Driving After Drinking in Canada
Findings from the Canadian Addiction Survey

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ABSTRACT

Background: Despite substantial decreases in the magnitude of the alcohol-crash problem over the past 25 years, many Canadians continue to drive under the influence of alcohol, causing thousands of serious injuries and deaths every year.

Methods: Data from the 2004 Canadian Addiction Survey (CAS) were used to determine the prevalence of self-reported driving after drinking and the characteristics of those who engage in the behaviour.

Results: Overall, 11.6% of licensed drivers in Canada reported operating a vehicle within an hour of consuming two or more drinks containing alcohol. Less than 5% of licensed drivers accounted for 86% of the more than 20 million (estimated) past-year drinking and driving occurrences. Drinking Drivers reported more extensive and problematic use of alcohol, and were more likely to report illegal drug use relative to Non-drinking Drivers.

Conclusion: Driving after drinking remains a common behaviour among Canadian drivers. Those who persist in driving after drinking can be distinguished from other drivers on the basis of their greater use of alcohol and drugs. Those who drive after drinking frequently consume even greater quantities of alcohol on more frequent occasions and are more likely to experience problems as a result of their drinking. These findings suggest that countermeasure efforts need to be continued on all levels and expanded to specifically target high-risk heavy drinkers.

MeSH terms: Alcohol drinking; accidents traffic; risk taking

During the 1980s, the magnitude of the alcohol-crash problem in Canada decreased substantially. In 1982, 60% of drivers killed in road crashes in Canada tested positive for alcohol; by 1990, the percent of driver fatalities involving alcohol had decreased to 43%.1,2 Subsequent decreases have been small and inconsistent. In 2004, 3,012 drivers were involved in serious injury crashes and 815 people died in collisions involving a drinking driver in Canada.3 Clearly, alcohol continues to be a major factor in motor vehicle fatalities and injuries.

Self-report surveys reveal a similar pattern in the prevalence of drinking-driving behaviour. In a national household survey conducted by Transport Canada in 1983, 51.8% of current drinkers reported operating a vehicle within two hours of consuming alcohol within the past 30 days.4 The 1988 National Survey on Drinking and Driving found 24.6% of current drinkers reported driving within an hour of having two or more drinks within the past 12 months;5 one year later, the National Alcohol and Drug Survey reported 18.8% had done so.6 In 1994, the Canadian Alcohol and Drug Survey reported that 20.5% of current drinkers had driven after drinking within the past 12 months.7

This paper uses data from the Canadian Addiction Survey (CAS) to provide a contemporary estimate of the extent of driving after drinking in Canada and to describe the characteristics of those who persist in driving after drinking in a climate where such behaviour is widely censured.

METHOD

The Canadian Addiction Survey (CAS)8 is a telephone survey conducted in late 2003 and early 2004 on behalf of the Canadian Centre on Substance Abuse, Health Canada, and the Canadian Executive Council on Addictions.* The CAS is based

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Population Estimates of Demographic Characteristics of Drinking and Non-drinking Drivers

<table>
<thead>
<tr>
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<th>Drinking Drivers (95% CI)</th>
<th>Non-drinking Drivers (95% CI)</th>
<th>Test*</th>
<th>Signif</th>
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<tbody>
<tr>
<td>% Male</td>
<td>78.1 (70.8 – 84.0)</td>
<td>45.6 (42.3 – 49.4)</td>
<td>OR=4.22</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>% Married/Partnered†</td>
<td>49.4 (40.9 – 58.0)</td>
<td>62.5 (59.0 – 65.9)</td>
<td>OR=0.55</td>
<td>p&lt;0.01</td>
</tr>
<tr>
<td>% Employed FT†</td>
<td>63.3 (54.4 – 71.4)</td>
<td>48.9 (45.4 – 52.5)</td>
<td>OR=1.57</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>Mean Personal Income ($1000)</td>
<td>38.3 (34.2 – 43.3)</td>
<td>33.3 (31.1 – 35.3)</td>
<td>F=4.54</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>% Drive Daily</td>
<td>92.6 (85.7 – 96.3)</td>
<td>81.7 (78.7 – 84.3)</td>
<td>OR=2.66</td>
<td>p&lt;0.01</td>
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* All tests (except the first) control for sex.
† There was also a significant interaction of sex and drinking driving status (F=4.54, p<0.05) indicating the age difference between Drinking Drivers and Non-drinking Drivers is found only among females.
‡ Odds Ratio for Married/Partnered is relative to Previously Married/Never Married.
§ Odds Ratio for Employed Full-Time is relative to all other employment categories, including part-time, unemployed, retired, student.

