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The Alcohol and Drug Crash Problem in Canada 2017 Report

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ABSTRACT

This report describes the magnitude and characteristics of the alcohol-crash and drug-crash problems in Canada during 2017, trends in these problems, and comparisons between jurisdictions.

Information contained in this report was drawn from two national databases compiled and maintained by the Traffic Injury Research Foundation (TIRF) and funded by Desjardins Insurance. One database contains information on persons fatally injured in motor vehicle crashes; the other has information on persons seriously injured in motor vehicle crashes.

This report is prepared on behalf of the Canadian Council of Motor Transport Administrators (CCMTA). It examines: data on alcohol in fatally injured drivers and pedestrians; the number and percent of people who died in alcohol-related crashes; alcohol involvement in those crashes in which someone was seriously injured but not killed; and data on drugs in fatally injured drivers.

Thus, in the report, various indicators are used to estimate the magnitude and extent of the alcohol-crash problem and drug-crash problem in Canada during 2017 as well as changes in these problems over the past few years. The indicators include:

- the number and percent of people who were killed in crashes that involved alcohol;
- the number and percent of fatally injured drivers who had been drinking;
- the number and percent of fatally injured pedestrians who had been drinking;
- the number and percent of drivers in serious injury crashes that involved alcohol;
- the number and percent of fatally injured drivers who tested positive for drugs; and,
- the number and percent of fatally injured drivers who tested positive for cannabis.

As well, these indicators are presented separately for each province and territory.

Finally, this report also examines the degree to which there has been a change in: (1) fatalities and serious injuries in collisions involving a drinking driver; and (2) the presence of drugs among fatally injured drivers. Analysis is provided for Canada and each province/territory. Data from the 2016-2017 period are compared to data from the 2011-2015 baseline period.

The opinions expressed in this report are those of the authors and do not necessarily represent the views or opinions of the reviewers, jurisdictions or CCMTA, who commissioned this report.

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1.0 INTRODUCTION

This report describes the magnitude and characteristics of the alcohol-crash and drug-crash problems in Canada during 2017 as well as trends in these problems. It includes data on alcohol in fatally injured drivers and pedestrians as well as data on drugs in fatally injured drivers derived from the *Fatality Database*. For the past two and a half decades, the *Fatality Database*, developed and maintained by the Traffic Injury Research Foundation (TIRF), has provided objective data on alcohol use among persons fatally injured in motor vehicle crashes. Each year, TIRF compiles information from coroners' and medical examiners' files on the results of toxicological tests for alcohol and drugs in the blood of fatally injured drivers and pedestrians. Given a high testing rate for alcohol in all jurisdictions, particularly among fatally injured drivers, the *Fatality Database* has proven a valid and reliable source of descriptive data on the magnitude and characteristics of the alcohol-fatal crash problem, a means for monitoring changes/trends in the problem as well as a valuable tool for research on alcohol-impaired driving. Previously, funding for the maintenance of the Fatality Database and the publication of a related report, The Alcohol-Crash Problem in Canada, was co-funded by Transport Canada and the Canadian Council of Motor Transport Administrators (CCMTA). Presently, the data collection component of the Fatality Database is funded by Desjardins. Publication of this report is sponsored by the Canadian Council of Motor Transport Administrators (CCMTA).

This report also uses supplemental data obtained from police collision reports as well as coroner and medical examiner files to examine the number and percent of people who died in alcohol-related crashes and the number and percent of drivers testing positive for drugs in Canada. Thus, it extends the focus beyond fatally injured drivers to include all persons killed in road crashes, to provide a better indication of the magnitude and nature of the alcohol-crash problem and drug-crash problem.

This report also examines alcohol involvement in those crashes in which someone was seriously injured but not killed. For this purpose, relevant information is derived from a Serious Injury Database that is constructed and maintained by TIRF. Funding for the construction of the *Serious Injury Database* was initially provided by Transport Canada and CCMTA as part of a previous project. The continued support of the *Serious Injury Database* is provided by Desjardins. Since few drivers involved in serious injury crashes are tested for alcohol, a surrogate or indirect measure is used to assess the incidence of alcohol involvement in these crashes.

The report is divided into the following fifteen sections:

Section 2.0 briefly describes the sources of the data – the *Fatality Database* and *Serious Injury Database* – and the various indicators of the alcohol-crash problem and drug-crash problem used in this report.

Section 3.0 provides descriptive data on the incidence of alcohol involvement in fatal and serious injury crashes and drug involvement in fatal crashes in Canada during 2017, trends in these problems, and comparisons of the problems between jurisdictions.

In subsequent sections (**4.0 through 16.0**), descriptive data on alcohol involvement in fatal and serious injury crashes and drug use by fatally injured drivers in each province and territory are summarized. Trends in the problem and comparisons between the 2016-2017 period and the 2011-2015 baseline period are also examined. Caution should be exercised in interpreting some of the numbers and percentages in Sections 4.0 through 16.0 as some of the subgroups examined are small in number.

2.0 DATA SOURCES AND INDICATORS OF THE ALCOHOL-CRASH PROBLEM

Information contained in this report was drawn from two national databases compiled and maintained by TIRF and funded by Desjardins. One database contains information on persons fatally injured in motor vehicle crashes; the other has information on persons seriously injured in motor vehicle crashes. These two sources of information are described in this section of the report.

The section also describes the various indicators that are used to estimate the magnitude and extent of the alcohol-fatal, alcohol-serious injury and drug-fatal crash problems in Canada during 2017 as well as changes in the problem over the past few years. The indicators include:

- the number and percent of people who were killed in crashes that involved alcohol;
- the number and percent of fatally injured drivers who had been drinking;
- the number and percent of fatally injured pedestrians who had been drinking;
- the number and percent of drivers in serious injury crashes that involved alcohol;
- the number and percent of fatally injured drivers who tested positive for drugs; and,
- the number and percent of fatally injured drivers who tested positive for cannabis.

2.1 Sources of the data

Two national databases were used to generate the statistics for this report – the *Fatality Database* and the *Serious Injury Database*. The *Fatality Database* was initially developed in the early 1970s to provide a comprehensive source of objective data on alcohol use among persons fatally injured in motor vehicle crashes occurring on and off public highways in Canada. It is historically intact from 1973 to 2017, inclusive, for seven provinces – British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, and Prince Edward Island. Beginning with 1987, data are available from all jurisdictions in Canada.

The *Serious Injury Database* was initially constructed in the mid-1990s to examine the incidence of alcohol in crashes that involve a serious injury – i.e., a crash that resulted in a person being admitted to a hospital. It was originally used as a means to assess the extent to which the federal-provincial/territorial road safety initiatives *(RSV 2010, RSS 2015, and now RSS 2025)* achieved a reduction in alcohol-related serious injury crashes. Since 1995, relevant information on crashes that involve serious injury has been assembled from all jurisdictions in Canada.

2.1.1 The Fatality Database. The *Fatality Database* consists of case files (records) of persons fatally injured in motor vehicle crashes. Two sources of information provide data for most case files: (1) police reports on fatal motor vehicle collisions and (2) coroners' and medical examiners' reports. In general,

both sources must be accessed to obtain complete data on victims, crashes, vehicles, and toxicology.

Police-reported data include characteristics of the victim (age and sex, position in the vehicle – driver, passenger) and details of the crash (type of vehicle(s) and collision time and date).

In this report, data are analyzed on the basis of a victim's biological sex rather than the gender with which the victim self-identifies. At this stage, there are no known cases in the Fatality Database where one's biological sex is listed differently than self-identified gender. In addition, one factor in how alcohol is absorbed and metabolized is based upon one's biological sex. It should be noted that, if, in the future, there is a need to add additional values for sex/gender in the National Fatality Database and this report, this can be done. However, as with other variables used for comparison in this report (e.g., age group, number of vehicles, type of vehicle), care will be taken to ensure that an individual cannot be identified.

Objective, toxicological data on alcohol and drug use among victims (i.e., drivers, riders, and pedestrians) are obtained from files in coroners' and medical examiners' offices. The alcohol and drug data are the results of chemical tests, performed on body fluid samples (typically blood) by recognized forensic laboratories or other facilities. Rigorous testing procedures in each jurisdiction ensure reliable and accurate data on the prior use of alcohol and drugs by victims of motor vehicle collisions. As will be discussed in a subsequent section, there is a high rate of testing for alcohol in most jurisdictions, especially among drivers fatally injured in motor vehicle collisions.

Details of the method used to access and collect relevant police-reported and coroner/medical examiner data on persons fatally injured in motor vehicle collisions as well as the approach used to create case files for the *Fatality Database* are contained in previous annual reports in this series (e.g., see Mayhew et al. 1999). The sections below provide a definition of a motor vehicle fatality, describe the number and type of victim contained in the *Fatality Database*, and discuss the testing rates for alcohol and drugs overall in Canada as well as in each jurisdiction.

Motor vehicle fatality. A motor vehicle fatality is defined in the data capture procedures, and in this report, as any person dying within 30 days as a result of injuries sustained in a collision on a public roadway involving at least one highway vehicle. Public roadways include provincial highways and municipal roads but exclude private property, Crown land, military bases, and roads administered by First Nations. Automobiles, light trucks, vans, heavy trucks, tractor-trailers, motorcycles, buses, emergency vehicles, and motorhomes are considered to be highway vehicles. Even if a fatal collision takes place on a public roadway, the fatality is not included in this year's report unless at least one highway vehicle is involved. Thus, if the fatality results from a single-vehicle collision on a public roadway that involves a snowmobile, all-terrain vehicle or dirtbike, it is not included in this report.

It should be noted that out of 2,211 persons who died in a collision in Canada in 2017, 1,866 (84.4%) died within 30 days of the crash in a collision that occurred on a public roadway that involved at least one highway vehicle. The fatality data for 2017 as well as the historical data reported in Sections 2 thru 16 include those persons dying within 30 days of the collision on a public roadway involving at least one highway vehicle.

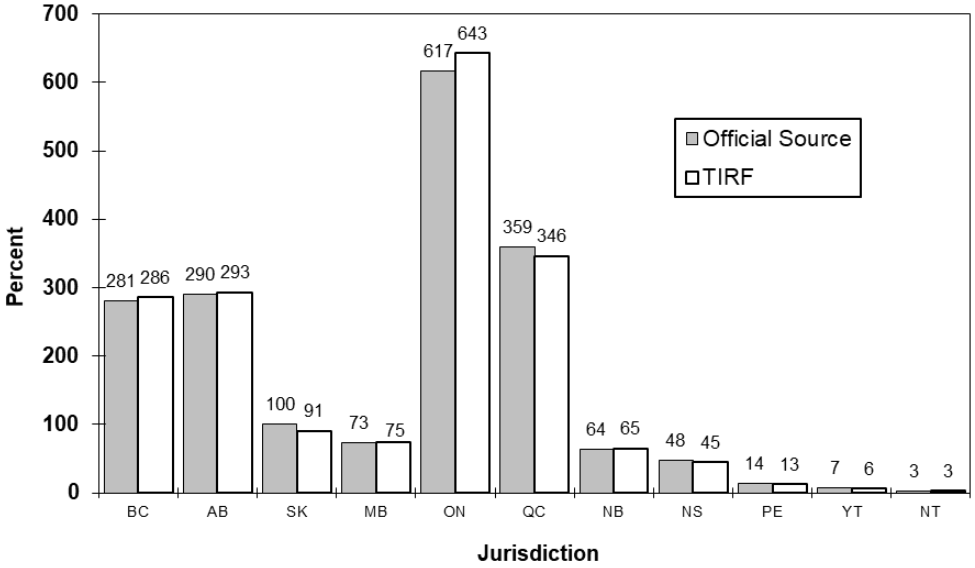
Number of fatalities: Official sources compared to the Fatality Database. The *Fatality Database* contains information on 1,866 persons fatally injured in motor vehicle collisions in Canada during 2017. In previous reports, TIRF included fatality data for persons dying within 12 months (365 days) of the collision. In order to facilitate comparisons between fatality data that TIRF collects for the *Fatality Database* with those data which are reported by transportation agencies, this report analyses fatality data for those persons who died within 30 days of collisions which occur on public roadways that involve at least one principal highway vehicle.

Nonetheless, some differences may persist in the number of cases reported in the *Fatality Database* as opposed to those reported by the transportation agencies. Fatalities that may not be captured by transportation agencies yet found in the *Fatality Database* include the following:

- Victims involved in a collision in one jurisdiction that die in another jurisdiction;
- Victims involved in a collision in one year that die in the subsequent year (e.g., collide in 2016, die in 2017), provided that the date of death is within 30 days of the collision; and,
- Victims identified by the coroner/medical examiner that were coded as an injury or omitted from transportation agency databases (procedures for data collection available to coroners and medical examiners can be more robust and conducive to avoiding the underreporting of crashes).

Figure 2-1 provides a comparison of the number of traffic fatalities reported by transportation agencies with the number of motor vehicle fatalities occurring within 30 days on public roadways that are included in the *Fatality Database* for 2017. For most of the jurisdictions, the number of cases in the TIRF database closely corresponds with those officially reported by transportation agencies.

Figure 2-1
Number of Fatalities Reported by Official Sources and TIRF Fatality Database: 2017



Type of victim. *The Fatality Database* contains information on three types of victims fatally injured in motor vehicle crashes – drivers/riders, passengers, and pedestrians who died within 30 days of a collision on public roadways. Drivers include operators of all types of highway vehicles. Similarly, passengers include occupants of highway vehicles who were not operating these vehicles. And, finally, pedestrians are those individuals travelling on foot that were struck and fatally injured by a highway vehicle.

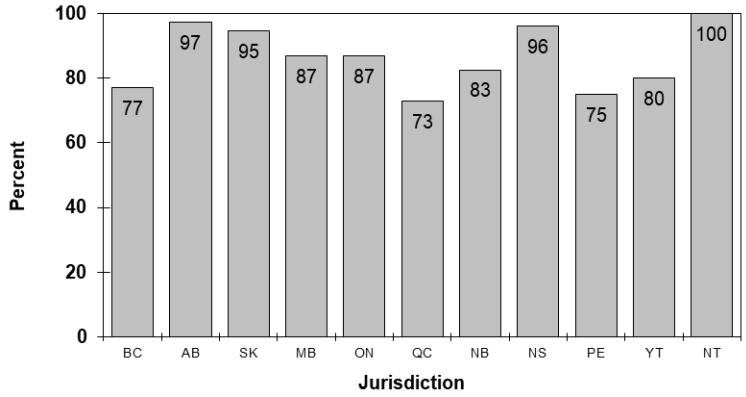
In Canada during 2017, almost 2 out of every 3 fatalities were operators of motor vehicles (67.0%); 17.0% were passengers; and 16.0% were pedestrians. From this perspective, vehicle occupants, particularly drivers, remain the major road-user group of concern.

Testing rates for alcohol*.* The inclusion of objective data on the presence of alcohol among traffic victims represents an important feature of the *Fatality Database*. The value of this information depends greatly on the frequency with which tests for the presence of alcohol are performed on the body fluids of victims.

Among fatally injured victims who died within 30 days of the crash on public roadways in Canada during 2017, fatally injured drivers were tested most frequently (84.8%), followed by pedestrians (55.4%) and passengers (27.1%). The testing rate among fatally injured pedestrians and passengers increases slightly if victims under the age of 16, who are less often tested, are excluded (56.2% and 28.8%, respectively).

The rate of testing for alcohol varies not only as a function of the type of victim but by jurisdiction as well. This is illustrated graphically in Figure 2-2, which shows the rate of testing for alcohol among fatally injured drivers of highway vehicles who died within 30 days of the crash in the various jurisdictions.

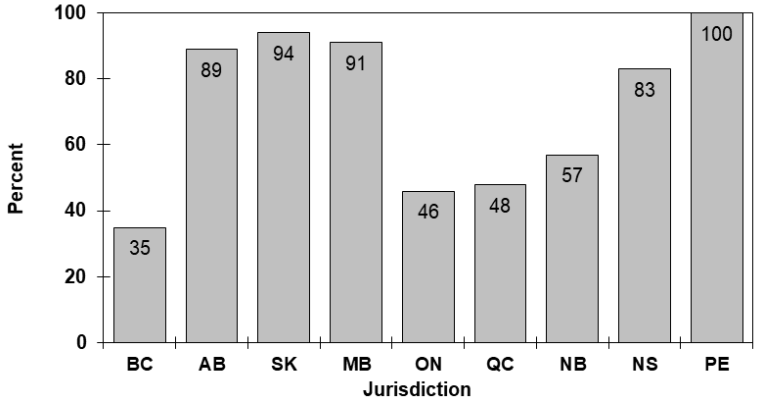
Figure 2-2
Percent of Fatally Injured Drivers
Tested for Alcohol: Canada, 2017



Most jurisdictions test over 80.0% of the driver fatalities. In some jurisdictions, there is clearly room for improvement – the testing rates need to be increased to enhance the reliability and utility of the information. In those jurisdictions with a high rate of testing for fatally injured drivers, there are various reasons why tests are not done on some drivers. This occurs, for example, when the victim survived the initial crash and died much later – the alcohol results at that time would be of little value. Or, if extensive transfusions were given to the victim prior to death, there is little point in taking a blood sample for an alcohol test. And, if the victim were incinerated in a vehicle fire, or massive injuries resulted in exsanguination (i.e., excessive loss of blood), body fluids may not be available for testing.

Figure 2-3 shows the rate of testing for alcohol among fatally injured pedestrians in the various jurisdictions. As can be seen, there is considerable variation in the rate of testing – from 35.0% in British Colombia to 100.0% in Prince Edward Island.

Figure 2-3
Percent of Fatally Injured Pedestrians
Tested for Alcohol: Canada, 2017



2.1.2 The Serious Injury Database. The Serious Injury Database contains information on persons seriously injured in crashes and on all drivers involved in these crashes, whether the driver was injured or not. The data come from motor vehicle crash reports completed by investigating police officers. The information compiled for each seriously injured person and crash-involved driver includes: personal characteristics (age and sex); factors contributing to the crash, including police-reported alcohol involvement; type of vehicle driven/occupied (e.g., automobile, truck/van, motorcycle) and the details of the crash (time, date, type of collision – multiple vehicle/single vehicle).

To construct the database, annual motor vehicle collision data are obtained from each jurisdiction in Canada. These data are either provided to TIRF by the relevant agency in the jurisdiction or, in some cases, provided to TIRF by Transport Canada who received the collision data from the jurisdiction. Relevant information on collisions in which someone was seriously injured is extracted from the provincial/territorial data files and then aggregated into the national *Serious Injury Database*.

The Serious Injury Database provides data from 1996 to 2017 for most jurisdictions. Only since 1998 in the Yukon and 2005 in British Columbia have investigating officers been able to record on the police report form whether the crash involved a serious injury or, at the person level, the severity of the injury a person sustained in the crash. Accordingly, it was not possible to identify persons who sustained a serious injury or drivers involved in serious injury crashes in those jurisdictions prior to the dates indicated. For this reason, the Canadian trend data presented in Section 3.6.4 include only data from 2005 to 2017. However, for other jurisdictions, trend data are available since 1996.

