THE PRESENCE OF ALCOHOL AND/OR DRUGS IN MOTOR VEHICLE FATALITIES, BY JURISDICTION: CANADA, 2013

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Introduction

The goal of this document is to provide general estimates of the number and percentage of motor vehicle crash deaths in Canada that involve alcohol alone, drugs alone, and both alcohol and drugs. As outlined below, this has proven to be a very complicated task.

First, the latest national data are from 2013, with the exception of the British Columbia data which are only current to 2010.[1] Second, there is no information on total motor vehicle deaths, but rather only those resulting from crashes on public roads involving at least one highway vehicle. Third, information on the presence of alcohol and/or drugs among crash victims is largely limited to drivers of highway vehicles who died within 30 days of a collision on a public road. There are no comparable alcohol and drug data on:

- drivers dying in crashes involving only snowmobiles, ATVs, farm tractors, dirt bikes, and bicycles;
- drivers of highway vehicles dying more than 30 days after a collision;
- drivers of highway vehicles dying in collisions occurring on private property, Crown land, military bases, or roads administered by First Nations; and
- pedestrians, passengers or others killed in traffic crashes.

Consequently, several assumptions had to be made in estimating even in regard to crash deaths on public roads involving a highway vehicle. For example, to make up for the missing 2013 British Columbia data, we used the province's 2010 data. Similarly, in order to estimate the presence of alcohol and/or drugs in all fatal crashes on public roads involving a highway vehicle, we applied the percentage breakdown among the aforementioned subcategory of drivers (*i.e.* drivers of highway vehicles dying within 30 days of a collision on a public road) to the total crash deaths occurring within 12 months. The notes accompanying the two Charts provide a more detailed explanation of our calculations and the sources upon which we relied.

While the Charts are based on the best available and most current Canadian data, it must be acknowledged that the data are neither particularly good nor current. We relied on the *Alcohol and Drug-Crash Problem in Canada: 2013 Report*[2] prepared by the Traffic Injury Research Foundation (TIRF). In turn, this document is based on the *National Fatality Database* developed by TIRF in conjunction with the provincial and territorial coroners, medical examiners and police authorities.

The *National Fatality Database* is subject to several major limitations and qualifications. First, it does not provide detailed information on total motor vehicle deaths, but rather only those resulting from crashes on public roads. Second, the definition of an "alcohol-related crash death" in Québec is narrower than that used in other jurisdictions.[3] Third, the rates of testing for alcohol varied among the

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[1] Traffic Injury Research Foundation (TIRF), *Alcohol and Drug-Crash Problem in Canada: 2013 Report* (Ottawa: Canadian Council of Motor Transport Administrators (CCMTA), 2017) at 4 and 5 [*Crash Problem, 2013*].

[2] *Ibid.*

[3] In the absence of blood-alcohol evidence, a crash will only be considered alcohol related in Québec if the police

types of victims (drivers, passengers and pedestrians) and among the jurisdictions. While 97% of fatally-injured drivers and 81% of fatally-injured pedestrians were tested for alcohol in Alberta, the comparable testing rates in Québec were 76% and 40%, respectively.[4] Detailed drug data were only available for fatally-injured drivers and, as in the case of alcohol, the testing rates for drugs varied among the jurisdictions.[5]

Perhaps of greatest concern, however, is that the *National Fatality Database* likely understates the total number of alcohol-related crash deaths. For instance, if an impaired driver crashes into a vehicle, killing its sober driver and two occupants, it is only the dead sober driver's blood-alcohol concentration (BAC) that is reported in the *National Fatality Database*. Unless the police obtain BAC evidence from the surviving impaired driver, or otherwise record that the surviving driver had been drinking,[6] all three deaths would be recorded as being non-alcohol related. Similar problems arise when drinking drivers survive crashes in which they kill sober passengers, pedestrians or bicyclists.

