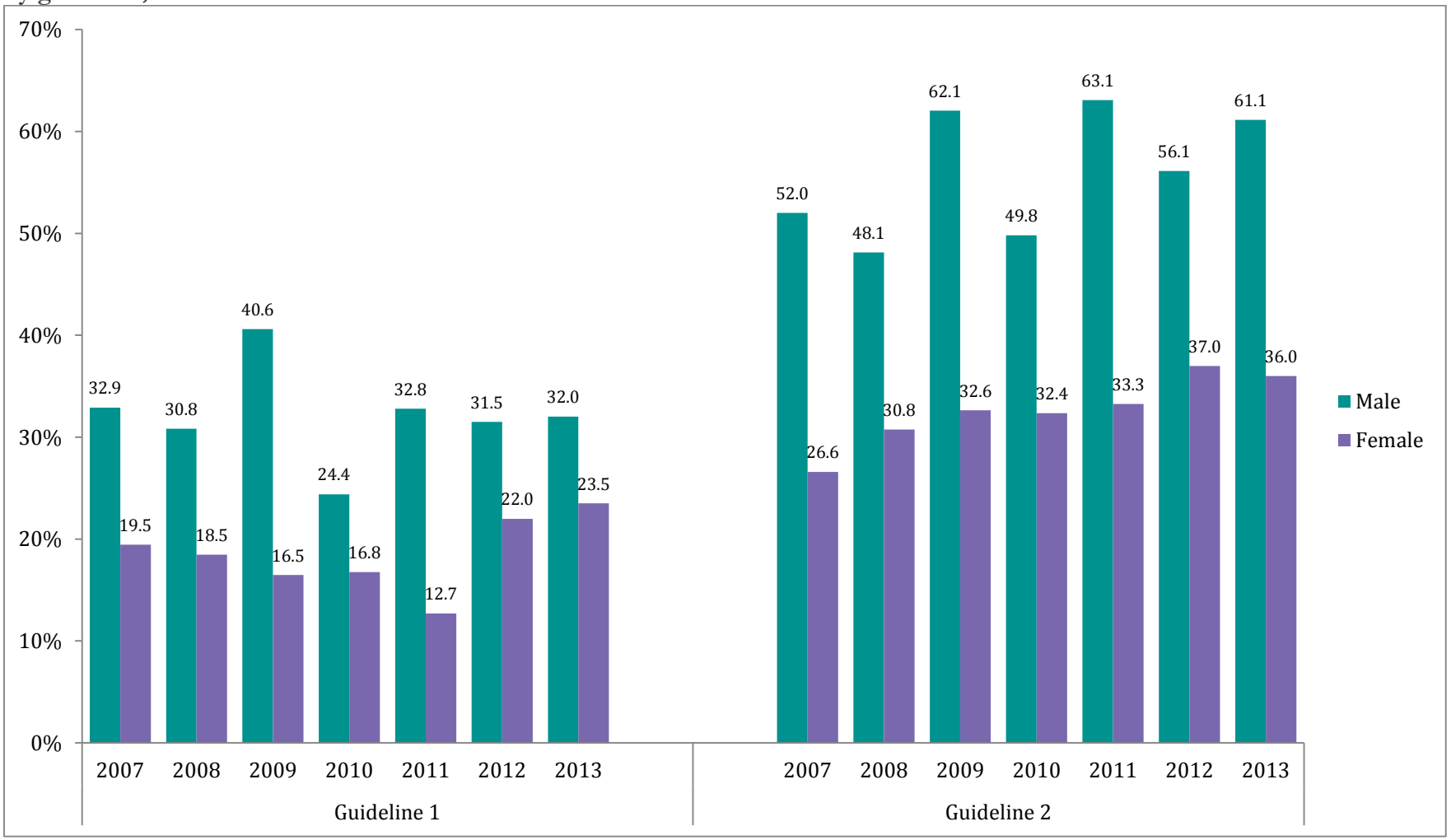


Source CCHS, 2013

Figure 8 on the next page displays the percentage of CCHS respondents in WDG that reported exceeding guidelines #1 and #2 separately by gender between 2007 and 2013. The proportion of men who exceeded at least one of the low-risk drinking guidelines in WDG in 2013 (60%) is significantly higher than the proportion of women (39%) that exceeded them. The graph clearly shows that men in WDG are higher risk drinkers than women.

By examining the guidelines separately, it is evident that people are more likely to exceed the special occasion limits (guideline 2) than the daily or weekly limits (guideline 1). Men are more likely to exceed both guidelines, but there is also a slow but steady increase in the proportion of women who report exceeding the special occasion limit, with an increase of almost 10%, from 26.6% to 36.0% of women over the last 6 years (2007-2013).

Figure 8: Percent of CCHS respondents in WDG who exceeded the low-risk drinking guidelines in the past 12 months, by sex, by guideline, from 2007-2013



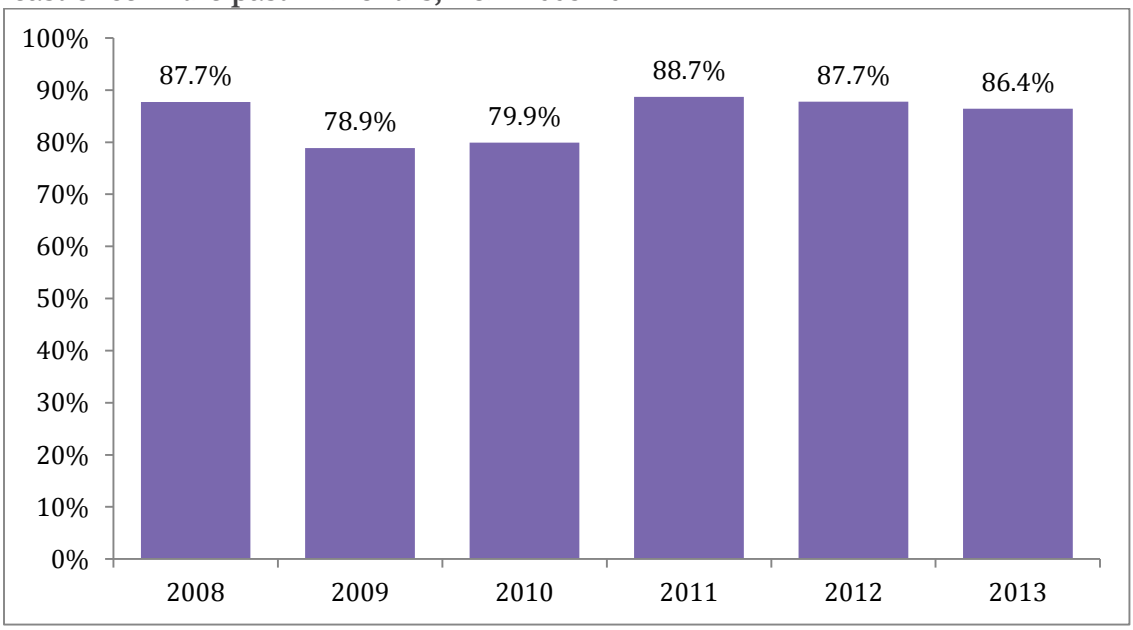
Source: CCHS, 2007-2013

Women of Childbearing Age

It is important to consider women of childbearing age when looking at high-risk drinking because of their potential to conceive a baby and the risks associated with alcohol drinking during pregnancy. In this case, the WDGPH Reproductive Health Team has defined childbearing age as 15-44 years old. It should be noted that the CCHS does not ask questions about alcohol to women who are currently pregnant or breastfeeding, so the statistics presented in the section below do not include that population.

In 2013 in WDG, 86% of women of childbearing age who were not nursing or pregnant reported drinking alcohol at least once in the past 12 months. **Figure 9** examines self-reported drinking over time, displaying the proportion of women in WDG who reported drinking at least once in the past 12 months from 2008-2012.

Figure 9: Proportion of women of childbearing age in WDG who reported drinking at least once in the past 12 months, from 2008-2012



Source: CCHS, 2008-2013

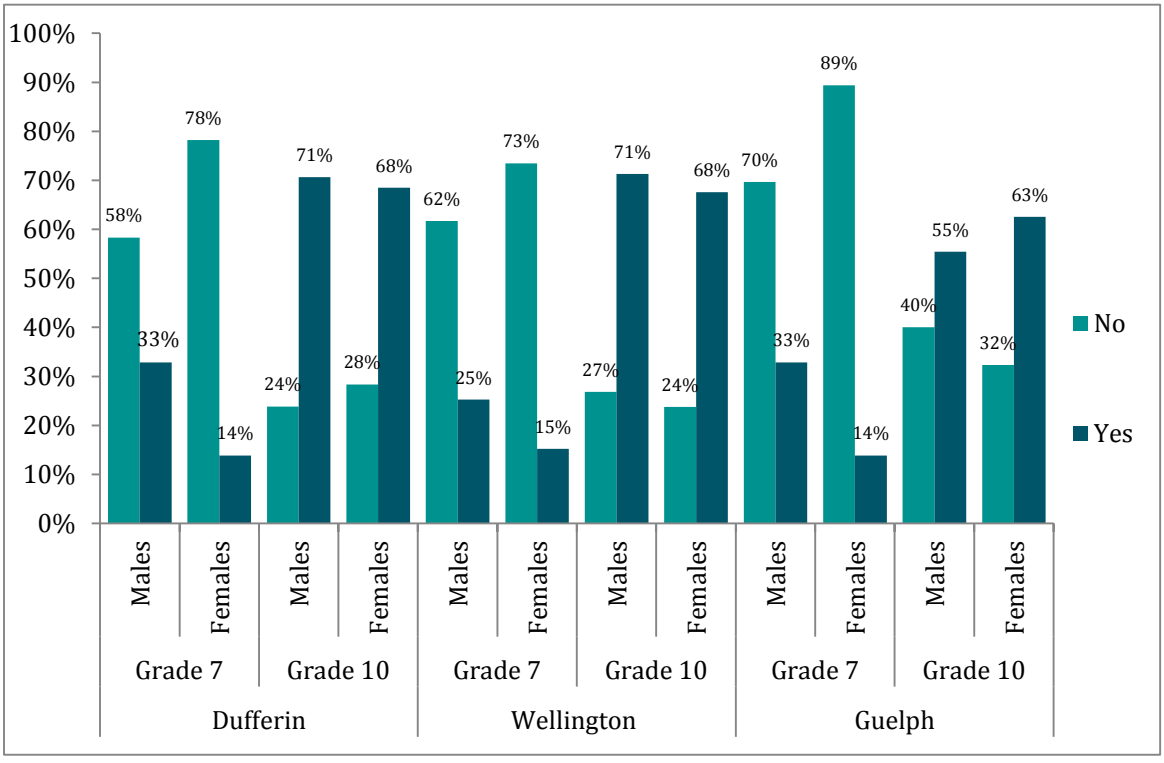
Among women of childbearing age (15-44 years old) in WDG who are not pregnant or nursing, 62% reported exceeding the LRADGs in 2013. This number is higher than the proportion of the general female population, of which only 39% reported exceeding the LRADGs. Looking at the results over time (**Figure 8**) there is no statistically significant indication that reported drinking in the past 12 months increased among women of childbearing age over the 6 year time period.

Unfortunately no reliable data is available on drinking behaviours of pregnant or nursing women in WDG.

Youth

Figure 8 displays the percentage of grade 7 and 10 students in Wellington, Dufferin, and Guelph who have or have not had a drink of beer, wine, or liquor in the last 12 months according to the WDG Youth Survey (WDGPH, 2011-2012). Overall, 22% of grade 7 students and 66% of grade 10 students reported having at least one drink in the last 12 months. As such, the transition between not drinking at all during the past year and drinking at least one drink happens between grade 7 and 10 for the majority of youth in WDG. **Figure 10** goes further to break those numbers down by gender, showing that grade 7 males are significantly more likely to have reported consuming alcohol in the past 12 months than grade 7 females.