Drinker Categories of Drinking and Non-drinking Drivers

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<tr>
<td>Light-Infrequent</td>
<td>20.6% (15.0 – 27.7)</td>
<td>50.1% (46.5 – 53.6)</td>
</tr>
<tr>
<td>Light-Frequent</td>
<td>49.0% (40.5 – 57.6)</td>
<td>37.7% (34.2 – 41.3)</td>
</tr>
<tr>
<td>Heavy-Infrequent</td>
<td>5.4% (3.2 – 9.0)</td>
<td>6.0% (4.7 – 7.7)</td>
</tr>
<tr>
<td>Heavy-Frequent</td>
<td>24.9% (18.6 – 32.5)</td>
<td>6.2% (4.6 – 8.4)</td>
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χ²=228.96, df=3, p<0.001

RESULTS

Respondents indicating that they had driven within an hour of consuming two or more drinks at least once in the past 12 months were designated “Drinking Drivers”, representing 11.6% (95% CI: 9.9-13.6) of the population of licensed drivers or 14.5% (12.3-16.9) of the population of non-abstaining licensed drivers.

Among the 11.6% of licensed drivers who reported driving after drinking, most said they did so infrequently. Over half (54.8%) reported doing so on only one or two occasions in the past year; 11.7% did so more than once a month. Based on the reported frequency of the behaviour, it is estimated that Canadian drivers drove after drinking on over 20 million occasions in the year prior to the survey. Despite the overall prevalence of the behaviour, the data indicate that 86% of all reported drinking-driving trips were accounted for

on a two-stage (telephone household, respondent) random sample of 13,909 residents of Canada 15 years of age and older. Variance estimates and confidence intervals have been adjusted for design effects. Weights have been applied based on 252 population classes, stratified by the 21 regional areas by six age groups and by sex to yield a sample that is representative of the Canadian population aged 15 and older. Detailed information on the sample and methods is published elsewhere. The response rate was 47%.

Questions on driving after drinking were included in one of three panels of the sample (n=4,639). Respondents who reported consuming alcohol in the past year, possessed a driver’s licence, and reported driving a motor vehicle in the past year were asked how frequently they had operated a vehicle within one hour of consuming two or more drinks containing alcohol. Responses to this question were used to distinguish between those who did (n=426) and did not (n=2,516) drive after drinking. Those who refused (n=4) or did not know (n=23) were dropped from subsequent analyses.

All survey participants (n=13,909) were asked basic demographic information and detailed questions about their use of alcohol, cannabis, and other drugs.
by less than 5% of licensed drivers in Canada.

**Demographic characteristics**

Table I compares the demographic characteristics of Drinking Drivers to those of non-abstaining drivers who do not drive after drinking – i.e., Non-drinking Drivers. Drinking Drivers are more likely than Non-drinking Drivers to be male and less likely to be married. Drinking Drivers are generally younger than Non-drinking Drivers, but the age difference is only evident among females. Drinking Drivers are also more likely to have a full-time job and to have significantly higher average annual income.