Moreover, even if the police strongly suspect that a surviving driver is impaired by alcohol, it is extremely difficult for them to obtain BAC evidence, particularly if the driver is taken to a hospital. Thus, relatively few hospitalized impaired drivers are charged with, or convicted of, a federal impaired driving offence. For example, a 2004 British Columbia study involving six hospitals found that only 11% of hospitalized drivers with BACs of more than .08% were convicted of any *Criminal Code* impaired driving offence, despite the fact that the average BAC of the alcohol-positive drivers was .156%.[7] Similarly, only 16% of alcohol-impaired drivers admitted to an Alberta tertiary care trauma centre following a crash between 1995 and 2003 were convicted of any federal impaired driving offence, even though their average BAC was .19% or almost 2½ times the *Criminal Code* limit.[8]

The authors of the *Crash Problem, 2013* stated that in order to address the underreporting

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conclude that alcohol, rather than a long list of other factors, was "a probable cause" of the crash. *Ibid* at 9.

4 *Ibid* at 6, "Figure 2-2 Percent of Fatally Injured Drivers Tested for Alcohol: Canada, 2013;" and *ibid* at 7, "Figure 2-3 Percent of Fatally Injured Pedestrians Tested for Alcohol: Canada, 2013."

5 For example, drug-testing rates among fatally-injured drivers ranged from 96% in Manitoba to 36% in Newfoundland and Labrador. *Ibid* at 12, "Figure 2-4 Percent of Fatally Injured Drivers Tested for Drugs: Canada, 2013."

6 Canadian research indicates that the police frequently fail to detect and report the presence of alcohol. See for example, E. Vingilis, E. Adlaf & L. Chung, "Comparison of Age and Sex Characteristics of Police-Suspected Impaired Drivers and Roadside-Surveyed Impaired Drivers" (1982) 14 Accident Analysis and Prevention 425; and E. Vingilis & V. Vingilis, "The Importance of Roadside Screening for Impaired Drivers in Canada" (1987) 29 Canadian Journal of Criminology 17 at 22-25. Although these sources are dated, police underreporting remains problematic, particularly in Québec.

7 R. Purssell *et al.*, "Proportion of injured alcohol-impaired drivers subsequently convicted of an impaired driving criminal code offence in British Columbia" (2004) 6(2) Canadian Journal of Emergency Medicine 80 at 80.

8 M. Goecke *et al.*, "Characteristics and conviction rates of injured alcohol-impaired drivers admitted to a tertiary care Canadian Trauma Centre" (2007) 30(1) Clinical and Investigative Medicine 26 at 26.

problem, the *National Fatality Database* is supplemented "with any other evidence of alcohol … from either the coroner's report or from the police collision report."[9] However, it is difficult to see how this supplemental evidence would significantly ameliorate the underreporting problem. In contrast, American researchers have undertaken studies to develop "multipliers" to more fully account for the underreporting of alcohol involvement in crashes.[10] Similar underreporting issues arise in drug-related crashes.

It must be emphasized that the Charts document the presence of alcohol and/or drugs and not their causal role, if any, in the fatal crashes. However, there is detailed information on the BAC of alcohol-positive deceased drivers and pedestrians which indicates that most were likely very impaired.[11] Unfortunately, there is no comparable information on the percentage of drug-positive drivers who were impaired or otherwise adversely affected by drugs at the time of the crash.[12] Given the preceding concerns, the Charts should be seen as providing a general estimate of the presence of alcohol and/or drugs in fatal crashes on public roadways involving a highway vehicle.

Conclusion

As outlined in Chart I, there were an estimated 2,430 motor vehicle fatalities on public roads involving a highway vehicle in 2013, and alcohol and/or drugs were involved in 59.7% (1,451) of the fatalities. These figures do not include alcohol and/or drug-related fatalities occurring in crashes off of a public road or in crashes involving only ATVs, snowmobiles, farm tractors, and other non-highway vehicles. Nor do the figures include alcohol and/or drug fatalities involving boats and other vessels, railroad equipment and aircraft.

In recent years, MADD Canada has estimated that more than 1,000 Canadians a year are

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[9] *Crash Problem, 2013*, *supra* note 1 at 9.