Figure 10: Percentage of grade 7 and 10 students in Wellington, Dufferin, and Guelph who reported drinking or not drinking beer, wine, or liquor in the past 12 months in 2012 by geography and gender

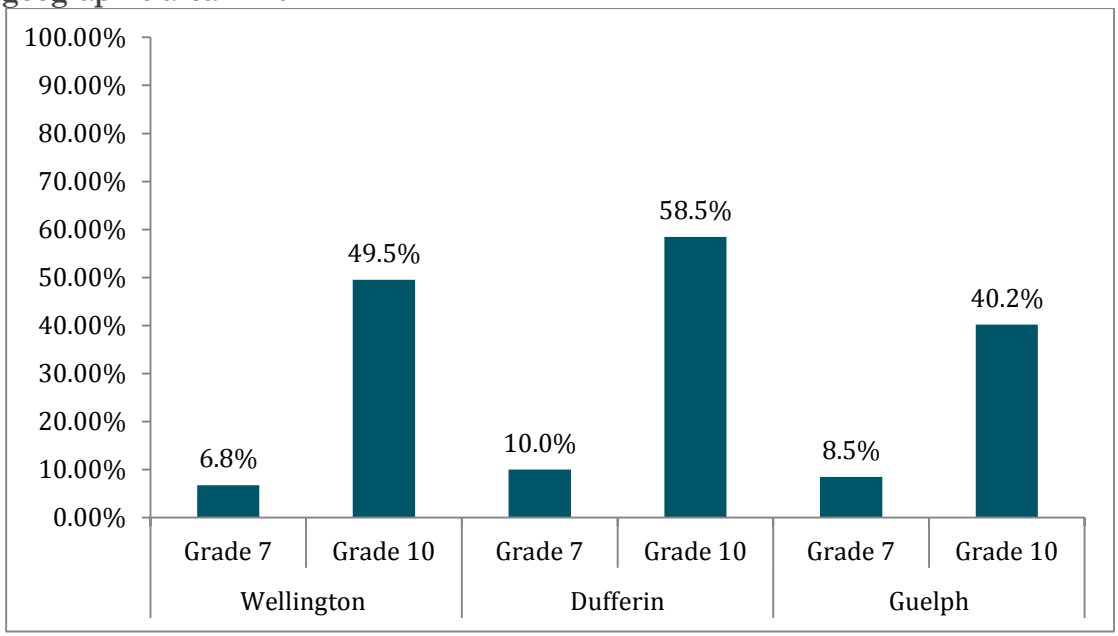


Source: WDG Youth Survey, 2012

Figure 11 displays the percentage of grade 10 students in Wellington, Dufferin, and Guelph who reported at least one episode of heavy drinking in the past 12 months, by geographic area in 2012. In this case, heavy drinking is defined as having 5 or more alcoholic beverages on one occasion. In WDG, there is a statistically significant

relationship between geographic area and heavy drinking such that grade 10 youth in Dufferin County (58%) are significantly more likely to report heavy drinking than grade 10 youth in Wellington County (50%) or the City of Guelph (40%).

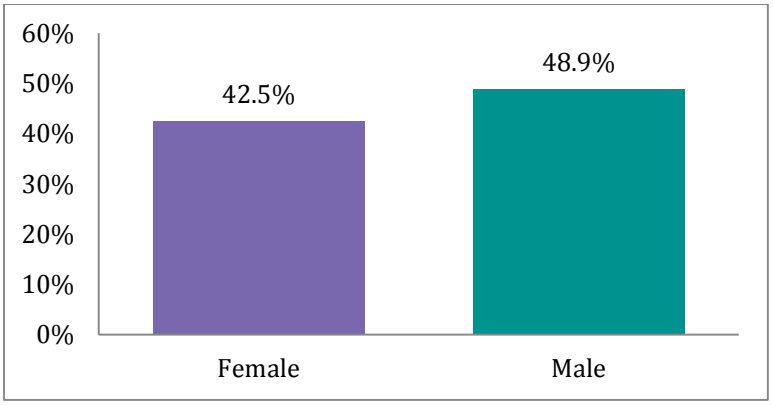
Figure 11: Percentage of grade 7 & 10 students in Wellington, Dufferin, and Guelph who reported At Least One Episode of Heavy Drinking in the Past 12 Months, by geographic area in 2012



Source: WDG Youth Survey, 2012

Figure 12 illustrates that there is also a significant relationship between gender and youth heavy drinking in WDG such that grade 10 males (49%) are significantly more likely to report at least one episode of heavy drinking in the past year than grade 10 females (43%).

Figure 12: Percentage of grade 10 students in Wellington, Dufferin, and Guelph who reported At Least One Episode of Heavy Drinking in the Past 12 Months, by gender, in 2012



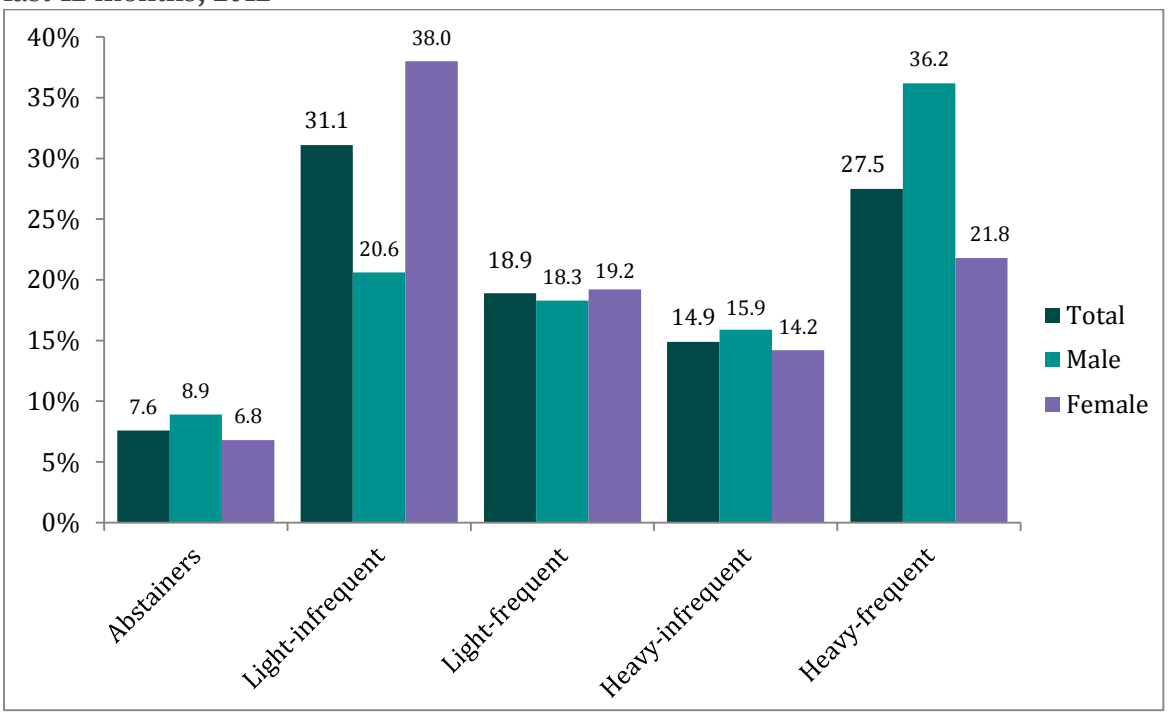
Source: WDG Youth Survey, 2012

University of Guelph Students

Figure 13 displays drinking patterns for University of Guelph Canadian Campus Survey respondents during the last 12 months in 2012 (Townshend, 2013). The survey found that 89% of students reported drinking within the last 12 months. A student's drinking pattern was classified as one of the following based on his or her responses to drinking behaviour question:

- Abstainers: students who did not drink
- Light-infrequent: usual consumption of less than 5 drinks daily and less than weekly drinking
- Light-frequent: usual consumption of less than 5 drinks on the days they drink and weekly drinking
- Heavy-infrequent: usual consumption of more than 5 drinks on the days they drink and less than weekly drinking
- Heavy-frequent: usual consumption of more than 5 drinks on the days they drink and weekly drinking

Figure 13: Drinking patterns of University of Guelph student respondents during the last 12 months, 2012



Source: Townshend, 2013

Although not shown in the chart above, the survey also examined what types of students were most likely to have different types of drinking behaviour patterns. When examining living situation, the survey found that residence students were most likely to be heavy-frequent drinkers and least likely to be light-frequent drinkers

compared to students in other types of accommodation. Fourth year students were more likely to be light-frequent drinkers and least likely to be heavy-frequent drinkers compared to students in other years of study. Heavy-frequent drinkers were more likely to be born in Canada and those born outside of Canada were more likely to be abstainers. Students who commuted mid-range distances were also least likely to be heavy-frequent drinkers compared to other distances. Lastly, recreationally-oriented students (e.g. those who prioritized participating in parties, athletics, and recreational clubs) were most likely to be heavy-frequent drinkers. In contrast, intellectually-oriented students (e.g. those who prioritized arts, academics, political/student/cultural/religious organizations) were least likely to be heavy-frequent drinkers. (Townshend, 2013)

The survey also examined binge drinking behaviour in the last 12 months. Overall, 12.9% of students reported drinking more than 5 drinks on an occasion bimonthly over the last 12 months and 4.9% of students reported drinking more than 8 drinks on an occasion bimonthly over the last 12 months. In both cases, males were significantly more likely to report binge drinking than females. (Townshend, 2013)

The University of Guelph (UoG also participated in the National College Health Assessment (NCHA) (University of Guelph, 2013). Findings from that survey indicate that patterns of alcohol consumption at the UoG are consistent with patterns across Canada except that UoG students are significantly less likely to abstain (8%) from alcohol than their Canadian counterparts (16%). The findings from the NCHA also show that UoG students perceive alcohol use to be higher among their peers than it actually is. For example, while only 82.3% of UoG students reported using alcohol in the last 30 days, they estimated that 98.5% of the student body used this (University of Guelph, 2013). This overestimation of drinking is consistent with research on other college and university campuses. The research shows that these overestimated social norms influence student drinking behaviour such that a student will match the type of drinking that he or she perceives other students to be doing (Borsari & Carey, 2001). These elevated social norms also make it less likely that students will view their drinking as problematic, making them less likely to address harmful behaviour (Borsari & Carey, 2001).

Alcohol & the Social Determinants of Health

Drinking alcohol, like many other behaviours, is influenced by societal factors that are beyond individual control. This section of the report will examine how high-risk drinking in WDG relates to many sociodemographic variables including income, education, marital status, racial background, rural/urban living, and housing. The results are displayed in **Figure 14**.

Studies across North America and Europe have shown a consistent relationship between income and alcohol drinking such that people with a higher SES drink more (Canadian Public Health Association, 2011). In WDG in 2013, 58% of people living in households that made more than $100,000 per year, Ontario's 75th percentile for household income, reported exceeding the LRADGs. By comparison, only 44% of people living in households making less than $32,000 per year, Ontario's 25th percentile for household income, reported exceeding the LRADGs (with 12% not stated). The drinking rates in WDG are also significantly higher for both income levels than they are in Ontario.

When drinking behaviour is examined in relation to education it is evident that advanced education does not have a protective effect against high risk drinking in WDG. In fact, fewer people in WDG who completed high school education or less reported exceeding the LRADGs (42%) compared to people who completed a post-secondary education (53%). In both cases, this is similar to the Ontario trend, however WDG residents who have some or all of their post-secondary education are statistically significantly more likely to exceed the LRADGs than their Ontario counterpart.