In the case of British Columbia (21.8%), Northwest Territories (12.0%), and Newfoundland and Labrador (4.8%), some injury severities are recorded as “unspecified”, so the number of drivers in serious injury crashes used in this report for these two jurisdictions might be underestimated.

The sections below provide a definition of a serious injury crash, describe the number and type of cases contained in the *Serious Injury Database*, and discuss the use of a surrogate or indirect measure to assess alcohol involvement in these crashes.

Serious injury. A serious injury crash is one that resulted in at least one person being admitted to a hospital. The serious injury may have been sustained by a driver, passenger or pedestrian involved in the crash (i.e., the driver involved in a serious injury crash may not have been the person seriously injured).

Number of cases. In Canada during 2017, 9,693 persons were seriously injured in motor vehicle crashes; 12,043 drivers were involved in these crashes. These numbers for Canada exclude New Brunswick and Nunavut because data on serious injury collisions for these jurisdictions were not available at the time this report was being prepared. Table 2-1 shows the number of drivers involved in serious injury crashes for each province and territory. Alberta accounts for the largest number of the drivers involved in serious injury crashes (3,604 drivers or 29.9% of the “national” total); the Northwest Territories accounts for the lowest number of drivers in such crashes, five drivers (less than 0.1% of all drivers).

Table 2-1
Number and Percent of Drivers Involved in Serious Injury Crashes in Each Jurisdiction: Canada, 2017

Jurisdiction	Number of Drivers	% of Total
British Columbia	2,096	17.4
Alberta	3,604	29.9
Saskatchewan	380	3.2
Manitoba	590	4.9
Ontario	2,852	23.7
Quebec	1,924	16.0
New Brunswick*		0.0
Nova Scotia	413	3.4
Prince Edward Island	48	0.4
Newfoundland and Labrador	113	0.9
Yukon	18	0.1
Northwest Territories	5	0.0
Nunavut*		0.0
TOTAL	12,043	100.0

* Data not available at the time of publication.

Type of cases. The *Serious Injury Database* includes information on persons who sustained a serious injury in a motor vehicle crash and information on all drivers involved in these crashes. Drivers include operators of all types of highway vehicles. It should be noted that analysis of the vehicle occupied by drivers in Canada involved in serious injury crashes in 2017 excludes Quebec. Since March 2010, Quebec has regrouped automobiles and light trucks into a single category in its collision data. Of all the drivers involved in serious injury crashes: almost half were automobile drivers (48.8%), 37.5% were truck/van drivers; 9.2% were motorcycle riders; 3.6% were tractor-trailer drivers; and 1.0% were drivers of other types of highway vehicles (e.g., buses, emergency vehicles).

A surrogate measure of alcohol involvement. Drivers in serious injury crashes are seldom tested for alcohol. The investigating police officer may, however, indicate the condition of each of the drivers involved in the crash (e.g., whether or not they had been drinking), or in the case of Quebec, if alcohol was "a probable cause" in the crash. Unfortunately, a judgement by police about the drivers' use of alcohol is not always made. In addition, the investigating police officer may determine that some other factor – e.g., driver fatigue, medical or physical defect – would more accurately describe the condition of the driver. Thus, relying exclusively on police-reported alcohol involvement may underestimate the magnitude of the alcohol-related serious injury crash problem.

To overcome this data limitation, a surrogate or indirect measure of alcohol involvement is used in this report. A description of this surrogate measure is provided in the next section.

2.2 Indicators of the problem

The indicators used to describe the magnitude and nature of the alcohol-related fatal and serious injury crash problem include:

- the number and percent of people who are killed in alcohol-related crashes;

- the number and percent of fatally injured drivers who had been drinking or were legally impaired;
- the number and percent of pedestrians who had been drinking; and,
- the number and percent of drivers in serious injury crashes that involved alcohol.

In addition, the following indicators are used to describe the magnitude and nature of the drug-crash problem:

- the number and percent of fatally injured drivers who tested positive for drugs; and,
- the number and percent of fatally injured drivers who tested positive for cannabis.

Each of these indicators of the problem is described briefly below.

2.2.1 The number and percent of people killed in alcohol-related crashes. This report traditionally includes two different indicators that measure alcohol involvement among persons fatally injured in motor vehicle collisions. The first indicator (see Table 3-1) considers a motor vehicle fatality to be alcohol involved if there was at least one drinking driver or drinking pedestrian involved in the fatal crash. The second indicator (see Table 3-8) considers a motor vehicle fatality as alcohol involved if there was at least one drinking driver in the fatal crash. In this second indicator a fatally injured pedestrian's condition does not determine alcohol involvement; the only criteria used are the condition of the driver whose vehicle struck the pedestrian. The first indicator has typically been used for the most recent data year whereas the second indicator has been used to compare trends on alcohol involvement.

To determine if alcohol was involved in the fatal crash, information on the BAC of fatally injured drivers and pedestrians from the *Fatality Database* was supplemented with any other evidence of alcohol in the fatal crash identified from either the coroner/medical examiner report or from the police collision report – e.g., the police reported that a driver or pedestrian in the fatal crash had consumed alcohol. The review of coroner/medical examiner files and police reports provided information on the presence of alcohol among drivers who died but were not chemically tested for alcohol; drivers who survived (virtually all of whom are not tested), and pedestrians who were not tested.

For Canada and each of its jurisdictions, this report describes characteristics and trends in the number of deaths in crashes involving a drinking driver. This particular indicator only considers a fatality to be alcohol-related if at least one driver (either killed or surviving) had been drinking. In addition, only fatalities occurring on public roadways are included. Furthermore, at least one of the vehicles involved must be a highway vehicle (e.g., automobile, truck, van, motorcycle, tractor-trailer, etc.). Sport utility vehicles (SUVs) are included with light trucks in tables dealing with fatally or seriously injured drivers or occupants.

Among the people who died in motor vehicle crashes on public roadways within 30 days of the collision that involved at least one highway vehicle, it was possible to determine if a drinking driver had been involved in 93.2% of the cases.

2.2.2 The number and percent of fatally injured drivers who had been drinking. The magnitude of the

alcohol-fatal crash problem is usually stated in terms of the number and percent of fatally injured drivers who tested positive for alcohol. As mentioned previously, this indicator of the problem is useful because of its validity and because the requisite data have been routinely compiled each year as part of the *Fatality Database* project.

The indicator is a highly valid and reliable measure of the problem because a high percentage of drivers of highway vehicles who are killed in crashes are tested for the presence of alcohol. Similar to previous years, there was a high testing rate in Canada during 2017, with 84.8% of fatally injured drivers of highway vehicles who die within 30 days of the crash being tested for alcohol.

In previous versions of this report, some trend tables and figures dealing with alcohol use among fatally injured drivers of highway vehicles included data on drivers dying within 12 months of the collision or those who died within six hours of the collision. In addition, some of the drivers included in these analyses may have been involved in collisions which did not occur on public roadways (Brown et al. 2015). However, in this report, data on alcohol use among fatally injured drivers is limited to drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways. Highway vehicles include automobiles, vans, light trucks, motorcycles, heavy trucks, tractor-trailers, buses, and emergency vehicles.

2.2.3 The number and percent of fatally injured pedestrians who had been drinking. Drinking pedestrians not just drinking drivers contribute to the overall magnitude of the alcohol-fatal crash problem each year in Canada. This occurs because walking on or beside the highways after drinking is extremely risky. Accordingly, this report uses information from the *Fatality Database* to examine the number and percent of fatally injured drinking pedestrians. This is possible because testing for alcohol is reasonably high – 55.4% overall, which increases to 56.2% if victims under the age of 16 are excluded.

Descriptive data on fatally injured drinking pedestrians are provided in the Canada section (3.0) but not in the provincial/territorial sections (4.0 through 16.0) of the report. The number of fatally injured pedestrians in most jurisdictions is relatively small, so detailed results for these jurisdictions would not be reliable. Jurisdictional results are also not reported to protect privacy. However, data on the overall incidence of fatally injured drinking pedestrians in each jurisdiction are presented in the Canada section of the report (3.3).

2.2.4 The number and percent of drivers in serious injury crashes that involved alcohol. The extent to which alcohol is involved in serious injury crashes is not well documented and, consequently, poorly understood for two primary reasons. First, drivers involved in such crashes are seldom tested for the presence of alcohol. Second, investigating police officers do not always report the presence of alcohol in these crashes – see Mayhew et al. (1997) for a discussion of the limitations of information on alcohol involvement contained in police collision reports.

For these reasons, a surrogate or indirect measure of the alcohol-related serious injury crash problem has been used. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle at night, from 9:00 pm to 6:00 am (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol

involvement – i.e., at least one drinking driver in the crash.

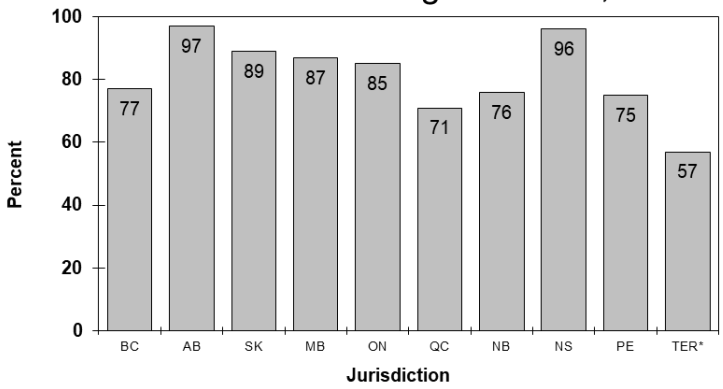
Surrogate measures have been shown to correlate strongly with more direct measures of the alcohol-crash problem – e.g., the number of drinking driver fatalities as determined by chemical tests in blood – and provide a reasonably reliable estimate of trends in alcohol-related serious injury crashes. Such measures, however, have limited validity – i.e., not all drinking drivers are identified – so this measure likely provides a "conservative" estimate of the magnitude of the problem (see Mayhew et al. 1997).

2.2.5 The number and percent of fatally injured drivers who tested positive for drugs. The magnitude of the drug-fatal crash problem is usually stated in terms of the number and percent of fatally injured drivers who tested positive for drugs. Although data from the coroners and medical examiners are the best source of data for drug impaired driving among fatally injured drivers, there is more variability in testing rates and reporting practices than there is for alcohol use. For example, these agencies have, at times, tested different proportions of fatally injured drivers and/or tested for different numbers of drugs. Caution should be exercised when comparing drug use among fatally injured drivers across different years or jurisdictions as well as interpreting national results. However, this indicator of the problem has become more valid as more historical data on drug use have been compiled in TIRF's *Fatality Database*. It should also be noted that as early as 2000, Transport Canada requested that TIRF collect data on drugs for fatally injured drivers in motor vehicle crashes.

Data on drug use among fatally injured drivers is limited to drivers of highway vehicles who died within 30 days of collisions which occurred on public roadways. The indicator is a relatively reliable measure of the problem as a growing percentage of drivers who are killed in crashes are tested for the presence of drugs – i.e., similar to previous years, there was a high testing rate in Canada during 2017, with 83.1% of fatally injured drivers of highway vehicles being tested for drugs.

The rate of testing for drugs varies by jurisdiction. Figure 2-4 shows the rate of testing for drugs among fatally injured drivers in the various jurisdictions. Testing rates vary from 57.1% in the Territories to 96.9% in Alberta.

Figure 2-4
Percent of Fatally Injured Drivers of Highway Vehicles Tested for Drugs: Canada, 2017



Not only does the Fatality Database capture information on whether or not a driver tests positive for drugs, data are also collected to indicate the type of drug or drugs that are found in the blood sample of a fatally injured driver. These drugs can include illicit, prescription, and over-the-counter drugs as many different types of drugs adversely affect driving performance.

Drug Evaluation Classification (DEC) programs, used by police services throughout North America categorize drugs into the various groups on the basis of common signs and symptoms exhibited by persons using these drugs (Jonah, 2012). This report uses these categories which are:

- Cannabis;
- Central nervous system depressants (e.g., benzodiazepines and antihistamines);
- Central nervous system stimulants such as cocaine, amphetamine, methamphetamine, and ecstasy (MDMA);
- Hallucinogens (e.g., LSD, magic mushrooms);
- Dissociative anesthetics such as ketamine and phencyclidine (PCP);
- Narcotic analgesics (e.g., morphine, heroin, methadone, codeine, oxycodone); and,
- Inhalants (e.g., toluene, gasoline, cleaning solvents).

Further information on these drug categories, their properties, and their effects on driving performance can be found at TIRF's Drug Impaired Driving Learning Centre https://druggeddriving.tirf.ca/ (TIRF 2020).

In Section 3.5 and corresponding sections for each jurisdiction, tables are provided to show how many fatally injured drivers of highway vehicles who died on public roadways within 30 days of the collision tested positive for each of the aforementioned drug categories.

3.0 CANADA

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in Canada. It describes data on:

- people who were killed in alcohol-related crashes (Section 3.1);
- alcohol use among fatally injured drivers (Section 3.2);
- alcohol use among fatally injured pedestrians (Section 3.3);
- drivers involved in alcohol-related serious injury crashes (Section 3.4);
- drug use among fatally injured drivers (Section 3.5); and,
- trends in the alcohol-crash and drug-crash problems (Section 3.6).

3.1 Deaths in alcohol-related crashes

Table 3-1 presents information on people who died in alcohol-related crashes in Canada during 2017 for persons dying within 30 days of the collision. Motor vehicle deaths are categorized in terms of the victim's age, sex, victim type (see Section 2.1.1) and the type of vehicle they occupied (see Section 2.2.1). The first column in the table presents the number of deaths. The next two columns show the number and percent of these fatalities where sufficient information was available to determine if alcohol was involved. *A motor vehicle fatality was considered to be alcohol involved if there was at least one drinking driver or drinking pedestrian in the fatal crash*.

For example, it can be seen that 117 people aged 16-19 were killed in motor vehicle crashes in Canada during 2017. And, in 109 cases (93.2%) it was possible to determine if alcohol was a factor in the crash. The next column shows the number of people killed in crashes that were known to be alcohol-involved.

For example, 27 people aged 16-19 died in alcohol-related crashes in Canada during 2017. The next column expresses this as a percentage – i.e., 24.8% of the 16-19 year olds who were killed died in an alcohol-related crash.

The final column (percent of all alcohol-related deaths) expresses the number of deaths in alcohol-related crashes as a percent of all the deaths in such crashes. For example, the alcohol-related deaths among 16-19 year olds represent 5.5% of all the people killed in alcohol-related crashes in Canada during 2017.

The totals at the bottom of the table provide a summary. As can be seen, 1,866 persons died within 30 days of a motor vehicle crash in Canada during 2017. In 1,740 (93.2%) of these cases, it was possible to determine if alcohol was a factor. Of these known cases, 495 (28.4%) involved alcohol. Extrapolating this figure to the total number of motor vehicle fatalities (1,866 x .284) it can be estimated that *in Canada during 2017, 531 persons died in alcohol-related crashes within 30 days of the collision*.

Table 3-1
Deaths in Alcohol-Related Crashes: Canada, 2017

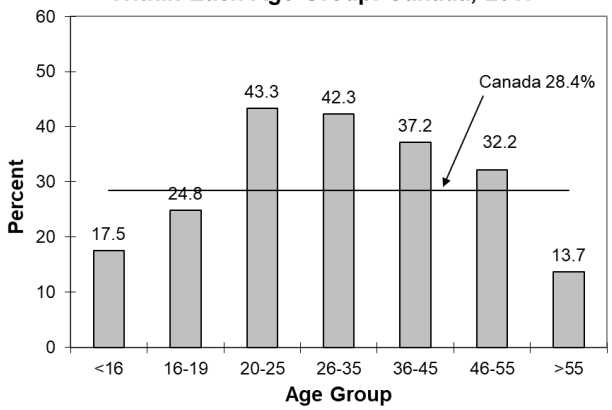
Category of Victim	Total Number of Deaths*	Alcohol Use Known		Alcohol-Related Deaths (ARDs)		
		Number	% of total	Number	% of known cases	% of all ARDs
Age Group						
<16	63	57	90.5	10	17.5	2.0
16-19	117	109	93.2	27	24.8	5.5
20-25	217	210	96.8	91	43.3	18.4
26-35	300	284	94.7	120	42.3	24.2
36-45	253	242	95.7	90	37.2	18.2
46-55	243	227	93.4	73	32.2	14.7
>55	673	611	90.8	84	13.7	17.0
Sex						
Male	1305	1229	94.2	400	32.5	80.8
Female	561	511	91.1	95	18.6	19.2
Victim Type						
Driver/ Operator	1251	1188	95.0	356	30.0	71.9
Passenger	317	288	90.9	79	27.4	16.0
Pedestrian	298	264	88.6	60	22.7	12.1
Vehicle Occupied						
Automobiles	808	765	94.7	232	30.3	46.9
Trucks/Vans	441	412	93.4	142	34.5	28.7
Motorcycles	205	198	96.6	46	23.2	9.3
Other Hwy Vehicles	53	50	94.3	5	10.0	1.0
Off-road Vehicles	61	51	83.6	10	19.6	2.0
(Pedestrians)	298	264	88.6	60	22.7	12.1
TOTAL	1866	1740	93.2	495	28.4	100.0

* Persons dying within 30 days in crashes on public roadways that involved at least one principal highway vehicle.

3.1.1 Victim age. Of all the people who died in alcohol-related crashes (see last column), 24.2% were aged 26-35; 18.4% were aged 20-25; 18.2% were aged 36-45; 17.0% were over age 55; 14.7% were aged 46-55; and 5.5% were aged 16-19. The youngest (<16) group accounted for only 2.0% of all people who died in alcohol-related crashes.

Figure 3-1 shows the percent of alcohol-related deaths within each age group. The highest incidence of alcohol involvement occurred in the crashes in which persons aged 20-25 died (43.3%). The lowest incidence of alcohol involvement was found among the youngest and oldest fatalities as only 17.5% of persons under 16 and 13.7% of persons over 55 years of age died in crashes involving alcohol.

Figure 3-1
Percent of Alcohol-Related Deaths
Within Each Age Group: Canada, 2017



3.1.2 Sex. Of all the people who died in alcohol-related crashes, 80.8% were males. The incidence of alcohol in crashes in which a male died (32.5%) was greater than the incidence of alcohol in crashes in which a female died (18.6%).

3.1.3 Victim type. Of all the people who died in alcohol-related crashes, 71.9% were drivers/operators of a vehicle; 16.0% were passengers; and 12.1% were pedestrians. Within each of these victim types, there are some differences in alcohol involvement. Among the principal victim types, the highest incidence of alcohol involvement (30.0%) occurred in the crashes in which a driver/operator died. Alcohol was involved in 27.4% of the crashes in which a passenger died and 22.7% of those in which a pedestrian died.

3.1.4 Type of vehicle occupied. Of all the people who died in alcohol-related crashes, over two-fifths (46.9%) were in an automobile; 28.7% were in a truck/van; 9.3% were on a motorcycle; 2.0% were on an off-road vehicle (e.g., bicycle, snowmobile, all-terrain vehicle); and 1.0% were occupants of other highway vehicles (e.g., bus, tractor-trailer, emergency vehicle).

The incidence of alcohol involvement in which a truck/van occupant died was greater than the incidence of alcohol in crashes in which an automobile occupant died (34.5% versus 30.3%). The incidence of alcohol involvement in which a motorcycle occupant died was 23.2%.

3.2 Alcohol in fatally injured drivers

This section presents information on the presence of alcohol, exclusively among drivers fatally injured in Canada during 2017. Table 3-2 shows the information by age group, sex, vehicle type, and collision type (single vs. multiple) for drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Sections 2.1.1 and 2.2.2).

The first column in the table shows the number of drivers killed. The next two columns show the number and percent of these victims who were tested for alcohol. The remaining columns provide information on the results of the alcohol tests – this includes the percent of those tested who were positive for alcohol in each of five blood alcohol concentration (BAC) levels.

To illustrate, among 20-25 year olds, there were 140 drivers killed during 2017; 125 of these fatally injured drivers (89.3%) were tested for alcohol. Of those who were tested, 55.2% showed no evidence of alcohol, 2.4% had BACs below 50 mg%, 4.0% had BACs from 50 to 80 mg%, 19.2% had BACs from 81 to 160 mg%, and 19.2% had BACs over 160 mg%.

Table 3-2
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Canada, 2017**

Category of Driver	Total Number of Driver Deaths*	Drivers Tested		Percent of Tested Drivers with BACs of:				
		Number	% of total	Zero	1-49	50-80	81-160	>160
Age								
<20***	76	67	88.2	74.6	3.0	3.0	10.4	9.0
20-25	140	125	89.3	55.2	2.4	4.0	19.2	19.2
26-35	216	196	90.7	58.2	4.6	3.1	7.7	26.5
36-45	181	159	87.8	68.6	3.1	2.5	8.8	17.0
46-55	168	148	88.1	67.6	3.4	1.4	8.1	19.6
>55	413	317	76.8	85.5	2.2	0.0	5.4	6.9
Sex								
Male	938	792	84.4	67.7	3.0	2.4	9.8	17.0
Female	256	220	85.9	80.5	3.2	0.0	5.0	11.4
Vehicle Type								
Automobile	616	511	83.0	69.9	2.9	0.8	9.2	17.2
Motorcycle	192	159	82.8	76.1	3.8	3.8	8.8	7.5
Tractor Trailer	44	38	86.4	86.8	5.3	0.0	5.3	2.6
Heavy Truck[1]	11	10	90.9	100.0	0.0	0.0	0.0	0.0
Van	92	79	85.9	79.7	1.3	2.5	3.8	12.7
Light Truck[2]	232	208	89.7	59.6	3.4	2.9	11.1	23.1
Other Truck[3]	6	6	100.0	66.7	0.0	0.0	0.0	0.0
Other Hwy. Vehicle[4]	1	1	100.0	100.0	0.0	0.0	0.0	0.0
Collision Type								
Single-Vehicle	479	407	85.0	52.8	3.7	2.7	15.2	25.6
Multiple-Vehicle	715	605	84.6	82.3	2.6	1.3	4.5	9.3
TOTAL	1194	1012	84.8	70.5	3.1	1.9	8.8	15.8

* Drivers dying within 30 days in crashes on public roadways.

** Excluding Newfoundland and Labrador.

*** Drivers in two age groups have been aggregated to ensure that an individual will not be identified.

[1] Trucks over 4500 kg.

[2] e.g., pickup trucks.

[3] Motorhomes, utility vehicles, plows and trucks of unknown type.

[4] Emergency vehicles and buses.

Note: The vehicle types that appear in the shaded area correspond to the truck/van category used in the jurisdictional sections of this report.

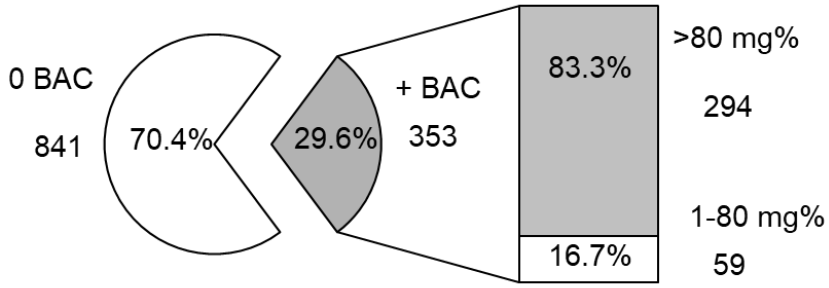
The main findings are shown by the totals at the bottom of the table. As can be seen, there were 1,194 drivers fatally injured in traffic crashes in Canada during 2017. The overall rate of testing for alcohol in drivers was 84.8%, lower than the rate in 2016 (85.7%). Among tested drivers in Canada:

- 70.5% showed no evidence of alcohol as 29.5% had been drinking;
- 3.1% had BACs from 1-49 mg%;
- 1.9% had BACs from 50-80 mg%
- 8.8% had BACs from 81 to 160 mg%; and,
- 15.8% had BACs over 160 mg%.

Thus, 29.6% of fatally injured drivers in Canada had been drinking and 83.3% of fatally injured drinking drivers had BACs over 80 mg%.

In Figure 3-2, the BAC distribution for tested fatally injured drivers is extrapolated to reflect the BAC distribution for all fatally injured drivers. In this figure, 353 of 1,194 drivers (29.6%) have a positive BAC. And among fatally injured drinking drivers, 294 (83.3%) have BACs over 80 mg%.

Figure 3-2
BACs* Among Fatally Injured Drivers
of Highway Vehicles: Canada, 2017



* numbers are estimates based on the BAC distribution of drivers tested for alcohol

3.2.1 Age differences. Drivers under age 16 and 16-19 have been regrouped (<20 age group) have been regrouped to ensure that individuals cannot be identified. Figures 3-3 and 3-4 summarize the data from Table 3-2 for the various age groups. Figure 3-3 shows the percent of all drinking drivers accounted for by each age group. The bar on the left shows the percent of all fatally injured drivers with any evidence of alcohol accounted for by each age group. On the right is shown the percent of "legally impaired drivers" – BACs over 80 mg% – accounted for by each age group. Drivers under 16 are not included in these figures because very few of them had been drinking.

Of all the fatally injured drinking drivers, 27.4% were aged 26-35; 18.7% were aged 20-25; 16.7% were aged 36-45; 16.1% were aged 46-55; and 15.4% were over age 55. Those under age 20 accounted for only 5.7% of the fatally injured drinking drivers.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 26.9% were aged 26-35; 19.3% were aged 20-25; 16.5% were aged 36-45 and 46-55; and 15.7% were aged over 55. Those under age 20 accounted for only 5.2% of fatally injured drivers who were over the legal limit.

Figure 3-3
Percent of All Fatally Injured Drinking and Legally Impaired Drivers Accounted for by Each Age Group: Canada, 2017

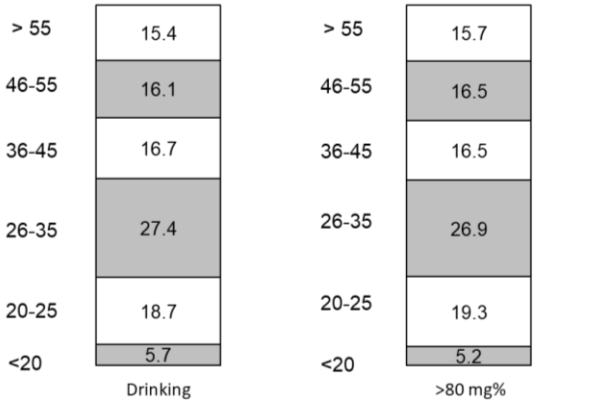
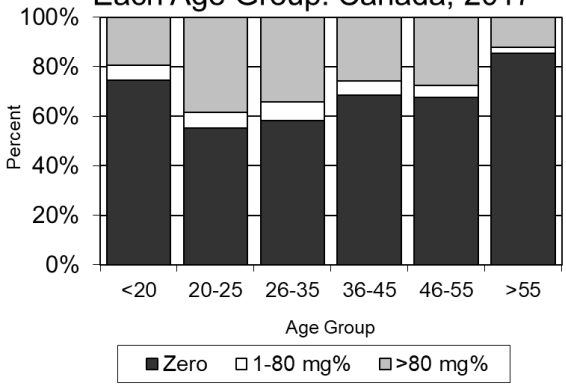


Figure 3-4 presents the information in a slightly different manner. For each age group, the percentage of drivers who were sober (zero BAC) is shown by the lower, black portion of the bar; the percent who tested positive for alcohol but whose BAC was below the legal limit (1-80 mg%) is shown by the white section in the middle, and the percent with BACs over the legal limit (>80 mg%) is shown by the upper, grey part of the bar.

Figure 3-4
Percent of Drinking Drivers Within Each Age Group: Canada, 2017



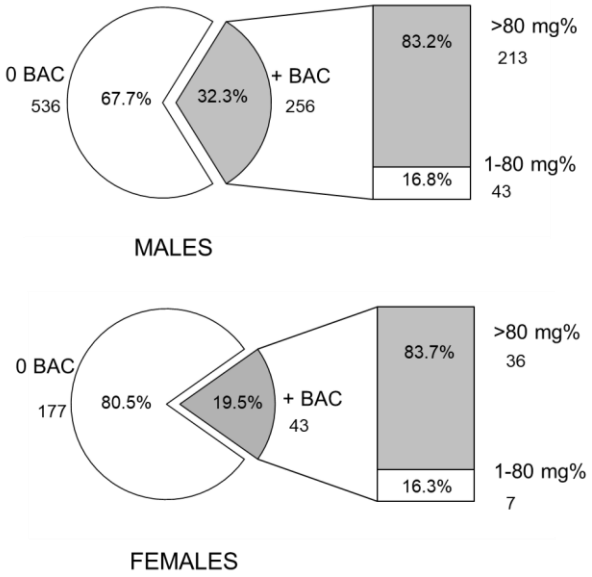
Fatally injured drivers age 20-25 were the most likely to have been drinking – 44.8% of drivers in this age group had been drinking. By contrast, only 14.5% of tested drivers over age 55 had been drinking.

3.2.2 Sex differences. Males dominate the picture – they account for 85.6% of all the fatally injured drivers who had been drinking and 85.5% of the fatally injured drivers who were legally impaired. Males dominate the picture largely because they account for 78.6% of the drivers who are killed (938 of the 1,194 fatalities are males).

A comparison in the prevalence of alcohol use among male and female fatally injured drivers is shown in Figure 3-5. The pie chart shows within each sex, the percent who were sober (i.e., 0 BAC) and positive for alcohol (+ BAC). The bar to the right of the pie chart shows the distribution of alcohol levels found among those who were drinking – the percent who had alcohol levels above and below the legal limit. Percentages are given inside the figures; the absolute number of cases is shown adjacent to the figure.

Fatally injured male drivers were more likely to have been drinking than female drivers (32.3% and 19.5%, respectively). And, most of the male and female drivers who were drinking had BACs over the legal limit (83.2% and 83.7%, respectively).

Figure 3-5
Alcohol Use Among Male and Female Drivers: Canada, 2017



3.2.3 Vehicle differences. Table 3-3 shows the number and percent of drinking and legally impaired drivers accounted for by drivers of different types of highway vehicles. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 51.5% were automobile drivers; 28.1% were light truck drivers; 12.7% were motorcycle riders; 5.4% were van drivers; 1.7% were tractor-trailer drivers; and 0.7% were drivers of other trucks.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 54.2% were automobile drivers; 28.5% were light truck drivers; 10.4% were motorcycle riders; 5.2% were van drivers; 1.2% were tractor-trailer drivers; and 0.4% were drivers of other trucks.

Table 3-3

Number and Percent of Fatally Injured Drinking and Legally Impaired Drivers Accounted for by Drivers* of Different Vehicle Types: Canada, 2017

Vehicle Type	Number of Drinking Drivers	% of All Drinking Drivers	Number of Legally Impaired Drivers	% of All Legally Impaired Drivers
Automobile	154	51.5	135	54.2
Motorcycle	38	12.7	26	10.4
Tractor-Trailer	5	1.7	3	1.2
Heavy Truck[1]	0	0.0	0	0.0
Van	16	5.4	13	5.2
Light Truck[2]	84	28.1	71	28.5
Other Truck[3]	2	0.7	1	0.4
TOTAL	299	100.0	249	100.0

* Excludes operators of bicycles, snowmobiles, farm tractors and other non-highway vehicles.

[1] Trucks over 4500 kg.

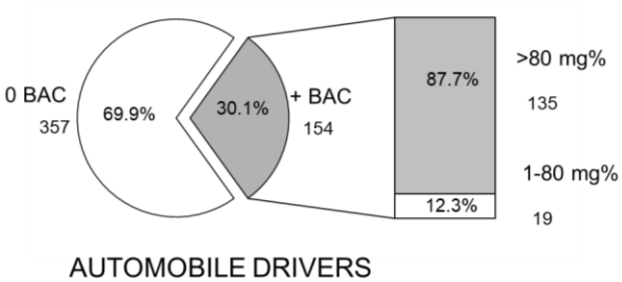
[2] e.g., pickup trucks.

[3] Motorhomes, utility vehicles, plows and trucks of unknown type.

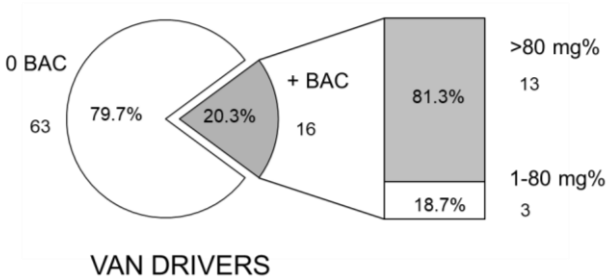
Figures 3-6a, 3-6b and 3-6c summarize the results of alcohol tests for drivers fatally injured in 2017 according to the type of vehicle being operated: automobile drivers and drivers of vans (Figure 3-6a); motorcycle riders and drivers of light trucks (Figure 3-6b); and drivers of heavy trucks and tractor-trailers (Figure 3-6c). A common format is used in all cases. The pie chart shows the number and percent of drivers who were sober as well as the number and percent of drivers who had been drinking. The bar chart displays the BAC distribution among those who tested positive for alcohol.

Among fatally injured automobile drivers, 30.1% had been drinking. Of those who were drinking, over four-fifths (87.7%) had alcohol levels in excess of the legal limit. Among fatally injured van drivers, 20.3% had been drinking and most (81.3%) of these had BACs over the legal limit. Among motorcycle riders, 23.9% had been drinking and 68.4% of these had BACs over the legal limit. The highest incidence of drinking was found among drivers of light trucks – 40.4% had been drinking and 84.5% of these had illegal BACs. By comparison, 13.2% of tractor-trailer drivers had been drinking and 60.0% had BACs over the legal limit. Drivers of heavy trucks have a much lower frequency of alcohol involvement as none of these tested drivers (0.0%) had been drinking. Given that the number of fatally injured drivers of heavy trucks and tractor-trailers is small, BAC results should be treated with caution.

Figure 3-6a
Alcohol Use Among Drivers of Different
Vehicle Types: Canada, 2017

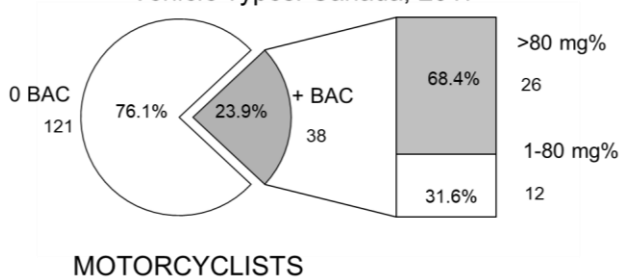


AUTOMOBILE DRIVERS

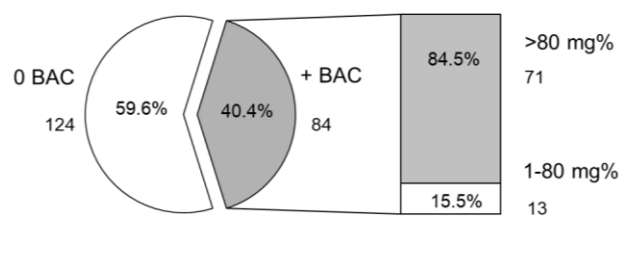


VAN DRIVERS

Figure 3-6b
Alcohol Use Among Drivers of Different
Vehicle Types: Canada, 2017

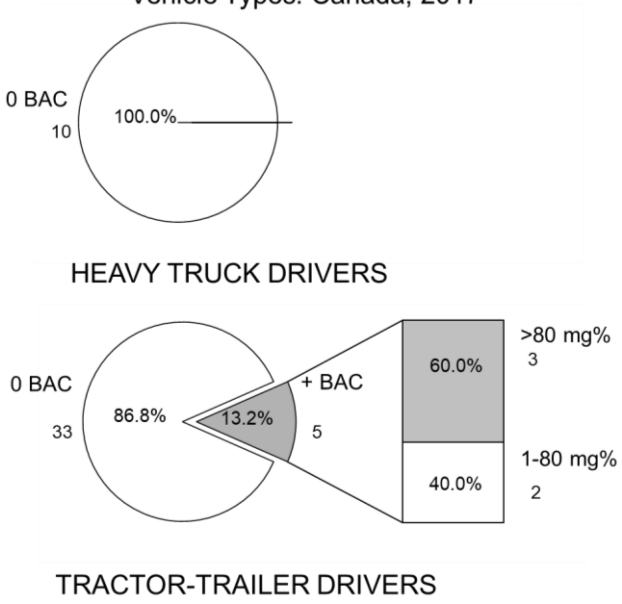


MOTORCYCLISTS



LIGHT TRUCK DRIVERS

Figure 3-6c
Alcohol Use Among Drivers of Different Vehicle Types: Canada, 2017



Figures 3-6d and 3-6e present similar information on the incidence of drinking among drivers operating recreational vehicles who died within 30 days in collisions which occurred on public roadways (results for these vehicle types are not included in Tables 3-2 or 3-3). Given that there are relatively few operators of recreational vehicles who were fatally injured in collisions on public roadways (most notably snowmobilers and off-road vehicle operators), the following figures should be treated with caution.

As can be seen, the lowest incidence of drinking was found among bicyclists as only 8.3% of fatally injured bicyclists had been drinking at the time of the collision. Among those bicyclists who had been drinking, 100.0% had BACs over the legal limit. Among snowmobile drivers, 28.6% had been drinking and 100.0% had BACs over the legal limit. Operators of off-road vehicles (ATVs, dirt bikes, etc.) were more likely than snowmobile drivers to have been drinking (57.1%) and 75.0% of these drinking drivers had BACs over the legal limit.

Figure 3-6d
Alcohol Use Among Drivers of Different Vehicle Types: Canada, 2017

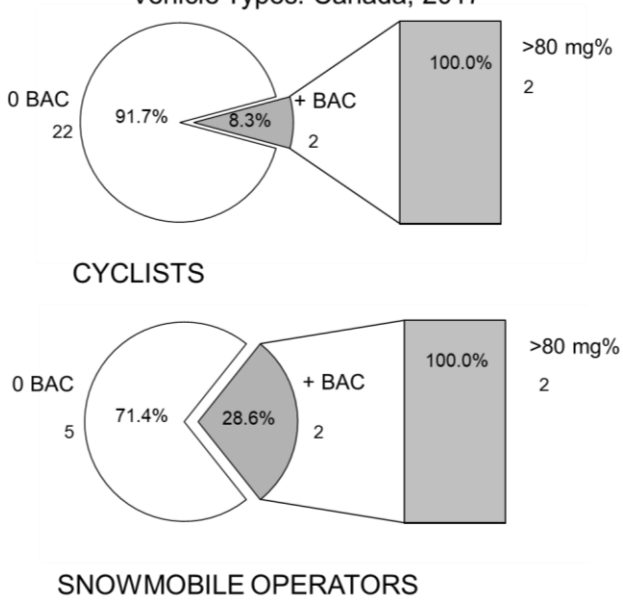
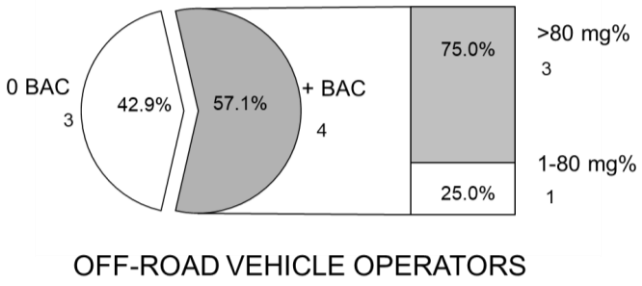


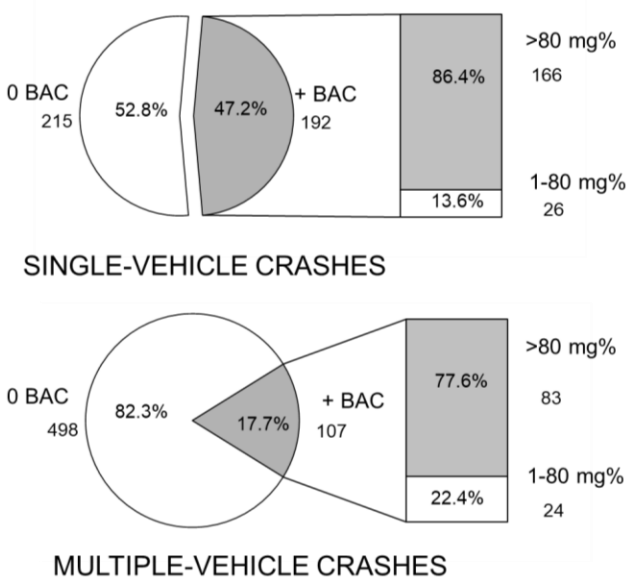
Figure 3-6e
Alcohol Use Among Drivers of Different Vehicle Types: Canada, 2017



3.2.4 Collision differences. Less than half of all drivers killed (479 out of 1,194, or 40.1%) were involved in single-vehicle collisions but these crashes accounted for almost two-thirds of the drivers who had been drinking or were legally impaired (64.2% and 66.7%, respectively).

The reason for this apparent disparity is because alcohol is overrepresented in single-vehicle crashes. As shown in Figure 3-7, almost half of the drivers involved in single-vehicle crashes (47.2%) tested positive for alcohol, compared to only 17.7% of those involved in multiple-vehicle collisions. Most drinking drivers in single-vehicle crashes had BACs over the legal limit (86.4%). Among drinking drivers in multiple-vehicle crashes, 77.6% had BACs over the legal limit.

Figure 3-7
Alcohol Use Among Drivers by Type of Collision: Canada, 2017



3.3 Alcohol in fatally injured pedestrians

This section presents information on the presence of alcohol among pedestrians fatally injured as a result of being hit by a motor vehicle in Canada during 2017. *At the time this report was being prepared, 2017 medical examiner data from Newfoundland and Labrador were not available. For this reason, 2017 data reported in this section excludes this jurisdiction.* Table 3-4 shows the information by age group, sex and jurisdiction. The first column in the table shows the number of pedestrians killed. The next two columns show the number and percent of these victims who were tested for alcohol. The remaining columns provide information on the results of the alcohol tests – this includes the percent of those tested who were positive for alcohol in each of five BAC levels.

During 2017, as shown by the totals at the bottom of the table, there were 298 pedestrians fatally injured; 165 (55.4%) of these pedestrians were tested for the presence of alcohol. Among tested pedestrians:

- 69.7% showed no evidence of alcohol as 30.3% had been drinking;
- 4.2% had BACs below 50 mg%;
- 0.6% had BACs from 50 to 80 mg%;
- 3.6% had BACs from 81 to 160%; and
- 21.8% had BACs over 160 mg%.

Thus, 30.3% of fatally injured pedestrians had been drinking and most of these had BACs over 80 mg%.

Table 3-4
Alcohol Use Among Fatally Injured Pedestrians: Canada*, 2017

Category of Pedestrian	Number of Pedestrians	Pedestrians Tested		Percent of Tested Pedestrians with BACs of:				
		Number	% of total	Zero	1-49	50-80	81-160	>160
Age								
<16	15	6	40.0	100.0	0.0	0.0	0.0	0.0
16-19	12	8	66.7	75.0	0.0	0.0	0.0	25.0
20-25	22	14	63.6	50.0	7.1	0.0	0.0	42.9
26-35	31	22	71.0	54.5	0.0	0.0	4.5	40.9
36-45	30	20	66.7	40.0	10.0	0.0	5.0	45.0
46-55	39	26	66.7	69.2	7.7	3.8	3.8	15.4
>55	149	69	46.3	84.1	2.9	0.0	4.3	8.7
Sex								
Male	177	108	61.0	62.0	5.6	0.0	4.6	27.8
Female	121	57	47.1	84.2	1.8	1.8	1.8	10.5
Jurisdiction								
British Columbia	46	16	34.8	93.8	0.0	0.0	0.0	6.3
Alberta	36	32	88.9	65.6	3.1	3.1	9.4	18.8
Saskatchewan	16	15	93.8	46.7	6.7	0.0	6.7	40.0
Manitoba	11	10	90.9	40.0	0.0	0.0	0.0	60.0
Ontario	113	52	46.0	73.1	5.8	0.0	0.0	21.2
Quebec	62	30	48.4	73.3	3.3	0.0	6.7	16.7
New Brunswick	7	4	57.1	100.0	0.0	0.0	0.0	0.0
NS/PEI**	7	6	85.7	66.7	16.7	0.0	0.0	16.7
TOTAL	298	165	55.4	69.7	4.2	0.6	3.6	21.8

* Canada totals exclude Newfoundland and Labrador.
** Results for Nova Scotia and Prince Edward Island have been regrouped to ensure that an individual will not be identified.

3.3.1 Age difference. Of all the fatally injured pedestrians, half (49.8%) were over 55 years of age (149 of the 298 pedestrian fatalities). The oldest pedestrians, however, accounted for a much smaller portion of the drinking pedestrians and those with BACs over 80 mg%. This is illustrated in Figure 3-8. The figure shows the percent of all drinking pedestrians accounted for by each age group. The bar on the left shows the percent of all fatally injured pedestrians with any evidence of alcohol accounted for by each age group. On the right is shown the percent of pedestrians with BACs over 80 mg% accounted for by each age group. Of all the fatally injured drinking pedestrians, 24.0% were aged 36-45; 22.0% were over age 55; 20.0% were 26-35; 16.0% were aged 46-55; 14.0% were aged 20-25; and 4.0% were aged 16-19.

Of all the fatally injured pedestrians with BACs over 80 mg%, 23.8% were aged 26-35 and 36-45; 21.4% were over age 55; 14.3% were aged 20-25; 11.9% were aged 46-55; and 4.8% were aged 16-19.

Figure 3-8
Percent of All Fatally Injured Drinking and Legally Impaired Pedestrians Accounted for by Each Age Group: Canada, 2017

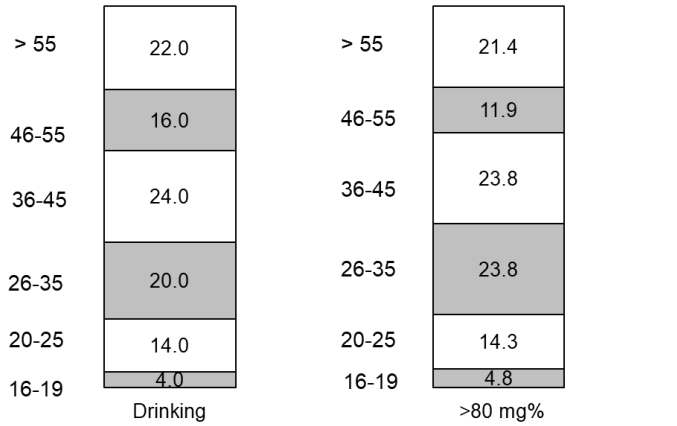
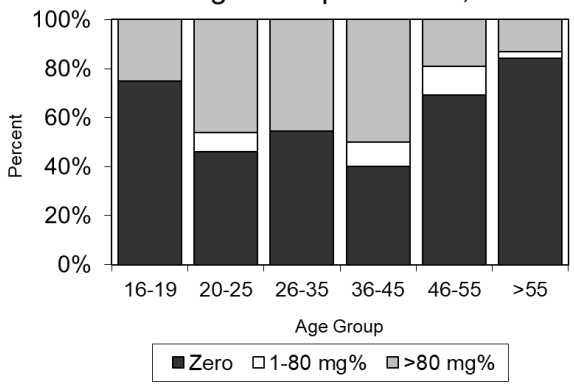


Figure 3-9 presents the information in a slightly different manner. For each age group, the percent of pedestrians who were sober (zero BAC) is shown by the lower, dark portion of the bar; the percent who tested positive for alcohol but whose BAC was less than or equal to 80 mg% is shown by the white section in the middle, and the percent with BACs over 80 mg% is shown by the upper, grey part of the bar.

Fatally injured pedestrians age 36-45 were the most likely to have been drinking – 60.0% of pedestrians in this age group had been drinking. By contrast, 0.0% of tested pedestrians under age 16 and 15.9% of those over age 55 had been drinking.

Figure 3-9
Percent of Drinking Pedestrians Within Each Age Group: Canada, 2017



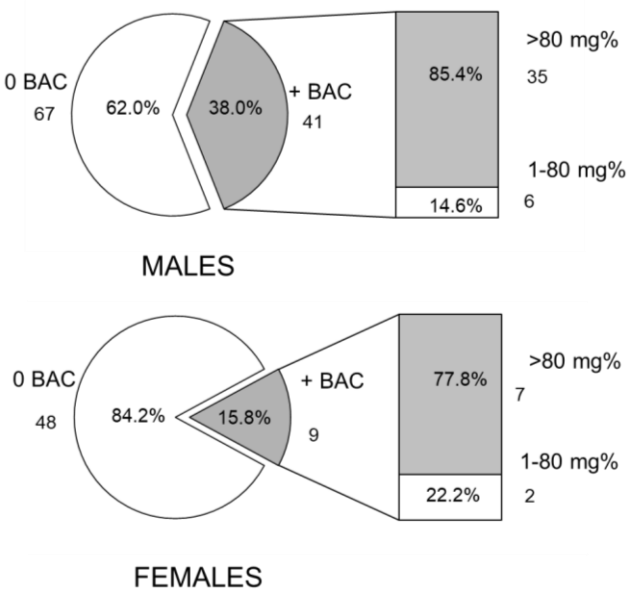
3.3.2 Sex differences. Males account for 82.0% of all the fatally injured pedestrians who had been drinking, and 83.3% of the fatally injured pedestrians who had BACs over 80 mg%. Males dominate the picture because they account for 59.4% of the pedestrians who are killed (177 of the 298 fatalities are male).

Figure 3-10 summarizes the findings for alcohol use among fatally injured male and female pedestrians. The pie chart shows the proportion of those pedestrians who were sober (0 BAC) and those positive for alcohol (+ BAC). The bar to the right of the pie chart shows the distribution of alcohol levels found

among those who had been drinking; the percent who had BACs above and below 80 mg%. Percentages are given inside the figures; the absolute number of cases is shown adjacent to the figure.

Among fatally injured male pedestrians, 38.0% had been drinking and 85.4% of these pedestrians had BACs over 80 mg%. Among fatally injured female pedestrians, 15.8% had been drinking and 77.8% had BACs over 80 mg%.

Figure 3-10
Alcohol Use Among Male and Female
Fatally Injured Pedestrians: Canada, 2017



3.3.3 Jurisdictional differences. Fatally injured pedestrians in Nova Scotia and Prince Edward Island have been regrouped to ensure that an individual will not be identified. Of all the fatally injured pedestrians, 37.9% were killed in Ontario, 20.8% were killed in Quebec, and 15.4% were killed in British Columbia. Ontario accounted for 28.0%, Alberta accounted for 22.0%, and Saskatchewan and Quebec each accounted for 16.0% of the fatally injured drinking pedestrians. Among fatally injured pedestrians with BACs over 80 mg%, 26.2% were from Ontario, 21.4% were from Alberta, and 16.7% were from Saskatchewan and Quebec. It should be noted that the figures for pedestrians in British Columbia who are drinking or have BACs over 80 mg% are underestimated because they are based on tested pedestrians and the rate of testing for alcohol is low in this jurisdiction – e.g., only 35.6% of pedestrians fatally injured in British Columbia were tested, compared to 93.8% in Saskatchewan, 90.9% in Manitoba, and 88.9% in Alberta.

As shown in Table 3-4, the highest incidence of alcohol in fatally injured pedestrians was in Manitoba (60.0%). The lowest incidence of alcohol in fatally injured pedestrians was in New Brunswick (0.0%) and British Columbia (6.2%).

3.4 Drivers involved in alcohol-related serious injury crashes

This section presents information on drivers of highway vehicles involved in alcohol-related crashes in which someone was seriously injured in 2017 in Canada. A "surrogate" or "indirect" measure is used to estimate alcohol involvement because drivers in serious injury crashes are seldom tested for alcohol. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle, at night (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol involvement – i.e., they noted that at least one drinking driver was involved in the crash (see Section 2.2.4).

The results are shown in Table 3-5 for drivers grouped in terms of age, sex, type of vehicle driven, and type of collision. The first column shows the number of drivers of highway vehicles involved in serious injury crashes. The number and percent of drivers in such crashes that involved alcohol is shown in the next two columns. The final column expresses the number of drivers involved in alcohol-related serious injury crashes in any row as a percent of all drivers involved in alcohol-related serious injury crashes.

Table 3-5
Drivers of Highway Vehicles in Alcohol-Related Serious Injury Crashes: Canada, 2017**

Category of Drivers	Number of Drivers	Alcohol-Related		
		Number	% of total	% of all drivers in alcohol-related crashes
Age				
<16	30	4	13.3	0.2
16-19	810	162	20.0	8.8
20-25	1561	371	23.8	20.1
26-35	2344	444	18.9	24.0
36-45	1864	282	15.1	15.2
46-55	1923	234	12.2	12.6
>55	2955	268	9.1	14.5
unknown	556	85	15.3	4.6
Sex				
Male	8152	1390	17.1	75.1
Female	3615	403	11.1	21.8
unknown	276	57	20.7	3.1
Vehicle Type*				
Auto	4934	769	15.6	50.7
Truck/Van	3795	580	15.3	38.3
Motorcycle	933	107	11.5	7.1
Tractor Trailer	361	51	14.1	3.4
Other Hwy. Vehicle	96	9	9.4	0.6
Collision Type				
Single-Vehicle	3746	1287	34.4	69.6
Multiple-Vehicle	8297	563	6.8	30.4
TOTAL	12043	1850	15.4	100.0

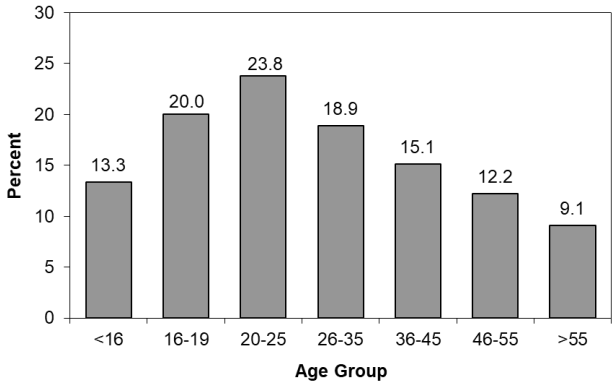
* Vehicle type section excludes Quebec since this jurisdiction has grouped automobiles and light trucks together in its collision data since March 2010.

** Excludes data from New Brunswick and Nunavut.

As shown, by the totals at the bottom of the table, 12,043 drivers were involved in crashes in which someone was seriously injured. Among these, 15.4% were alcohol-related crashes.

3.4.1 Driver age. Of all the drivers involved in alcohol-related serious injury crashes, 24.0% were aged 26-35; 20.1% were aged 20-25; and 15.2% were aged 36-45. Drivers under the age of 16 accounted for only 0.2% of all those involved in alcohol-related crashes. Figure 3-11 shows for each age group the percent of drivers who were in a serious injury crash that involved alcohol. The highest incidence of alcohol involvement was found for drivers aged 20-25 and 16-19 (23.8% and 20.0%, respectively). The lowest incidence of involvement in alcohol-related crashes was found for the oldest age group of drivers as 9.1% of drivers over 55 were in a serious injury crash that involved alcohol.

Figure 3-11
Percent of Drivers Within Each Age Group in Serious Injury Crashes that Involved Alcohol: Canada, 2017



3.4.2 Driver sex. Of all the drivers involved in alcohol-related serious injury crashes, 75.1% were males. The incidence of involvement in alcohol-related serious injury crashes was also greater for males than for females (17.1% and 11.1%, respectively).

3.4.3 Type of vehicle driven. The numbers and percentages in the vehicle type section exclude Quebec since this jurisdiction has grouped automobiles and light trucks together in its collision data since March 2010. Of all the drivers involved in alcohol-related serious injury crashes, 50.7% were automobile drivers and 38.3% were truck/van drivers.

Among serious injury crashes involving automobile drivers, 15.6% were alcohol related. The percentage of involvement in alcohol-related serious injury crashes was 15.3% for truck/van drivers, 14.1% for tractor-trailer drivers, 11.5% for motorcyclists, and 9.4% for drivers of other highway vehicles.

3.4.4 Type of collision. Of all the drivers involved in alcohol-related serious injury crashes, 69.6% of them were in single-vehicle crashes. The highest incidence of involvement in alcohol-related serious injury crashes was also found among drivers in single-vehicle crashes (34.4%) compared to only 6.8% for drivers involved in multiple-vehicle crashes.

3.5 Drug use among fatally injured drivers

This section presents information on the presence of drugs, exclusively among drivers fatally injured in Canada during 2017. *At the time this report was being prepared, 2017 medical examiner from Newfoundland and Labrador were not available. For this reason, 2017 data reported in this section*

excludes this jurisdiction. A comparison of testing rates of fatally injured drivers for both alcohol and drugs can be found in Table 3-15 on p. 45. Table 3-6 shows the information by age group, sex, vehicle type, and collision type (single vs. multiple). The data are presented for drivers of the highway vehicles (i.e., automobiles, trucks, vans, motorcycles, tractor-trailers) who died within 30 days in collisions which occurred on public roadways.

The first column in the table shows the number of drivers killed. The next two columns show the number and percent of these victims who were tested for drugs. The remaining columns provide information on the results of the drug tests – this includes the number and percent of those tested who were positive for drugs.

Table 3-6
Drug Use Among Fatally Injured Drivers of Highway Vehicles: Canada, 2017**

Category of Driver	Total Number of Driver Deaths*	Drivers Tested		Positive for Drugs	
		Number	% of total	Number	% of total
Age					
<20***	76	66	86.8	36	54.5
20-25	140	123	61.0	60	48.8
26-35	216	194	89.8	86	44.3
36-45	181	153	84.5	64	41.8
46-55	168	145	86.3	57	39.3
>55	413	311	75.3	127	40.8
Sex					
Male	938	775	82.6	344	44.4
Female	256	217	84.8	86	39.6
Vehicle Type					
Automobile	616	501	81.3	220	43.9
Motorcycle	192	155	80.7	65	41.9
Tractor Trailer	44	38	86.4	9	23.7
Heavy Truck[1]	11	9	81.8	4	44.4
Van	92	79	85.9	36	45.6
Light Truck[2]	232	203	87.5	95	46.8
Other Truck[3]	6	6	100.0	1	16.7
Other Hwy. Vehicle[4]	1	1	100.0	0	0.0
Collision Type					
Single-Vehicle	479	397	82.9	208	52.4
Multiple-Vehicle	715	595	83.2	222	37.3
TOTAL	1194	992	83.1	430	43.3

* Drivers dying within 30 days in crashes on public roadways.
** Excluding Newfoundland and Labrador.
*** Drivers in two age groups have been aggregated to ensure that an individual will not be identified.

[1] Trucks over 4500 kg.
[2] e.g., pickup trucks.
[3] Motorhomes, utility vehicles, plows and trucks of unknown type.
[4] Emergency vehicles and buses.

Note: The vehicle types that appear in the shaded area correspond to the truck/van category used in the jurisdictional sections of this report.

As can be seen, in 2017, 83.1% of fatally injured drivers in Canada were tested for drug use. Among fatally injured tested drivers, 430 out of 992 (43.3%) were positive for drugs.

3.5.1 Age differences. Drivers under age 16 and 16-19 have been regrouped (<20 age group) to ensure that individuals cannot be identified. Fatally injured drivers under age 20 were the most likely to have been positive for drugs – 54.5% of drivers in this age group tested positive for drugs. By contrast, 39.3% of drivers aged 46-55 tested positive for drugs.

3.5.2 Sex differences. Males dominate the picture as they account for 80.0% of all the fatally injured drivers who tested positive for drugs. Males dominate the picture largely because they account for 78.6% of the drivers who are killed (938 of the 1,194 fatalities are males). Fatally injured male drivers were more likely to have been positive for drugs than female drivers (44.4% and 39.6%, respectively).

3.5.3 Vehicle differences. Within each of the vehicle types, 46.8% of light truck drivers, 45.6% of fatally injured van drivers, 44.4% of heavy truck drivers, 43.9% of automobile drivers, 41.9% of motorcyclists, 23.7% of tractor trailer drivers, and 16.7% of drivers of other trucks tested positive for drugs. By contrast, 0.0% of drivers of other highway vehicles tested positive for drugs.

3.5.4 Collision differences. More than half of the drivers who were killed in single-vehicle collisions (52.4%) tested positive for drugs compared to 37.3% of those involved in multiple vehicle crashes.

3.5.5 Categories of drugs detected. In Table 3-7, the categories of drugs found among fatally injured drivers testing positive for drugs is shown. A brief description of the different drug categories is provided in Section 2.2.5. Among the 430 fatally injured drivers who tested positive for drugs, 46.7% tested positive for cannabis. Other categories of drugs found in fatally injured drivers testing positive for drugs were CNS depressants (41.4%), CNS stimulants (33.0%), narcotic analgesics (21.2%), dissociative anesthetics (1.9%), hallucinogens (0.9%), and inhalants (0.2%).

Table 3-7
Drug Use Among Fatally Injured Drivers of Highway Vehicles: Canada**, 2017

Prevalence of Drug Use

Total Number of Driver Deaths	Drivers Tested		Positive for Drugs	
	Number	% of total	Number	% of tested
1194	992	(83.1)	430	(43.3)

Categories of Drugs Found Among Drivers Testing Positive

Drug Category	Positive for Drug Type	
	Number of Drivers	% of drivers testing positive*
Cannabis	201	(46.7)
CNS Depressants	178	(41.4)
CNS Stimulants	142	(33.0)
Narcotic Analgesics	91	(21.2)
Dissociative Anesthetics	8	(1.9)
Hallucinogens	4	(0.9)
Inhalants	1	(0.2)

* Percentages will not add up to 100% due to multiple drug types found in blood samples of some drivers.

** Excluding Newfoundland and Labrador.

3.6 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

The previous sections examined four indicators of the alcohol-crash problem: the number and percent of people who died in crashes that involved alcohol; the number and percent of fatally injured drivers who had been drinking; the number and percent of fatally injured pedestrians who had been drinking; and the number and percent of drivers in serious injury crashes that involved alcohol. The drug use among fatally injured drivers indicator was also examined. This section examines changes in these four indicators of the alcohol-crash problem and indicators of the drug-crash problem and cannabis-crash problem. Findings for these indicators of the alcohol-crash problem and drug-crash problem in the 2016-2017 period are compared with those taken from the 2011-2015 baseline period.

3.6.1 Deaths involving drinking drivers: 1996-2017. As mentioned earlier in Section 3.1, at the time this report was being prepared, 2017 medical examiner from Newfoundland and Labrador were not available. *For this reason, trend data reported in this section excludes this jurisdiction.* Table 3-8 and Figure 3-12 show the number and percent of people who died in crashes involving a drinking driver from 1996 to 2017. These results differ slightly from those in Section 3.1. In this section, deaths that occur in crashes that involve a drinking pedestrian are not necessarily classified as alcohol-related deaths. The focus here is more restrictive, on deaths that occur in crashes involving at least one drinking driver (see Section 2.2.1 for types of vehicles that are included).

Table 3-8

Number* and Percent of Motor Vehicle Deaths Involving a Drinking Driver: Canada***, 1996-2017**

Year of Death	Number of Deaths	Alcohol-Related Deaths	
		Number	% of total
1996	2944	1063	36.1
1997	2997	1043	34.8
1998	2814	967	34.4
1999	2888	878	30.4
2000	2746	846	30.8
2001	2565	849	33.1
2002	2718	817	30.1
2003	2677	873	32.6
2004	2568	782	30.5
2005	2735	828	30.3
2006	2678	884	33.0
2007	2557	829	32.4
2008	2278	765	33.6
2009	2136	700	32.8
2010	2129	724	34.0
2011	2025	617	30.5
2012	2111	624	29.6
2013	1917	523	27.3
2014	1816	484	26.7
2015	1891	514	27.2
2016	1883	524	27.8
2017	1866	477	25.6
2011-2015 baseline	1952	552	28.3
2016-2017 period	1875	501	26.7

* Numbers are estimates based on the percent of deaths for which information was available to determine alcohol use.

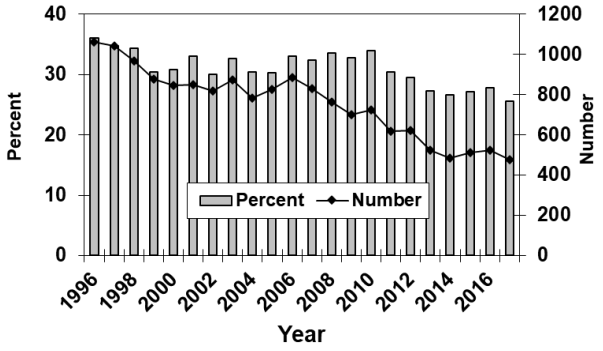
** Persons dying within 30 days of collisions which occur on public roadways involving at least one principal vehicle type.

*** Excluding Newfoundland and Labrador.

As shown in the table and figure, the number of deaths in crashes that involved a drinking driver generally decreased from 1,063 in 1996 to 484 in 2014, rose to 524 in 2016, and decreased to a low of 477 in 2017. The percentage of alcohol-related fatalities decreased from 36.1% in 1996 to 26.7% in 2014, rose to 27.8% in 2016, and fell to a low of 25.6% in 2017.

As shown at the bottom of the table, during the 2011-2015 baseline period there was an average of 552 fatalities involving a drinking driver and they accounted for 28.3% of all fatalities. This means that the percent of fatalities involving a drinking driver decreased by 5.7% from 28.3% in the baseline period (2011-2015) to 26.7% in the 2016-2017 period. And in terms of the number of persons killed in crashes involving a drinking driver, there has been a 9.2% decrease from an average of 552 in the baseline period (2011-2015) for Road Safety Strategy 2015 to 501 in the 2016-2017 period.

Figure 3-12
Number and Percent of Deaths Involving a Drinking Driver: Canada, 1996-2017



3.6.2 Alcohol use among fatally injured drivers: 1996-2017. As mentioned earlier in Section 3.2, at the time this report was being prepared, 2017 medical examiner from Newfoundland and Labrador were not available. *For this reason, trend data reported in this section excludes this jurisdiction.* Data on alcohol use among fatally injured drivers of highway vehicles over the 22-year period from 1996 to 2017 are shown in Table 3-9. Trends are illustrated in Figure 3-13 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol – represented by the white area; (2) had BACs below the legal limit – shown by the light grey area; and (3) had BACs over the legal limit – the dark grey area.

The number of fatally injured drivers with BACs over the legal limit (> 80 mg%) generally declined from 469 to 234 in 2014, rose to 254 in 2015, and decreased to 249 in 2017. The percent of fatally injured drivers with BACs over the legal limit generally decreased from 34.4% in 1996 to a low of 23.7% in 2014, rose to 26.0% in 2015, and decreased again to 24.6% in 2017.

By contrast, the number of fatally injured drivers with zero BACs has fluctuated over this 22-year period, rising from 798 in 1996 to a high of 977 in 1999, before gradually decreasing to 713 in 2017. The percent of fatally injured drivers with zero BACs generally increased from 58.6% to 67.8% between 1996 and 1999, remained stable until 2010 (62.9%), peaked at 71.8% in 2014, decreased to 67.9% in 2016, and rose again to 70.5% in 2017.

The number of fatally injured drivers with BACs between 1-80 mg% generally declined from 95 to 50 in 2017. The percent of fatally injured drivers with BACs between 1 and 80 mg% generally decreased from 7.0% in 1996 to 4.9% in 2017.

When compared to the 2011-2015 baseline period shown at the bottom of Table 3-9, the percentage of fatally injured drivers with zero BACs in the 2016-2017 period increased by 0.7% (from 68.7% to 69.2%). Among drivers with BACs from 1-80 mg%, there was a 9.4% increase (from 5.3% to 5.8%). And among those with BACs over 80 mg%, there was a 3.4% decrease (from 25.9% to 25.0%).

Table 3-9

Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Canada*, 1996-2017

Year	Number of Drivers	Drivers Tested		Drivers Grouped by BAC (mg%)					
		No.	(% Total)	Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1996	1600	1362	85.1	798	58.6	95	7.0	469	34.4
1997	1678	1394	83.1	854	61.3	98	7.0	442	31.7
1998	1598	1360	85.1	827	60.8	86	6.3	447	32.9
1999	1685	1442	85.6	977	67.8	81	5.6	384	26.6
2000	1606	1375	85.6	884	64.3	87	6.3	404	29.4
2001	1536	1332	86.7	828	62.2	74	5.6	430	32.3
2002	1626	1401	86.2	915	65.3	84	6.0	402	28.7
2003	1565	1347	86.1	833	61.8	78	5.8	436	32.4
2004	1537	1322	86.0	866	65.5	89	6.7	367	27.8
2005	1673	1427	85.3	914	64.1	77	5.4	436	30.6
2006	1620	1389	85.7	880	63.4	98	7.1	411	29.6
2007	1572	1355	86.2	845	62.4	94	6.9	416	30.7
2008	1436	1265	88.1	787	62.2	71	5.6	407	32.2
2009	1337	1138	85.1	712	62.6	61	5.4	365	32.1
2010	1288	1105	85.8	695	62.9	71	6.4	339	30.7
2011	1221	1027	84.1	688	67.0	56	5.5	283	27.6
2012	1255	1062	84.6	717	67.5	49	4.6	296	27.9
2013	1162	1014	87.3	701	69.1	65	6.4	248	24.5
2014	1119	986	88.1	708	71.8	44	4.5	234	23.7
2015	1166	978	83.9	670	68.5	54	5.5	254	26.0
2016	1126	962	85.4	653	67.9	65	6.8	244	25.4
2017	1194	1012	84.8	713	70.5	50	4.9	249	24.6
2011-2015 baseline	1185	1014	(85.6)	697	(68.7)	54	(5.3)	263	(25.9)
2016-2017 period	1160	987	(85.1)	683	(69.2)	57	(5.8)	247	(25.0)

* Canada totals exclude Newfoundland and Labrador.

Figure 3-13

Trends in Alcohol Use Among Driver Fatalities: Canada, 1996-2017

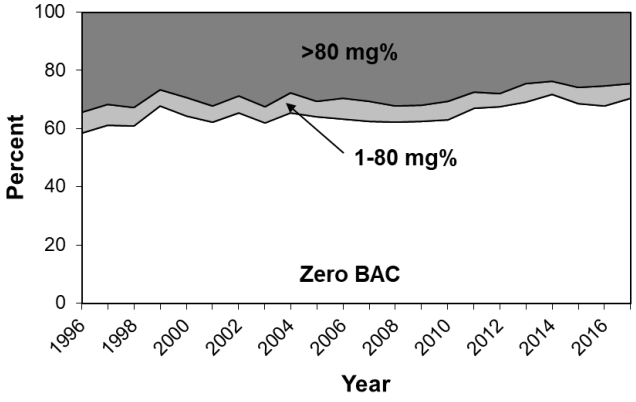


Table 3-10 and Figure 3-14 also show data on alcohol use among fatally injured drivers from 1996 to 2017. Once again, these data are for drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2). However, these results differ from those reported above

for two reasons. First, the number of drivers is extrapolated to reflect the BAC distribution of drivers tested for alcohol (see Figure 3-2). Second, drivers are grouped in only two BAC categories: zero and positive.

As can be seen at the bottom of Table 3-10, the percentage of fatally injured drivers testing positive for alcohol from 2011-2015, the baseline period, is 31.3%. In the 2016-2017 period, 30.9% of fatally injured drivers tested positive for alcohol, a 1.3% decrease from the baseline period.

Table 3-10

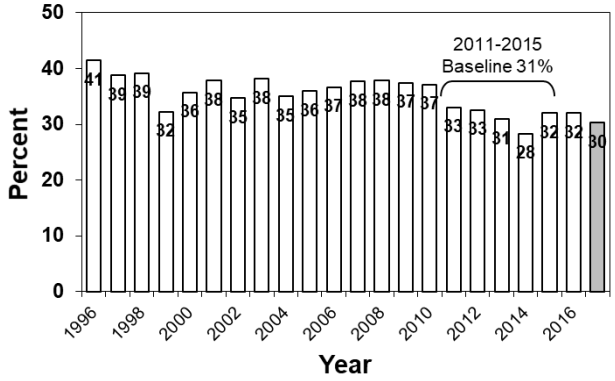
Alcohol Use* Among Fatally Injured Drivers** of Highway Vehicles: Canada, 1996-2017

Year	Number of Drivers	Drivers Grouped by BAC (mg%)			
		Zero	(% Tested)	Positive	(% Tested)
1996	1600	937	(58.6)	663	(41.4)
1997	1678	1028	(61.3)	650	(38.7)
1998	1598	972	(60.8)	626	(39.2)
1999	1685	1142	(67.8)	543	(32.2)
2000	1606	1033	(64.3)	573	(35.7)
2001	1536	955	(62.2)	581	(37.8)
2002	1626	1062	(65.3)	564	(34.7)
2003	1565	968	(61.9)	597	(38.1)
2004	1537	1007	(65.5)	530	(34.5)
2005	1673	1072	(64.1)	601	(35.9)
2006	1620	1026	(63.3)	594	(36.7)
2007	1572	980	(62.3)	592	(37.7)
2008	1436	893	(62.2)	543	(37.8)
2009	1337	837	(62.6)	500	(37.4)
2010	1288	810	(62.9)	478	(37.1)
2011	1221	818	(67.0)	403	(33.0)
2012	1255	847	(67.5)	408	(32.5)
2013	1162	803	(69.1)	359	(30.9)
2014	1119	804	(71.8)	315	(28.2)
2015	1166	799	(68.5)	367	(31.5)
2016	1126	764	(67.9)	362	(32.1)
2017	1194	841	(70.4)	353	(29.6)
2011-2015 baseline	1185	814	(68.7)	371	(31.3)
2016-2017 period	1160	802	(69.1)	358	(30.9)

* Numbers are estimates based on the BAC distribution of drivers tested for alcohol.

** Dying within 30 days in collisions which occurred on public roadways.

Figure 3-14
Percent of Fatally Injured Drivers
Positive for Alcohol: Canada, 1996-2017



3.6.3 Fatally injured pedestrians: 1996-2017. As mentioned earlier in Section 3.3, at the time this report was being prepared, 2017 medical examiner from Newfoundland and Labrador were not available. *For this reason, trend data reported in this section excludes this jurisdiction.* Data on alcohol use among fatally injured pedestrians over the 22-year period from 1996 to 2017 are shown in Table 3-11. Trends are illustrated in Figure 3-15 which shows changes in the percent of fatally injured pedestrians who: (1) showed no evidence of alcohol – represented by the white area; (2) had BACs below the legal limit – shown by the light grey area; and (3) had BACs over 80 mg% – the dark grey area.

The number of fatally injured pedestrians with a BAC over 80 mg% generally declined from a high of 93 in 1996 to 50 in 2014, rose to 63 in 2016, and fell to a low of 42 in 2017. The percent of fatally injured pedestrians with a BAC over 80 mg% generally rose from 35.2% in 1996 to a high of 40.9% in 2010, and decreased to a low of 25.5% in 2017.

The number of fatally injured pedestrians with no evidence of alcohol generally decreased from 164 to 95 from 1996 to 2009, rose to 149 in 2016, and decreased again to 115 in 2017. The percent of fatally injured pedestrians with zero BACs has ranged from about 50% to 60% over this 22-year period. The percentage of fatally injured pedestrians with no evidence of alcohol generally rose from 62.1% in 1996 to 69.7% in 2017.

Table 3-11

Alcohol Use Among Fatally Injured Pedestrians*:
Canada, 1996-2017

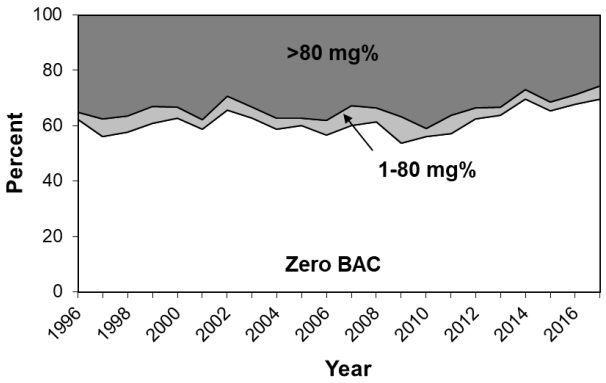
Year	Number of Pedestrians	Pedestrians Tested		Pedestrians Grouped by BAC (mg%)					
		No.	(% Total)	Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1996	429	264	61.5	164	62.1	7	2.7	93	35.2
1997	388	237	61.1	133	56.1	15	6.3	89	37.6
1998	382	236	61.8	136	57.6	14	5.9	86	36.4
1999	375	233	62.1	142	60.9	14	6.0	77	33.0
2000	343	202	58.9	127	62.9	8	4.0	67	33.2
2001	312	206	66.0	121	58.7	7	3.4	78	37.9
2002	324	204	63.0	134	65.7	10	4.9	60	29.4
2003	368	217	59.0	136	62.7	9	4.1	72	33.2
2004	321	206	64.2	121	58.7	8	3.9	77	37.4
2005	317	201	63.4	121	60.2	5	2.5	75	37.3
2006	337	205	60.8	116	56.6	11	5.4	78	38.0
2007	312	196	62.8	118	60.2	14	7.1	64	32.7
2008	272	161	59.2	99	61.5	8	5.0	54	33.5
2009	296	177	59.8	95	53.7	17	9.6	65	36.7
2010	276	171	62.0	96	56.1	5	2.9	70	40.9
2011	313	180	57.5	103	57.2	12	6.7	65	36.1
2012	315	205	65.1	128	62.4	8	3.9	69	33.7
2013	287	171	59.6	109	63.7	5	2.9	57	33.3
2014	284	185	65.1	129	69.7	6	3.2	50	27.0
2015	294	182	61.9	119	65.4	6	3.3	57	31.3
2016	348	220	63.2	149	67.7	8	3.6	63	28.6
2017	298	165	55.4	115	69.7	8	4.8	42	25.5
2011-2015 baseline	299	185	(61.9)	118	(63.8)	7	(3.8)	60	(32.4)
2016-2017 period	323	193	(59.8)	132	(68.4)	8	(4.1)	53	(27.5)

* Dying within 30 days in collisions which occurred on public roadways.

The number of fatally injured pedestrians with BACs between 1-80 mg% fluctuated over this 22-year period, decreasing from 15 in 1997 to five in 2013, before rising to eight in 2016 and 2017. The percent of fatally injured drivers with BACs between 1-80 mg% generally rose from 2.7% in 1996 to 9.6% in 2009, decreased to 3.2% in 2014, and rose again to 4.8% in 2017.

When compared to the 2011-2015 baseline period shown at the bottom of Table 3-11, the percentage of fatally injured pedestrians with zero BACs in 2016 increased by 7.2% (from 63.8% to 68.4%). Among pedestrians with BACs from 1-80 mg%, there was a 7.9% increase (from 3.8% to 4.1%). And among those with BACs over 80 mg%, there was an 15.1% decrease (from 32.4% to 27.5%).

Figure 3-15
Trends in Alcohol Use Among Pedestrian Fatalities: Canada, 1996-2017



3.6.4 Drivers in serious injury crashes: 2005-2016. Table 3-12 and Figure 3-16 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes. For most jurisdictions, serious injury collision data are available as early as 1996. However, these data were not available for British Columbia until 2005 and the Yukon until 1998. Thus, in order to provide data for the greatest number of cases, the data shown in this table cover the 2005-2017 period. However, there are still some jurisdictions that did not have serious injury collision data available for all 12 years at the time this report was being prepared. These jurisdictions include New Brunswick (2013, 2017), Newfoundland and Labrador (2009-2011), and Nunavut (2011, 2017). Thus Table 3-12 and Figure 3-16 exclude these three jurisdictions.

As can be seen, the incidence of alcohol-involvement in serious crashes has generally declined. Between 2005 and 2006 the number of drivers of highway vehicles in serious injury crashes that involved alcohol rose from 3,387 to 3,508. This number gradually decreased to 1,788 in 2015, and rose to 1,835 in 2017. The percentage of drivers of highway vehicles in serious injury crashes involving alcohol rose from 19.4% in 2005 to 20.7% in 2007, generally decreased to 14.5% in 2015, then rose to 15.4% in 2017. In the baseline period (2011-2015), an average of 16.2% of drivers in serious injury crashes were in alcohol-involved crashes. In the 2016-2017 period, the incidence of drivers in alcohol-involved crashes was 15.2%, a 6.2% decrease.

Table 3-12

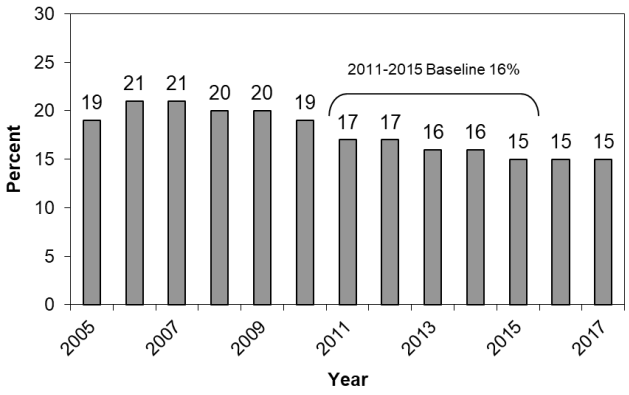
Number and Percent of All Drivers in Serious Injury Crashes* that Involved Alcohol: Canada, 2005-2017**

Year	Number of Drivers	Number in Alcohol-Involved Crashes	Percent
2005	17439	3387	(19.4)
2006	17073	3508	(20.5)
2007	15659	3236	(20.7)
2008	14420	2871	(19.9)
2009	13185	2663	(20.2)
2010	13058	2452	(18.8)
2011	11940	2081	(17.4)
2012	12230	2100	(17.2)
2013	12120	1920	(15.8)
2014	11762	1879	(16.0)
2015	12301	1788	(14.5)
2016	12096	1804	(14.9)
2017	11930	1835	(15.4)
2011-2015 baseline	12071	1954	(16.2)
2016-2017 period	12013	1820	(15.2)

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

** Excludes data from New Brunswick, Newfoundland and Labrador, and Nunavut.

Figure 3-16
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: Canada, 2005-2017



3.6.5 Drug use among fatally injured drivers: 2000-2017. As mentioned earlier in Section 3.5, at the time this report was being prepared, 2017 medical examiner from Newfoundland and Labrador were not available. *For this reason, trend data reported in this section excludes this jurisdiction.* Data on drug use among fatally injured drivers of highway vehicles over the 18-year period from 2000 to 2017 are shown in Table 3-13. Trends are illustrated in Figure 3-17 which shows changes in the percent of fatally injured drivers who tested positive for drugs.

Unlike trends in the number of fatally injured drivers testing positive for alcohol, the corresponding trends in the number of drivers testing positive for drugs is more difficult to analyse since testing rates for drugs are less consistent than those for alcohol. For example, in 2000, only 40.2% of fatally injured drivers were tested for drugs compared to 83.1% in 2017.

The percent of fatally injured drivers testing positive for drugs generally rose from 32.4% in 2000 to a high of 47.2% in 2015 and decreased in 2017 (43.3%).

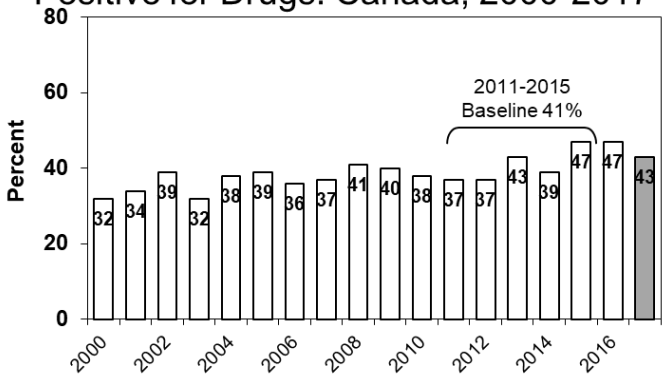
During the baseline period (2011-2015), an average of 40.6% of fatally injured drivers tested positive for drugs. In the 2016-2017 period, the incidence of fatally injured drivers testing positive for drugs rose to 44.9%, a 10.6% increase.

Table 3-13
Drug Use Among Fatally Injured Drivers* of Highway Vehicles: Canada**, 2000-2017

YEAR	Number of Drivers	Drivers Tested	(% Total)	Drivers Tested for Drugs			
				Negative	(% Tested)	Positive	(% Tested)
2000	1606	645	40.2	436	67.6	209	32.4
2001	1536	685	44.6	451	65.8	234	34.2
2002	1626	744	45.8	454	61.0	290	39.0
2003	1565	739	47.2	503	68.1	236	31.9
2004	1537	699	45.5	435	62.2	264	37.8
2005	1673	831	49.7	505	60.8	326	39.2
2006	1620	1013	62.5	646	63.8	367	36.2
2007	1572	1029	65.5	644	62.6	385	37.4
2008	1436	891	62.0	523	58.7	368	41.3
2009	1337	794	59.4	476	59.9	318	40.1
2010	1288	782	60.7	487	62.3	295	37.7
2011	1221	937	76.7	593	63.3	344	36.7
2012	1255	993	79.1	625	62.9	368	37.1
2013	1162	983	84.6	563	57.3	420	42.7
2014	1119	941	84.1	572	60.8	369	39.2
2015	1166	948	81.3	501	52.8	447	47.2
2016	1126	940	83.5	503	53.5	437	46.5
2017	1194	992	83.1	562	56.7	430	43.3
2011-2015 baseline	1185	961	81.1	571	59.4	390	40.6
2016-2017 period	1160	967	83.4	533	55.1	434	44.9

* Dying within 30 days in collisions which occurred on public roadways.
** Excludes Newfoundland and Labrador.

Figure 3-17
Percent of Fatally Injured Drivers Positive for Drugs: Canada, 2000-2017



Data on cannabis use among fatally injured drivers of highway vehicles over the 18-year period from 2000 to 2017 are shown in Table 3-14. Trends are illustrated in Figure 3-18 which shows changes in the percent of fatally injured drivers who tested positive for cannabis.

Similar to trends in the number of fatally injured drivers testing positive for drugs, the trends in the number of drivers testing positive for cannabis is difficult to analyse since testing rates for cannabis are less consistent than those for alcohol. For example, in 2000, only 40.2% of fatally injured drivers were tested for cannabis compared to 83.1% in 2017.

The percent of fatally injured drivers testing positive for cannabis generally rose from 12.9% in 2000 to 21.3% in 2013, decreased in 2014 (18.0%), rose until 2016 (21.2%), and decreased to 20.3% in 2017.

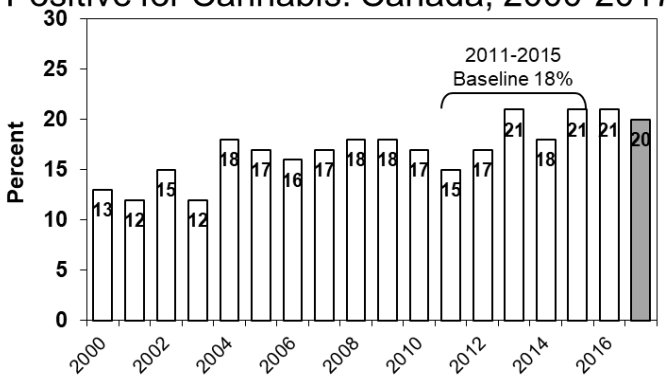
During the baseline period (2011-2015), an average of 18.4% of fatally injured drivers tested positive for cannabis. In the 2016-2017 period, the incidence of fatally injured drivers testing positive for cannabis rose to 20.7%, a 12.5% increase.

Table 3-14
Cannabis Use Among Fatally Injured Drivers* of Highway Vehicles: Canada**, 2000-2017

YEAR	Number of Drivers	Drivers Tested	(% Total)	Drivers Tested for Cannabis			
				Negative	(% Tested)	Positive	(% Tested)
2000	1606	645	40.2	562	87.1	83	12.9
2001	1536	685	44.6	605	88.3	80	11.7
2002	1626	744	45.8	630	84.7	114	15.3
2003	1565	739	47.2	654	88.5	85	11.5
2004	1537	699	45.5	571	81.7	128	18.3
2005	1673	831	49.7	690	83.0	141	17.0
2006	1620	1013	62.5	847	83.6	166	16.4
2007	1572	1029	65.5	852	82.8	177	17.2
2008	1436	891	62.0	728	81.7	163	18.3
2009	1337	794	59.4	649	81.7	145	18.3
2010	1288	782	60.7	648	82.9	134	17.1
2011	1221	937	76.7	793	84.6	144	15.4
2012	1255	993	79.1	823	82.9	170	17.1
2013	1162	983	84.6	774	78.7	209	21.3
2014	1119	941	84.1	772	82.0	169	18.0
2015	1166	948	81.3	754	79.5	194	20.5
2016	1126	940	83.5	741	78.8	199	21.2
2017	1194	992	83.1	791	79.7	201	20.3
2011-2015 baseline	1185	960	81.0	783	81.6	177	18.4
2016-2017 period	1160	966	83.3	766	79.3	200	20.7

* Dying within 30 days in collisions which occurred on public roadways.
** Excludes Newfoundland and Labrador.

Figure 3-18
Percent of Fatally Injured Drivers
Positive for Cannabis: Canada, 2000-2017



3.7 Comparisons of Alcohol and Drug Indicators Between Jurisdictions

This section provides a comparison between jurisdictions of the prevalence of alcohol and drug use among fatally injured drivers and alcohol involvement among drivers in serious injury collisions. Analyses in this section differ from those in Section 3 in that they not only present data for Canada as a whole, but data for each of the jurisdictions. This enables one to compare data between jurisdictions or to compare an individual jurisdiction's data with the national average. This section includes analysis of:

- Alcohol and drug use among fatally injured drivers in 2017; and,
- Trends in alcohol and drug use.

Please note that fatality data for Canada excludes Newfoundland and Labrador since 2017 medical examiner data were not available at the time of publication.

3.7.1 Alcohol and drug use among fatally injured drivers in 2017. Alcohol and drug use among fatally injured drivers are shown separately, and together, for Canada and each of its jurisdictions for 2017 in Table 3-15 and Figure 3-19. The table presents data on the number and percent of fatally injured drivers of highway vehicles that tested positive for alcohol and drugs. In addition, Table 3-15 shows the number and percentage of drivers who tested positive for both alcohol and drugs. These data are similar to those used to create Table 3-2 and 3-7. Data for less populous jurisdictions should be treated with caution since the number of fatally injured drivers is substantially smaller than those for other jurisdictions. In the case of the Yukon, Northwest Territories, and Nunavut, data are regrouped in order to ensure that an individual will not be identified.

In Canada in 2017, 84.8% of fatally injured drivers were tested for alcohol. Among these drivers, 29.5% had positive BACs. The testing rate for drug use among fatally injured drivers was somewhat lower (83.1%). And among these drivers, 43.3% tested positive for drugs. In 2017, 852 fatally injured drivers were tested for both alcohol and drugs. Among these drivers, 166 (19.5%) tested positive for both alcohol and drugs. The highest percentages of fatally injured drivers who tested positive for both alcohol and drugs were in the Territories (75.0%) and New Brunswick (25.7%).

Table 3-15

Alcohol and Drug Use Among Fatally Injured Drivers of Highway Vehicles: Canada, 2017

Juris	Drivers Killed*	Tested for Alcohol			Tested for Drugs			Tested for Both	
		Drivers Tested**	Zero BAC	Positive BAC	Drivers Tested**	Negative	Positive	Drivers Tested	Positive for Both
BC	180	138 (76.7)	107 (77.5)	31 (22.5)	138 (76.7)	109 (79.0)	29 (21.0)	126	16 (12.7)
AB	191	186 (97.4)	125 (67.2)	61 (32.8)	185 (96.9)	95 (51.4)	90 (48.6)	185	41 (22.2)
SK	55	52 (94.5)	32 (61.5)	20 (38.5)	49 (89.1)	30 (61.2)	19 (38.8)	49	9 (18.4)
MB	46	40 (87.0)	26 (65.0)	14 (35.0)	40 (87.0)	21 (52.5)	19 (47.5)	40	7 (17.5)
ON	413	359 (86.9)	260 (72.4)	99 (27.6)	352 (85.2)	184 (52.3)	168 (47.7)	226	57 (25.2)
QC	218	159 (72.9)	117 (73.6)	42 (26.4)	155 (71.1)	96 (61.9)	59 (38.1)	154	16 (10.4)
NB	46	38 (82.6)	22 (57.9)	16 (42.1)	35 (76.1)	15 (42.9)	20 (57.1)	35	9 (25.7)
NS	26	25 (96.2)	17 (68.0)	8 (32.0)	25 (96.2)	9 (36.0)	16 (64.0)	25	6 (24.0)
PE	12	9 (75.0)	6 (66.7)	3 (33.3)	9 (75.0)	3 (33.3)	6 (66.7)	8	2 (25.0)
NL****									
TER***	7	6 (85.7)	1 (16.7)	5 (83.3)	4 (57.1)	0 (0.0)	4 (100.0)	4	3 (75.0)
CAN	1194	1012 (84.8)	713 (70.5)	299 (29.5)	992 (83.1)	562 (56.7)	430 (43.3)	852	166 (19.5)

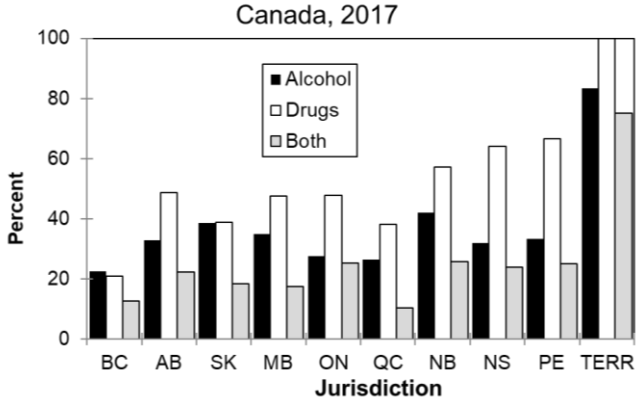
* Drivers dying within 30 days in crashes on public roadways.

** Represents number and percent tested of all drivers killed.

*** Data for the Yukon, Northwest Territories, and Nunavut are aggregated so that an individual will not be identified.

**** Data not available at the time of publication.

Figure 3-19
Percentage of Fatally Injured Drivers Testing Positive for Alcohol, Drugs, and Both Substances by Jurisdiction: Canada, 2017



3.7.2 Trends in alcohol and drug use. Comparisons for different indicators between the 2011-2015 baseline period and the 2016-2017 period were made for Canada and each of its jurisdictions. Similar to fatality data in Section 3.7.1, medical examiner from Newfoundland and Labrador were not available for

2017. *Thus, nationwide data exclude this jurisdiction for both the baseline period and the most recent years of data collection.* The following indicators are reviewed:

- Alcohol-related fatalities;
- Alcohol use among fatally injured drivers;
- Drivers in alcohol-related serious injury collisions; and,
- Drug use among fatally injured drivers.

Table 3-16 shows the percentage of persons that died in alcohol-related collisions. Data for less populous jurisdictions should be treated with caution since the number of drivers involved in serious injury collisions is substantially smaller than those for other jurisdictions. More detailed data can be found in Section 3.6.1.

During the 2011-2015 baseline period, an average of 28.3% of fatalities in Canada were alcohol-related, ranging from 0.0% in Nunavut to 50.0% in the Yukon. During the 2016-2017 period, 26.7% of fatalities in Canada were alcohol-related. Nunavut did not report any fatalities on public roadways in 2016 or 2017. On the other hand, 60.0% of fatalities in the Yukon, 50.0% in the Northwest Territories and 40.5% in Manitoba were alcohol-related in the 2016-2017 period.

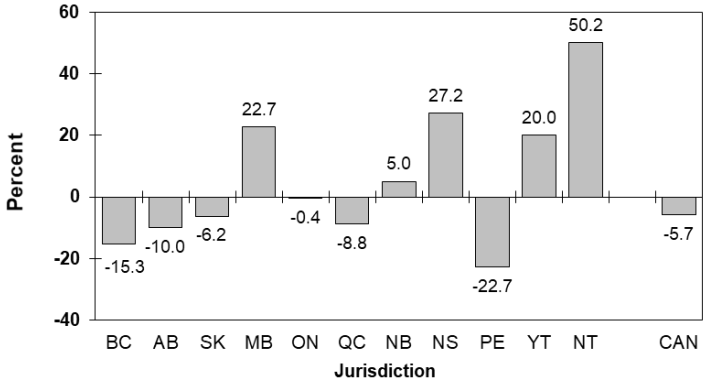
Table 3-16
Percent of Alcohol-Related Fatalities
2016-2017 vs. Baseline (2011-2015)

Juris	2011-2015 Baseline Average	2011	2012	2013	2014	2015	2016	2017	2016 to 2017 Average	Percent Differences		
										2017 vs. 2016	2017 vs. 2011-2015 Baseline	2016-2017 vs. 2011-2015 Baseline
BC	24.9	27.5	23.7	22.8	23.2	26.8	21.2	21	21.1	-0.9	-15.7	-15.3
AB	37.0	35.5	37.3	38.2	33.4	41.1	36.3	29.7	33.3	-18.2	-19.7	-10.0
SK	38.8	42.8	36.1	40.2	42.6	33.0	38.5	34.1	36.4	-11.4	-12.1	-6.2
MB	33.0	38.2	40.2	26.4	28.8	30.8	46.2	33.3	40.5	-27.9	0.9	22.7
ON	24.0	24.9	26.3	23.5	23.2	21.9	23.2	24.4	23.9	5.2	1.7	-0.4
QC	24.0	28.6	25.0	22.4	23.0	20.1	23.4	20.2	21.9	-13.7	-15.8	-8.8
NB	31.7	34.8	35.9	29.6	17.6	34.9	34.7	30.8	33.3	-11.2	-2.8	5.0
NS	24.6	29.2	29.5	23.6	26.9	17.5	30.0	33.3	31.3	11.0	35.4	27.2
PE	46.2	50.0	72.7	28.6	20.0	38.9	35.7	28.6	35.7	-19.9	-38.1	-22.7
NL	31.6	37.2	25.8	38.9	30.3	24.4	31.0	-	-	-	-	-
YT	50.0	33.3	0.0	25.0	50.0	75.0	50.0	66.7	60.0	33.4	33.4	20.0
NT	33.3	-	50.0	0.0	25.0	66.7	50.0	66.7	50.0	33.4	100.3	50.2
NU	0.0	0.0	0.0	-	-	-	-	-	-	-	-	-
CAN	28.3	30.5	29.6	27.3	26.7	27.2	27.8	25.6	26.7	-7.9	-9.5	-5.7

Figure 3-20 shows the changes in the percentage of fatalities that were alcohol-related in the 2016-2017 period compared to the 2011-2015 baseline period. In Canada, there was a 5.7% decrease in the percentage of fatalities that were alcohol-related between the 2016-2017 period (26.7%) and the 2011-2015 baseline period (28.3%). In six of the jurisdictions that were reviewed, there was a decrease in the percentage of persons who died in alcohol-related collisions. The most pronounced decrease in the 2016-2017 period compared to the 2011-2015 baseline period occurred in Prince Edward Island (22.7%).

In five jurisdictions there was an increase in the percentage of fatalities that were alcohol-related. The greatest increase in alcohol-related fatalities in the 2016-2017 period compared to the 2011-2015 baseline period was in the Northwest Territories (50.2%) and Nova Scotia (27.2%).

Figure 3-20
Change in the Percentage of Alcohol-Related Fatalities Between 2016-2017 and 2011-2015



The percentage of fatally injured drivers who tested positive for alcohol for Canada and its jurisdictions is shown in Table 3-17. Data for less populous jurisdictions should be treated with caution since the number of fatally injured drivers of highway vehicles is quite small when compared to corresponding numbers from other jurisdictions. Data for drivers from the Yukon, Northwest Territories, and Nunavut (Territories) are regrouped to ensure that an individual driver will not be identified. Furthermore, specific data for the years 2016 and 2017 for the Territories are not provided in order to maintain confidentiality. More detailed data on alcohol use among fatally injured drivers can be found in Section 3.6.2.

An average of 31.3% of fatally injured drivers tested positive for alcohol during the 2011-2015 baseline period, ranging from 27.0% in Nova Scotia to 50.0% in Prince Edward Island and the Territories. During the 2016-2017 period, 30.8% of fatally injured drivers in Canada tested positive for alcohol, ranging from 23.4% in British Columbia to 88.9% in the Territories and 44.4% in Prince Edward Island.

There was a 1.6% decrease in the percentage of fatally injured drivers who tested positive for alcohol in the 2016-2017 period (30.8%) when compared to the 2011-2015 baseline period (31.3%). Figure 3-21 shows that in six jurisdictions, there was an increase in the percentage of fatally injured drivers who tested positive for alcohol in the 2016-2017 period compared to the 2011-2015 baseline period. This increase was most pronounced in the Territories (77.8%) and New Brunswick (34.6%). In the remaining four jurisdictions, there were decreases in the percentage of fatally injured drivers testing positive for alcohol in the 2016-2017 period compared to the 2011-2015 baseline period. The most noteworthy decrease was in British Columbia (21.7%).

Table 3-17
Percent of Fatally Injured Drivers Positive for Alcohol
2016-2017 vs. Baseline (2011-2015)

Juris	2011-2015 Baseline Average	2011	2012	2013	2014	2015	2016	2017	2016 to 2017 Average	Percent Differences		
										2017 vs. 2016	2017 vs. 2011-2015 Baseline	2016-2017 vs. 2011-2015 Baseline
BC	29.9	27.9	28.6	27.9	28.4	35.6	23.5	22.5	23.4	-4.3	-24.7	-21.7
AB	34.5	31.8	33.0	36.7	31.1	38.2	33.0	32.8	33.2	-0.6	-4.9	-3.8
SK	39.7	44.3	31.5	33.8	43.5	45.0	41.8	38.5	40.7	-7.9	-3.0	2.5
MB	32.6	28.1	49.0	28.3	34.4	27.1	42.0	35.0	40.0	-16.7	7.4	22.7
ON	27.1	28.4	30.8	28.3	22.1	26.1	29.0	27.6	28.2	-4.8	1.8	4.1
QC	32.4	38.3	33.7	32.5	30.1	25.9	31.8	26.4	28.8	-17.0	-18.5	-11.1
NB	32.4	32.5	32.4	29.0	22.2	36.1	43.6	42.1	43.6	-3.4	29.9	34.6
NS	27.0	39.4	25.9	20.9	26.7	19.2	34.4	32.0	34.5	-7.0	18.5	27.8
PE	50.0	63.6	83.3	33.3	33.3	36.4	50.0	33.3	44.4	-33.4	-33.4	-11.2
NL	30.4	20.0	30.4	40.9	36.8	27.6	21.1	-	-	-	-	-
TERR*	50.0	40.0	0.0	0.0	0.0	50.0	-	-	88.9	N/A	N/A	77.8
CAN	31.3	33.0	32.5	30.9	28.2	31.5	32.1	29.5	30.8	-8.1	-5.8	-1.6

* Results for the Yukon, Northwest Territories and Nunavut for 2016 and 2017 have not been reported to ensure that an individual will not be identified.

Figure 3-21
Change in the Percentage of Fatally Injured Drivers Testing Positive for Alcohol Between 2016-2017 and 2011-2015

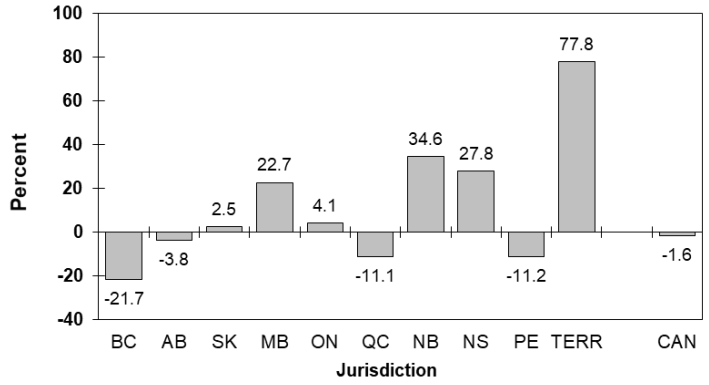


Table 3-18 shows the percentage of drivers that were involved in alcohol-related serious injury collisions. Totals for Canada exclude New Brunswick, Newfoundland and Labrador, and Nunavut since serious injury collision data were missing for these jurisdictions for at least one of the years between 2011 and 2017 at the time of publication. Data for less populous jurisdictions should be treated with caution since the number of drivers involved in serious injury collisions is substantially smaller than those for other jurisdictions. Section 3.6.4 provides more detailed data on these drivers.

During the 2011-2015 baseline period, an average of 16.2% of drivers in Canada were involved in alcohol-related serious injury collisions, ranging from 11.8% in Manitoba to 27.6% in Saskatchewan. In the 2016-2017 period, an average of 15.2% of drivers in Canada were involved in alcohol-related serious injury collisions, ranging from 10.7% in Manitoba to 42.9% in the Northwest Territories.

Table 3-18
Percent of Drivers in Alcohol-Related Serious Injury Collisions
2016-2017 vs. Baseline (2011-2015)

Juris	2011-2015 Baseline Average	2011	2012	2013	2014	2015	2016	2017	2016 to 2017 Average	Percent Differences		
										2017 vs. 2016	2017 vs. 2011-2015 Baseline	2016-2017 vs. 2011-2015 Baseline
BC	19.6	19.8	20.4	19.6	19.6	18.7	17.8	18.7	18.2	5.1	-4.6	-7.1
AB	15.2	16.7	15.7	14.3	16.7	13.2	14.5	12.4	13.4	-14.5	-18.4	-11.8
SK	27.6	27.8	28.6	28.4	22.8	29.5	21.5	28.4	25.1	32.1	2.9	-9.1
MB	11.8	15.6	10.7	13.1	11.8	9.4	10.1	11.4	10.7	12.9	-3.4	-9.3
ON	14.1	15.3	15.0	13.6	13.3	12.9	13.8	13.3	13.6	-3.6	-5.7	-3.5
QC	15.9	17.4	17.9	15.6	14.4	13.4	13.7	17.4	15.6	27.0	9.4	-1.9
NB	-	27.4	24.8	N/A	23.9	24.6	27.4	N/A	-	-	-	-
NS	16.5	17.1	18.6	15.8	16.6	14.7	19.1	22.5	21.3	17.8	36.4	29.1
PE	22.4	24.2	25.8	24.5	25.0	11.1	14.0	20.8	17.0	48.6	-7.1	-24.1
NL	-	N/A	18.6	17.9	7.4	14.3	15.2	13.3	14.3	-12.5	-	-
YT	25.0	34.6	15.8	26.1	25.9	11.5	11.1	22.2	17.4	100.0	-11.2	-30.4
NT	25.0	0.0	0.0	37.5	0.0	42.9	62.5	20.0	42.9	-68.0	-20.0	71.6
NU	-	N/A	0.0	0.0	-	50.0	0.0	N/A	-	-	-	-
CAN	16.2	17.4	17.2	15.8	16.0	14.5	14.9	15.4	15.2	3.4	-4.9	-6.2

There was a 6.2% decrease in the percentage of drivers who were involved in alcohol-related serious injury collisions in the 2016-2017 period (15.2%) when compared to the 2011-2015 baseline period (16.2%). Figure 3-22 shows that there was a decrease in the percentage of drivers who were involved in alcohol-related serious injury collisions in ten jurisdictions. The most pronounced decreases in the 2016-2017 period compared to the 2011-2015 baseline period occurred in the Yukon (30.4%) and Prince Edward Island (24.1%). The only jurisdictions that saw an increase from the 2011-2015 baseline period to the 2016-2017 period were the Northwest Territories (71.6%) and Nova Scotia (29.1%).

Figure 3-22
Change in the Percentage of Drivers in Alcohol-Related Serious Injury Collisions Between 2016-2017 and 2011-2015

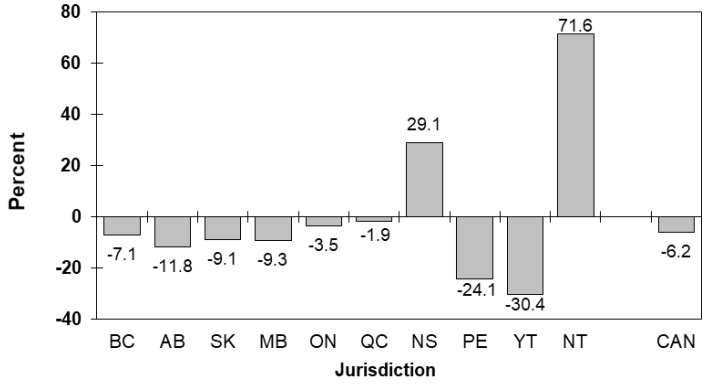


Table 3-19 shows the percentage of fatally injured drivers who tested positive for drugs, for Canada as a whole, and by jurisdiction. Data for less populous jurisdictions should be treated with caution since the number of fatally injured drivers of highway vehicles is quite small when compared to corresponding

numbers from other jurisdictions. 2013, 2014, 2016, and 2017 data for drivers from the Yukon, Northwest Territories, and Nunavut (Territories) are not reported to ensure that an individual driver will not be identified. In Section 3.6.5, more detailed data are available on drug use among fatally injured drivers.

As can be seen, during the 2011-2015 baseline period, an average of 40.6% of fatally injured tested drivers had positive results for drugs. This percentage ranged from 23.1% in British Columbia to 50.0% in the Territories and 47.8% in Manitoba. During the 2016-2017 period, 44.9% of fatally injured drivers in Canada tested positive for drugs, ranging from 19.0% in British Columbia to 66.7% in Prince Edward Island.

There was a 10.6% increase in the percentage of fatally injured drivers who tested positive for drugs in the 2016-2017 period (44.9%) when compared to the 2011-2015 baseline period (40.6%). In Figure 3-23, it can be seen that in eight jurisdictions, there was an increase in the percentage of fatally injured drivers who tested positive for drugs. The most pronounced increase in drivers who tested positive for drugs in 2016-2017 compared to the 2011-2015 baseline period was in Prince Edward Island (55.5%). The only jurisdiction that saw a decrease from the 2011-2015 baseline period to the 2016-2017 period was British Columbia (17.7%).

Table 3-19

Percent of Fatally Injured Drivers Positive for Drugs
2016-2017 vs. Baseline (2011-2015)

Juris	2011-2015 Baseline Average	2011	2012	2013	2014	2015	2016	2017	2016 to 2017 Average	Percent Differences		
										2017 vs. 2016	2017 vs. 2011-2015 Baseline	2016-2017 vs. 2011-2015 Baseline
BC	23.1	14.4	19.3	27.9	21.3	31.9	16.2	21	19	29.6	-9.1	-17.7
AB	46.0	35.3	40.6	55.2	43.8	53.9	50.3	48.6	49.5	-3.4	5.7	7.6
SK	40.6	42.5	37.3	41.7	36.8	46.6	66.2	38.8	54.4	-41.4	-4.4	34.0
MB	47.8	33.9	44.9	39.1	53.1	70.8	54.0	47.5	51.1	-12.0	-0.6	6.9
ON	46.9	41.6	47.3	48.7	43.5	52.7	51.9	47.7	49.7	-8.1	1.7	6.0
QC	35.8	44.6	30.5	35.5	34.9	34.5	38.5	38.1	38.5	-0.9	6.4	7.5
NB	43.8	38.2	27.3	35.5	68.0	58.3	66.7	57.1	62.2	-14.4	30.4	42.0
NS	40.5	43.8	37.7	37.2	36.7	46.2	50.0	64.0	55.2	28.0	58.0	36.3
PE	42.9	72.7	16.7	20.0	33.3	22.2	75.0	66.7	66.7	-11.1	55.5	55.5
NL	40.0	37.5	50.0	12.5	42.9	37.5	71.4	-	-	-	-	-
TERR*	50.0	33.3	0.0	-	-	75.0	-	-	-	-	-	-
CAN	40.6	36.7	37.1	42.7	39.2	47.2	46.5	43.3	44.9	-6.9	6.7	10.6

* Results for the Yukon, Northwest Territories and Nunavut for 2013, 2014, 2016 and 2017 have not been reported to ensure that an individual will not be identified.

Figure 3-23
Change in the Percentage of Fatally Injured Drivers Testing Positive for Drugs Between 2016-2017 and 2011-2015

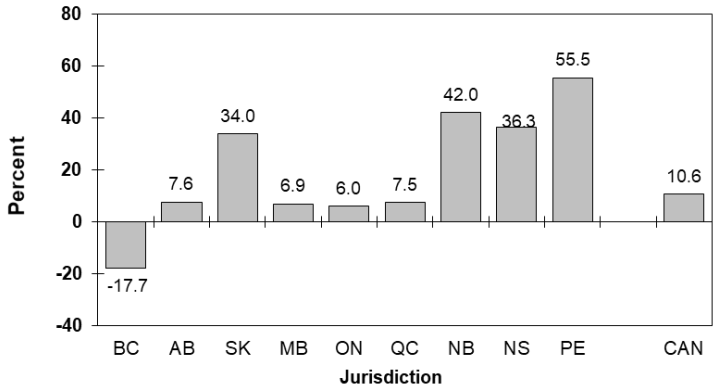


Table 3-20 shows the percentage of fatally injured drivers who tested positive for cannabis, for Canada as a whole, and by jurisdiction. Data for less populous jurisdictions should be treated with caution since the number of fatally injured drivers of highway vehicles is quite small when compared to corresponding numbers from other jurisdictions. Individual annual data for 2016 and 2017 from drivers in the Yukon, Northwest Territories, and Nunavut (Territories) are not reported to ensure that an individual driver will not be identified.

As can be seen, in the 2011-2015 baseline period, 18.5% of tested fatally injured drivers in Canada had positive results for cannabis. This percentage ranged from 1.3% in Manitoba and 12.2% in Saskatchewan to 31.4% in Newfoundland and Labrador. During the 2016-2017 period, 20.7% of fatally injured drivers in Canada tested positive for cannabis, ranging from 4.4% in Manitoba to 66.7% in the Territories.

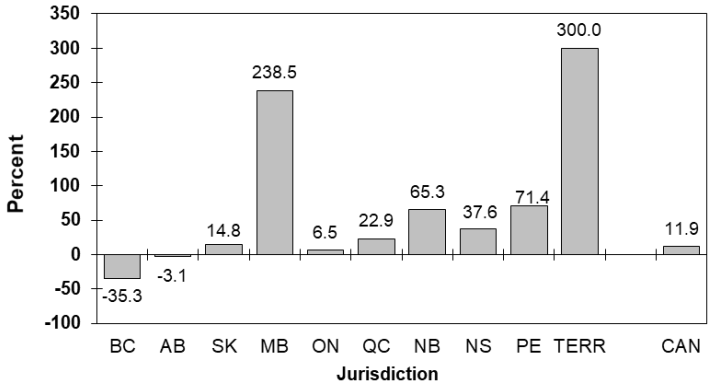
There was an 11.9% increase in the percentage of fatally injured drivers who tested positive for cannabis in the 2016-2017 period (20.7%) when compared to the 2011-2015 baseline period (18.5%). In Figure 3-24, it can be seen that in eight jurisdictions, there was an increase in the percentage of fatally injured drivers who tested positive for cannabis. The most pronounced increase was in the Territories, where there was an 300.0% increase from those drivers who tested positive for cannabis in the 2016-2017 period (66.7%) compared to the 2011-2015 baseline period (16.7%). Conversely, there was a 35.3% decrease in the percentage of fatally injured tested drivers in British Columbia who were positive for cannabis in the 2016-2017 period (8.8%) compared to the 2011-2015 baseline period (13.6%).

Table 3-20
Percent of Fatally Injured Drivers Positive for Cannabis
2016-2017 vs. Baseline (2011-2015)

Juris	2011-2015 Baseline Average	2011	2012	2013	2014	2015	2016	2017	2016 to 2017 Average	Percent Differences		
										2017 vs. 2016	2017 vs. 2011-2015 Baseline	2016-2017 vs. 2011-2015 Baseline
BC	13.6	9.6	10.1	15.5	14.2	18.5	8.8	8.7	8.8	-1.1	-36.0	-35.3
AB	19.1	12.4	18.3	25.1	19.2	19.6	16.9	20.0	18.5	18.3	4.7	-3.1
SK	12.2	15.1	12.1	9.7	10.5	13.8	15.4	12.2	14.0	-20.8	0.0	14.8
MB	1.3	3.6	0.0	0.0	0.0	2.1	2.0	7.5	4.4	275.0	476.9	238.5
ON	24.7	20.8	27.1	29.1	20.3	25.8	29.8	23.3	26.3	-21.8	-5.7	6.5
QC	16.6	14.5	13.7	17.7	19.7	17.9	18.5	21.9	20.4	18.4	31.9	22.9
NB	24.5	26.5	12.1	22.6	28.0	33.3	46.2	34.3	40.5	-25.8	40.0	65.3
NS	25.5	25.0	20.8	30.2	23.3	30.8	31.3	40.0	35.1	27.8	56.9	37.6
PE	20.6	36.4	0.0	20.0	0.0	22.2	37.5	33.3	35.3	-11.2	61.7	71.4
NL	31.4	37.5	25.0	12.5	42.9	37.5	42.9	-	-	-	-	-
TERR*	16.7	33.3	0.0	0.0	0.0	25.0	-	-	66.7	-	-	300.0
CAN	18.5	15.4	17.1	21.3	18.0	20.5	21.2	20.3	20.7	-4.2	9.7	11.9

* Results for the Yukon, Northwest Territories and Nunavut for 2016 and 2017 have not been reported to ensure that an individual will not be identified.

Figure 3-24
Change in the Percentage of Fatally Injured Drivers Testing Positive for Cannabis Between 2016-2017 and 2011-2015



4.0 BRITISH COLUMBIA

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in British Columbia. It describes data on:

- people who were killed in alcohol-related crashes (Section 4.1);
- alcohol use among fatally injured drivers (Section 4.2);
- drivers involved in alcohol-related serious injury crashes (Section 4.3);
- drug use among fatally injured drivers (Section 4.4); and,
- trends in the alcohol-crash and drug-crash problems (Section 4.5).

4.1 Deaths in alcohol-related crashes

Table 4-1 presents information on people who died in alcohol-related crashes in British Columbia during 2017 for persons dying within 30 days of the collision. This table specifically reports upon persons who died within 30 days of a collision which occurred on a public roadway that involved at least one highway vehicle. Motor vehicle deaths are categorized in terms of the victim's age, sex, victim type (see Section 2.1.1) and the type of vehicle they occupied (see Section 2.2.1). The first column in the table presents the number of deaths. The next two columns show the number and percent of these fatalities in which sufficient information was available to determine if alcohol was involved. *A motor vehicle fatality was considered to be alcohol involved if there was at least one drinking driver or drinking pedestrian in the fatal crash*.

For example, 15 people aged 16-19 were killed in motor vehicle crashes in British Columbia during 2017. And, in 13 cases (86.7%) it was possible to determine if alcohol was a factor in the crash.

The next column shows the number of people killed in crashes that were known to be alcohol-involved. For example, four people aged 16-19 died in alcohol-related crashes in British Columbia during 2017. The next column expresses this as a percentage – i.e., 30.8% of the 16-19 year olds who were killed died in an alcohol-related crash.

The final column (percent of all alcohol-related deaths) expresses the number of deaths in alcohol-related crashes as a percent of all the deaths in such crashes. For example, the alcohol-related deaths among 16-19 year olds represent 6.7% of all the people killed in alcohol-related crashes in British Columbia during 2017.

The totals at the bottom of the table provide a summary. As can be seen, 286 persons died within 30 days of a motor vehicle crash in British Columbia during 2017. In 272 (95.1%) of these cases, it was possible to determine if alcohol was a factor. Of these known cases, 60 (22.1%) involved alcohol. Extrapolating this figure to the total number of motor vehicle fatalities (286 x .221) it can be estimated

that *in British Columbia during 2017, 63 persons died in alcohol-related crashes within 30 days of the collision*.

Table 4-1
Deaths in Alcohol-Related Crashes: British Columbia, 2017

Category of Victim	Total Number of Deaths*	Alcohol Use Known		Alcohol-Related Deaths (ARDs)		
		Number	% of total	Number	% of known cases	% of all ARDs
Age Group						
<16	8	8	100.0	2	25.0	3.3
16-19	15	13	86.7	4	30.8	6.7
20-25	24	23	95.8	6	26.1	10.0
26-35	52	51	98.1	18	35.3	30.0
36-45	42	40	95.2	14	35.0	23.3
46-55	36	35	97.2	7	20.0	11.7
>55	109	102	93.6	9	8.8	15.0
Sex						
Male	202	193	95.5	49	25.4	81.7
Female	84	79	94.0	11	13.9	18.3
Victim Type						
Driver/ Operator	188	180	95.7	44	24.4	73.3
Passenger	52	49	94.2	13	26.5	21.7
Pedestrian	46	43	93.5	3	7.0	5.0
Vehicle Occupied						
Automobiles	105	100	95.2	31	31.0	51.7
Trucks/Vans	80	74	92.5	21	28.4	35.0
Motorcycles	33	33	100.0	3	9.1	5.0
Other Hwy Vehicles	14	14	100.0	2	14.3	3.3
Off-road Vehicles	8	8	100.0	0	0.0	0.0
(Pedestrians)	46	43	93.5	3	7.0	5.0
TOTAL	286	272	95.1	60	22.1	100.0

* Persons dying within 30 days in crashes on public roadways that involved at least one principal highway vehicle.

4.1.1 Victim age. Of all the people who died in alcohol-related crashes, 30.0% (see last column) were aged 26-35; 23.3% were aged 36-45; 15.0% were over age 55; 11.7% were aged 46-55; 10.0% were aged 20-25; 6.7% were aged 16-19; and 3.3% were under age 16.

The highest incidence of alcohol involvement occurred in the crashes in which a person aged 26-35 died (35.3%). The lowest incidence of alcohol involvement was found among the oldest fatalities – 8.8% of persons over 55 years of age died in crashes involving alcohol.

4.1.2 Sex. Of all the people who died in alcohol-related crashes, 81.7% were males. The incidence of alcohol in crashes in which a male died (25.4%) was greater than the incidence of alcohol in crashes in which a female died (13.9%).

4.1.3 Victim type. Of all the people who died in alcohol-related crashes, 73.3% were drivers/operators of a vehicle; 21.7% were passengers; and 5.0% were pedestrians.

Within each of the victim types, the highest incidence of alcohol involvement (26.5%) occurred in the crashes in which a passenger died. Alcohol was involved in 24.4% of the crashes in which a

driver/operator died and 7.0% of those in which a pedestrian died.

4.1.4 Type of vehicle occupied. Of all the people who died in alcohol-related crashes, 51.7% were in an automobile; 35.0% were in a truck/van; 5.0% were motorcyclists; and 3.3% were occupants of other highway vehicles.

Within each of these vehicle types, the incidence of alcohol involvement in which an automobile occupant died was greater than the incidence of alcohol in crashes in which a truck/van occupant or motorcyclist died (31.0% versus 28.4% and 9.1%). Among occupants of other highway vehicles, 14.3% were in an alcohol-related crash.

4.2 Alcohol in fatally injured drivers

This section presents information on the presence of alcohol, exclusively among drivers fatally injured in British Columbia during 2017. Table 4-2 shows the information by age group, sex, vehicle type (see Section 2.2.1 for types of vehicles that are included), and collision type (single vs. multiple) for drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Sections 2.1.1 and 2.2.2).

The first column in the table shows the number of drivers killed. The next columns show the number and percent of these victims who were tested for alcohol. The remaining columns provide information on the results of the alcohol tests: the first three of these present results for drivers who showed any evidence of alcohol; the last three columns present information on drivers who had BACs over the statutory limit of 80 mg%.

To illustrate, among 20-25 year olds there were 11 drivers killed during 2017; 10 of these fatally injured drivers (90.9%) were tested for alcohol. Of those who were tested, two (20.0%) were positive for alcohol. This means that 20-25 year old fatally injured drinking drivers accounted for 6.5% of all drinking drivers who were killed.

Then, in the final three columns, it can be seen that two of the 10 (20.0%) fatally injured 20-25 year olds who were tested for alcohol had BACs in excess of 80 mg%. This means that both of the drivers who tested positive for alcohol had BACs in excess of the legal limit. The final column expresses the number of drivers with illegal BACs as a percent of all drivers with BACs over the limit. Thus, 20-25 year old drivers accounted for 8.0% of all the drivers with BACs over the legal limit.

The main findings are shown by the totals at the bottom of the table. British Columbia had an average testing rate in 2017, with 76.7% of fatally injured drivers being tested for alcohol use.

In British Columbia, 22.5% had been drinking and 25 of 31 (80.6%) fatally injured drinking drivers had BACs over 80 mg%. Although not shown in the table, more refined analyses by different BAC categories show that among tested drivers:

- 77.5% had BACs of zero mg%;
- 0.7% had BACs from 1-49 mg%;

- 3.6% had BACs from 50-80 mg%
- 2.9% had BACs from 81 to 160 mg%; and,
- 15.2% had BACs over 160 mg%.

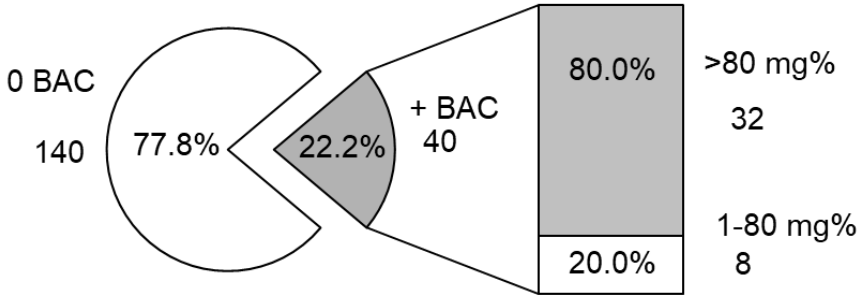
Table 4-2
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: British Columbia, 2017

Category of Driver	Total Number of Driver Deaths*	Drivers Tested		Positive BAC			BAC >80 mg%		
		No.	% of total	No.	% of tested	% of all drivers with +BAC	No.	% of tested	% of all drivers with BAC >80 mg%
Age Group									
16-19	9	8	88.9	3	37.5	9.7	0	0.0	0.0
20-25	11	10	90.9	2	20.0	6.5	2	20.0	8.0
26-35	35	32	91.4	12	37.5	38.7	10	31.3	40.0
36-45	30	22	73.3	7	31.8	22.6	7	31.8	28.0
46-55	25	19	76.0	3	15.8	9.7	2	10.5	8.0
>55	70	47	67.1	4	8.5	12.9	4	8.5	16.0
Sex									
Male	145	109	75.2	28	25.7	90.3	22	20.2	88.0
Female	35	29	82.9	3	10.3	9.7	3	10.3	12.0
Vehicle Type									
Automobiles	72	57	79.2	15	26.3	48.4	12	21.1	48.0
Trucks/Vans	64	49	76.6	11	22.4	35.5	10	20.4	40.0
Motorcycles	31	22	71.0	3	13.6	9.7	1	4.5	4.0
Tractor Trailers	13	10	76.9	2	20.0	6.5	2	20.0	8.0
Collision Type									
Single vehicle	80	63	78.8	23	36.5	74.2	17	27.0	68.0
Multiple vehicle	100	75	75.0	8	10.7	25.8	8	10.7	32.0
TOTAL	180	138	76.7	31	22.5	100.0	25	18.1	100.0

* Drivers dying within 30 days in crashes on public roadways.

In Figure 4-1, the BAC distribution for tested fatally injured drivers is extrapolated to reflect the BAC distribution for all fatally injured drivers. In this figure, 40 of 180 (22.2%) fatally injured drivers have a positive BAC. And among fatally injured drinking drivers, 32 (80.0%) have BACs over 80 mg%.

Figure 4-1
BACs* Among Fatally Injured Drivers of Highway Vehicles: British Columbia, 2017



* numbers are estimates based on the BAC distribution of drivers tested for alcohol

According to the British Columbia member jurisdiction of CCMTA, where information is presented on blood alcohol concentration (BAC) levels of deceased drivers (e.g., Figure 3-2 on page 19, Figure 4-1 on page 56 reflecting British Columbia data), the following must be taken into account:

BAC values presented in these figures only represent BAC values for deceased drivers exclusively and therefore represent only a subset of the BAC levels of drivers involved in motor vehicle crashes that cause deaths and injuries. For example, where a driver is assigned alcohol as a contributing factor to a crash and that driver survives that crash but, another road user is killed (pedestrian, cyclist or another driver or occupants of any vehicle), that driver's BAC level is not reflected in the figures shown above or the similar figures assembled for other Canadian provinces and territories. Furthermore, where a driver is assigned alcohol as a contributing factor to a crash and that driver survives that crash but are themselves injured or another road user is injured (pedestrian, cyclist or any driver or occupants of any vehicle involved in the crash), that driver's BAC level is again NOT reflected in the figures 3-2, 4-1, or the similar figures assembled for other Canadian provinces and territories. This is a major and prevailing limitation of these data and the BAC values represented herein. This means that the BAC levels reflected in these tables do not reflect the full range of BAC levels of drivers involved in serious crashes and should not be relied upon to draw conclusions about BAC levels and motor vehicle crash risk. In order to understand BAC levels and motor vehicle crash risk, a number of research studies exist to do that. Based on an extensive amount of research, there is overwhelming evidence that even BAC levels as low as .02 impair driving abilities and at .04 to .05 BAC there is a clear relationship between crash risk and alcohol (see Zador et al. 2000; Blomberg et al. 2009; Moskowitz et al. 2000).

4.2.1 Age differences. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 38.7% were aged 26-35; 22.6% were aged 36-45; 12.9% were over age 55; 9.7% were aged 16-19 and 46-55; and 6.5% were aged 20-25.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 40.0% were aged 26-35; 28.0% were aged 36-45; 16.0% were over age 55; and 8.0% were aged 20-25 and 46-55.

When comparing the incidence of drinking and driving among fatally injured drivers by age group, fatally

injured drivers aged 16-19 and 26-35 were the most likely to have been drinking (37.5%). By contrast, only 8.5% of the tested drivers aged over 55 had been drinking.

4.2.2 Sex differences. Males dominate the picture – they account for 92.3% of all the fatally injured drivers who had been drinking, and 90.0% of all the fatally injured drivers who were legally impaired.

Males dominate the picture largely because they account for most of the drivers who are killed (145 of the 180 fatalities or 80.6% are males). Fatally injured male drivers were more likely to have been drinking than female drivers (25.7% and 10.3%, respectively). And, 78.6% of the male and 100.0% of the female drivers who were drinking had BACs over the legal limit.

4.2.3 Vehicle differences. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 48.4% were automobile drivers; 35.5% were truck/van drivers; 9.7% were motorcyclists; and 6.5% were tractor-trailer drivers.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 48.0% were automobile drivers; 40.0% were truck/van drivers; 8.0% were tractor-trailer drivers; and 4.0% were motorcyclists.

Within each of the vehicle types, 26.3% of automobile drivers, 22.4% of fatally injured drivers of truck/vans, 20.0% of tractor-trailer drivers, and 13.6% of motorcyclists were found to have been drinking.

4.2.4 Collision differences. