NEW WAY

OLD WAY

DRINKING & DRIVING AMONG WOMEN IN ONTARIO: A QUALITATIVE STUDY

TIRF

The knowledge source for safe driving

THE TRAFFIC INJURY RESEARCH FOUNDATION

The mission of the Traffic Injury Research Foundation (TIRF) is to reduce traffic-related deaths and injuries. TIRF is a national, independent, charitable road safety research institute. Since its inception in 1964, TIRF has become internationally recognized for its accomplishments in a wide range of subject areas related to identifying the causes of road crashes and developing programs and policies to address them effectively.

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EXECUTIVE SUMMARY

Introduction

Impaired driving incidents among women have risen in past decades (Armstrong et al. 2014), making this issue a source of growing concern. In Canada, women now account for one in every five impaired driving incidents as compared to one in thirteen in 1986 (Perrault 2016). In addition, general messages to "not drink and drive" may not be effective with all audiences, and, particularly women. Historically, prevention messaging has been targeted towards males who represent approximately 80% of the impaired driving problem (Beirness & Davis 2007; Drew et al. 2010; Schwartz & Rookey 2008). To date, little is known about the factors that contribute to the likelihood that women will drive after drinking or accept a ride with a drinking driver. For this reason, it is important to explore the perceptions and experiences of women, who have either driven after drinking or been a passenger of a drinking driver, to provide an empirical foundation to develop a gender-specific response to impaired driving.

The limited Canadian research that is available reveals that self-reported driving after drinking among women has remained consistent but that women are more often charged with impaired driving as compared to previous years, and represent a larger proportion of drivers killed in road crashes that test positive for alcohol. More generally, research shows that single, unmarried, or divorced women tend to be more likely to drive after drinking, and age is not considered to be a factor. Women are also more likely than men to have children in the vehicle with them while driving after drinking. Women, however, often report more individual-level factors that influence their involvement, or continuing involvement, in driving after drinking or being a passenger of a drinking driver (Beuert et al. 2014; Neale et al. 2014). Common factors include biological factors, personal estimations, coping-mechanisms, safety and availability of public transportation, and lack of gender-specific educational campaigns. As such, more research to investigate contributing factors and risks of impaired driving among women is imperative, and strategies to address this gap require attention. Of greatest importance, much work is needed to improve the development and delivery of tailored educational resources for women about this problem.

Methods and objectives

This study was designed to fill this gap in the literature by conducting focus groups with women who had driven after drinking any amount of alcohol in the past or been a passenger of a drinking driver. TIRF facilitated a total of seven focus groups between July 2015 and June 2016 with some support from the Ontario Women's Health Network (OWHN). A total of forty women participated in the study from Sudbury, Ottawa, Owen Sound, Brantford, and Guelph-Wellington. Focus groups were conducted at community and women's health centres. The groups ranged in size between three to eight participants and lasted approximately two hours, including a half hour education session at the end of each group.

The exploratory nature of this research was designed to increase knowledge about the understudied factors that contribute to the risk of impaired driving among women. In particular,

the study used a mixed-method approach that was selected to integrate both qualitative and quantitative data collection strategies. The project also incorporated the principles of Inclusion Research that maintains the inclusion of the voices of women in research is critical within health and policy research. The project had three main objectives:

> to gauge the level of knowledge among women about the effects of alcohol and the effects of alcohol on driving;

> to examine the experiences of women who had driven after consuming any amount of alcohol or been a passenger of a drinking driver; and,

> to explore the perceptions of women regarding factors that contributed to, and/or lessened, the risk of drinking and driving and/or riding as a passenger of a drinking driver in their community.

Survey results

Overall, approximately half of the women in this study were aged 45 and older and lived in suburban communities. Many of them were educated, had some level of employment, and were currently without a partner. With regards to personal drinking behaviours, most women indicated they consumed alcohol a few times per month and often had between one and four drinks on these occasions. More women indicated being a passenger of a drinking driver than driving after drinking within the past year.

Focus group results

There are some important findings that emerged from the focus groups in relation to the six main topics of discussion. Many women that participated in this study reported some knowledge about the amount of alcohol that they could safely consume and its effects on their ability to drive. However, many of them were equally uncertain about just how much alcohol could be consumed, or how long it would take for alcohol to be eliminated from their body. Participants also had some awareness of the various biological, metabolic and social factors that could influence their ability to metabolize alcohol and their responses were fairly consistent with research about alcohol and driving. However, again, a majority of participants did not appear confident when they identified these various factors, and often presented their answers as questions to the other women in the group, and sought clarification to determine if they were correct. These results suggest that women could benefit from a better understanding of how alcohol affects women and the factors that play a role in this equation.

Almost all of the focus group participants reported that their knowledge about the effects of alcohol was based on their personal experiences with intoxication and/or the perceptions of female family members and friends. This finding is a source of concern in light of research that indicates that people often base their judgment about impairment on their own personal estimates (Beuert et al. 2014) although subjective judgments can be incorrect (Aston & Liguori 2013; Beirness 1987; Martin et al. 1991).

In addition, a majority of participants reported that men and women could not consume equal amounts of alcohol, and many of them agreed that men could consume more alcohol than women

before being unsafe to drive. However, several women were not confident regarding about how much more men could consume as compared to women, or how much alcohol women could safely consume before driving as compared to men. While women were also able to identify some factors that contributed to differences in the amount of alcohol that could be consumed by men as compared to women, and their responses were fairly consistent with research evidence about this topic, again, a number of women were not confident in their responses. Notably, many women presented their responses as questions and/or bluntly acknowledged that they were unsure of their responses. Collectively, these results suggest that women are not well-informed about important differences between men and women in terms of the consumption of alcohol and its impairing effects, and this may contribute to decisions by women to drive after drinking or ride as a passenger of a drinking driver.

Women in this study also acknowledged a number of contributing factors that lead to them to drive after drinking or ride as a passenger of a drinking driver. These factors generally included peer pressure, impaired judgment, lack of transportation or affordable transportation, safety concerns, and mental health issues. Many of these factors were similar to factors that were identified in previous research investigating the experiences of women who were convicted of impaired driving in the U.S. (Robertson et al. 2013). This finding is source of concern and indicates that the reasons among convicted female impaired drivers are not dissimilar to those of women who are not detected for drinking and driving.

Concern for themselves as well as family and friends was also substantial among women who participated in this study. Not only did women express concern about the potential negative consequences associated with driving after drinking for themselves, it was notable that these women reported that they did not think about potentially harming or injuring someone else until after the fact. There was also a high level of awareness of strategies that could be used to avoid driving after drinking or riding as a passenger of a drinking driver. Top strategies included: the use of personal limits, planning ahead, the buddy system, having a designated driver, changing social circles, using a personal breathalyzer, and reaching out for help and sobriety, although some women noted important barriers to the use of these strategies. Notably, alternative transportation options were not identified as a relevant strategy, and this may be due to the safety concerns that women associate with this strategy.

There were also some significant barriers to discussion among women about drinking and driving, and riding as a passenger of a drinking driver that emerged from this study. While most of the women expressed a strong desire for conversation about this topic among women, many of them also acknowledged that they were not informed about the facts to help start a conversation, and that they lacked the skills to discuss this topic. Stigma and shame was also a perceived barrier to discussing this issue with family and friends.

Conclusions and recommendations

While many of the women in this study had some knowledge in relation to each of the six topic areas that were explored, there were also some important gaps in knowledge that can contribute to women choosing to drive after drinking or ride as a passenger of a drinking driver. In particular,

effort is needed to correct a common misperception among women that they are able to consume one drink per hour and still drive safely. In addition, messages are needed to increase awareness among women that their subjective estimates of their own level of intoxication are often incorrect, and to improve knowledge about important factors that affect how women metabolize alcohol as compared to men as well as about factors that contribute to women being more impaired after consuming the same amount of alcohol.

Messages that are more relevant to the personal experiences of women and that acknowledge the reasons that they may choose to drink and drive or ride as a passenger of a drinking driver would be welcome. Women also agreed that prevention messaging that acknowledges the pressure that women may experience to drink more alcohol in different situations would be helpful.

In addition, important gaps in strategies for women to avoid drinking and driving or riding as a passenger of a drinking driver were revealed, although some of these gaps, such as safety concerns associated with alternative transportation options, will be more challenging to overcome.

These findings can help inform the development of drinking and driving prevention campaigns for women. Results provide insight regarding the types of knowledge and content that should be included in prevention messaging, important features of prevention messaging that is more appropriate for women and potential ways that such messaging should be delivered.

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1. INTRODUCTION

Impaired driving incidents among women have risen in past decades (Armstrong et al. 2014), making this issue a source of growing concern. In Canada, women now account for one in every five impaired driving incidents as compared to one in thirteen in 1986 (Perrault 2016). This change in women's involvement in such incidents is best illustrated by high-profile media cases of women drinking and driving in Canada. Most notable among these cases is 22-year-old Darya Selinevich from North York, Toronto. Years before her arrest, Selinevich posted comments to social media indicating her intention to drive after drinking and ridiculing efforts to encourage the use of alternative transportation options. Her attitude towards driving after drinking and, consequently, her behaviour eventually resulted in a tragic loss of life. Selinevich had already lost her licence for impaired driving just one month prior to killing a cyclist with her vehicle. She had more than twice the legal limit of alcohol in her system (Joseph, June 2015).

The case of Darya Selinvich suggests that general messages to "not drink and drive" may not be effective with all audiences, and, particularly women. Historically, prevention messaging has been targeted towards males who represent approximately 80% of the impaired driving problem (Beirness & Davis 2007; Drew et al. 2010; Schwartz & Rookey 2008). Consequently, many impaired driving prevention campaigns based on messaging targeted toward men may not resonate with women. There is indeed evidence that women respond differently to prevention messaging, as compared to men, particularly with regard to health behaviours (Kim 2011; Toll et al. 2008). The different responses to prevention messages might be associated with the varying factors that either contribute to, or lessen, the risk of driving after drinking among women versus men.

To date, little is known about the factors that contribute to the likelihood that women will drive after drinking or accept a ride with a drinking driver. There has been limited research that has investigated this phenomenon in the past two decades, and attention to this issue has been nominal. For these reasons, it is important to explore the perceptions and experiences of women, who have either driven after drinking or been a passenger of a drinking driver, to provide an empirical foundation to develop a gender-specific response to impaired driving.

This research report explores the perceptions and experiences of women who drive after drinking or ride as a passenger of a drinking driver. The first section of this report summarizes the existing literature about the magnitude and characteristics of female drunk drivers and briefly highlights some of the factors associated with effective education campaigns. The second section describes the methodological approach and objectives of this project. Finally, the results as well as recommendations are discussed in sections three and four of this report.

2. LITERATURE REVIEW

Research that explores the involvement of women in driving after drinking and/or riding as a passenger of a drinking driver is based on a variety of sources, such as self-report surveys, roadside surveys of drivers, arrest records, and, crash reports. Each of these data sources presents a different window on the problem and helps provide a more complete perspective. The knowledge gained from these studies is briefly summarized in this section. Much of this research primarily focuses on women driving after drinking, and sheds little insight into their experiences as passengers of drinking drivers.

2.1 Magnitude of the problem

Self-reported measures of driving behaviour from several countries suggest that women have historically accounted for a small proportion of drivers that self-report driving after drinking (Drew et al. 2010; Schwartz & Rookey 2008). In Canada, according to the results of the Canadian Addiction Survey (CAS), approximately one-fifth of respondents (21.9%) who self-reported drinking and driving were women (Beirness & Davis 2007).

In the past decade, there have been declines in driving after drinking among men; however, declines among women have been less pronounced. A survey conducted in Alberta, for example, showed that the number of drivers reporting driving after drinking had declined more slowly among women than men between 1991 and 2009. While self-reported driving after drinking among men had decreased by 107%, this behaviour among women had declined 65% (Nurullah 2012).

Although self-reported behaviour among women has changed little in the past 25 years, recent roadside surveys suggest that the problem has decreased. To illustrate, a roadside survey conducted in British Columbia showed a decline from 2010 to 2012 among male and female drivers who tested positive for alcohol. Compared to 2010, the percentage of drivers in 2012 with a BAC of .05 mg% or greater was 38.9% lower among males and 45.4% lower among females (Beasley & Beirness 2014). However, these data represent only two points in time and, therefore, it is not possible to conclude whether there is a trend or not.

Conversely, the rate of impaired charges among women has steadily increased. According to the few studies available about impaired driving among women in Canada, 20% of all impaired driving charges involved women in 2015 (Perrault 2016). Women now account for one in every five impaired driving charges compared to just 1 in 13 in 1986 (Perrault 2016). Of greater concern, although the number of impaired driving incidents has declined by more than half since 1986, the number of female impaired drivers has remained relatively stable. Moreover, in Canada, impaired driving is the most common serious alcohol-related charge that brings women in contact with the court system (Mahony 2011).

While the number of impaired driving cases involving women has increased, the percentage of female drivers involved in alcohol-related crashes has remained relatively stable and increases have been incremental in more recent years. Women in Canada and the United States (U.S.) accounted

for a relatively small proportion of fatally injured impaired drivers (Brady & Li 2012; Brown et al. 2015). In Canada, before the 1990s, women represented less than 10% of the fatally injured impaired drivers. Between 1991 and 2001, however, this number rose slightly and ranged between 10% and 12%.

From 2002 to 2010, women have comprised between 11% and 16% of fatally injured impaired drivers (Mayhew et al. 2011). This percentage declined to 10% in 2011 but has increased in recent years. Women accounted for 19% of fatally injured impaired drivers in 2013. However, fatally injured male drivers are still considerably more likely to have been drinking than female drivers (33.9% and 24.2%, respectively), and most male and female fatally injured drivers who were drinking had blood alcohol concentrations (BACs) over the legal limit (75.6% and 80.8%, respectively) (Brown et al. 2016).

Overall, it appears that the frequency of self-reported drinking and driving among women has remained unchanged. Although there is some research to suggest that the proportion of women testing positive for alcohol in roadside surveys may have declined, more concerning, their involvement in alcohol-related crashes has increased slightly. In addition, the proportion of women charged with impaired driving has grown substantially.

It is unclear why self-reported drinking among women has changed little, whereas there have been reported increases in female involvement in impaired driving incidents detected by police as well as female involvement in fatal crashes. However, explanations posited in previous research have shed some insight. Such increases have been attributed to a combination of changes in social norms that have resulted in more women driving and working outside the home, changes in social values that have made alcohol consumption among women more acceptable, and changes in laws that have increased the likelihood of detection and arrest among women who are more impaired at lower BACs.

As such, these findings indicate that more research is needed to increase understanding of reasons that this behaviour has persisted, and to address the prevalence of drinking and driving among women in Canada today.

2.2 Characteristics of female drunk drivers

Research that clearly describes the characteristics of female drunk drivers in Canada is limited, but there are some international studies that shed some light on the population of women who drive after drinking.

According to recent research, women of all ages drive after drinking. Robertson et al. (2013) reported that the ages of women convicted of drunk driving in the U.S. ranged from late teens to mid-60s. However, older research has suggested that the median and mean ages for women who drive after drinking is often early 30s (Armstrong et al. 2014; Brubacher et al. 2013; Robertson et al. 2013). The average age of women who drive after drinking appears to be older as compared to men who drive after drinking.

With regards to marital status, research has consistently shown that women who drive after drinking are mostly unmarried; either single, separated or divorced (Robertson et al. 2013; Wells-

Parker et al. 1991; Anderson et al. 1993). Moreover, the majority of women convicted of impaired driving in Robertson et al. (2013) had children and/or grandchildren. This research also showed that it was not uncommon for women to drive while impaired with their children in the vehicle for a variety of reasons. Other research has reported that female impaired drivers were three times more likely than males to have children younger than 14 years in the vehicle (Quinlan et al. 2000).

Although a U.S. based study revealed that, after a first impaired driving violation, adult men and women were equally likely to drive impaired (Rauch et al. 2010), research has more often found that women were less likely than men to be multiple offenders of driving after drinking (Anderson et al. 1993; Armstrong et al. 2014; Møller et al. 2015). In Armstrong et al. (2014), for example, 16.2% of women compared to 26.4% of men were detected for more than one impaired driving offence during a one-year period.

In summary, research has shown that single, unmarried, or divorced women tend to be more likely to drive after drinking. Age was not a factor in that women of all ages were equally likely to engage in driving after drinking. These women were also more likely than men to have children in the vehicle with them while driving after drinking. The following section explores the factors that contribute to driving after drinking among women, including biological factors, personal estimations of intoxication, coping mechanisms, safety and the availability of public transportation, and the lack of tailored educational resources for women.

2.3 Risk factors of driving after drinking for women

The growing body of literature about female impaired drivers has postulated several explanations as to why impaired driving among women has grown. One explanation pertains to changes in the socio-legal climate and mechanisms of social control and social control policies (Schwartz & Rookey 2008). Research from the U.S., for example, showed that historically women were only charged with drinking and driving if it involved a traffic collision or physical or verbal abuse of a police officer, meaning that many offences were unreported or under-reported (Coles 1991). This historical method of socio-legal control has changed dramatically with mandatory arrest procedures. Similarly, it has been argued that lowering the legal limit for impaired driving from .10mg% to .08mg% had a more notable effect on women who are more likely to be impaired with smaller amounts of alcohol. A combination of these factors, in addition to changes in the social roles of women who are more likely to drive and work outside the home, as well as changes in social norms that have made it more acceptable for women to consume alcohol, have contributed to the growth in this problem (Popkin 1991; Bergdahl 1999; Mayhew et al. 2003; Tsai et al. 2008; Gudrais 2011). Most recently, according to a report by the Chief Public Health Officer in 2015 about alcohol consumption in Canada, data showed that in 2013 more than half of women aged 15 years and older (56%) reported binge drinking (defined as four or more drinks in one sitting) at least once in the previous year whereas 44% reported doing this in 2004 (Health Canada 2016).

Women often reported more individual-level factors that influence their involvement, or continuing involvement, in driving after drinking or being a passenger of a drinking driver (Beuert et al. 2014; Neale et al. 2014). These included biological factors, personal estimations, coping-mechanisms,

safety and availability of public transportation, and lack of gender-specific educational campaigns. It is these factors that are the focus of the current research study.

Biological factors. Women absorb and metabolize alcohol differently than men. Women reach elevated peak blood alcohol concentration (BAC) levels more rapidly than men from equivalent doses of alcohol (Mumenthaler et al. 1999; Sutker 1983). It has been postulated that body water and metabolic factors make women more vulnerable than men to alcohol impairment (Frezza et al. 1990; Graham et al. 1998). As an example, research has found that women have a smaller proportion of body water as compared to fat, and this means that there is less water in which to dilute the alcohol in the blood stream, leading to higher BAC peak levels after drinking equivalent amounts of alcohol as men (Sutker 1983; Gudrais 2011). In addition, since women are more vulnerable to the effects of alcohol, some researchers have argued that women are more susceptible to its effects on cognitive function (Mann et al. 2005).

In other words, women who are unaware of these biological differences, and who attempt to keep pace with the drinking of their male counterparts are more likely to be impaired. Historically, drinking and driving campaigns that focus on the number of standard drinks that may be consumed (e.g., one drink per hour), and that are more specific to men rather than women could potentially compound the negative consequences of this issue.

Personal estimations. Both women and men often misjudge their level of intoxication and, consequently, their driving capabilities while intoxicated. Women and men often think that they are becoming sober faster than they are because their actual BAC is declining more slowly (Charlton & Starkey 2015). For example, Charlton & Starkey (2015) reported that drivers had decreased feelings of intoxication and increased willingness to drive during the time that their driving skills were deteriorating. These findings highlight the negative implications of reliance on personal estimations of the ability to accurately gauge one's own level of intoxication or one's ability to drive safely.

However, women still often reported estimating their intoxication level to determine their ability to drive. In a study in the United Kingdom, the majority of women (59%) who drove with a BAC above the legal limit (of .08mg%) self-reported that their main reason for doing so was that they "felt it [was] OK to drive." Other common responses included "[I] thought I could drive very carefully" (31%) (Beuert et al. 2014, p. 24). Although these women were over the legal limit, they did not feel that they were at risk of a collision and believed they were not a danger to themselves or others. Women in the U.K. study were also more confident in estimating their own personal limit for alcohol consumption than estimating how much alcohol (e.g., wine, spirits, or beer) an average woman could drink before being unsafe to drive. This over-confidence in estimating individual intoxication levels before driving can lead some women to make an unsafe choice to drive after drinking.

Coping mechanisms. In studies, women have reported drinking alcohol for a variety of reasons, such as to celebrate events, to be social, or to relax. Some women also reported consuming alcohol as a mechanism to cope with stressful life situations (Wells-Parker et al. 1991). This use of alcohol has the potential to lead to misuse or abuse and contribute to impaired driving. In the U.S., for

example, 85% of females arrested for impaired driving reported suffering from a substance abuse disorder (alcohol and/or drugs) (BHRCS 2007).

Various life stressors may also predispose both women and men to alcohol problems later in life. Research shows that women and men who have reported experiences of childhood physical, sexual and/or mental abuse (Dube et al. 2002; Messina & Grella, 2006; Triffleman et al. 1995) or family history of alcohol abuse (Grant 1998; Dawson, Harford & Grant 1992) were more likely to develop alcohol problems in adulthood. However, Robertson et al. (2013) reported mixed evidence that impaired drivers had histories of abusive home life or family substance use. They conducted interviews with convicted female drunk drivers in the U.S. and found that home environments were split between no history of substance abuse and family dysfunction versus abusive/dysfunctional homes where alcohol and other drugs were common. Experiences with violence or abuse in adulthood can also trigger alcohol misuse. Intimate partner violence and/or sexual violence, which women more often experienced, can contribute to the risk of developing alcohol dependency or abuse (Kilpatrick et al. 1997), and contribute to impaired driving behaviour.

Women may also drink to cope with the pressure and stress of home environments. In a study by Brennan and colleagues (2008), for example, more women than men reported heightened exposure to a partner's drinking, family interpersonal problems and emotional distress. If their partner's drinking patterns were heavy, women could be influenced to consume more alcohol or might feel inclined to protect their partner's heavy drinking (McMurran et al. 2011). This was consistent with one of the profiles of female impaired drivers reported by Robertson et al. 2013. These situations can also contribute to women being the passenger of a drinking driver more often.

In addition, social expectations and judgment in terms of balancing work and home, and the associated responsibilities of children and families, can add a great deal of stress to the lives of women. Consumption of alcohol to cope with stress can interfere with the completion of daily responsibilities, such as childcare and transporting children. The added stigma associated with consuming large quantities of alcohol while parenting can add shame and fear to women with alcohol problems, resulting in reluctance among them to acknowledge that they cannot cope or need help.

Safety and availability of transportation. Some types of transportation, such as public transportation and taxi services, have continuously been criticized for being unsafe for women all over the world (Karver 2015; Neupane & Chensney-Lind 2014; Plazinić & Jović 2014). The severity of this concern has even motivated some developers to create female-only transportation options (Tudela Rivadeneyra et al. 2015). Hence it is not surprising that some women might avoid public transportation and taxis when possible, even choosing to drive after drinking or ride with a passenger of a drinking driver as a result. This avoidance of some types of transportation is equally unsafe for women who instead choose to drive after drinking or accept a ride with a drinking driver. Of concern, women in many countries expressed the preference to drink after driving or accept a ride with a drinking driver to avoid the use of public transportation or walking home alone (McMurran et al. 2011). These women reported that this avoidance was based on the fear of their own personal safety (McMurran et al. 2011; Beuret et al. 2014; Neale et al. 2014).

In smaller suburban and rural communities in Canada, the unavailability of public transportation or taxi services is more pronounced. For some, public transportation may not even be an option because many smaller communities, in Ontario, for example, do not have access to public transportation or, if available, there is a lack of available public transportation options or hours of service and accessible areas are limited. International research reveals that women have discussed rural living as a contributing factor to driving after drinking or accepting a ride with a drinking driver. In one Australian study, women disclosed that without accepting a ride from a drinking driver or driving themselves they would have been stranded (Neale et al. 2014). As an alternative, some of the women drove on back roads and believed it was the next reasonable option.

Lack of tailored educational resources. Women may not receive much-needed, tailored educational information about driving after drinking. Men are most often the target audience for most impaired driving campaigns since they represent the majority of impaired drivers. To illustrate, self-efficacy and the ability to replace dangerous behaviours with ones that are safer is an important feature of effective road safety campaigns (Cismaru et al. 2009; Tay and Watson 2002; Wundersitz et al. 2010). As such, campaigns that recommend the use of public transportation or taxis may be less practical for women in light of their concerns about personal safety. Scholars have also argued that current international health behaviour campaigns about risky alcohol consumption and its associated behaviours do not work with young women (Brown & Gregg 2012). As an illustration of the difference between men and women with health prevention messaging, Tarn & Greenfield (2010) found that women take more notice of warning labels against drinking and driving and are more affected by authoritative health messages than are men. This suggests that it is important that efforts to curb female drinking and driving are informed by research regarding the responsiveness of women to health behaviour campaigns.