**Alcohol and drug use**

Drinking and Non-drinking Drivers also differed considerably in terms of the extent of their alcohol consumption. Table II compares five different measures of drinking as well as reported cannabis and other illegal drug use between Drinking Drivers and Non-drinking Drivers. Drinking Drivers drink more frequently and consume greater quantities of alcohol. They also report having consumed five or more drinks on more occasions in the past year than Non-drinking Drivers.

Drinking Drivers also have significantly higher AUDIT scores than Non-drinking Drivers. In fact, 40% of Drinking Drivers score 8 or higher on the AUDIT compared with 10% of Non-drinking Drivers.

Table III shows that Drinking Drivers are more likely than Non-drinking Drivers to be classified as light-frequent (49.0% vs. 37.7%) and heavy-frequent drinkers (24.9% vs. 6.2%). This suggests that the frequency of alcohol consumption contributes to the likelihood of driving after drinking more than the quantity of consumption. It is, however, the quantity of alcohol consumed that determines the extent of the risk associated with any given drinking-driving occasion; therefore, those Drinking Drivers who not only drink frequently but also heavily (i.e., Heavy-Frequent Drinkers), must be considered a particularly high-risk group.

**Frequent Drinking Drivers**

In light of the finding that most drinking-driving trips are accounted for by only a small proportion of all drivers, a comparison between those who drink and drive frequently (i.e., 12 or more times in the past 12 months) and those who do so less often seemed warranted.

Although males are more likely to drink and drive than females (see Table I), they are particularly over-represented among Drinking Drivers who engage in the behaviour frequently. Males represent 93.6% of Frequent Drinking Drivers compared with just 76.1% of Infrequent Drinking Drivers (OR = 4.6, 95% CI = 1.7-12.3). Frequent Drinking Drivers are also more likely to drive daily or almost daily (98.8%) compared with Infrequent Drinking Drivers (91.7%) (OR=7.75, 95% CI = 1.5-40.0).

The most striking differences between Frequent and Infrequent Drinking Drivers concern their reported drinking behaviour. Table IV shows various measures of alcohol consumption for the two groups. Frequent Drinking Drivers reported drinking more on days per month than Infrequent Drinking Drivers. There was also a tendency for Frequent Drinking Drivers to report consuming a greater number of drinks in the week prior to the survey (p<0.10) and to report more days on which they consumed five or more drinks in the past year (p<0.10). Frequent Drinking Drivers had higher mean AUDIT scores than Infrequent Drinking Drivers, indicating a greater likelihood of experiencing alcohol-related problems.

**CONCLUSION**

This paper adds to the existing literature by providing a contemporary estimate of the prevalence and persistence of drinking-driving behaviour. It documents the drinking patterns, level of harmful alcohol consumption, and the extent of drug use among those who report driving after drinking. Using self-reported frequency, the paper shows that a small group of drivers accounts for an overwhelming proportion of all drinking-driving behaviour and documents differences between frequent and infrequent drinking drivers.

The findings are constrained by the limitations inherent in many self-report surveys such as the CAS. First, the response rate was 47%. Those who engage in drinking-driving and/or use illicit substances may be less likely than others to participate in this type of survey. Second, although the absence of a driver’s licence does not necessarily preclude driving, those who did not have a driver’s licence were not asked the question about driving after drinking. In addition, the current climate of social disapproval of drinking after driving may have resulted in greater reluctance to report engaging in this behaviour. Overall, these factors limit the generalizability of the results and most likely lead to an underestimate of the true extent of drinking-driving behaviour.