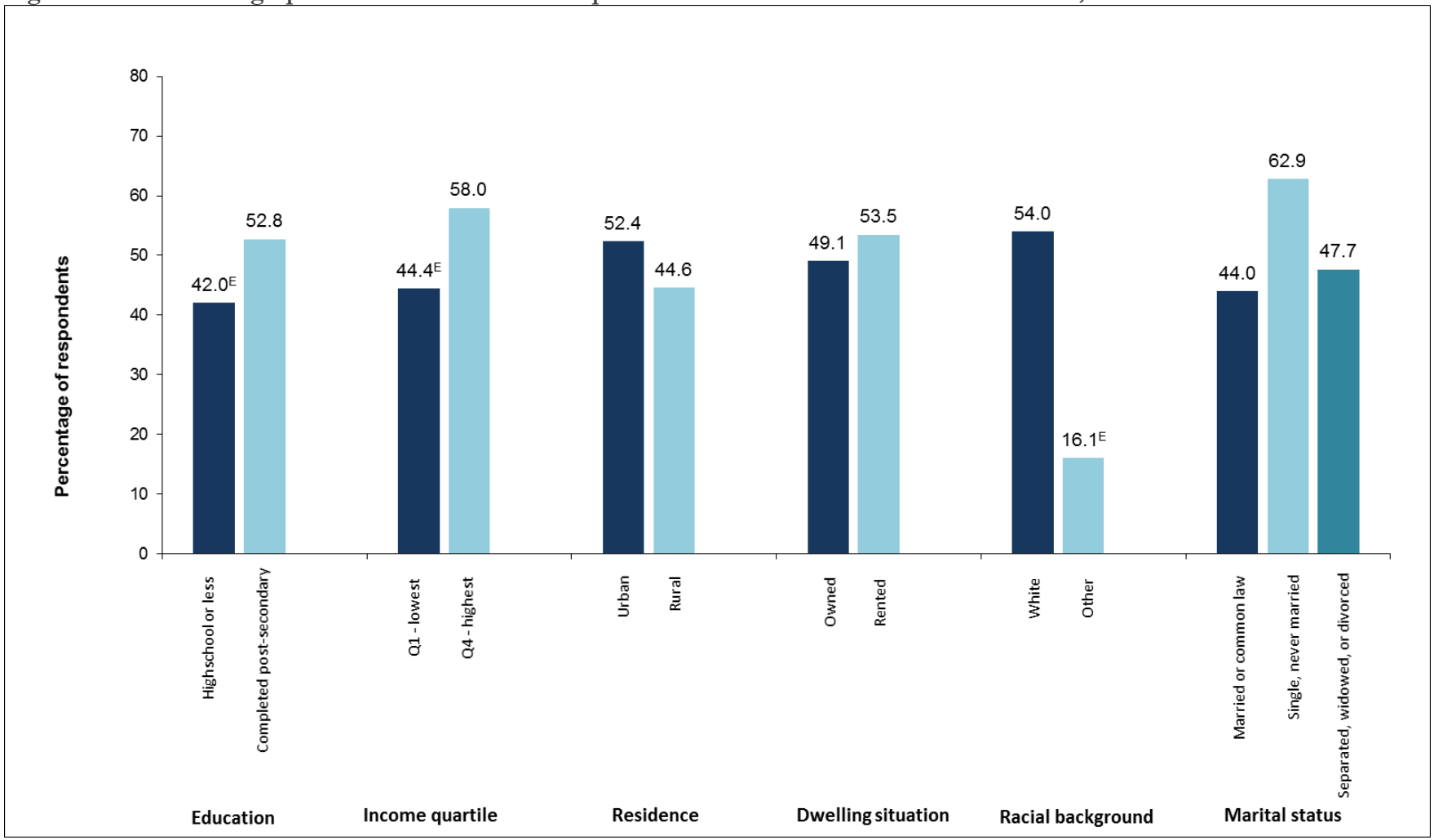
Studies have shown that cultural forces have a strong influence on drinking behaviour (Dawson, 1998; Chartier & Caetano, 2010). The data from WDG does indicate that racial background is related to high-risk drinking behaviour. In WDG, people from a white background (54%) are significantly more likely to exceed the LRADGs than people from any other racial background (16%), with 17% of people from other racial backgrounds not stated.

Similarly, people in WDG who are single and have never been married (66%) are significantly more likely to exceed the LRADGs than people who are married or common law (44%), or divorced, separated, or widowed (48%). Many studies have shown that marriage seems to have a protective effect against high-risk alcohol drinking (Staff et al., 2010). The findings from WDG mirror findings from the US and Australia in that people who are divorced, single, or never married are more likely

to drink in a high risk way compared to their married counterparts (Staff et al., 2010; Liang & Chikritzhs, 2012; Liew, 2012).

Lastly, it is also possible to look at high-risk drinking behaviour by living situation. There is a slight, not statistically significant difference between rural and urban dwellers' drinking behaviours in WDG such that 52% of residents living in the urban areas of Guelph and Orangeville reported exceeding the LRADGs compared to only 45% of residents in the rural areas. This is unexpected when compared to a recent Cancer Care Ontario report that showed that rural residents drank significantly more drinks per week and were more likely to exceed cancer prevention guidelines for drinking compared to urban residents (Cancer Care Ontario, 2014). High-risk drinking behaviour in WDG does not seem to differ significantly for residents living in owned housing (49%) versus rented housing (53%).

Figure 14: Socio-demographic variables for CCHS respondents in WDG who exceed the LRADGs, 2013



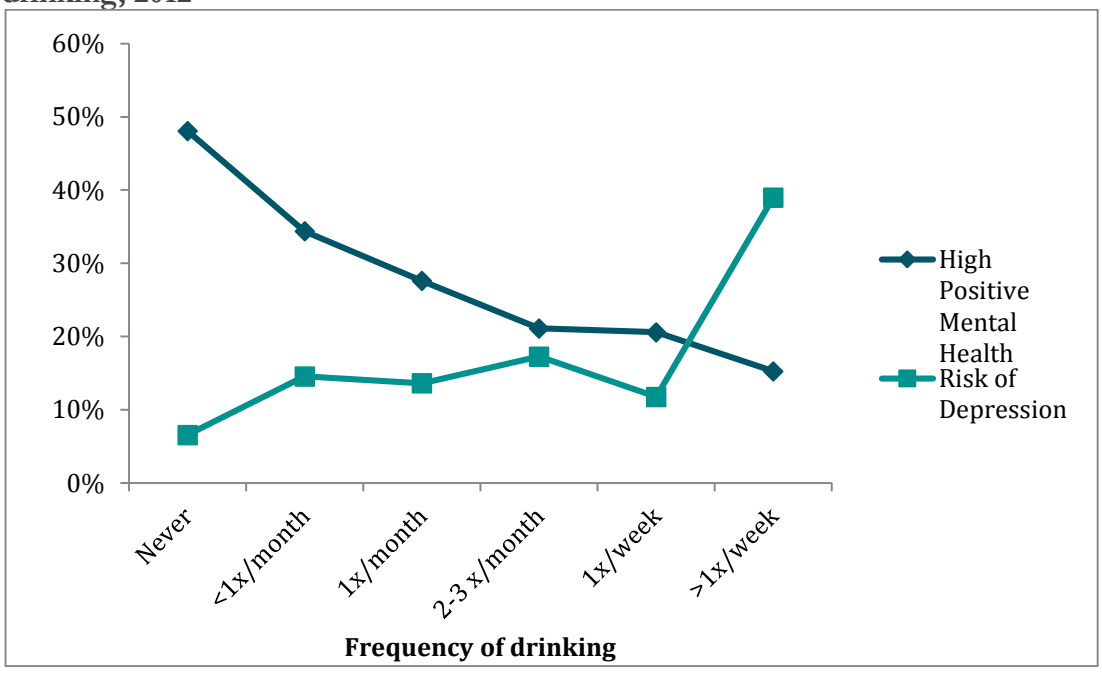
E: high sampling variability is associated with these estimates
Source: CCHS, 2013

Youth Mental Health & Alcohol

It is well established that people who have alcohol use disorders often also experience mental health issues including mood and anxiety disorders (Morisano, Babor, & Robaina, 2014). While regular comorbidity has been established, it is not yet possible to determine whether the mental health issues cause alcohol misuse or whether alcohol misuse causes mental health issues (Morisano, Babor, & Robaina, 2014). As such, the following section of the report will examine the comorbidity of alcohol and mental health issues in the WDG population both for youth and adults.

Data from the WDG Youth Survey indicate that risk of depression and higher self-reported positive mental health in youth seems to be associated with frequency of youth drinking. **Figure 15** illustrates that young people who drink more frequently have a higher risk of depression compared to young people who never drink. **Figure 15** also shows that youth who reported drinking more were less likely to report high positive mental health compared to youth that never drink.

Figure 15: Proportion of youth experiencing mental health indicators, by frequency of drinking, 2012

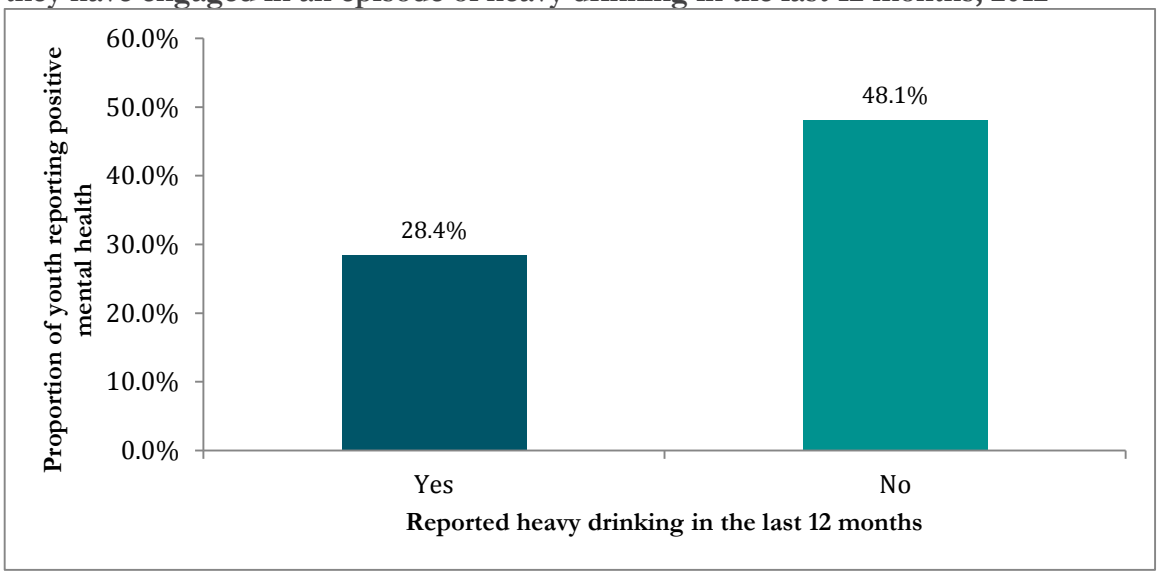


Source: WDG Youth Survey, 2012

Figure 16 below illustrates that there is also a statistically significant difference on reported positive mental health between youth who did and did not engage in at least one episode of heavy drinking in the past 12 months. Only 28% of youth who

engaged in heavy drinking reported high positive mental health while 48% of those who did not engage in binge drinking reported high positive mental health.

Figure 16: Proportion of youth who reported positive mental health by whether or not they have engaged in an episode of heavy drinking in the last 12 months, 2012



Source: WDG Youth Survey, 2012

When the CCHS data was considered for adults 19 years and over, an association between heavy drinking and self-reported mental health status was not observed.