[10] T. Miller *et al.*, "Underreporting of Driver Alcohol Involvement in United States Police and Hospital Records: Capture-Recapture Estimates" (2012) 56 Annals of Advances in Automotive Medicine 87; and E. Zaloshnja *et al.*, "Costs of Alcohol-Involved Crashes, United States, 2010" (2013) 57 Annals of Advances in Automotive Medicine 3.

[11] For example, 56% of the alcohol-positive drivers of highway vehicles dying within 30 days of a crash in 2013 had BACs in excess of .16% and 22% had BACs between .081% and .160%. *Crash Problem, 2013*, *supra* note 1 at 16, "Table 3-2 Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Canada, 2013." Similarly, 66% of alcohol-positive dead pedestrians had BACs in excess of .16% and 26% had BACs between .081% and .160%. *Ibid* at 25, "Table 3-4 Alcohol Use Among Fatally Injured Pedestrians: Canada, 2013."

[12] However, there are some limited data on the drug concentrations among fatally-injured drivers, and drivers subject to roadside oral fluid testing in some provinces. See respectively, M. Brault *et al*., "The Contribution of Alcohol and Other Drugs Among Fatally Injured Drivers in Quebec: Final Results" in P. Williams & A. Clayton, eds., *Proceedings of the 17th International Conference on Alcohol, Drugs and Traffic Safety,* Glasgow, 8-13 August 2004, CD-ROM (Glasgow: International Council on Alcohol, Drugs and Traffic Safety, 2004); and D. Beirness & E. Beasley, *Alcohol and Drug Use Among Drivers: British Columbia Roadside Survey 2010* (Ottawa: Canadian Centre on Substance Abuse (CCSA), 2011). The authors of the last study indicated that the vast majority of cannabis-positive drivers had THC levels that would impair "their ability to operate a motor vehicle safely." *Ibid* at 12 and 13.

killed in impairment-related transportation crashes. This estimate appears to be reasonably consistent with the available 2013 crash data.

Chart I: The Presence of Alcohol and/or Drugs in Fatal Crashes on Public Roads Involving a Highway Vehicle: Canada, 2013[13]

	Total No. of Crash Deaths[14]	% and No. of Fatalities Involving Alcohol Alone[15, 16]		% and No. of Fatalities involving Drugs Alone[15, 16]		% and No. of Fatalities Involving Both Alcohol & Drugs[15, 16]	
CAN	2,430	15.2%	369	28.1%	683	16.4%	399
AB	405	12.6%	51	31.1%	126	24.1%	98
BC[17]	423	15.2%[18]	64	28.1%[18]	119	16.4%[18]	69
MB	103	19.6%	20	30.4%	31	8.7%	9
NB	64	12.9%	8	19.4%	12	16.1%	10
NL	43	28.4%	12	0.0%	0	12.5%	5
NS	86	11.6%	10	27.9%	24	9.3%	8
ON	661	11.6%	77	31.6%	209	16.9%	112
PE	17	13.3%	2	0.0%	0	20.0%	3
QC	461	20.1%	93	22.5%	104	12.4%	57
SK	157	21.3%	33	29.2%	46	12.5%	20
NT[19]	4	--	--	--	--	--	--
NU[19]	0	--	--	--	--	--	--
YK[19]	5	--	--	--	--	--	--

[13] Chart I is largely based on *Crash Problem, 2013*, *supra* note 1 at 4, 5, and 43, "Table 3-14 Alcohol and Drug Use Among Fatally Injured Drivers of Highway Vehicles: Canada, 2013." Note that the numbers in the Chart have been rounded.

[14] TIRF reported that a total of 2,007 persons died within 12 months of a collision in Canada, excluding fatalities from British Columbia. *Crash Problem, 2013*, *supra* note 1 at 4 and 5. In order to make up for this missing data, we added the equivalent British Columbia statistics from 2010 to determine the Canadian total.

TIRF only provided 30-day crash death data for the provinces and territories. However, TIRF indicated that the national 30-day crash deaths constituted 84.1% of the national crash deaths occurring within 12 months. Consequently, we used this ratio to calculate the total number of deaths occurring within 12 months for the provinces and territories.