The extent of effective and accurate prevention messaging for women in Canada about drinking and driving is unknown, however, internationally, research shows that women have acknowledged the lack of prevention messaging specifically tailored to them (Beuret et al., 2014; Neale et al. 2014; Robertson et al., 2013). Of concern, in the absence of relevant educational information, women in the United Kingdom and Australia received inaccurate information or none at all (Beuret et al., 2014; Neale et al. 2014). As an example, in Beuret et al. (2014), women in the United Kingdom could not recall what constituted one unit of alcohol. This lack of accurate information about the effects of alcohol on the female body and its effect on driving could further place women at risk for driving after drinking.

2.4 Summary

The aforementioned research illustrates an important need for not only an in-depth exploration of the experiences with, and perceptions of, women in terms of drinking and driving or being a passenger of a drinking driver in Canada, but also the need for tailored educational resources that speak to their risks.

While there is recent research from the U.S., United Kingdom and Australia that clearly illustrates this problem, comparable studies are not currently available in the Canadian context. The limited Canadian research that is available does illustrate that self-reported driving after drinking among women has remained consistent but that women are more often charged with impaired driving as

compared to previous years, and represent a larger proportion of drivers killed in road crashes that test positive for alcohol. As such, more research to investigate contributing factors and risks of impaired driving among women is imperative, and strategies to address this gap require attention. Of greatest importance, much work is needed to improve the development and delivery of tailored educational resources for women about this problem.

In order to begin to address these gaps, this report provides a current snapshot of the perceptions and experiences of women with drinking and driving and being a passenger of a drinking driver.

3. OBJECTIVES AND METHODS

3.1. Objectives

The goal of this project is to identify the factors that contribute to the risk of women driving after drinking or being a passenger of a drinking driver in suburban and rural communities across Ontario. The purpose is to fill gaps in the literature regarding the knowledge and lived experiences of women to inform evidence-based prevention initiatives to prevent and reduce drinking and driving among women. The project offers a current perspective to create the foundation to develop much needed prevention strategies that can be tailored specifically to women.

The need to develop targeted prevention resources for women generally was identified based on a literature review combined with a series of case studies that involved women convicted of one or more impaired driving offences in the U.S. (Robertson et al. 2013). The women, as well as practitioners from the criminal justice and treatment systems that participated in the case studies, identified a lack of relevant prevention strategies and education campaigns tailored to women in the U.S. The participants of the case studies pointed to a lack of knowledge about how alcohol is metabolized differently by women and the impairing effects of alcohol on driving performance. This milestone project identified factors contributing to the risk of women driving after drinking, such as being the sole caregiver and financial provider, a history of trauma and mental health issues, and the absence of a support network. In particular, almost all women reported a significant event or trigger that occurred in their life immediately prior to their arrest. This study underscored the importance of increasing knowledge about the factors that contributed to the risk of women driving after drinking.

Factors that may contribute to the risk of women driving after drinking have been largely overlooked within the Canadian context. The current project aimed to fill this gap in the literature by conducting focus groups with women in five suburban communities in Ontario who had driven after drinking any amount of alcohol in the past or been a passenger of a drinking driver. The outcomes of the current project can help inform much-needed prevention strategies to reduce drinking and driving among women in Ontario.

To this end, this project had three main objectives:

> to gauge the level of knowledge among women about the effects of alcohol and the effects of alcohol on driving;

> to examine the experiences of women who had driven after consuming any amount of alcohol or been a passenger of a drinking driver; and,

> to explore the perceptions of women regarding factors that contributed to, and/or lessened, the risk of drinking and driving and/or riding as a passenger of a drinking driver in their community.

The exploratory nature of this research was designed to increase knowledge about the understudied factors that contribute to the risk of impaired driving among women.

Ethical approval for this research was obtained from the Centre of Community-Based Research located in Kitchener, Ontario. In addition, the authors of this study obtained informed consent in writing from each of the women that participated in the study. The consent form explained the voluntary and confidential nature of their involvement.

3.2. Research design

A mixed-method approach for the research was selected for this study to integrate both qualitative and quantitative data collection strategies. This mixed-method approach was used to create a more complete and comprehensive understanding of the research problem than was possible with either approach alone.

A qualitative approach was best-suited to the exploratory nature of the research objectives because experiences are subjective, and context-specific, and less easily measured or quantified (Creswell 2013). This approach allowed researchers to gain valuable insight into the lived experiences of women and their perceptions of drinking and driving. In addition, incorporating a quantitative component, made it possible to generalize the findings to a broader context. This generalization can provide a foundation to develop prevention strategies for women in Ontario.

The project also incorporated the principles of Inclusion Research that maintains that the inclusion of the voices of women in research is critical within health and policy research (OWHN 2009). Inclusion Research is an approach to community-based research that seeks to ensure marginalized women are included in health research. The approach was co-developed by the Ontario Women's Health Network and is used by researchers internationally to ensure the inclusion of visible minorities, immigrants, low-income women, women with disabilities, women with health issues, women who experience violence, and other marginalized groups. Inclusion Research helps to identify the health needs and gaps in health services experienced by all women. The principles of Inclusion Research that guided this study included the following:

> acknowledgement of the value of women's lived experiences;

> recognition of the power dynamic between the researchers and participants;

> provision of space for marginalized women to share and connect with others in similar circumstances;

> involvement of community partners in the research project; and,

> mobilization of research to action.

These principles were incorporated throughout the various stages of the project and, in combination with the research approaches, helped guide the study design.

An exploratory case study design was selected for this research (Yin 2003). Multiple or collective case studies allows the research to compare the individual case studies as well as compare the studied locations. This type of design is considered both robust and reliable (Yin 2003) and enables researchers to identify different factors that contributed to the risk of drinking and driving or riding as a passenger of a drinking driver among women in different locations across Ontario. This cross-case comparison makes it possible to investigate more than one case location and, if similar, can increase the possibility of transferring the findings to other settings or contexts.

To provide a detailed examination of the women involved in the case studies, the research incorporated focus groups into the research design. In previous studies about female alcohol-impaired offenders, TIRF found that women valued the opportunity to share their stories and experiences with driving after drinking as well as the chance to connect with other women (Robertson et al. 2013). The women in Robertson et al. (2013), for example, reported benefiting from connecting with other women in the focus groups and valued having the opportunity to help other women learn from their own experiences to avoid the negative consequences of this risky behaviour.

3.3. Development of discussion guide and survey questions

A discussion guide was developed to structure the conversation with the women during the focus groups. The guide included questions relating to knowledge about the biological differences between men and women in regards to the impairing effects of alcohol. It also contained questions about attitudes towards drinking and driving, as well as their experiences with the factors that contributed or lessened the risk of driving after having consumed alcohol or being a passenger of a drinking driver (See appendix A for discussion guide). The research questions were generated based on previous research, which included an extensive literature review and previous focus groups with female impaired driving offenders, probation officers, and courtroom staff, as well as focus groups with women in relation to other health issues.

The research also incorporated a questionnaire that contained 15 items to capture general demographic information about participants and their history with alcohol use, drinking and driving, and alcohol-related behaviours (See Appendix B for demographic survey). Questions were developed with consideration of data from previous TIRF Road Safety Monitors, an annual, Canadian public opinion survey about key traffic safety issues, including drinking and driving.

Lastly, an evaluation form was developed to provide insight into the perceptions of women about the quality of the research process and the value of the post-focus group sessions that shared current research about the effects of alcohol on women and on driving, as well as women who drink and drive. The evaluation form contained questions regarding the experiences of participants in terms of the focus groups (e.g., convenience, suitable accommodations and facilitators) as well as suggestions for future focus groups and/or post-focus group educational sessions.

3.4. Site selection and sampling design

Data were collected from focus groups with women in five communities throughout Ontario, Canada. The communities were Sudbury, Ottawa, Owen Sound, Brantford, and Guelph-Wellington. To provide more descriptive context about each of the five communities, an overview of each location is included in Appendix C.

The research used maximum variation purposeful sampling in the selection of the sites, which allowed the researchers to observe patterns across geographical locations that emerged as a result of contextual heterogeneity (Palinkas et al. 2013). The five sites were selected to ensure that a cross-selection of geographically diverse communities from Ontario was represented within the study. It is important to note that the selection of sites also relied on the collaboration of

community partners; but, ultimately, the final decision to include a geographical location was made by researchers.

Community partners were selected also through maximum variation purposeful sampling, which made it possible to maximize the variation of the type of community service providers. The community partners were located in, or around, the community boundaries and had different connections with women and their respective communities.

The research incorporated snowball purposive as well as criterion sampling to recruit the women (Palinkas et al. 2013). The use of snowball and criterion sampling allowed community partners to identify and recruit women from their organization or community who fit the pre-selected criteria developed for the study. The study aimed to recruit women who were living in rural and/or smaller urban communities in Ontario who were aged 19 or older and had a driver's licence. Recruitment strategies targeted women who comprised Ontario's diverse population in relation to age, ethnicity, immigration, employment, economic status, and the diversity of women's realities.

3.5. Subject recruitment

Prospective participants were recruited through local community partners. Community partners recruited participants and organized the focus groups, and also received an honorarium to recognize their time to organize the focus groups. Community groups were provided with funds as needed to cover any additional costs incurred by participants (i.e., childcare, transportation).

Community partners were provided with information about the project to guide them in the recruitment of women in their communities. The information included the purpose and objective of the project, the required sampling criteria, and recruitment aides (i.e., flyers and letters). They used flyers, in-person communication, phone and emails to support their recruitment efforts.

Community partners invited women to participate in the focus groups. The participants were informed about the scope of the project, and that women were invited to stay for a brief education session at the end of the focus group. This educational session provided participants with an opportunity to discuss and ask questions about drinking and driving and ensured that accurate information about this issue was available to them when the focus group concluded. Participants were informed that each of them would receive an honorarium at the end of the focus group and that childcare stipends or on-site care would be provided as needed.

3.6. Data collection

TIRF facilitated a total of seven focus groups between July 2015 and June 2016 with some support from OWHN. The community partners each hosted one to two focus groups at their respective sites. The locations where the focus groups were conducted varied by geographical location and were pre-arranged by the community partners to ensure that the locations were safe and confidential as well as accessible to women. Locations included community and women's health centres. The groups ranged in size between three to eight participants and lasted approximately two hours, including a half hour education session. A total of 40 women participated in these focus groups.

At the beginning of each focus group, information was re-stated in the same clear and accessible language that was used for recruitment to ensure participants understood the focus group process

including risks and benefits, confidentiality and the voluntary nature of participation. It was emphasized to participants that they were free to leave the group at any point. Researchers explained that quotes from the participants (who would not be identified) would be used in the final report and other materials developed for the project as illustration of important issues. Facilitators provided examples of quotations from past research to demonstrate how their information would be used. Once this information was shared, a written demographic questionnaire was distributed to, and collected from, participants.

During the focus groups, researchers ensured that the discussions were constructive and that every participant had an opportunity to contribute their experiences. A rapport was developed with the participants within the opening dialogue with the groups. This helped to create an inviting atmosphere for participants to feel comfortable talking freely and contributing information that they were willing to share.

Facilitators took notes during the groups. Recording devices were not used to protect the anonymity of the women and to develop an atmosphere that would not hinder them to speak freely. Participant names were not recorded to further protect the confidentially of the women. The researchers reviewed and compared their discussion notes immediately following each of the focus groups or at the first available opportunity in order to incorporate additional information or clarify details.

Immediately following the focus groups, participants were invited to attend a voluntary half hour educational session. All but three of the women chose to participate in the post-focus group workshops. The post-focus group session provided an opportunity for women to learn about alcohol, drinking and driving, and community-specific resources. Topics included: current drinking and driving rates in Canada, characteristics of female drunk drivers, contributing factors, and biological differences between men and women.

At the end of the group, regardless of participation in the session, women were asked to complete an anonymous evaluation about the focus group and, if applicable, the post-focus group session. Forms were distributed to the participants at the beginning of the group to provide insight into the quality of the research process and the value of the post-focus group sessions.

3.7. Data analysis

After data collection was completed, qualitative data were analyzed using thematic analysis, which refers to a qualitative method to identify patterns or themes within, and across, data sets (Braun & Clarke 2006). Themes were clarified as a "patterned response or meaning within the data set" (Braun & Clarke 2006, pg. 10). Thematic analysis allowed the researchers to discover the patterned responses or themes across the data from the five site locations in relation to factors contributing to driving after drinking by women. The thematic analysis that was conducted is described in more detail below.

The notes taken by the researchers during the focus groups were coded independently. The researchers each began with the same initial set of predetermined codes; these codes were items that the researchers expected to find based upon the literature (e.g., lack of transportation as a factor contributing to impaired-driving by women). During the coding phase, the researchers also identified new codes based on the nature of the respondents' own answers. Summaries of the

codes by each of the researchers were compared; this intra-rater agreement helped ensure reliability of the research (Shenton 2004).