Availability: The Alcohol Business

Alcohol is an economic factor that has both positive and negative impacts on WDG. For example, alcohol production, distribution, and sales create jobs in WDG; the Sleeman Brewery alone employs over 430 people (Guelph Business Directory, 2014). Alcohol sales generate profits for producers, distributers, and sellers and tax revenue for the government. Alcohol has also become a complimentary component in arts, tourism, and entertainment sectors throughout WDG. Despite these positive societal impacts, the effects of alcohol use and especially misuse contribute to societal costs that must be endured at personal, business, or taxpayer expense. For example, alcohol causes illness, injury, crime, addiction, and death, which all place a financial burden on individuals and society. As such, to try and provide context to scope of alcohol's involvement in WDG, this section of the report will examine the business of alcohol and its availability.

Availability

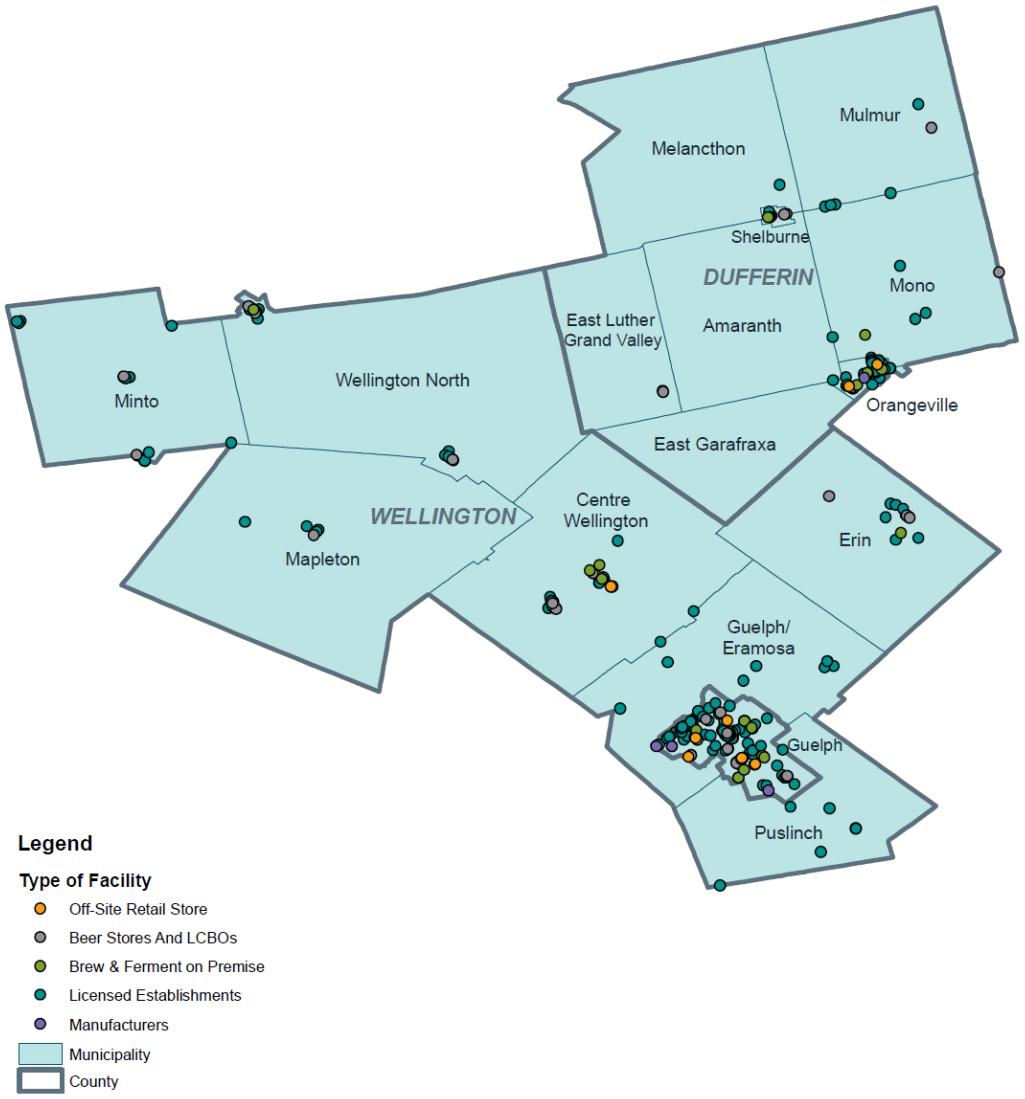
Greater alcohol availability is known to be linked with increases in alcohol-related problems in a community. Alcohol availability refers to the ease or convenience of obtaining alcohol and includes factors like the location of alcohol outlets, outlet density, and hours of operation, among other things. Greater alcohol outlet density, that is, increasing the concentration of alcohol retail establishments in a given area, is related to increases in assaults, violence, sexually transmitted diseases, child maltreatment, and alcohol related motor vehicle accidents. Furthermore, reductions in alcohol outlet density have been shown to reduce those alcohol-related problems in a community. Studies are conflicted about whether or not greater alcohol outlet density increases alcohol consumption in a community, but the negative societal effects mentioned above have been shown regardless of changes in patterns of consumption. (Babor et al., 2010)

Figure 17 below displays the location of regulated alcohol outlets in WDG as of April 2014 on a map. For the purpose of this report, alcohol outlets include the following:

- Beer stores & LCBO stores
- Breweries
- Wineries
- Brew and ferment on premise establishments
- Off-site winery retail stores (e.g. The Wine Rack)
- Licensed establishments (e.g. restaurants and bars)

All of the regulated alcohol outlets in WDG have been plotted on the map in **Figure 17** however it should be noted that not all of the outlets are visible because many overlap.

Figure 17: Location of alcohol outlets in WDG



Source: AGCO, 2014

Table 3: Number of alcohol production related businesses

	Wellington	Dufferin	Guelph
Brewery	0	1	4
Winery	1	0	0
Distillery	0	0	0
Brew and ferment on premise	5	7	8

Source: AGCO, 2014

Table 4: Number of alcohol sales related businesses

	Wellington	Dufferin	Guelph
Beer stores and LCBOs	12	9	9
Off-site retail stores (e.g. Wine Rack)	1	2	5
Licensed establishments	86	55	159

Note: manufacturers (breweries, wineries, distilleries) may also sell their products on premise and are not included in these figures
Source: AGCO, 2014

Table 5: Proportion of the population within 2.5km and 1km of an alcohol outlet

	Wellington	Dufferin	Guelph
1.0 km (10 minute walk)	47%	61%	87%
2.5 km (25 minute walk)	65%	76%	**100%**

Source: AGCO, 2014

Figure 16 and the associated tables provide a picture of alcohol availability in WDG. The data shows that alcohol outlet density is higher around areas that are more densely populated. In the City of Guelph, 100% of the population lives within 2.5 kilometers, or a 25 minute walk, from an alcohol outlet, and 87% of the population lives within 1.0 kilometers, or a 10 minute walk. This makes alcohol very accessible within the City of Guelph. Fewer residents in Dufferin County and Wellington County have such convenient access to alcohol, but the 1.0 km and 2.0 km availability in both places is still high. When comparing availability and consumption it is evident that the City of Guelph and Dufferin County, which have the greatest access to alcohol, also have higher proportions of the population that drink and exceed the LRADGs compared to Wellington County. It is not known if this relationship is statistically significant.

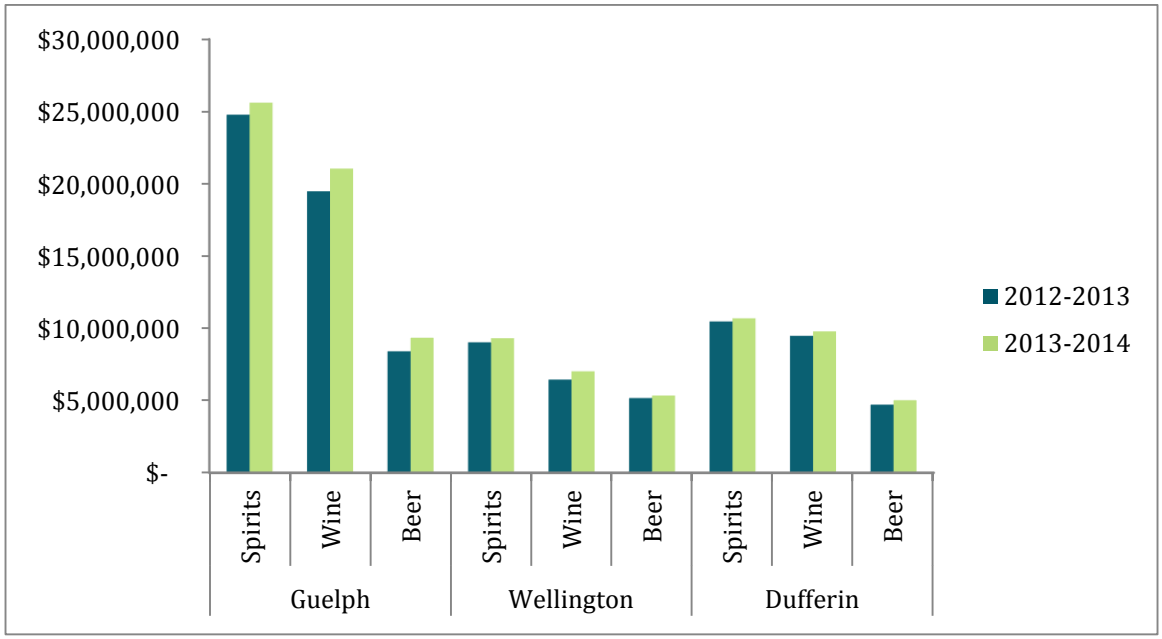
Sales

Looking at alcohol sales data is another way to gauge population consumption of alcohol. The sales data in this section come from Liquor Control Board of Ontario (LCBO) stores in WDG. Unfortunately, The Beer Store and winery off-site retail companies (e.g. The Wine Rack) were unwilling to share their sales data. LCBO sales comprised 50.8% of the Ontario beverage alcohol market in dollars in 2012 (LCBO, 2013). So, while the data below provide a good part of the picture in understanding alcohol sales in WDG, half of the picture is still missing.

Figure 18 below displays alcohol sales data for spirits, wine, and beer, by dollar amount at LCBO stores in WDG from April 1, 2012 to March 31, 2014. **Figure 19**

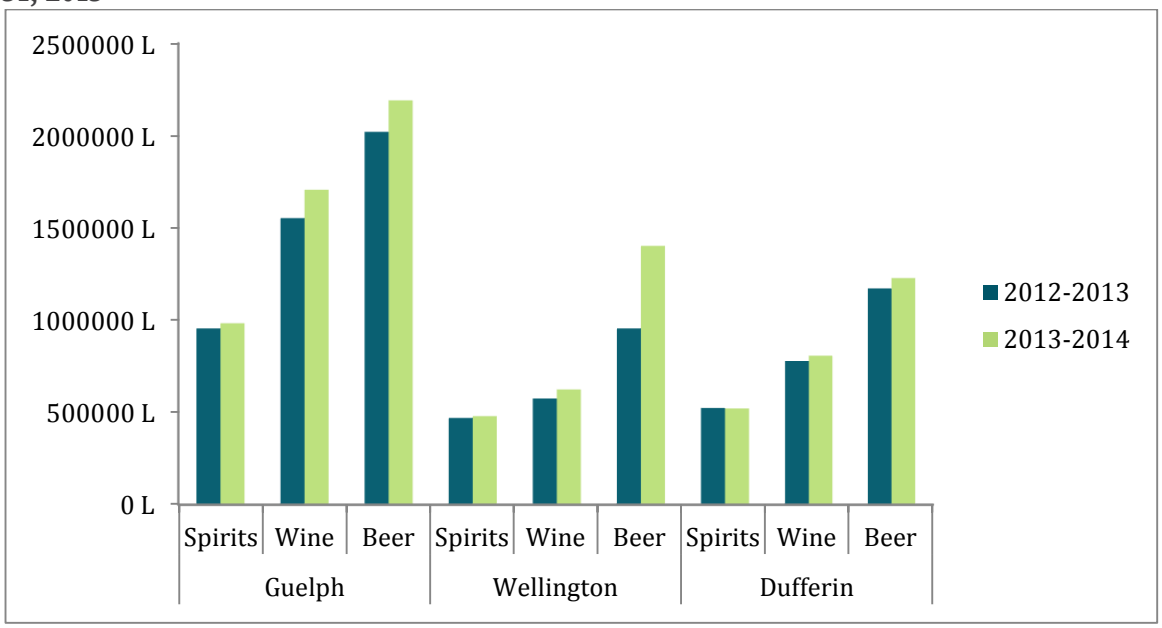
displays the number of litres of spirits, wine, and beer sold at WDG LCBO stores during the same time period.