[15] The national 12-month data for victims other than drivers were not broken down in terms of fatalities involving

alcohol alone, drugs alone, and both alcohol and drugs. In order to address this issue, we assumed that the presence of alcohol and/or drugs in all types of crashes was the same as that in crashes involving drivers dying within 30 days of a crash on a public road. This assumption underestimates the presence of alcohol and/or drugs in some types of crashes and overestimates the presence of alcohol and/or drugs in other types. For example, 80% of fatally-injured snowmobile operators, 20% of fatally-injured "off-road vehicle" drivers, and 35.7% of fatally-injured pedestrians in 2013 were positive for alcohol, in contrast to 31.6% of fatally-injured drivers of highway vehicles. *Crash Problem, 2013*, *supra* note 1 at 23, "Figure 3-6d Alcohol Use Among Drivers of Different Vehicle Types: Canada, 2013" and "Figure 3-6e Alcohol Use Among Drivers of Different Vehicle Types: Canada, 2013;" and at 25, "Table 3-4 Alcohol Use Among Fatally Injured Pedestrians: Canada, 2013."

[16] The number of deaths in these three columns is higher than that listed in the *Crash Problem, 2013*, *supra* note 1 at 43, "Table 3-14 Alcohol and Drug Use Among Fatally Injured Drivers of Highway Vehicles: Canada, 2013." First, as the title of Table 3-14 indicates, the data were limited to fatally-injured drivers of highway vehicles. In order to address this gap, we assumed (as explained above in note 15) that the presence of alcohol and/or drugs in other types of crashes was the same as that in crashes involving fatally-injured drivers.

Second, Table 3-14 only included the number of crash deaths in which it was known that alcohol and/or drugs were present. For example, assume that in a given jurisdiction 20 people died in crashes in which it could not be determined if alcohol was involved and that 30 people died in crashes in which it could be determined if alcohol was involved. Assume as well that alcohol was a factor in half of the 30 deaths. Table 3-14 would report the number of alcohol-related crash deaths to be 15 (*i.e.* 30 deaths x 50%), not 25 (*i.e.* 50 deaths x 50%). In other words, the authors did not extrapolate from the percentage of known alcohol and/or drug-positive fatalities to estimate the total number of alcohol and/or drug-related fatalities. In order to provide a more comprehensive estimate, we applied the percentage of known cases to the unknown cases.

Third, as indicated, Table 3-14 only included alcohol and/or drug-positive drivers of highway vehicles dying within 30 days of a collision. In order to estimate the presence of alcohol and/or drugs in all types of crashes, we applied the percentage breakdown from the aforementioned subcategory of drivers dying within 30 days to the total number of crash victims dying within 12 months.

Fourth, the Table did not include alcohol and/or drug-related crash deaths in British Columbia because the provincial data were not available at the time of publication. In order to make up for this missing data, we included the latest British Columbia statistics, which were from 2010.

[17] As indicated, the total crash deaths for British Columbia were based on 2010 data. It should be noted that the province enacted comprehensive alcohol-related roadside administrative licence suspension and vehicle impoundment legislation in 2010 which significantly reduced alcohol-related crashes, deaths and injuries. See S. Macdonald *et al.*, "The impact on alcohol-related collisions of the partial decriminalization of impaired driving in British Columbia, Canada" (2013) 59 Accident Analysis and Prevention 200; and D. Beirness & E. Beasley, "An Evaluation of Immediate Roadside Prohibitions for Drinking Drivers in British Columbia: Findings from Roadside Surveys" (2014) 15 Traffic Injury Prevention 228.

[18] The 2010 British Columbia data were not broken down in terms of the alcohol and/or drug-positive crash victims. We assumed that the presence of alcohol and/or drugs in fatal crashes in British Columbia in 2010 was the same as that among fatally-injured drivers of highway vehicles in the rest of Canada in 2013.