After the codes were independently collated, themes were analyzed at a general level and, accordingly, the codes were sorted into potential themes associated with the topics of discussion. Themes were reviewed to ensure they held a meaningful and coherent pattern and accurately reflected the experiences of the women from the focus groups. Of note, the themes produced by the researchers independently were highly consistent across each of the six topics. After it was determined that the themes fit the data well, the themes were defined and named.

Of importance, the themes were generally consistent across the focus groups in the five site locations. The focus groups conducted at facilities that offered alcohol treatment involved women with slightly more complex life histories, and the focus groups in one site involved women who had higher levels of education and employment.

Lastly, direct quotations from the women have been included in the results to better illustrate ways that the themes accurately represent the data (Shenton 2004). The selected quotations best represent the perceptions, knowledge, and experiences of women in terms of driving after drinking or being a passenger of a drinking driver.

4. RESULTS

Forty women participated in the study from various suburban and rural communities across Ontario. The demographic characteristics of the women who participated in this study, according to the survey results, are presented at the beginning of this section in order to provide some context to help interpret the main themes emerging from the focus groups. Key characteristics drawn from the survey included age, ethno-cultural background, education and employment, and marital status. Other relevant characteristics included the size of the community in which participants resided, their personal level of use of alcohol, and their experiences drinking and driving or riding as a passenger of a drinking driver. Two of the women also indicated on the survey that their responses included more than the indicated one-year timeframe.

There were several themes that emerged according to the topics of discussion in the focus group sessions. These themes are described in detail following the presentation of the survey data. Main themes are presented in relation to the six key topics of discussion:

> knowledge about the effects of alcohol;

> knowledge about sex differences in relation to alcohol consumption;

> contributing factors to driving after drinking or riding as a passenger of a drinking driver;

> concern about driving after drinking or riding as a passenger of a drinking driver;

> awareness and use of prevention strategies; and,

> barriers to discussion about drinking and driving.

Similarly, during some focus groups, a minority of participants indicated they were in recovery from alcohol abuse and discussed portions of their journey of recovery. However, each of these women reported recent periods of sobriety, so they discussed past behaviours in relation to drinking and driving beyond the one-year time frame.

4.1 Survey results

Overall, approximately half of the women in this study were aged 45 and older and lived in suburban communities. Many of them were educated, had some level of employment, and were currently without a partner. With regards to personal drinking behaviours, most women indicated they consumed alcohol a few times per month and often had between one and four drinks on these occasions. More women indicated being a passenger of a drinking driver than driving after drinking within the past year.

Age. Approximately half of the women who participated in the focus groups were aged 45 or older, and one-quarter of them were under age 25. Experiences drinking and driving and riding as a passenger of a drinking driver were more prevalent among women aged 45 and older, likely as a result of greater life experience and involvement in intimate relationships, as well as generational differences in attitudes towards drinking and driving.

Ethno-cultural background. Most women in the study identified with diverse ethno-cultural backgrounds, with some indicating two or three different backgrounds. One-quarter of the women identified themselves as Caucasian, and almost one-quarter of them reported being of European descent. The rest of the women self-identified as being Aboriginal/First Nations/Native (11%), French (11%), Asian (0.05%), and/or East Indian (0.03%).

Education and employment. Study participants reported higher levels of education and many were employed. Almost three-quarters of the women indicated they had graduated from college, university or trade school, from graduate school, or some other advanced degree program. Just one-quarter of women indicated their highest level of education was some courses completed at college, university of trade school. Almost half of the women reported they were employed either full-time or part-time (i.e., part-time, temporary, casual, contract or seasonal work), at 32.5% and 12.5% respectively. Almost one-quarter of the women indicated being retired. Other women indicated they were not currently employed (15%), a student (5%), or other (i.e., disability) (12.5%).

Marital status. Most women reported that they currently did not have a spouse or partner. Almost three-quarters of women noted they were either single (37.5%), separated or divorced (25%), or widowed (7.5%). The rest of the women indicated they were married or living with a partner (30%). Slightly more than half of the participants reported they had children over the age of 18 (35%) or under the age of 18 (20%) whereas slightly less than half of them indicated they did not have children (45%).

Population size. Most of the women in this study resided in larger, suburban communities. The majority of the women noted that the population size of their community was more than 45,000 people, whereas almost one-quarter of the women indicated living in a community with a population size less than 45,000. Almost all women under the age of 35 indicated living in a community larger than 45,000. Of note, it was more challenging to organize focus groups in more rural and smaller communities due to concerns among women about being identified.

Personal alcohol use. More than half of the women indicated drinking a few times per month during the last year (59%), and more than one-quarter of them reported they consumed alcohol a few times per week (35%). Two women noted drinking daily during the past year. On occasions when women reported drinking, almost three-quarters of them (70%) consumed one to four drinks per occasion, and more than one-quarter (30%) consumed five to eight drinks. Most of the women (58%) revealed they would consume approximately one drink per hour on average; more than one-third of the women (40%) indicated they consumed two to three drinks in one hour. Only one participant reported she consumed less than one drink in one hour on occasions when she drank. However, a majority of women reported that they consumed more alcohol than usual on occasions such as holidays or special events. Among these women, almost half of them (42%) reported they drank between one and four drinks, almost one-third (31%) indicated they drank five to eight drinks, and more than one-quarter (27%) reported they had more than nine drinks.

Drinking and driving. Whereas 88% of women noted that they had not driven after drinking when it was probably unsafe to do so, only 65% of women reported that they had not been a passenger of a drinking driver within the past year.

Among those women who did report driving after drinking, almost 8% acknowledged driving after drinking between one and three times, and 2.5% reported they had driven after drinking between four and six times, and 2.5% reported they had done so more than six times when they were probably unsafe to drive.

In terms of being a passenger of a drinking driver, more than half of participants (65%) indicated they had not been a passenger of a drinking driver who was probably not safe to drive in the past year. However, almost one-third (33%) of the women indicated being a passenger of a drinking driving between one and three times (32.5%), and almost 3% of women reported they had been a passenger between four and six times within the past year.

In both of these instances, women reported that the drinking driver (i.e., themselves or the other driver) was most often drinking at the house of a friend or relative (42%) or at a bar/restaurant (32%) immediately prior to driving. Other locations where either the women had been drinking, or the drinking driver had been drinking prior to driving were their own home (11%), a party (11%) or a festival (5%). Women reported they were most often drinking with close friends (40%), alone (27%), or with their partner and/or family (20%). Other women were drinking with acquaintances or colleagues (13%) before either driving after drinking or being a passenger of a drinking driver.

4.2 Focus groups

Each focus group and educational session combined lasted between 90 minutes and two hours. Discussion in the focus groups explored the key topics of investigation in accordance with the discussion guide. These included:

> knowledge about the effects of alcohol and its effects on driving;

> knowledge of the effects of sex differences in relation to the effects of alcohol;

> factors that contributed to their driving after drinking and/or riding as a passenger of a drinking driver;

> concern about driving after drinking and/or riding as a passenger of a drinking driver;

> knowledge and use of prevention strategies; and,

> barriers to conversation among women about this topic.

These topics were discussed in all of the focus groups regardless of location across Ontario. The researchers posed some questions relating to the topics to the group but other questions emerged organically. The main themes and experiences of women in relation to each of these six topics are described below. Some of the themes emerging from the focus groups include specific quotes from participants to help illustrate some findings.

4.2.1 Knowledge about the effects of alcohol

Focus groups participants were asked to describe the effects of alcohol on their bodies as well as their own driving abilities. In general, women were uncertain about how long it would take for alcohol to be completely eliminated from their body, and estimates ranged from as little as two hours to as much as 24 hours. Participants were also asked to estimate how much alcohol would affect their driving ability. Almost all of the women estimated that they could consume between one and four alcoholic drinks before being unsafe to drive, with one woman indicating that she could not consume any alcoholic drinks before being unsafe to drive. During discussion, participants also acknowledged that these estimations would vary depending on various biological, metabolic and social factors. Each of the factors that were believed to influence the effects of alcohol on the body are briefly summarized below.

> **Amount and type of liquor consumed.** Almost all of the women acknowledged that both the amount and type of liquor consumed affected their level of intoxication. However, perceptions about the impairing effects of different types of alcohol varied, and some women believed that wine and beer had less impairing effects than spirits. For example, one woman noted that "high in sugar [alcoholic] drinks would hit you harder." Some women also reported that, in their experiences, female friends were not consistently aware of the impairing effects of different types of alcohol, and reported that "sometimes people think it's only wine, so it's fine," or that "light beer cannot be harmful, so people drink more." To fully illustrate this point, one woman shared a story of her friend who was petite and who would "…have 4 to 4 ½ drinks of beer. She didn't think it was bad because it was beer."

> **Body weight.** Focus group participants generally agreed that persons with larger bodies in terms of height and weight were able to consume more alcohol with fewer impairing effects than persons with smaller bodies.

> **Intake of food and water.** Most of the women agreed that eating food or drinking water would help speed up the metabolism of alcohol by the body. Some women further elaborated on the importance of eating on the impairing effects of alcohol, and noted that the lack of food prior to drinking would increase their level of intoxication because there was not enough food to absorb the alcohol; however, differences in the types of food consumed were not identified. One participant also elaborated on the importance of consuming water and reported that drinking water dilutes the alcohol in the body and helps the body metabolize alcohol more quickly.

> **Fatigue.** Many of the women reported that fatigue would affect their level of intoxication. Specifically, these women noted that persons who were more fatigued would be more intoxicated than persons drinking the same quantity of alcohol who were less fatigued.

> **Illicit and licit drugs.** It was acknowledged that the use of drugs was a factor that could influence the impairing effects of alcohol. Discussion included a focus on both illicit and licit drugs. Some of the participants reported that the use of illicit drugs compounded the effects of alcohol. A minority of women also reported mixing alcohol with licit drugs or

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medications but were less certain about their impairing effects in combination with alcohol. These women acknowledged initially being deterred by the warnings on their medications. However, they subsequently started experimenting with the medication in combination with small amounts of alcohol. After experiencing no alarming effects they typically reported increasing the amount of alcohol consumed in conjunction with medication.

> **Time span.** Some women in the study reported that the absorption rate of alcohol was affected by the duration of time spent drinking. To illustrate, one woman shared that "[her] friend was … drinking one drink per hour for 13 hours and then drove" and suggested that the general rule that the body eliminates one drink per hour would not apply when alcohol is consumed over a longer period. Overall, women were uncertain about whether the duration of drinking affected the elimination of alcohol from the body. In addition, many participants were not aware that drinking one drink per hour was appropriate for men, and that women could not consume as much alcohol during this timeframe. Awareness that this general rule could not be strictly applied because of differences in size and sex was also inconsistent.

> **Hormones and mood.** At least some women reported that the hormones in a woman's body affected their intoxication level and their ability to metabolize the liquor but were not able to elaborate on the way that hormones influenced the impairing effects of alcohol. Similarly, some participants reported that their emotional state would affect their level of alcohol intoxication. To illustrate, one woman reported that a proceeding trauma, such as "fighting with a boyfriend," could result in a women being more impaired. Another woman noted that it was "less about the number of drinks, and more about the type of day you are having."

> **Tolerance.** The women also thought that habitual users of alcohol would have higher alcohol tolerance and were able to still drive safety after consuming a larger quantity of alcohol than non-habitual users. Some of the women who self-identified as having alcohol abuse problems discussed how their tolerance to alcohol varied depending on whether they were using alcohol or how long they had been in recovery. These women reported relapsing after months of sobriety and being surprised that they were more impaired at lower levels of alcohol. They noted that "when you first relapse you can't drink as much because you are abstinent" and it "depends on where you are at in your cycle of addiction."

Overall, the responses of women were fairly consistent in terms of various biological, metabolic and social factors that could influence the ability to metabolize alcohol, as well as consistent with research about alcohol and driving, notably the identification of fatigue, body weight, hormones, and licit and illicit drugs (Barett et al. 2004; Frezza et al. 1990; Goist & Sutker 1985; Graham et al. 1998; Sutker 1983; Vakulin et al. 2007; Weiler et al. 2000). For instance, their belief that fatigue compounded the effects of alcohol aligns well with fatigued driving evidence. In particular, driver fatigue directly heightens the effect of alcohol and influences the driver's ability. For example, a driving simulation study found that mixing low-doses of alcohol with fatigue produced a decline in steering ability (Barett et al. 2004; Vakulin et al. 2007). In addition, research shows that the relative

risk of road crash fatality or injury for alcohol and fatigue combined is greater than alcohol or fatigue alone (Philip et al. 2001).

However, the majority of the women did not appear confident when they identified these various factors. A consistent finding in each focus group was that participants were not consistently aware of biological, metabolic and social factors that influenced the ability of women to absorb and tolerate alcohol, or its impairing effects. In this regard, it was not uncommon for participants to present their answers as questions to the other women in the group, and to seek clarification to determine whether they were correct.

Almost all of the focus group participants reported that their knowledge about the effects of alcohol was based on their personal experiences with intoxication and/or the perceptions of female family members and friends. One woman reported that "I feel it after two or three. If I feel it, I know that it's affecting everything" including the "perception of what is okay for you." When asked to estimate how long it took for alcohol to be eliminated from their body, responses included "[when] I don't feel gross." One participant indicated that she knows that she cannot drive after two drinks because of "what people around [her] tell [her]," and said that her friends would tell her if her behaviour was different than usual.

Of concern, research shows that people often base their judgment about impairment on their own personal estimates (Beuert et al. 2014); however, these subjective judgments can be incorrect (Aston & Liguori 2013; Beirness 1987; Martin et al. 1991). In particular, there is evidence that people perceive themselves as sobering up faster than their actual BAC level is declining (Charlton & Starkey 2015).

Estimating actual BAC levels is complicated and can result in some persons perceiving that they are safe to drive after drinking (Amlung et al. 2014; Laude & Fillmore 2016). For example, in Quinn and Fromme (2012), students were more likely to drive after drinking because they perceived themselves to be less intoxicated than their actual BAC level. This effect can vary according to past drinking behaviours. For instance, Van Dyke and Fillmore (2014) reported that after drinking, persons with past impaired driving history self-reported greater willingness to drive than those without past histories. In summary, research suggests that personal estimates should not be relied on when choosing to drive after drinking, but many women in the focus groups still used such assessments when deciding whether to get behind the wheel or not.

4.2.2 Knowledge about sex differences in relation to alcohol consumption

A topic of discussion focused on various biological and social differences between men and women as they pertain to alcohol intoxication. Women were asked to gauge the quantity of liquor each sex could consume before being unsafe to drive. A majority of participants reported that men and women could not consume equal amounts, and many of them agreed that men could consume more alcohol than women before being unsafe to drive. However, many women were uncertain about how much more men could consume as compared to women. To illustrate, one woman noted that men could consume "double what women could drink" before being unsafe to drive. When asked to estimate the amount of alcohol that men could drink within a three-to-four-hour span before being unsafe to drive, responses varied from one to twenty drinks. While there was

consensus that women could consume less alcohol before being unsafe to drive, again, estimates varied from one to four drinks for women within an equivalent time span.

When asked about factors that could contribute to men as compared to women being impaired by alcohol, women identified a variety of factors that could cause either men or women to become more or less intoxicated. The following are factors that women thought contributed to the differences:

> **Tolerance.** Several women agreed that men were more capable of consuming larger quantities of alcohol because their tolerance to alcohol was greater. In particular, women mentioned that since men drink more often, they develop greater tolerance to alcohol than they do.

> **Body weight.** During discussion women in the focus groups compared their body size to that of their male family members or friends. Some of the women shared stories about female friends or family members who were impaired and commented that if "men drink that amount [they] would be fine."

> **Food intake.** Some of the women reported that differences between men and women in relation to food consumption prior to drinking would affect how much alcohol they could consume. For example, women reported that men would typically consume more food before drinking alcohol whereas women would limit the amount or type of food and number of calories consumed before and during drinking in light of the calories contained in alcoholic drinks.

> **Hormonal differences.** Similar to questions about the effects of alcohol, a few women mentioned hormonal differences between men and women that could affect their level of intoxication. However, when probed further, these women could not provide an explanation of these differences but believed that hormonal differences could affect the level of alcohol intoxication in women.

> **Amount of blood.** A small minority of women reported that the amount and chemical makeup of blood was different for men and women and this contributed to differences in alcohol intoxication between the sexes. As illustrated by one woman, "alcohol in the blood could look different [for men and women] but they are as impaired at the end of the day."

Similar to the previous issue, the discussion about the above differences in alcohol concentration between men and women was fairly consistent with research evidence about this topic (Mumenthaler et al. 1999; Sutker 1983). Again, a number of women were not confident in their responses. Notably, many women presented the responses as questions and/or bluntly acknowledged that they were unsure of their responses. To illustrate, one woman noted that "I have the feeling that men can handle more, but I could be totally wrong" and another participant indicated that "I'm not sure what's true."

The discussion about sex differences related to alcohol consumption included not only biological differences, but also social differences in the ways alcohol affect men and women. In particular, participants also discussed the differences between men and women in relation to risk-taking

behaviours and mood changes due to alcohol intoxication. At least some of the participants believed that men engaged in more risk-taking behaviours after consuming alcohol as compared to women. In addition, there was no consensus about differences in the mood of men as compared to women due to alcohol impairment. Some women reported that alcohol made men louder and more aggressive whereas it made women more emotional. Other women discussed moods in terms of "the type of drunk you are" as opposed to sex differences. In other words, it was believed by some women that females could be as loud and aggressive as men while impaired, and that these differences were unrelated to sex.

Participants were also asked to describe the social pressure related to drinking that they experienced from men and women. A minority of women reported that they never felt peer pressure from either men or women to drink because they most often drank alone in their homes. However, a majority of women acknowledged that they experienced peer pressure from both men and women, but the nature of this peer pressure varied depending on the social context, including the workplace, sporting events, social events with female friends, and heterosexual advances. More detail about these experiences is described below.

> **Workplace.** Many of the women in the focus groups discussed experiencing more pressure to drink from male colleagues as compared to male friends. Participants noted that they were more likely to socialize with male colleagues at work events, or in bars or restaurants in order to avoid missing networking opportunities with their colleagues. These networking opportunities were perceived to be valuable to advancement and promotional opportunities. In addition, some women felt more pressure to consume equal amounts of alcohol to their male colleagues. To illustrate, one participant noted that "you'd get weird reactions if you don't drink." Another participant reported that she was not able to drink as much as her male counterparts and noted that "men are more competitive. I got made fun of because women can't hold alcohol as good as men."

> Women who reported working as servers and/or bartenders in establishments that served alcohol acknowledged often feeling pressure to drink from both male and female patrons and colleagues. It was reported that there was "pressure from everyone and, after hours, to party." The women felt the need to "keep up" with the patrons and then continue to drink with their colleagues after the establishment closed. Research has indicated that this pressure from co-workers to drink after work was a predictor of heavy drinking among restaurant workers and bartenders (Kjaerheim et al. 1995). This finding was also evident in U.S. research about convicted female impaired drivers. For example, Robertson and colleagues (2013) found that one-third of the female impaired driving offenders in four states that had worked in bars and restaurants reported that their occupation contributed to their alcohol consumption.

> **Sporting events.** In general, women in the focus groups reported they felt more pressure from men than women to consume alcohol at sporting events. However, these locations (e.g., sports bar, baseball games, etc.) are more often frequented by males. Research also shows that women might then feel pressure to consume liquor in equal quantities as their male counterpart in order to fit-in (Wenner 1998).

> **Social events with women.** A majority of focus group participants disclosed that they felt more pressure to consume alcohol from other women during social events with them, such as during "girls' night out" or "emergency girl time." Several women reported that their female friends did not want to drink alone at these events. To illustrate, one woman noted that her "girlfriends would say come on, keep up with me." Other women reported that their female friends would tell them that "you are fine, drink more," "you have no drink in your hand," "you aren't as much fun without liquor" or "don't make me drink alone." These women speculated that women pressured other women to drink alongside with them in order to relieve their guilt of drinking alone.

> **Heterosexual advances.** Finally, some of the women reported that they experienced more pressure to drink from heterosexual males that made sexual advances towards them: "men use alcohol to lure women." If the male purchased a drink, the women felt pressure to consume it. One woman indicated that her glass would never be empty because men would pour her another drink, sometimes without her knowledge.

Interestingly, many women reported that they feel more pressure to drink from men in relation to workplace settings and events however, they feel more pressure from women to drink in social settings.

4.2.3 Contributing factors to driving after drinking or being a passenger of a drinking driver

During the focus groups, all of the women shared either their personal experiences driving after drinking any amount of alcohol or riding as a passenger of a drinking driver. As noted previously, more women reported riding as a passenger as opposed to driving after drinking themselves. A number of contributing factors that lead to these situations were identified, including peer pressure, impaired judgment, lack of transportation or affordable transportation, safety concerns, and mental health issues.

> **Peer pressure.** The most commonly cited contributing factor that was identified by women in this study was the culture of drinking. A majority of women reported that a culture of drinking was common among their family, friends and their community. Some of the women explained that it was common for them to enjoy alcoholic drinks at familial events before heading home. Another woman mentioned that her group of friends would drink often and party after long days at work or at the cottage. It was noted by some women that drinking alcohol was typical and that "in the small community, all her friends would drink and drive in the cottage area." In addition, some women shared that they drove after drinking or rode with a drinking driver in order to be a part of the group.

> Many of the women reported that they drove after drinking because they were the least intoxicated among their group of friends or family. One woman indicated that "I thought I could do it better than other passengers." Other women reported driving because they were more sober than their partner or spouse. It was acknowledged that "I had to drive because my husband was too drunk to drive." In some cases, even though women were more sober than their male spouse, the men would still insist on driving. As illustrated by

one woman's story, her husband drove them home even though he knew he should not have been driving. He did not want his wife driving even if she was more sober. Another woman recalled that, when she was a teenager, her dad insisted on driving while she and her brother were in the vehicle, even if her mother was sober.

A few women mentioned that they drove home after drinking alcohol, even when they were unsafe to drive, because they had promised their friends that they would be the designated driver. These women reported they drove because they did not want to "let their friends down." Of note, while these women indicated they told their friends they had been drinking, they still felt pressured to drive because they "promised."

> **Impaired judgment.** Another contributing factor that was reported by those women who drove after drinking was that their judgment was impaired. Many of the women explained that they drove after drinking because they "just didn't think" and discussed their inability to make rational decisions while intoxicated: "I didn't give it a thought." Some of the women reported they did not realize their level of intoxication until they were partway home. One woman reported "thinking you are okay" and another shared that "I felt I was fine enough to drive, and drove people home…not realizing that it's not fine." As illustrated by one woman, she was already on the road before she realized the extent of her intoxication, but she reported that she kept driving because she needed to get home. She noted that "I don't feel drunk, until in the car in that situation."

When probed further regarding their poor judgment, women who drove after drinking often mentioned that their thought process was focused internally and that they "didn't think about hurting anyone." As illustrated by one participant, her goal was to leave a social engagement to remove her aggressive partner from fellow-party goers. She reported that "I was not thinking about other people in the moment," and only after leaving she "realize[d] that others are on the road."

Similarly, women who reported riding with a drinking driver also mentioned their impaired judgment. Some of the responses shared by these women included: "I tend not to think when I get into cars when drunk," "I'm not sure how drunk the drivers are… I just trust them," and "I wouldn't take a ride with a drinking driver if I wasn't drinking." This conversation about impaired judgment did not appear to be connected to previous responses related to their ability to estimate their own BAC level. In particular, women did not link their impaired judgment as a result of alcohol consumption with their inability to accurately estimate their level of intoxication when they had been drinking.

> **Lack of transportation or affordable transportation.** A majority of women in the study reported that the lack of transportation was a contributing factor to driving after drinking and/or riding as a passenger of a drinking driver. Many participants reported that there were "no taxis" in their community, that "the bus doesn't stay late enough" or "doesn't connect properly, which takes forever." One woman indicated that there was a "drunk bus" in her community that ran late but it was only available on certain routes and on certain nights. A number of women also noted the struggles of waiting for a taxi. They

identified long wait times for cabs in the winter, or that taxis would refuse to take them to their destination which was "too far." These situations often resulted in women instead opting to ride with a drinking driver.

The lack of affordable transportation was also a contributing factor to the decisions of some women to drive after drinking or ride as a passenger of a drinking driver. In suburban and rural communities, it was reported that the distances were long and taxis were quite expensive. As illustrated by one woman, she shared that being a passenger with a drinking driver used to be a normal occurrence for her since it was her only option to get home. She reported that "I was 21 without money and had to get to the other side of the city." Another woman disclosed that her friend continuously accepted rides from drinking drivers because she also could not afford most transportation options. Others reasons mentioned by drinking drivers were that they needed the vehicle the next morning and had no way to get back to their vehicle to get to work, that they could not leave it somewhere overnight because it was not their vehicle, or that they could not afford to leave it in a parking garage.

The transportation concerns differed slightly among women who self-identified as living in rural or smaller communities. These women mentioned the size of their community as a contributing factor to their driving after drinking and/or riding as a passenger of a drinking driver. Common factors that were identified by these women included that the "number of taxis is limited," "the bus only runs during peak hours as full service," and "it's not available outside the town." To illustrate, one woman shared a past experience of attending a semi-formal in a rural community although she and her girlfriend had no transportation home. She mentioned that a young man who had been drinking offered them a ride home for $20, and she and her friend accepted the ride as it was their only option. She recalled that he drove most of the trip in the middle of the road.

In addition, a few women mentioned that they rationalized their decision to drive after drinking based on the physical distance needed to drive: "home wasn't far." One woman shared that her cellphone service would not reach the rural locations and without accepting a ride with a drinking driver she would have been stranded. The women in the focus group reflect the same concerns that other scholars have noted in women from Australia (Neale et al. 2014).

> **Safety concerns.** A larger proportion of women in the focus groups agreed that they drove after drinking or took a ride with a drinking driver because of their concern for their personal safety. Perceptions about the safety of transportation options were a predominant factor associated with the choices made by women in these instances. Fears related to the use of public transportation while intoxicated were quite common among women. One participant noted that "I wouldn't want to get on a bus when I'm plastered. Even a taxi you need to watch. You are vulnerable." Some women expressed that they preferred not to use taxis when intoxicated because they were concerned that the taxi driver would be aware of their vulnerable state, as well as know their address. This fear was more pronounced in areas where women lived outside of the main population centre. In addition, many of these

women reported feeling vulnerable when waiting alone late at night for public transportation. The fear of sexual violence resulted in some women choosing to drive home after drinking or ride with a drinking driver because it was believed that this was a safer option.

This fear among women is highly consistent with research from several countries around the world (Karver 2015; Neupane & Chensney-Lind, 2014; Plazinić & Jović 2014). In these studies, women have repeatedly noted their personal safety preference to drive after drinking or accept a ride with a drinking driver in order to avoid the use of public transportation or walking home alone (McMurran et al. 2011; Beuret et al. 2014; Neale et al. 2014).

Moreover, this fear for safety was not exclusive to transportation options. Some women were equally concerned about their safety when spending the night at the drinking venue (e.g., house party) when they were too impaired to drive. These women also acknowledged that they were vulnerable while intoxicated, particularly if they did not know the owner of the house, or who else would be sleeping there. As such, these women reported that they preferred to return home or to a safe location rather than staying overnight where they could potentially be harmed.

> **Mental health.** Some of the women, particularly those that disclosed past struggles with alcohol addiction, expressed feelings of anxiety or shame that lead them to drive after drinking or accept a ride with a drinking driver. Concern was often related to family members, friends or community members knowing that they had consumed too much alcohol and could not drive. One participant noted that "it would be embarrassing to let people know how drunk you are" whereas another participant stated "I wanted to hide it." Some women with past alcohol issues who reported drinking heavily during the day acknowledged the stigma associated with being intoxicated during the day, and expressed concern that asking family and friends to drive them home would reveal their drinking problem. One woman noted that this concern was more pronounced in smaller communities. She reported that only one taxi was available in her community, and the driver was known to disclose the details of the taxi-riders to others in the community, stating, "If I called the taxi, it was public knowledge that I wasn't safe to drive." Instead of risking the members of her community finding out that she was drunk, she decided to drive home, and used back roads, as she believed this was a better option.

A few women expressed that feelings of worry or unease contributed to their decision to drive after drinking or take a ride with a drinking driver. According to the experience of one participant, she was more comfortable sobering up in her own home, noting that "I would rather be home with a hangover than in someone else's home." She believed that the loss of inhibitions while intoxicated made her feel comfortable in a social setting with unfamiliar people. However, when the loss of inhibition dissipated the next day, she would not be comfortable in another person's home.

Many women also mentioned life stressors that contributed to their driving after drinking or taking a ride with a drinking driver. One woman shared that she drove after drinking immediately following the separation from her spouse. She reported that she "drowned her sorrows" and "didn't know how I got home. My car was in the drive." Life stressors (e.g., divorce, physical or psychological abuse or trauma, heightened partner drinking) are common factors among women who use alcohol and drive after drinking (Dube et al. 2002; McMurran et al. 2011; Messina & Grella 2006; Robertson et al. 2013; Triffleman et al. 1995; Wells-Parker et al. 1991).

> **Other.** There were also some other contributing factors that were reported by a few women in the study. These factors included needing to pick up their kids, incorrectly estimating their own intoxication level prior to driving, a drinking driver who misrepresented their level of intoxication, and just knowing that they were unlikely to be detected. As noted by one participant, she chose to drive after drinking because enforcement was nominal unless it was a major holiday, such as Christmas. Another participant indicated that she just stayed out later to avoid the check points.

Many of these factors that were reported by participants as contributing to their decision to drive after drinking or ride as a passenger of a drinking driver were highly consistent with research about women convicted of impaired driving in the U.S. (Robertson et al. 2013). In this U.S. study, a majority of women also identified impaired judgment, the lack of available or affordable transportation options, and safety concerns. In addition, many women in the U.S. study self-identified as having a range of mental health issues, and a history of trauma. These latter findings were subsequently confirmed by criminal justice practitioners that were involved in this U.S. study.

4.2.4 Concern about driving after drinking or being a passenger of a drinking driver

A majority of the women that participated in this study expressed concern about the potential negative consequences associated with driving after drinking. These concerns were predominantly related to themselves as well as to their family and friends.

Concern for self. Many of the women who reported driving after drinking and/or riding as a passenger of a drinking driver identified concerns about the negative consequences for themselves, particularly in terms of personal safety as well as the imposition of penalties. Almost all of these women were concerned about being caught by the police. As illustrated by one woman who was stopped by police, "I was freaking out that I would be pulled over." These women often were more concerned about not getting caught at that moment than they were with drinking and driving. Most often, women were concerned with hurting themselves or others, but many of them reported they did not think about potentially hurting someone else until afterwards. As expressed by one participant, "it's not about one individual going to jail, but all those you can hurt." Another participant acknowledged that "how it affects others" was important. One women recalled that she was "not thinking about other people in the moment" and then "realizing that others are on the road" part way through her trip.

Almost all of the women who reported driving after drinking noted that their concerns were more prevalent after the fact. A number of participants acknowledged that it was often the morning

after that they could not believe they choose to drive after drinking or ride with a drinking driver. One woman reported that, in the past, one morning she woke up and her car was still running in the driveway and her front door was wide open. One woman shared that she was not concerned with the dangers until she was part way through the trip home. At this time, she mentioned that all she could think about was "let's get there quicker, so we can get out of the car." Another woman shared that she was an intoxicated passenger with a driver drinking in a vehicle that crashed into a lake and did not realize the extent of her decision to ride with a drinking driver until the following day, stating that "I could have died 20 times last night."

Concern for family and friends who drive after drinking. Almost all of the women expressed concern for their family and friends who had driven after drinking or taken a ride with a drinking driver. One women discussed her neighbour who often drove after drinking, stating that "he is a threat on the road. He will kill someone or himself. It's scary." A few of the women felt helpless to protect themselves or their family from other intoxicated drivers on the road. One woman noted that "I can control me but I can't control those around me." Many of the women expressed concern that their partners had driven after drinking. One woman shared that her husband was charged with impaired driving and lost his licence, so she had to drive him to work for the next three years. Another participant was concerned about her ex-boyfriend who "drinks so much that he sees three roads on his way home. It's a miracle that he hasn't been caught."

Throughout the conversations about driving after drinking or being a passenger of a drinking driver, many of the women mentioned the shame and anxiety they felt from their decision to drive after drinking and acknowledged the "guilt and shame that you engaged in that act and that you put yourself in that situation." To illustrate, one participant noted that she was "so ashamed, [she] knew it was a bad decision." This woman, like a few others, discussed how they attempted to suppress their shame. She shared that she pushes this feeling of shame from her mind, stating that "I'm not even going to think about it." Others felt similar shame but continued to think about it. One woman reported that she and her girlfriend still discuss an incident of riding as a passenger of a drinking driver that occurred almost ten years ago. Another participant reported her shame for being "duped" into the vehicle with a drinking driver, stating "how dare you for drinking then driving…how stupid for me to not notice."

4.2.5 Awareness and use of prevention strategies

During the focus groups, women in this study were asked to identify strategies that could have helped themselves or others avoid drinking and driving or riding as a passenger with a drinking driver. Awareness of several strategies was common, including the use of personal limits, planning ahead, the buddy system, having a designated driver, changing social circles, using a personal breathalyzer, and reaching out for help and sobriety. Notably, the use of alternative transportation options was not identified as a strategy.

> **Recognize personal limits.** Some of the women identified the importance of knowing their own personal alcohol limits and reported that "it's okay to say no, learn how to take control." These women suggested that women need to define their own personal boundaries and not put themselves at risk due to the influence of others. It was

acknowledged that consuming food prior to drinking could help reduce the intoxicating effects of alcohol. Whereas one participant mentioned that stopping for food before going home was a good way to "sober up," another participant reported that she encourages her kids to eat before drinking.

> **Plan ahead for a safe ride.** Many of the women suggested that planning ahead was a good strategy to avoid driving after drinking or riding as a passenger with a drinking driver. Some participants also noted that reaching out to the host of an event to inquire about who would be attending to help determine if the house would be safe to stay over. Some of the women reported that choosing to drink only at locations from which they could get home safely by walking. A few women acknowledged that planning ahead was not always effective because rides that were planned were not always available, and drivers who had committed to drive could end up drinking anyway. In addition, a few women reported that they were reluctant to "rely on others," and this was often associated with past experiences of being left in vulnerable positions by others who failed to keep their promise to be a safe and sober ride home.

> **Use the buddy system:** Many of the women suggested the use of a "buddy system" as a strategy to avoid drinking and driving or being a passenger of a drinking driver. The description of the buddy system was similar across groups and involved an agreement with a close friend to remain in close proximity to each other throughout the night to ensure their safety. It was believed that when it was time to go home, the buddy could help them avoid being pressured to be a passenger with a drinking driver by also saying it was not safe to ride with them, or waiting with them for alternative transportation such as a taxi so they were not alone in the cab.

> **Use a designated driver.** Many of the younger women reported that the use of a designated driver was a good strategy to avoid driving after drinking or being a passenger of a drinking driver. This strategy was quite common among younger participants who reported that they would take turns as the designated driver, or that they would take turns paying for a taxi to get several people within walking distance of home.

> **Use a personal breathalyzer.** A few women suggested that access to personal breathalyzers could help them to gauge if they are too intoxicated to drive. However, it was also acknowledged that they were uncertain about the reliability and accuracy of personal breathalyzers, and this concern is consistent with research findings that devices are not always accurate (Gornall 2014).

> **Change social circle of friends.** Some of the participants, particularly those who had previously struggled with addiction issues, reported that it was necessary to change their social circle and spend less time with people who consumed alcohol frequently or in larger quantities. This was believed to help them be less likely to find themselves in situations where they were likely to drive after drinking, or be a passenger of a drinking driver.

> **Ask for a ride.** Only a few women that participated in this study suggested reaching out to parents or family members for a ride home, and this strategy was more often identified by younger participants.

> **Sobriety.** Some women mentioned that their current prevention strategy was sobriety. These women self-identified as having past and present struggles with alcohol.

More generally, many of the women in this study mentioned the importance of prevention messaging for youth to advise them of effective strategies to avoid driving after drinking or riding as a passenger of a drinking driver. Reflecting on their own experiences, women reported that a stronger emphasis on the identification of alcohol-related problems among youth and university-level students was needed. Similarly, younger participants in this study reported examples of ways that prevention messaging had reached them at a young age and positively influenced their subsequent decisions to not drink and drive. A few older participants acknowledged that their alcohol-related problems had stemmed from a drinking problem at a young age. Women in this current study also noted that an emphasis on messaging for certain groups of youth, such as the lesbian, gay, bisexual, trans and queer (LGBTQ) community members, is much-needed.

This finding is consistent with research about convicted female impaired drivers in the U.S. who reported that more youth prevention messaging was needed for young women. This study finding was further confirmed by judges and probation officers who also reported that women who entered the U.S. criminal justice system for an impaired driving offence often presented with early onset drinking and significant substance use problems (Robertson et al. 2013).

4.2.6 Barriers to discussion about drinking and driving

A majority of women that participated in this study reported important barriers to discussion among women about drinking and driving, and riding as a passenger of a drinking driver. While most of the women expressed a strong desire for conversation about this topic among women, many of them also acknowledged that they were not informed about the facts to help start a conversation, and that they lacked the skills to discuss this topic. Some of the most significant perceived barriers to discussion about this issue are briefly summarized below.

> **Stigma and shame.** Most of the women mentioned that they were uncomfortable talking about driving after drinking with their friends and family because there was still substantial stigma and shame for women in relation to the use of alcohol. To illustrate, one woman stated, "there is a lot of shame around drinking and driving. I don't expect others to get it." Many of the women felt that there was greater stigma attached to women as compared to men in terms of drinking which contributed to challenges associated with acknowledging this behaviour. Common stereotypes related to the use of alcohol by mothers were often cited. As one participant noted, "It's the norm for the dad to drink but not the mom."

> Some of the women shared that this stigma was a barrier to them talking about their drinking and asking for help. One woman described how she felt she had an image to uphold with friends and family, and she did not want to damage this image by revealing her poor decisions to drive after drinking. This finding is consistent with research about

female impaired drivers in the U.S. In Robertson et al. (2013), practitioners reported that women perceived that others were "counting on them to fulfill different roles" (p. 69), and that women felt greater pressure to succeed and be able to successfully balance the demands of work and home.

Some of the women who reported problems with alcohol indicated that they felt isolated due to their behaviour. To illustrate, one participant who drove after drinking reported that she eventually was able to discuss it with her partner, but not with sisters. She noted that she also tried to discuss driving after drinking with her counsellor on one occasion, but the female counsellor told her that she did not want to hear about it.

Many participants initially reported that they believed that drinking and driving was rare among women, and that only women with alcohol problems engaged in this behaviour. Within one group, it was not until one participant countered this stereotype that the other women started questioning it themselves. In other groups, once one participant admitted to driving after drinking or being a passenger of a drinking driver, a number of other participants also acknowledged similar experiences. Notably, women who perceive that drinking and driving is unusual among women may be more likely to isolate themselves further, and this could make them more reluctant to seek help or support to reduce their drinking.

> **Lack of messaging that is relevant to women.** Almost all of the women mentioned a desire for more opportunities to discuss the use of alcohol and experiences related to drinking and driving. In particular, women questioned why there was not more messaging about the experiences of women with alcohol. One participant noted "Why isn't more messaging out there that "Mom isn't perfect. It's not talked about." It was believed that messaging about drinking and driving that was tailored to women would make it easier for women to have conversations about this important topic. There was consensus that more opportunities were needed to "open that door on the conversation," and that "if we don't discuss it, the worse it'll get." It was also acknowledged that "addiction [is] not a gender issue." This finding is consistent with research from several countries that there is a substantial need to empower women to discuss issues related to alcohol and driving (Beuret et al. 2014; Neale et al. 2014; Robertson et al. 2013).

> **Lack of tools.** Despite a strong desire expressed by women in this study to have conversations about alcohol and driving, many acknowledged that they lacked the tools to start the conversation or to approach a drinking driver. Some women mentioned they felt unequipped to prevent family and friends from drinking and driving. After sharing a story about the experiences of her girlfriends that drove after drinking, one participant noted that "I feel guilty because I couldn't stop them." One woman shared that her female friends will go out and have a couple drinks and then some of the women think they are fine to drive, stating "what can you do?." Another middle-aged woman in a similar situation even followed her friends home without telling them to make sure they arrived safely. This woman now has her children asking her "how do you stop your friends from getting into the car," yet she does not even know how to address this question among her own friends.

Finally, one participant mentioned that she had a similar experience with a female co-worker who insisted she was able to drive when approached by the participant. This woman reported that she did not know how to continue the conversation when her co-worker told her "don't be silly. I only had a couple of drinks," asking "how do you talk to that person about it. She seems sensible in one area but not in that."

4.2.7 Summary

There are some important findings that emerged from the focus groups in relation to the six main topics of discussion. Many women that participated in this study reported some knowledge about the amount of alcohol that they could safely consume and its effects on their ability to drive. However, many of them were equally uncertain about just how much alcohol could be consumed, or how long it would take for alcohol to be eliminated from their body. Participants also had some awareness of the various biological, metabolic and social factors that could influence their ability to metabolize alcohol and their responses were fairly consistent with research about alcohol and driving. However, again, a majority of participants did not appear confident when they identified these various factors, and often presented their answers as questions to the other women in the group, and sought clarification to determine if they were correct. These results suggest that women could benefit from a better understanding of how alcohol affects women and the factors that play a role in this equation.

Almost all of the focus group participants reported that their knowledge about the effects of alcohol was based on their personal experiences with intoxication and/or the perceptions of female family members and friends. This finding is a source of concern in light of research that indicates that people often base their judgment about impairment on their own personal estimates (Beuert et al. 2014); however, these subjective judgments can be incorrect (Aston & Liguori 2013; Beirness 1987; Martin et al. 1991).

In addition, a majority of participants reported that men and women could not consume equal amounts of alcohol, and many of them agreed that men could consume more alcohol than women before being unsafe to drive. However, several women were not confident regarding about how much more men could consume as compared to women, or how much alcohol women could safely consume before driving as compared to men. While women were also able to identify some factors that contributed to differences in the amount of alcohol that could be consumed by men as compared to women, and their responses were fairly consistent with research evidence about this topic, again, a number of women were not confident in their responses. Notably, many women presented their responses as questions and/or bluntly acknowledged that they were unsure of their responses. Collectively, these results suggest that women are not well-informed about important differences between men and women in terms of the consumption of alcohol and its impairing effects, and this may contribute to decisions by women to drive after drinking or ride as a passenger of a drinking driver.

Women in this study also acknowledged a number of contributing factors that lead to them to drive after drinking or ride as a passenger of a drinking driver. These factors generally included peer pressure, impaired judgment, lack of transportation or affordable transportation, safety concerns,

and mental health issues. Many of these factors were similar to factors that were identified by research investigating the experiences of women who were convicted of impaired driving in the U.S. (Robertson et al. 2013). This finding is source of concern and indicates that the reasons among convicted female impaired drivers are not dissimilar to those of women who are not detected for drinking and driving.

Concern for themselves as well as family and friends was also substantial among women who participated in this study. Not only did women express concern about the potential negative consequences associated with driving after drinking for themselves, it was notable that these women reported that they did not think about potentially harming or injuring someone else until after the fact. There was also a high level of awareness of strategies that could be used to avoid driving after drinking or riding as a passenger of a drinking driver. Top strategies included: the use of personal limits, planning ahead, the buddy system, having a designated driver, changing social circles, using a personal breathalyzer, and reaching out for help and sobriety, although some women noted important barriers to the use of these strategies. Notably, alternative trnasportation options were not identified as a relevant strategy, and this may be due to the safety concerns that women associated with this strategy.

There were also some significant barriers to discussion among women about drinking and driving, and riding as a passenger of a drinking driver that emerged from this study. While most of the women expressed a strong desire for conversation about this topic among women, many of them also acknowledged that they were not informed about the facts to help start a conversation, and that they lacked the skills to discuss this topic. Stigma and shame were also perceived as barriers to discussing this issue with family and friends.

5. CONCLUSIONS & RECOMMENDATIONS

While many of the women that participated in this study had some knowledge in relation to each of the six topic areas that were explored, there were also some important gaps in knowledge that can contribute to women choosing to drive after drinking or ride as a passenger of a drinking driver. In addition, important gaps in strategies for women to avoid drinking and driving or riding as a passenger of a drinking driver were revealed, although some of these gaps will be more challenging to overcome.

As such, these findings can help inform the development of drinking and driving prevention campaigns for women. In particular, the results of this study provided insight regarding the types of knowledge and content that should be included in prevention messaging, important features of prevention messaging that is more appropriate for women and potential ways that such messaging should be delivered. More information about each of these issues that emerged from this study is briefly summarized below.

Content of messages. According to women in this study, prevention messaging and materials are needed to increase knowledge among women about the effects of alcohol on their body and on their ability to drive safely. More relevant educational messages would help overcome their lack of confidence about this topic. In particular, effort is needed to correct a common misperception among women that they are able to consume one drink per hour and still drive safely. Almost all women that participated in this study were not aware that women could, on average, consume only three-quarters of a drink each hour. In addition, messages are needed to increase awareness among women that their subjective estimates of their own level of intoxication are often incorrect, and to improve knowledge about important factors that affect how women metabolize alcohol as compared to men, as well as about factors that contribute to women being more impaired after consuming the same amount of alcohol.

Women also agreed that prevention messaging that acknowledges the pressure that women may experience to drink more alcohol in different situations would be helpful. In particular, messages should discourage expectations among men that female companions should keep pace with their drinking. In addition, messages that highlight the types of social settings where such pressure may more often occur, such as sporting events or a night out with female friends, can help to alleviate the pressure that women feel to consume more alcohol, and make it easier for them to consume less alcohol.

Messages that are more relevant to the personal experiences of women and that acknowledge the reasons that they may choose to drink and drive or ride as a passenger of a drinking driver would also be welcome. In particular, rarely do prevention messages underscore the lack of transportation options, and the safety concerns of women that are associated with well-recognized strategies to avoid drinking and driving such as taking public transportation or sleeping at someone's house. As

such, strategies that are more appropriate and practical for women are an important gap that requires attention.

Finally, it was noted that women should also be encouraged to help other women avoid drinking and driving or riding as a passenger of a drinking driver. This can be achieved by women being more aware of other women at social events, inquiring about how they plan to get home or offering assistance to women who may be travelling in the same direction, and alleviating pressures to consume larger quantities of alcohol.

Features of prevention messaging. Women were also asked about their perceptions of prevention messaging that is currently available, as well as the features of prevention messaging that they believed would be more relevant to women. To this end, all of the women were eager to see prevention messaging that was tailored specifically to women, and reported frustration that in current messaging "the driver is always a he never a she." Features of female-focused prevention messaging that were preferable included:

> **Do not use scare tactics.** Almost all of the women did not want messages to scare them but rather to focus on the everyday consequences of impaired driving, such as the costs and consequences of a criminal record, the loss of licence, and the effects on employment. To illustrate, one participant noted that "your career can be ruined" because "you would lose your job." Other participants stated, "stop the scare tactics" and "it's time to change the approach."

> **Use a series of messages.** Most of the women suggested a series of prevention messages that highlight the bigger picture in relation to short and longer-term effects on drivers and family members. Elements of the bigger picture may include related consequences of job loss, loss of licence, higher insurance rates, and reaction from the community. It was noted that messages directly from women who had been affected as drivers or as victims may be more powerful to deliver these messages.

> **Familial theme.** Some women reported that appealing to women as mothers in relation to family may be more influential with this audience. Messages that underscored the risks posed to family members by drinking drivers were identified as relevant. To illustrate, one participant proposed that messages like "buckle up your kids need you" or to acknowledge that alcohol problems affect not just an individual but their family as well may be appropriate. It was suggested that appealing to women with messages that it is "your family on the road" could help discourage driving after drinking.

Delivery of prevention messaging. In terms of the delivery of messages, women suggested that targeting places where women spent time would be important. As such, women wanted to see these messages in magazines, bulletin boards, health centres, grocery stores, and high schools. Many of the women reported that personal communication from women to women in small group formats would be more effective than media campaigns. Of interest, convicted female impaired drivers and criminal justice practitioners in a U.S. study noted that female-only groups helped women feel more comfortable and be more honest about their drinking, and made it easier for women to connect with the experiences of others more easily (Robertson et al. 2013).

Transportation options. Another notable finding from this study was that public transportation options are often unavailable, or unaffordable. Moreover, women do not generally identify the use of alternative transportation options as a strategy to help them avoid driving after drinking or riding as a passenger of a drinking driver. Women associate these options with concerns about personal safety, and their avoidance of these strategies may contribute to drinking and driving. This suggests that efforts are needed to address these issues so that women are able to rely on these strategies. While this barrier will be difficult to address, this issue does warrant attention to help prevent and reduce drinking and driving among women.

In conclusion, the results of this study are useful to help inform the development of prevention messaging that is more personally relevant to the experiences of women. As such, the Traffic Injury Research Foundation, in partnership with Beer Canada, arrive alive DRIVE SOBER, and the Ontario Women's Health Network is currently using these findings as a basis to develop educational materials and prevention messaging for women that can begin to address this issue. Materials will be made available through its Change the Conversation program at www.changetheconversation.ca.

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APPENDIX A – DISCUSSION GUIDE

Discussion Guide Objectives: Focus groups with women from rural and suburban communities to explore their perceptions and experiences of driving after drinking and being a passenger in a car with a drinking driver, and to explore the factors that contribute to or lessen the risk of driving after drinking or riding in a vehicle with a drinking driver.

Facilitator to introduce: Good morning/afternoon/evening, my name is _____ and I am with the Traffic Research Injury Foundation, an independent, national research institute working in partnership with the Ontario Women's Health Network. We are conducting a study involving women from 5 rural and suburban communities across Ontario about driving after drinking any amount of alcohol and being a passenger in a car with a drinking driver. The project is being funded by Beer Canada through the 'Change the Conversation' program, a TIRF national education program that is available at no cost to communities about drinking and driving.

Myself and my colleague _____, will facilitate the focus group. The discussion in this group is confidential and anonymous and will only be shared with members of the research team; no individuals will be identified as a result of this work. This project includes 2 focus groups each in five communities across Ontario. The knowledge generated from the focus groups will help shape much needed prevention strategies tailored to women. Several free prevention resources for communities will be developed as a result of this project, including a lay language research brief and create preventive messaging resources in the form of a video, infographic, fact sheets and Public Service Announcements.

Consent and demographic survey process: We will be handing to you a consent form followed by a demographic survey to be filled out. [Facilitators to summarize in clear language the consent form]. If you have any questions now or after the focus group, you can always contact me or my colleague whose names and phone numbers are on this form.

Ground rules: Before we begin, in order to ensure everyone is heard and respected, we would like to set some ground rules. Everyone should have the opportunity to participate without interruption, and the stories shared must be kept confidential. Please stay with the group and do not have side conversations. Lastly, please remember to turn off cell phones and other electronic devices that might cause a disruption. Thank you.

Knowledge of the effects of drinking

1. How many drinks do you think you could have before you would not be able to drive safely?

2. What factors may limit your body's ability to absorb and tolerate alcohol?

   > How long does it take for alcohol to be out of your system?

Knowledge of the effect of sex differences on drinking

3. Have you ever felt peer pressure to consume more alcohol when you are socializing with females? With males?

4. Within 3-4 hours, how many drinks can you consume before you cannot safely drive? How many can men? By a drink we mean half an ounce of absolute alcohol, such as a 12 ounce can or glass of beer or cooler, a 5 ounce glass of wine, or a drink containing 1 shot of liquor.

5. Do you think that women are as impaired as men after consuming the same amount of alcohol?

   > What are some ways that alcohol affects men and women differently?

Attitudes/beliefs about drinking and driving

6. Do your friends or family ever drink and drive?

7. Is drinking and driving a concern to you? And, why?

Experiences driving after having consumed alcohol

8. Do you have experience with driving after consuming alcohol? (OR have you driven after consuming alcohol?)

   > In the past, what circumstances have led you to drive after consuming alcohol?

   > Was there anyone in the vehicle with you?

   > What did you think about driving after drinking the following day?

Experiences being a passenger with a drinking driver

9. Have you ever been a passenger in a vehicle with a driver who has been drinking? Was this person a family member or friend?

   > What circumstances led you to accept a ride with a drinking driver?

   > How did you feel when you were in the car with the drinking driver? Were you concerned, and if so what concerns did you have?

   > Were there any other passengers in the vehicle with you?

   > The following day, what did you think about being a passenger in the vehicle?

Factors that contribute to the risk of driving after drinking or riding as a passenger with a drinking driver

10. What are some of the factors that influenced you to drink and drive or ride as a passenger with a drinking driver?

    > What types of public transportation are available to you in your community? Does the availability and cost of public transportation or your concern for personal safety when using public transportation affect your decision?

    > Were any safe places available for you to stay? For your vehicle?

    > Would the location, the time of day, the distance or the circumstances influence you to drive after drinking or ride as a passenger with a drinking driver?

Factors that would lessen the risk of drinking and driving and or riding as a passenger with a drinking driver

11. In the past, what strategies have you used to avoid drinking and driving or riding as a passenger with a drinking driver?

12. What things could help you or others to avoid drinking and driving or riding as a passenger with a drinking driver?

Closing Question:

13. What would be the most helpful tool for women living in smaller communities to avoid drinking and driving or riding as a passenger with a drinking driver?

APPENDIX B – DEMOGRAPHIC QUESTIONNIARE

Women's Perceptions and Experiences of Drinking and Driving in Ontario

Demographic Questionnaire

Thank you for participating in this study on women's perceptions and experiences of drinking and driving in Ontario. This project is being conducted by the Ontario Women's Health Network and the Traffic Injury Research Foundation and is funded by Beer Canada through the 'Change the Conversation' program (www.changetheconversation.ca), a TIRF national education program that is available at no cost to communities about drinking and driving.

The following questions are to collect demographic information for statistical purposes. All information that you provide is voluntary and anonymous. This information will help us better understand the participants in this project.

1. How old are you? *(Check one only)*

   ☐ Under 25   ☐ 35-44
   ☐ 25-34   ☐ 45 or over

2. How do you identify your ethno-cultural background? *(Please fill in below)*

   _____

3. What is the population size of your community?

   ☐ Less than 5,000   ☐ 25,001-45,000
   ☐ 5,000-25,000   ☐ More than 45,000

4. What is the highest level of education or equivalency that you completed? *(Check one only)*

   ☐ Some high school or less
   ☐ High school graduate or high school equivalency
   ☐ Some college, university or trade school
   ☐ College, university or trade school graduate
   ☐ Graduate degree or other advanced degree

5. What is your employment status? *(Check all that apply)*

   ☐ Full-time
   ☐ Part-time / Temporary / Casual / Contract / Seasonal
   ☐ Not currently employed
   ☐ Student
   ☐ Retired
   ☐ Other, please specify: _____

Continue to next page

6. Which of the following best describes your family status?

☐ Single, never married
☐ Married (or living with a partner)
☐ Separated or Divorced
☐ Widow

7. Do you have children?

☐ No children
☐ Yes, and all are over the age of 18
☐ Yes, and some or all are under the age of 18

> The following questions ask about your personal alcohol use. Throughout these questions, by 'drink' we mean half an ounce of absolute alcohol (e.g. a 12 ounce can or glass of beer or cooler, a 5 ounce glass of wine, or a drink containing 1 shot of liquor).

8. During the last year, how often did you drink alcohol? *(Choose only one)*

☐ Few times per month
☐ Few times per week
☐ Daily

9. During the last year, on occasions when you did drink, how many drinks did you usually have?

☐ 1-4 drinks
☐ 5-8 drinks
☐ More than 9

10. On occasions that you drink, how many drinks do you usually consume in one hour?

☐ Less than 1 drink   ☐ 2-3 drinks
☐ 1 drink   ☐ 4 or more

11. Are there occasions (e.g. holidays / special events) that you drink more than your typical amount? If yes, on these occasions, how many drinks do you usually consume? **If no, SKIP to question 12.**

☐ 1-4 drinks
☐ 5-8 drinks
☐ More than 9

Continue to next page

The following questions are about your experiences with drinking and driving or riding as a passenger with a driver who has been drinking.

12. Within the past year, how many times have you driven after drinking when you were probably not safe to drive?

☐ None ☐ 4-6 times
☐ 1-3 times ☐ More than 6

13. Within the past year, how many times have you been a passenger of a driver who has been drinking when he/she were probably not safe to drive?

☐ None ☐ 4-6 times
☐ 1-3 times ☐ More than 6

14. If you answered one or more in question 12 and/or 13, typically where were you or the driver doing most of the drinking?

☐ Bar/ Restaurant ☐ Party
☐ Own home ☐ Other, please specify:
☐ Friend/Relative's house _____

15. If you answered one or more in question 12 and/or 13, typically, with whom were you doing most of the drinking?

☐ Alone ☐ Acquaintances or colleagues
☐ Life-partner and/or family ☐ Other, please specify:
☐ Close friends _____

End of demographic survey

APPENDIX C – JURISDICTIONAL DESCRIPTIONS

Sudbury and the Greater Sudbury Area

Demographics

> The area Greater Sudbury is 3,410.62 Km^2. The population density per square kilometer is 47.1. The average Ontario population density is 14.1. According to the 2011 Statistic Canada Census, the population of the Greater Sudbury area was 160, 770 in 2011 and 158,258 in 2006, a 1.6% population change. The median age of the population is similar to that of Ontario, 42.3 and 41.3 respectively.

> The proportion of men and women is similar in Sudbury. The age group most predominant among both men and women is age 50 to 64. The majority of the population is married or living with a common-law partner (2011 Census, Statistics Canada).

Alcohol use

> According to the statistics from the Sudbury & District Health Unit (SDHU), in 2013/2014, a significantly higher proportion of females than males follow the Low-Risk Alcohol Drinking Guidelines[1], 73% and 54%, respectively. The SDHU covers the Greater Sudbury and the surrounding Sudbury District as well as Manitoulin District. The prevalence rate of drinking more than the recommended guidelines is higher for men than for women (SDHU, 2016).

Impaired driving

> In 2011, the number of impaired driving charges in Greater Sudbury was 206, a rate of 126 per 100,000 populations. The percent change in rate from 2001 to 2011 in Sudbury declined by 19% (Perreault, 2013).

> Out of the 16,132 vehicles checked during the Greater Sudbury Police RIDE program in 2014, 20 were charged with impaired driving/over 80 and refusal charges (0.14%). The year before, 12,130 vehicles were checked and 17 were charged with impaired driving/over 80 and refusal charges (0.14%). Although only a small number of charges were laid, the percentage change from 2013 to 2014 was 16% (CBC, June 2015).

Ottawa area

Demographics

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[1] Canada's Low-Risk Alcohol Drinking Guideline provides suggestions for Canadians to follow to reduce their risk of the effects of alcohol, including "10 drinks a week for women, with no more than 2 a day most days; 15 drinks a week for men, with no more than 3 drinks a day most days."

> The area of Ottawa is 2,790.22 km². The population density per square kilometer is 316.6. The average Ontario population density is 14.1. The population of Ottawa was 812,129 in 2006 and was 883,391 in 2011, an 8.8% population change. The median age of the population is lower to that of Ontario, 39.2 and 41.3 respectively (Statistics Canada, 2012).

> The age group most predominant among both men and women is age 45 to 49. The majority of the population is married or living with a common-law partner (Statistics Canada, 2012).

Alcohol use

> According to the Canadian Community Health Survey, between 2011 and 2012, 44% of Ottawa adults reported binge drinking. This percentage is significantly higher than adults in the rest of Ontario (37%).

> Men were more likely than women to report binge drinking at least once in the past year, 55% and 34%, respectively. Men were also more likely to exceed the recommended weekly consumption limits compared to women, 40.5% and 24% respectively (Ottawa Public Health, 2013).

Impaired driving

> In 2011, Ottawa had the lowest impaired driving rates compared to 32 other census metropolitans in Canada. The number of impaired driving charges in 2011 in Ottawa was 827, a rate of 87 per 100,000 populations. The percent change in rate from 2001 to 2011 in Ottawa declined by 41% (Perreault, 2013).

Owen Sound

Demographics

> The area of Owen Sound is 628.58 km². The population density per square kilometer is 51.1. There were 21,688 people living in Owen Sound in 2011. In 2011, the percentage of the population age 65 and over is higher in Owen Sound (21.1%) than the national percentage (14.8%). The majority of the population (58.7%) age 15 and over were either married or living with a partner in 2011 (Statistics Canada 2012).

Alcohol use

> One in four residents of Grey Bruce self-report drinking four to five alcoholic drinks on one occasion at least once per month. Each year between 2000 and 2014, Grey Bruce residents reported higher rates of heavy drinking than the Ontario average. For example, in 2013/14, 22.7% of residents reported regular heavy drinking while only 16.7% of Ontarians reported regular heavy drinking (Grey Bruce Health Unit 2016).

> Women (14.6%) report lower rates of regular heavy drinking than their male (30.8%) counterparts. Regular heavy drinker is relatively stable between ages 12-64 but tampers off for those older than 65 (Grey Bruce Health Unit 2016).

Impaired driving

> According to the Grey Bruce Health Unit (2011), 6.3% of Grey Bruce residents age 18 or older report driving after operating a motor vehicle after drinking two or more alcoholic drinks.

Brantford

Demographics

> Brantford is 72.47 km^2. The population density per square kilometer is 72.47. According to the 2011 Statistic Canada Census, the population of Brantford was 93,650 in 2011 and 90,192 in 2006, a 3.8% population change. The median age of the population is similar to that of Ontario, 40.1 and 40.4 respectively (Statistics Canada, 2011).

> The proportion of men and women is similar in Brantford. The age group most predominant among both men and women is age 45 to 49. The majority of the population is married or living with a common-law partner (Statistics Canada, 2011).

Alcohol use

> According to Brant Public Health Unit, 16% of Brant residents age 18 or over engage in heavy drinking (Shields & Tremblay 2002).

Guelph

Demographics

> The area of Guelph is 593.52 km^2. The population density per square kilometer is 237.7. There were 121,688 people living in Guelph in 2011. The percentage of the population age 65 and over in 2011 was lower in Guelph (13.4%) than the national percentage (14.8%). The majority of the population (59.2%) age 15 and over were either married or living with a partner in 2011 (Statistics Canada, 2011).

Alcohol use

> In 2012, a higher proportion of residents from Wellington-Dufferin-Guelph reported drinking within the past month than the average for Ontario. Of the residents of Guelph, 83% reported drinking in the last 12 months. The proportion of residents from Wellington-Dufferin-Guelph in 2013 that exceeded the daily and weekly limit of low-risk alcohol use was 32% for men and 24% for women (Public Health Wellington-Dufferin-Guelph, 2015).

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