Figure 18: Alcohol sales ($) by LCBO stores in WDG from April 1, 2012 to March 31, 2014



Source: LCBO, 2012-2014

Figure 19: Alcohol sales (litres) by LCBO stores in WDG from April 1, 2012 to March 31, 2013

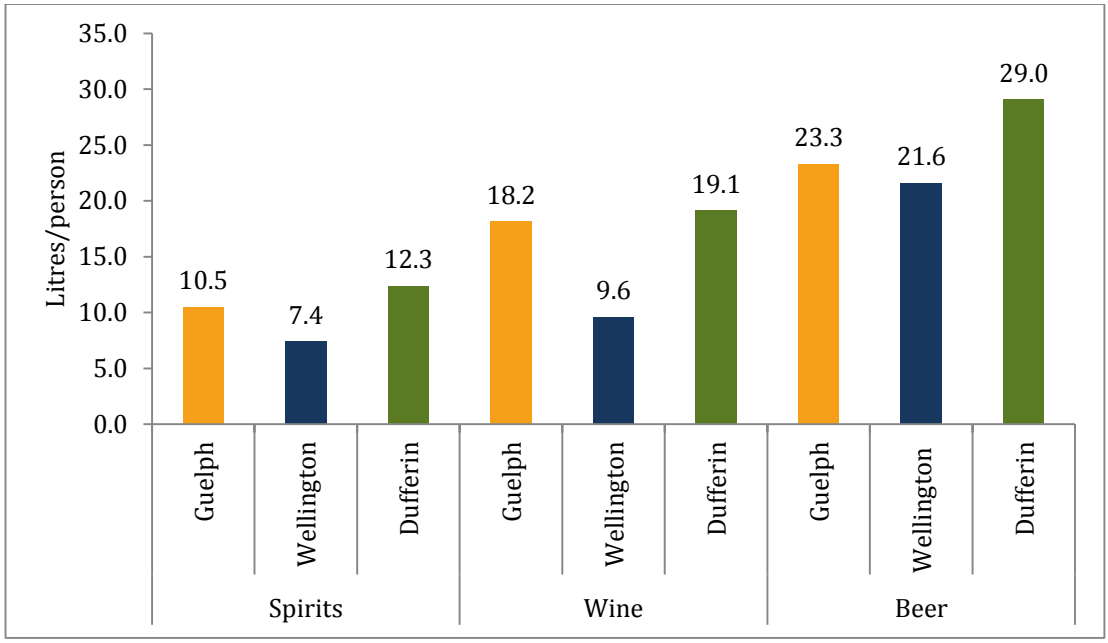


Source: LCBO, 2012-2014

The graphs above display small increases in LCBO store sales over almost all types of alcohol across WDG from 2012-2013 to 2013-2014. This is consistent with the slight increases in WDG residents' average weekly consumption of alcohol from 2012-2013 reported in section 1. In WDG, beer is the most popular alcoholic beverage by litre but residents spend the most money on spirits.

Figure 20 displays LCBO alcohol sales, in litres, per capita for Guelph, Wellington County, and Dufferin County separately. Sales per capita were expressed as a function of the total population of people aged 19 and over for each geographical area using population data from the 2011 census. **Figure 19** shows that, for all types of alcohol, the most liters per capita were purchased in Dufferin County, with the City of Guelph close behind. This mirrors the drinking behaviour of WDG residents, as a higher proportion of residents from Guelph and Dufferin County report drinking and exceeding at least one of the low-risk drinking guidelines compared to Wellington County.

Figure 20: LCBO alcohol sales in litres per capita (19+) for WDG from April 2013-March 2014



Source: LCBO, 2013-2014; Census, 2011

Alcohol & Pregnancy

Maternal alcohol consumption during pregnancy can lead to Fetal Alcohol Spectrum Disorder (FASD), a range of physical, mental, behavioral and cognitive abnormalities that persist into adulthood (Health Canada, 2012). Prenatal exposure to alcohol is the leading cause of developmental disability in Canada, affecting 1% of the population (PHAC, 2005).

Reliable local data is not yet available on maternal alcohol exposure during pregnancy. The BORN Ontario Information System does include an indicator on alcohol exposure, however, in 2013 27.8% of the local data for this indicator was missing, and in 2014 36.6% of the data was missing. Therefore, due to concerns about the reliability of the data, the data was not included in this report.

Because the CCHS does not ask pregnant and breastfeeding women about their alcohol consumption, the only local information that is available on alcohol drinking during pregnancy comes from a study of WDGPH's previous prebirth clinic program (WDGPH, 2012). The study reported that 18% (n=110) of the 617 women included in the study reported consuming alcohol during their pregnancy. Of the women who reported using alcohol during their pregnancy, only 11% continued to use alcohol after they became aware of their pregnancy (n=12). This means that only 2% of the entire sample population continued to use alcohol after becoming aware of their pregnancy. As such, most alcohol consumption during pregnancy occurred when a women was not aware that she was pregnant (WDGPH, 2012).

The 1993-2008 National Longitudinal Survey of Children and Youth (NLSCY) can provide some context to the local statistics. The report states that 10.7% of all women in Canada (not just women who have been pregnant) reported consuming any alcoholic beverages during pregnancy. In a comparison of provincial rates, women in Ontario had the second highest rate of drinking during pregnancy, at 12% (PHAC, 2013). Studies have identified many determinants of drinking during pregnancy. Mothers from heavy drinking families, mothers who live in poverty, mothers who have poor nutrition, mothers who have experienced physical or sexual abuse, and mothers from cultures of regular or excessive drinking are all more likely to drink and have babies with FASD than other mothers (Coons, 2013).

Unfortunately there is no available prevalence data for FASD in WDG. There is currently no OHIP or ICD-10 CA code associated with FASD diagnosis, so it is not possible to retrieve any information about diagnosis or health care visits on FASD from IntelliHEALTH.

Alcohol Related Hospitalizations

Certain diseases are deemed to be 100% attributable to alcohol, meaning that if alcohol was removed from the community, 100% of that disease would disappear. Essentially, these diseases are caused completely by alcohol (Rehm et al., 2006). **Table 6** displays the number of 100% alcohol attributable disease hospital visits from WDG patients per year from 2009-2013. The data in **Table 6** only includes visits to the emergency department (scheduled and unscheduled), surgical care, dialysis, oncology, and cardiac catheterization clinics.

Table 6: Number of distinct ambulatory visits per year where patients present with 100% alcohol attributable diseases as their main problem

	Number of Distinct Visits per Year					5 Year Total
(ICD-10 CA Code) Disorder	**2009**	**2010**	**2011**	**2012**	**2013**	
(F100) Mental and behavioural disorders due to acute alcohol intoxication	348	372	432	444	458	2054
(F101) Alcohol abuse	121	130	112	130	140	633
(F102) Alcohol dependence syndrome	93	121	170	110	150	644
(F103) Mental and behavioural disorders due to alcohol use withdrawal state	97	105	105	95	128	530
F(104) Mental and behavioural disorders due to alcohol use withdrawal state with delerium	7	6	**	**	**	27
(F105-F109) Other mental and behavioural disorders due to use of alcohol (including, psychotic disorder, amnesic syndrome, residual and late-onset psychotic disorder, and other and unspecified mental and behavioural disorders due to alcohol)	**	6	**	**	6	19
(G312) Degeneration of the nervous system due to alcohol	**	**	**	**	**	4
(K292) Alcoholic gastritis	11	12	6	22	12	63
(K860) Alcohol-induced chronic pancreatitis	**	**	**	**	**	6
(Q860) Fetal alcohol syndrome (dysmorphic)	**	**	**	**	**	2
(X45) Accidental poisoning by & exposure to alcohol	19	10	10	10	8	57
(X65) Intentional self-poisoning by alcohol	27	16	15	21	24	103
(Y15) Poisoning by alcohol - undetermined intent	**	**	**	**	8	18
TOTAL:	731	786	864	844	938	4163

** Numbers are too small to be reportable for individual years (n=5 or less)
Source: Ambulatory Emergency External Cause (2009-2013), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO

Overall, **Table 6** shows that 100% alcohol attributable hospital visits have increased by 28% from 2009-2013. While some of these diseases are acute (e.g. alcohol poisoning, mental health disorders due to acute intoxication) others take years to develop (e.g. degeneration of the nervous system due to alcohol). It is clear that conditions solely caused by alcohol are placing a burden on hospital system resources in WDG, and that the burden is increasing. There are also a number of medical conditions such as cancer, pancreatitis, and liver cirrhosis that are not included in **Table 6** that are partially caused by alcohol. Calculating the alcohol attributable prevalence of those conditions is complicated, so a separate report will be released in 2015 outlining their prevalence in WDG.

Table 7 displays the number of in-patient mental health admissions to Ontario mental health beds for patients from the Wellington-Dufferin-Guelph Public Health area. As such, this does not include people admitted to private treatment facilities, such as private beds at Homewood Health Centre.

Table 7: Number of in-patient admissions to Ontario mental health beds for 100% alcohol attributable disorders for WDG patients from 2009-2013

	# Distinct Admissions per Year					
(DSM-IV CODE) DISORDER	**2009**	**2010**	**2011**	**2012**	**2013**	**5 YEAR TOTAL**
(29100) Alcohol - intoxication or withdrawal delirium	**	**	**	**	**	**3**
(29110 or 29120) Alcohol - induced persisting amnestic disorder or dementia	**	**	**	**	**	**4**
(29130 or 29150) Alcohol - induced psychotic disorder, with hallucinations or delusions	**	**	**	**	**	**3**
(29181) Alcohol withdrawal	**	**	**	**	**	**6**
(29189 or 29190) Alcohol - induced anxiety/mood disorder or sexual dysfunction or other related disorder	**	**	**	**	**	**8**
(30300) Alcohol intoxication	**	12	**	**	**	**25**
(30390) Alcohol dependence	74	76	74	84	94	**402**
(30500) Alcohol abuse	5	15	16	14	12	**62**
YEARLY TOTAL	**88**	**108**	**100**	**107**	**110**	

**Numbers are too small to be reportable for individual years (n=5 or less)
Source: Ontario Mental Health Reporting System (2009-2013), Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO

Overall, in-patient admissions to publicly funded mental health beds have increased by 25% for WDG patients over the last 5 years.

Alcohol & Crime

The link between alcohol and crime is well-documented. Studies clearly show that there is a correlation between alcohol use, criminal perpetration and victimization (Wood, 2009). As such, it's important to consider crime related costs when determining the impact of alcohol on a community. This section of the report will examine all available local alcohol-related crime statistics for WDG.