While the percentage of alcohol-positive crash victims in British Columbia was likely lower than the national average, the percentage of drug-positive crash victims in the province likely exceeded the national average. For example, in a national post-mortem study, 45.1% of British Columbia drivers who died in 2008 were positive for drugs, compared to 36.7% for Canada as a whole. E. Beasley & D. Beirness, *Drug Use by Fatally Injured Drivers in Canada (2000-2008)* (Ottawa: CCSA, 2011) at 6. Similarly, a 2013 survey indicated that 11.9% of respondents in British Columbia reported using non-prescription drugs and driving in the past 30 days compared to the national average of 8.6%. B. Jonah, *CCMTA Public Opinion Survey of Drugs and Driving in Canada: Summary Report* (Ottawa: CCMTA, 2013) at 17. British Columbia also had the highest reported incidence of drug offences among the provinces in 2013, as well as the highest average number of reported drug offences from 2003 to 2012. A. Cotter, J. Greenland & M. Karam, *Drug-related offences in Canada, 2013* (Ottawa: Statistics Canada, 2015).

[19] Although we provided an estimate of the total number of crash deaths for each territory, it was not feasible to provide more specific information on the presence of alcohol and/or drugs given the small numbers involved.

Chart II: The Presence of Drugs in Fatal Crashes on Public Roads Involving a Highway Vehicle: Canada, 2013[20]

	Total No. of Crash Deaths[21]	% and No. of Fatalities Involving Drugs or Both Drugs & Alcohol[22, 23]		Most Prevalent Drug	
				No. and % of Fatalities Involving the Most Prevalent Drug[22, 23]	
CAN	2,430	44.5%	1,081	Cannabis	
				530	21.8%
AB	405	55.2%	224	Cannabis	
				102	25.1%
BC[24]	423	44.5%	188	Cannabis	
				94	22.3%
MB	103	39.1%	40	CNS Depressants	
				20	19.6%
NB	64	35.5%	23	Cannabis	
				14	22.6%
NL	43	12.5%	5	Cannabis	
				5	12.5%
NS	86	37.2%	32	Cannabis	
				26	30.2%
ON	661	48.5%	321	Cannabis	
				188	28.4%
PE	17	20.0%	3	Cannabis	
				3	20.0%
QC	461	34.9%	161	Cannabis	
				82	17.7%
SK	157	41.7%	65	Narcotic Analgesics/CNS Depressants	
				26 (each)	16.7% (each)
NT[25]	4	--	--	--	
				--	--
NU[25]	0	--	--	--	
				--	--
YK[25]	5	--	--	--	
				--	--

[20] Chart II is largely based on the same sources as Chart I. See *supra* note 13. However, for the most prevalent category of drugs among fatally-injured drivers, see the *Crash Problem, 2013*, *supra* note 1 at 31, "Table 3-7 Drug Use Among Fatally Injured Drivers of Highway Vehicles: Canada, 2013;" and the corresponding Table for each province and territory. **BC** (p. 59); **AB** (p. 73); **SK** (p. 87); **MB** (p. 101); **ON** (p. 116); **QC** (p. 130); **NB** (p. 145); **NS** (p. 159); **PE** (p. 173); **NL** (p. 187); **YK** (p.197); **NT** (p. 203); and **NU** (p. 206). Note that the numbers in the Chart have been rounded.

[21] See *supra* note 14.

[22] The 12-month data for victims other than drivers were not broken down in terms of the number or percentage of fatalities that involved drugs alone, and both drugs and alcohol. In order to address this gap, we have assumed that the presence of drugs and drugs in combination with alcohol in all types of crashes was the same as that among fatally-injured drivers of highway vehicles dying within 30 days of a crash on a public road. As indicated in note 15, this assumption may underestimate or overestimate the presence of drugs alone, and drugs in combination with alcohol among some types of crashes.

[23] As explained in detail in note 16, the number of deaths in these columns is higher than that listed in the *Crash Problem, 2013*, *supra* note 1 at 43, "Table 3-14 Alcohol and Drug Use Among Fatally Injured Drivers of Highway Vehicles: Canada, 2013."

[24] As indicated in notes 17 and 18, while the percentage of alcohol-positive crash victims in British Columbia was likely lower than the national average, the percentage of drug-positive crash victims was likely higher than the national average.

[25] Although we provided an estimate of the total number of crash deaths in each territory, it was not feasible to provide more specific information on the presence of drugs alone or drugs in combination with alcohol given the small numbers involved.