Nevertheless, the data from the CAS provide a contemporary estimate of the prevalence of drinking and driving that is comparable to those from previous surveys. Despite the substantial and encouraging reductions in drinking and driving over the past 25 years, it remains of considerable concern that in the face of ongoing public awareness campaigns, enforcement efforts, and even more stringent laws to discourage the behaviour, almost 12% of licensed drivers in Canada continue to drive after drinking. It is clear from these results that those who persist in driving after drinking differ from the general population of drivers in Canada along a number of demographic, social and behavioural dimensions. The most distinguishing characteris-

**TABLE IV**

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<td>No. Days Drinking Past Month</td>
<td>17.5 (12.0 – 23.0)</td>
<td>10.3 (8.5 - 12.0)</td>
<td>F=6.05</td>
<td>p&lt;0.02</td>
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<td>No. Drinks Past Week</td>
<td>13.7 (7.5 – 19.9)</td>
<td>7.7 (6.4 – 9.1)</td>
<td>F=3.39</td>
<td>p&lt;0.10</td>
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<td>Days 5+ Drinks Past Year*</td>
<td>3.4 (2.6 – 4.1)</td>
<td>2.7 (2.4 – 3.0)</td>
<td>F=2.89</td>
<td>p&lt;0.10</td>
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<td>Mean AUDIT Score†</td>
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* Response scale ranges from 1=“Never” (past 12 months) to 6=“More than once a week”.† Scores of 8 or higher are considered to identify those with “Hazardous and Harmful Drinking Patterns”.

This paper adds to the existing literature by providing a contemporary estimate of the prevalence and persistence of drinking-driving behaviour. It documents the drinking patterns, level of harmful alcohol consumption, and the extent of drug use among those who report driving after drinking. Using self-reported frequency, the paper shows that a small group of drivers accounts for an overwhelming proportion of all drinking-driving behaviour and documents differences between frequent and infrequent drinking drivers.

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tics of Drinking Drivers are their patterns of alcohol consumption. Drinking Drivers report drinking more often and in greater quantities than Non-drinking Drivers. They are also more likely to drink at hazardous or harmful levels. It is this heavy pattern of alcohol consumption, combined with daily or almost daily driving, that places these drivers at high risk of crash involvement. The more prevalent use of illegal drugs among Drinking Drivers is also indicative of a tendency to engage in other high-risk behaviours and may place these individuals at risk of driving after consuming drugs or a combination of alcohol and drugs.

The CAS data also demonstrate that some Canadians report driving after drinking frequently. Indeed, a substantial proportion of all drinking-and-driving occasions is accounted for by only a small group of drivers. Persons who frequently drive after drinking can be distinguished from occasional Drinking Drivers on the basis of their heavier and more frequent pattern of alcohol consumption. This is consistent with a large body of research highlighting the significance of a “hard core” group of Drinking Drivers who are responsible for a disproportionately large share of alcohol-related serious crashes.13-15

The CAS data demonstrate a need to continue countermeasure efforts at all levels – prevention, enforcement, sanctions, and rehabilitation – to deal effectively with the alcohol-crash problem. This includes general awareness and prevention measures targeted at all drivers, as well as specific measures focused on frequent and heavy drinkers who appear to be at considerable risk of engaging in the behaviour. Mass media campaigns implemented in conjunction with ongoing prevention activities have a demonstrable beneficial effect.16 Credible deterrence through high-profile random spotchecks increases the perceived and actual risk of apprehension and has proven effective.17 Sanctions must be swift, certain, and sufficiently severe to deter subsequent offences. Administrative licence suspensions imposed at the time of the offence also have demonstrated effectiveness.18,19 Short-term administrative suspensions for drivers with BACs below 80 mg/dL (currently 12 to 24 hours) could be extended and should include further licence actions as well as a requirement for alcohol screening following subsequent violations.20 The use of alcohol ignition interlocks to prevent drinking drivers from operating a vehicle could be expanded and made mandatory for all offenders.21 Initial screening of alcohol offenders and appropriate follow-up assessment and rehabilitation where warranted is necessary to deal with the level of alcohol abuse that contributes heavily to the problem. In addition, brief interventions in emergency rooms have proven effective22 and this approach could be extended to other interactions with health care providers to enhance the impact by providing a point of early intervention.

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Ask your Medical Officer of Health about your role during a pandemic influenza.