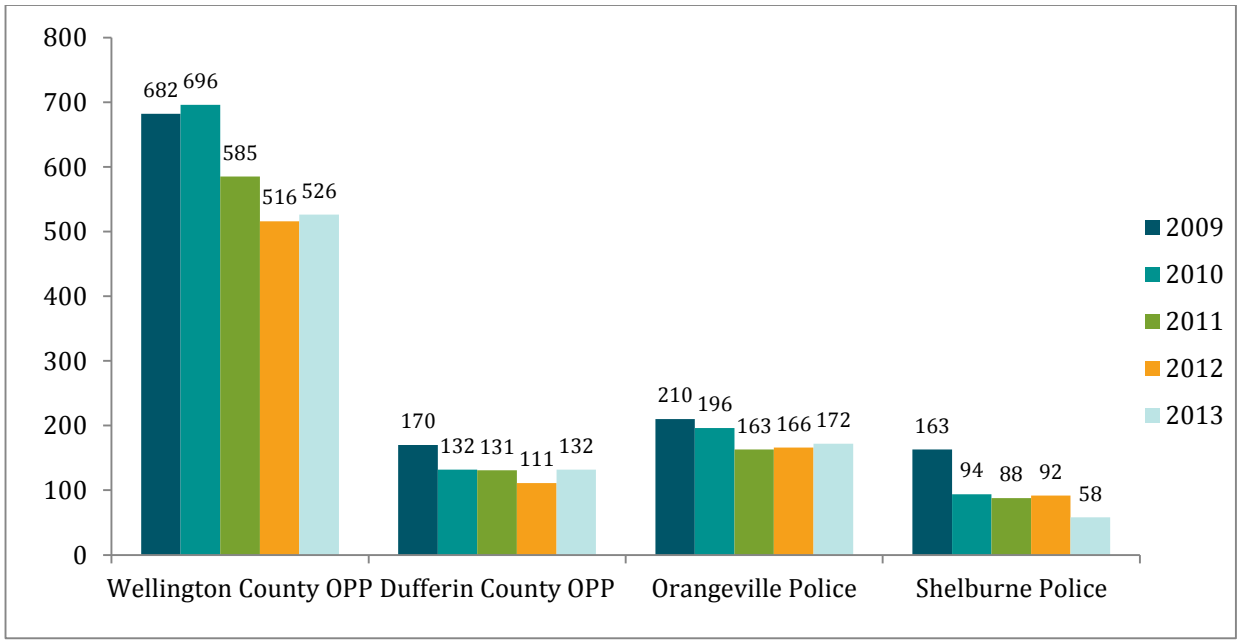
Many regulations and pieces of legislation guide how alcohol can be produced, bought, sold, and consumed in Ontario. **Table 8** outlines the various pieces of legislation that apply.

Table 8: Legislation guiding alcohol offenses in Ontario

Legislation	Description
Liquor License Act	Regulations and set fines that guide how liquor can be sold and consumed in Ontario. Some of the better known regulations include not having care or control of a motor vehicle with an open container of liquor and not knowingly selling or supplying liquor to a person under 19 years of age. The full list of over 100 regulations can be found in **Appendix A**.
Highway Traffic Act	Outlines specific traffic offenses including novice, young, G1 or G2 drivers having a BAC above 0, novice drivers failing to provide a breath sample, and G1 drivers being accompanied by someone who has a BAC above 0.5.
Criminal Code (Government of Canada)	Prohibits anyone from operating or assisting in the operation of aircraft and railway equipment and caring for or operating a motor vehicle if their ability to operate the vehicle is impaired by alcohol or drugs or if they have a BAC over 0.8. Anyone who fails to provide a breath sample can also be charged under the criminal code.

The Ontario Provincial Police, Shelburne Police, and Orangeville Police provided WDGPH with statistics on alcohol related charges from 2009-2013 for Wellington and Dufferin Counties. The statistics include charges under the Criminal Code, Highway Traffic Act, and Liquor License Act. A summary chart of the number of charges for each police force for each year can be found in **Figure 21.** The summary chart is not intended to provide a comparison between the different police forces because they serve different populations with unique characteristics and the resources available between the forces are not the same. Furthermore, because the data is presented as straight counts and not rates, the numbers are more of a reflection of the size of the population than the amount of crime. Instead, the data from each police force should be considered individually and can be examined for trends over time. It should also be noted that the summary chart below only includes data on charges and does not include information on incidents where charges were not laid, crimes that were not caught, or cases that were not pursued by the police forces.

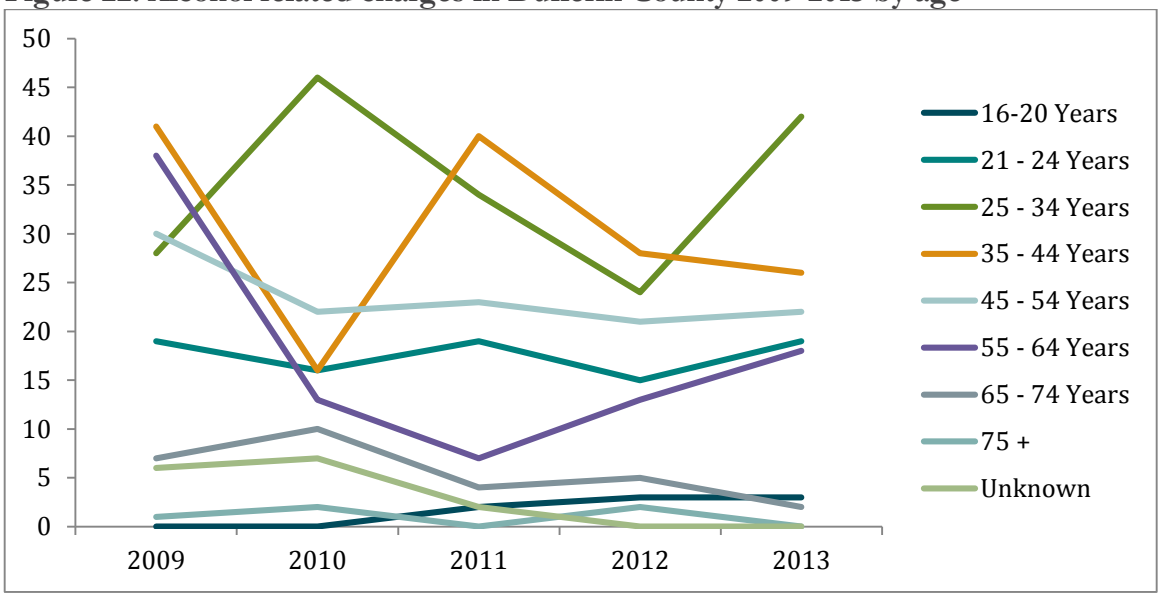
Figure 21: Summary of alcohol related charges in Wellington and Dufferin Counties, 2009-2013



Sources: ICON, 2013; Orangeville Police, 2013; Shelburne Police, 2013

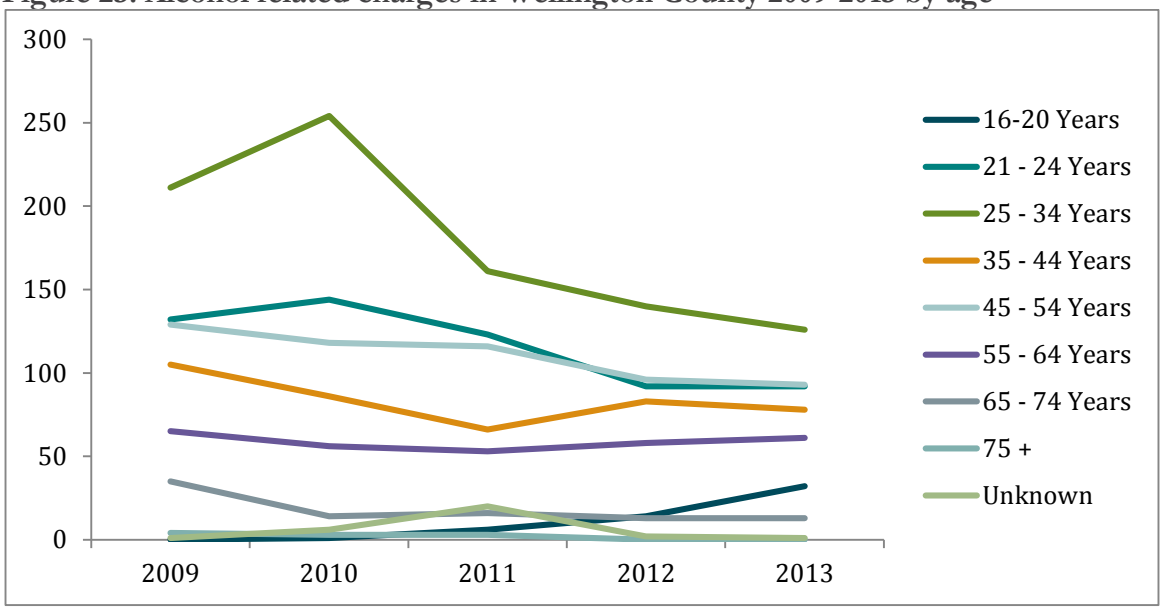
The number of alcohol related charges has generally declined between 18-64% across all of the police forces in Wellington County and Dufferin County over the last 5 years. **Figures 22** and **23** below display alcohol related charges issued by the Dufferin and Wellington County OPP detachments by age.

Figure 22: Alcohol related charges in Dufferin County 2009-2013 by age



Sources: ICON, 2013; Orangeville Police, 2009-2013; Shelburne Police, 2009-2013

Figure 23: Alcohol related charges in Wellington County 2009-2013 by age



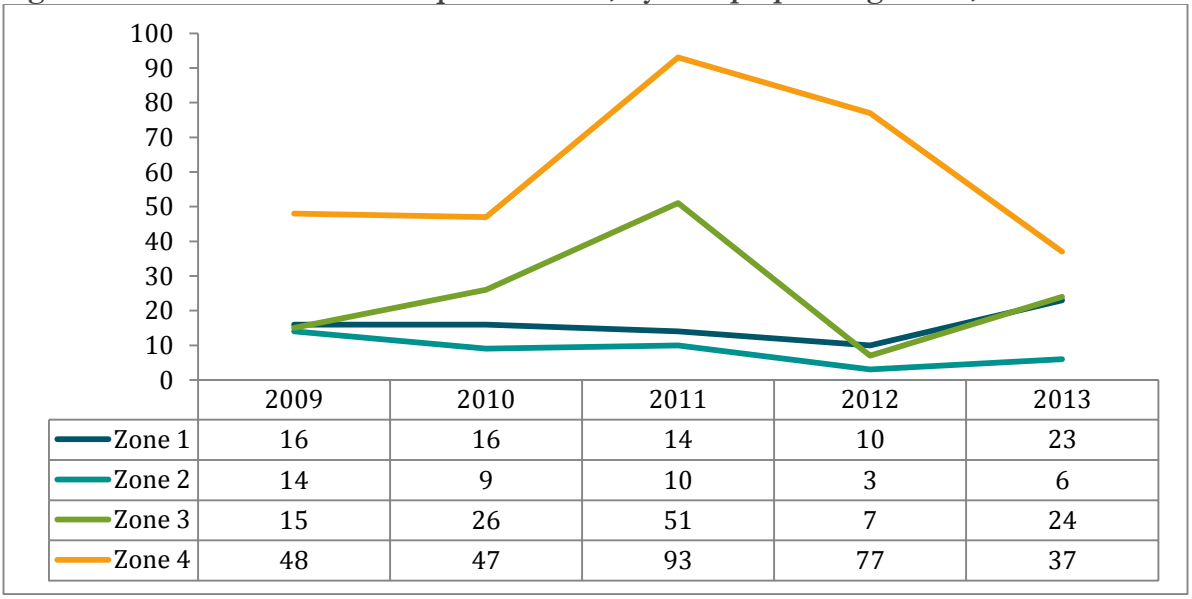
Sources: ICON, 2013; Orangeville Police, 2009-2013; Shelburne Police, 2009-2013

In Wellington County, 25-34 year olds acquired the highest number of alcohol related charges, followed by 21-24 year olds and 45-54 year olds. In Dufferin, the age group with the highest number of alcohol-related charges has fluctuated between 25-34 year olds and 35-44 year olds over the last 5 years.

The only publicly available information from the Guelph Police is on calls for service for liquor offenses and intoxicated persons. Call for service information is a good indication of the demand for police services for different issues in the community, but it is in no way an accurate representation of actual crimes.

Figure 24 below displays the calls for service for liquor offenses in Guelph. Between 2009 and 2013, calls for service for liquor offenses decreased by about 3%. It should be noted however that there was a substantial increase in liquor offense calls for service in 2011 in Zones 3 and 4. Overall, the downtown area of Guelph, otherwise known as Zone 4 had the most calls for service in any year. **Figure 25** below displays Guelph Police calls for service for intoxicated persons. Again, it is evident that the downtown area received the most calls for service for intoxicated persons than any other area of Guelph. Overall, calls for service for intoxicated persons decreased by 20% from 2009 to 2013, with 2011 receiving the greatest number of calls for service compared to any of the other years.

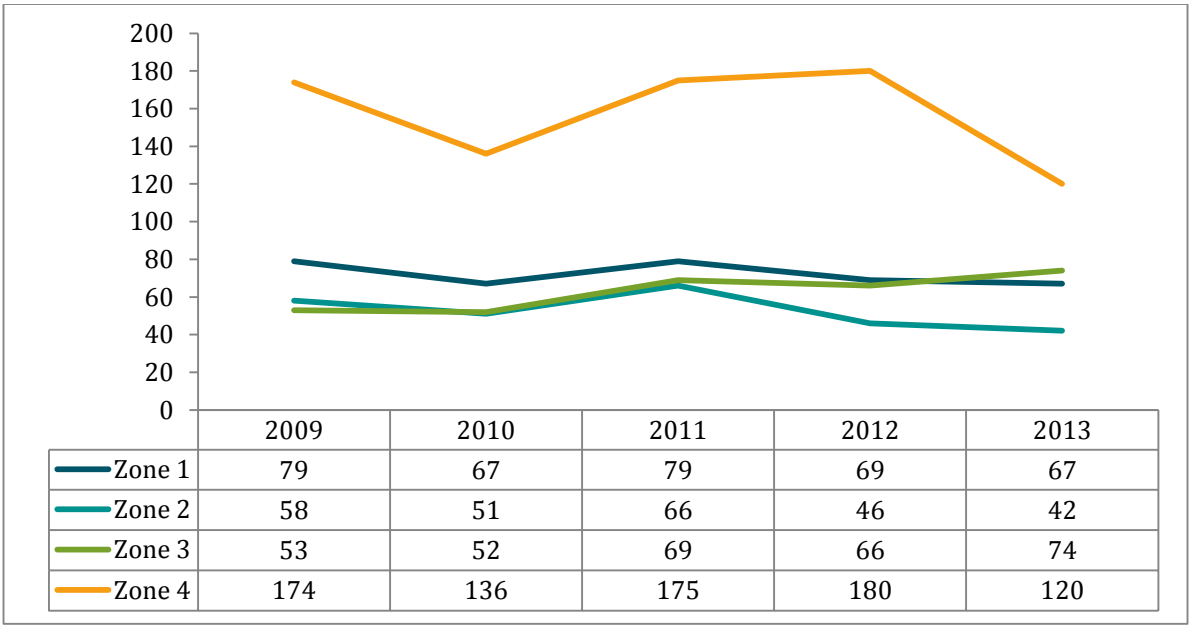
Figure 24: Calls for service for liquor offenses, by Guelph policing zones, 2009-2013



	2009	2010	2011	2012	2013
Zone 1	16	16	14	10	23
Zone 2	14	9	10	3	6
Zone 3	15	26	51	7	24
Zone 4	48	47	93	77	37

Source: Guelph Police Service, 2009-2013

Figure 25: Calls for service for intoxicated persons, by Guelph policing zones, 2009-2013



	2009	2010	2011	2012	2013
Zone 1	79	67	79	69	67
Zone 2	58	51	66	46	42
Zone 3	53	52	69	66	74
Zone 4	174	136	175	180	120

Source: Guelph Police Service, 2009-2013

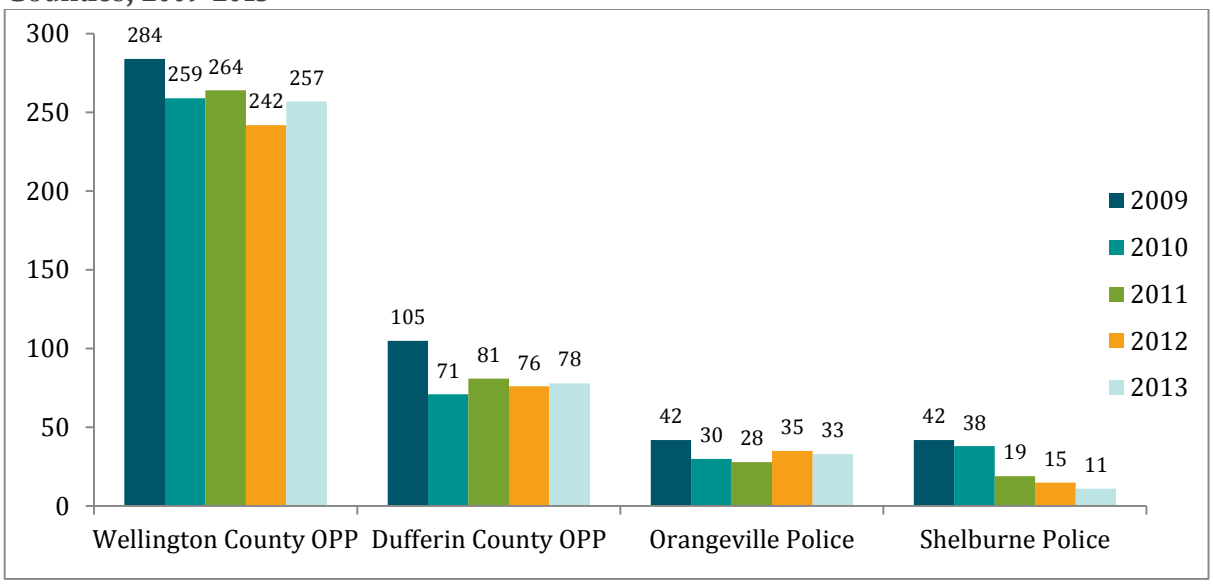
Impaired Driving

Alcohol is a major risk factor for motor vehicle collisions and traffic related fatalities. A dose-response relationship has been established between the amount of alcohol consumed and negative driving consequences. The relative risk of a fatal traffic collision for a driver with a blood alcohol concentration (BAC) of 0.04%-0.05% is significantly increased compared to a driver who has not been drinking. As a person's BAC increases, his or her risk of a fatal collision also increases exponentially (Babor et al., 2010).

According to the Ontario Ministry of Transportation, drinking and driving accounts for almost 25% of all of the traffic fatalities in Ontario (Ministry of Transportation of Ontario, 2010). The only reportable statistics from the Canadian Community Health Survey are statistics about not engaging in drinking and driving behaviours. The data from 2010, the last year questions were asked on drinking and driving, reveal that a high proportion of WDG and Ontario residents report not engaging in drinking and driving behaviour in the last 12 months. In fact, 89% of WDG drivers who drink and 90% of Ontario drivers who drink reported not driving after consuming two or more alcoholic beverages in the hour before driving within the past 12 months. There were no statistically significant differences in not driving after drinking between the two genders or the three WDG geographies. Similarly, a high proportion of WDG (85%) and Ontario (87%) residents reported not being a passenger with a driver who drank two drinks within an hour before driving. There were no statistically significant differences in not being a passenger with a drunk driver between the WDG geographies or between the two genders. While the high values of these statistics seem encouraging, it should be noted that underreporting may be an issue due to social desirability bias or recall bias.

Figure 26 below displays the number of impaired driving criminal code charges placed by Wellington and Dufferin County police forces from 2009-2013. **Figure 23** shows a slight decline in the number of drinking and driving related charges for each police force over time. It is important to note that the numbers in the graph do not reflect incidents where charges were not laid or crimes that were not caught.

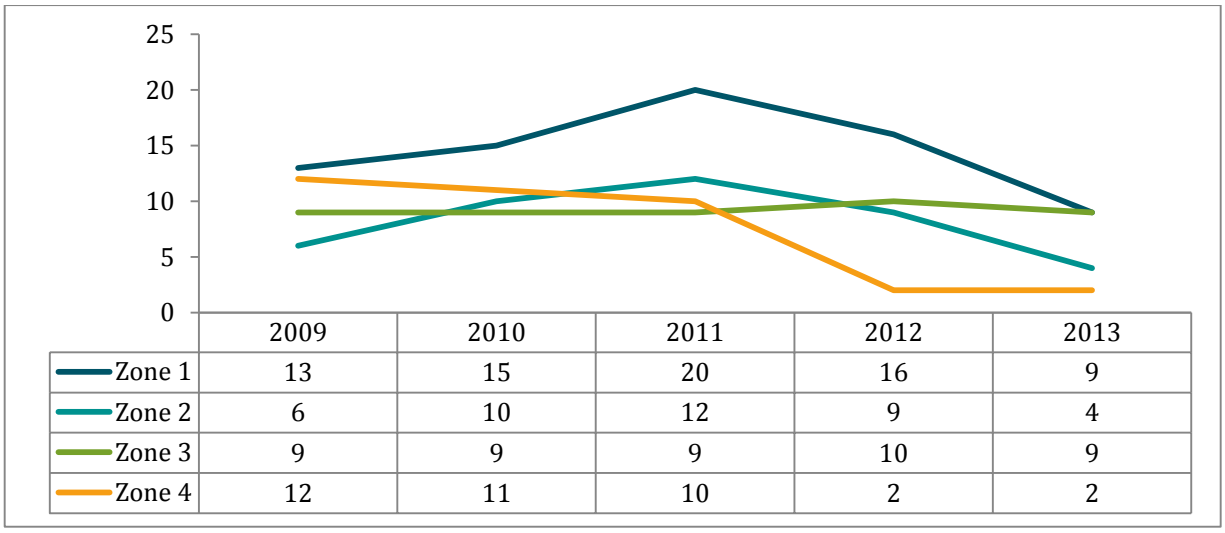
Figure 26: Criminal Code charges for impaired driving in Wellington and Dufferin Counties, 2009-2013



Sources: ICON, 2009-2013; Orangeville Police, 2009-2013; Shelburne Police 2009-2013

The only publicly available data on impaired driving from the Guelph Police is on calls for service. **Figure 27** below displays the number of calls for service the Guelph Police received for impaired driving, by policing zone in Guelph from 2009-2013. For each year the northwest side of Guelph, also known as Zone 1, received the highest number of calls for service for impaired driving. Overall, calls for service for impaired driving decreased between 2009 and 2013 by 67%, with a peak in Zone 1 and Zone 2 in 2011. According to the Guelph Police Annual Report (2013), impaired driving related occurrences decreased by 24.1% from 2012 (n=203) to 2014 (n=156).

Figure 27: Calls for service for impaired driving, by Guelph policing zones, from 2009-2013



	2009	2010	2011	2012	2013
Zone 1	13	15	20	16	9
Zone 2	6	10	12	9	4
Zone 3	9	9	9	10	9
Zone 4	12	11	10	2	2

Source: Guelph Police Service, 2009-2013

Violence

A number of studies have drawn a causal link between alcohol, violence, and aggression. As a person's alcohol consumption increases, his or her risk of involvement in a violent or aggressive incident also increases (Babor et al., 2010). Violent and aggressive incidents may include physical, sexual, or verbal assault, and threatening, hostile, or damaging behaviour.

Intimate partner violence, including physical, psychological, and sexual harm, has also been linked to alcohol use. Studies show that alcohol use is associated with the occurrence and severity of intimate partner violence. In Canada's 2004 General Survey on Victimization, 35% of victims reported that their violent partner had been drinking at the time of the incident (Canadian Centre for Justice Statistics, 2005). It is not yet known whether alcohol causes violence, whether aggressive feelings cause someone to drink, or if there is a more complicated causal relationship happening between alcohol and intimate partner violence (WHO, 2005). One thing is clear, however; excessive alcohol use can result in aggressive and violent behaviour because it interferes with a person's ability to interpret social cues and cope with stressful situations (Canadian Centre for Justice Statistics, 2005).

Unfortunately no local data is available on the prevalence of violent incidents related to alcohol in WDG. However, violence should be considered to be an important and devastating social cost of alcohol use.

Conclusion

The large majority of people in WDG drink alcohol. While alcohol can be consumed in a low-risk way, almost half of WDG residents and youth are consuming it in a way that increases their risk of acute health issues, injury, and chronic disease issues later in life. The health, social, and economic costs associated with alcohol drinking are vast and place a burden on health care and law enforcement agencies as well as individuals and families.

There is more research to be done to obtain an accurate understanding of the impact of alcohol on the WDG community. Studies on the impact of alcohol on emergency services, hospitalization and death rates, crime, violence, and other social services would be valuable. Accurate prevalence data on drinking during pregnancy and FASD would help to forward further future reproductive health work. Furthermore, research into the impact of alcohol advertising on special populations including youth, young adults, and women would also be valuable.

The intention of this report is to ignite a discussion among local service providers and community members about the impact of alcohol on themselves individually and in the community at large. The hope is that this report will spark new ideas on how we can to work together to motivate people to drink in a low-risk way, decreasing the burden that alcohol places on this community and making our community a healthier place.

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Appendix A

Liquor License Act (Ontario Court of Justice)

Item	Offence	Section	Set Fine
1.	Unlawfully keeping liquor for sale	5(1)	N.S.F
2.	Unlawfully offering liquor for sale	5(1)	N.S.F
3.	Unlawfully selling liquor	5(1)	N.S.F
4.	Unlawfully canvassing for orders for sale of liquor	5(2)	N.S.F
5.	Unlawfully receiving orders for sale of liquor	5(2)	N.S.F
6.	Unlawfully soliciting orders for sale of liquor	5(2)	N.S.F
7.	Unlawfully delivering liquor for a fee	5(3)	N.S.F
8.	Unlawfully directly acting as agent or representative of a manufacturer	11(1)	N.S.F
9.	Unlawfully indirectly acting as agent or representative of a manufacturer	11(1)	N.S.F
10.	Unlawfully directly purporting to be an agent or representative of a manufacturer	11(1)	N.S.F
11.	Unlawfully indirectly purporting to be an agent or representative of a manufacturer	11(1)	N.S.F
12.	Unlawfully directly canvassing for an order for sale of liquor as a representative of a manufacturer	11(1)	N.S.F
13.	Unlawfully indirectly canvassing for an order for sale of liquor as a representative of a manufacturer	11(1)	N.S.F
14.	Unlawfully directly receiving an order for sale of liquor as a representative of a manufacturer	11(1)	N.S.F
15.	Unlawfully indirectly receiving an order for sale of liquor as a representative of a manufacturer	11(1)	N.S.F
16.	Unlawfully directly taking an order for sale of liquor as a representative of a manufacturer	11(1)	N.S.F

17.	Unlawfully indirectly taking an order for sale of liquor as a representative of a manufacturer	11(1)	N.S.F
18.	Unlawfully directly soliciting an order for sale of liquor as a representative of a manufacturer	11(1)	N.S.F
19.	Unlawfully indirectly soliciting an order for sale of liquor as a representative of a manufacturer	11(1)	N.S.F
20.	Person unlawfully keeping for sale liquor without a transfer of licence	16(1)	N.S.F
21.	Person unlawfully offering for sale liquor without a transfer of licence	16(1)	N.S.F
22.	Person unlawfully selling liquor without a transfer of licence	16(1)	N.S.F
23.	Person unlawfully delivering liquor for a fee without a transfer of licence	16(1)	N.S.F
24.	Corporation unlawfully keeping for sale liquor without a transfer of licence	16(2)	N.S.F
25.	Corporation unlawfully offering for sale liquor without a transfer of licence	16(2)	N.S.F
26.	Corporation unlawfully selling liquor without a transfer of licence	16(2)	N.S.F
27.	Corporation unlawfully delivering liquor for a fee without a transfer of licence	16(2)	N.S.F
28.	Purchasing liquor from other than government store	27	$100.00
29.	Purchasing liquor from other than authorized person	27	$100.00
30.	Manufacturer unlawfully giving liquor	28	N.S.F
31.	Employee of manufacturer unlawfully giving liquor	28	N.S.F
32.	Agent of manufacturer unlawfully giving liquor	28	N.S.F
33.	Licensed representative of manufacturer unlawfully giving liquor	28	N.S.F
34.	Selling liquor to intoxicated person	29	N.S.F
35.	Supplying liquor to intoxicated person	29	N.S.F
36.	Permitting liquor to be sold to intoxicated person	29	N.S.F
37.	Permitting liquor to be supplied to intoxicated person	29	N.S.F
38.	Selling liquor to apparently intoxicated person	29	N.S.F
39.	Supply liquor to apparently intoxicated person	29	N.S.F
40.	Permitting liquor to be sold to apparently intoxicated person	29	N.S.F
41.	Permitting liquor to be supplied to apparently intoxicated person	29	N.S.F

42.	Knowingly selling liquor to person under 19 years	30(1)	N.S.F
43.	Knowingly supplying liquor to person under 19 years	30(1)	N.S.F
44.	Selling liquor to person who appears to be under 19 years	30(2)	N.S.F
45.	Supplying liquor to person who appears to be under 19 years	30(2)	N.S.F
46.	Licensee knowingly permitting person under 19 years to have liquor	30(3)	N.S.F
47.	Employee of licensee knowingly permitting person under 19 years to have liquor	30(3)	N.S.F
48.	Agent of licensee knowingly permitting person under 19 years to have liquor	30(3)	N.S.F
49.	Licensee knowingly permitting person under 19 years to consume liquor	30(3)	N.S.F
50.	Employee of licensee knowingly permitting person under 19 years to consume liquor	30(3)	N.S.F
51.	Agent of licensee knowingly permitting person under 19 years to consume liquor	30(3)	N.S.F
52.	Licensee permitting person who appears to be under 19 years to have liquor	30(4)	N.S.F
53.	Employee of licensee permitting person who appears to be under 19 years to have liquor	30(4)	N.S.F
54.	Agent of licensee permitting person who appears to be under 19 years to have liquor	30(4)	N.S.F
55.	Licensee permitting person who appears to be under 19 years to consume liquor	30(4)	N.S.F
56.	Employee of licensee permitting person who appears to be under 19 years to consume liquor	30(4)	N.S.F
57.	Agent of licensee permitting person who appears to be under 19 years to consume liquor	30(4)	N.S.F
58.	Person under 19 years having liquor	30(8)	$100.00
59.	Person under 19 years consuming liquor	30(8)	$100.00
60.	Person under 19 years attempting to purchase liquor	30(8)	$100.00
61.	Person under 19 years purchasing liquor	30(8)	$100.00
62.	Person under 19 years otherwise obtaining liquor	30(8)	$100.00
63.	Person under 19 years entering licensed premises	30(10)	$50.00
64.	Person under 19 years remaining on licensed premises	30(10)	$50.00

65.	Presenting as evidence of age documentation not lawfully issued to person	30(12)	$100.00
66.	Consuming liquor in other than licensed premises, residence or private place	31(2)	$100.00
67.	Having liquor in open container in other than licensed premises, residence or private place	31(2)	$100.00
68.	Being intoxicated in public place	31(4)	$50.00
69.	Being intoxicated in a common area	31(4)	$50.00
70.	Driving motor vehicle with open container of liquor	32(1)	$175.00
71.	Having care or control of a motor vehicle with open container of liquor	32(1)	$175.00
72.	Driving motor vehicle with unsealed container of liquor	32(1)	$175.00
73.	Having care and control of a motor vehicle with unsealed container of liquor	32(1)	$175.00
74.	Driving motorized snow vehicle with open container of liquor	32(1)	$175.00
75.	Having care or control of a motorized snow vehicle with open container of liquor	32(1)	$175.00
76.	Driving motorized snow vehicle with unsealed container of liquor	32(1)	$175.00
77.	Having care and control of a motorized snow vehicle with unsealed container of liquor	32(1)	$175.00
78.	Driving motor vehicle with liquor in open baggage	32(1)	$150.00
79.	Having care and control of motor vehicle with liquor in open baggage	32(1)	$150.00
80.	Driving motorized snow vehicle with liquor in open baggage	32(1)	$150.00
81.	Having care and control of motorized snow vehicle with liquor in open baggage	32(1)	$150.00
82.	Driving motor vehicle with liquor readily available	32(1)	$150.00
83.	Having care or control of a motor vehicle with liquor readily available	32(1)	$150.00
84.	Driving motorized snow vehicle with liquor readily available	32(1)	$150.00
85.	Having care or control of a motorized snow vehicle with liquor readily available	32(1)	$150.00
86.	Operating boat underway with open container of liquor	32(3)	$175.00
87.	Having care and control of a boat underway with open container of liquor	32(3)	$175.00
88.	Operating boat underway with unsealed container of liquor	32(3)	$175.00
89.	Having care and control of a boat underway with unsealed container of liquor	32(3)	$175.00

90.	Operating boat underway with liquor not in a closed compartment	32(3)	$150.00
91.	Having care or control of boat underway with liquor not in a closed compartment	32(3)	$150.00
92.	Drinking alcohol in a form that is not liquor	33(a)	$50.00
93.	Supplying alcohol in a form that is not liquor knowing it is to be used as a drink	33(b)	$100.00
94.	Licensee failing to ensure that person who is unlawfully on premises does not remain on premises	34(1)	N.S.F
95.	Licensee failing to ensure that person who is on the premises for an unlawful purpose does not remain on premises	34(1)	N.S.F
96.	Licensee failing to ensure that person contravening the law on the premises does not remain on the premises	34(1)	N.S.F
97.	Licensee failing to ensure premises vacated	34(4)	N.S.F
98.	Remaining in licensed premises	34(6)(a)	$100.00
99.	Re-entering licensed premises	34(6)(b)	$100.00
100.	Having liquor in designated place	35(3)	$100.00

Fergus Office

474 Wellington Road #18, Suite 100

Guelph Offices

20 Shelldale Crescent (Shelldale Centre)
503 Imperial Rd. N. (Water samples only)
512 Woolwich St. (Administration)

Mount Forest Office

311 Foster St.

Orangeville Office

71 Broadway

Shelburne Office (Mel Lloyd Centre)

167 Centre St.

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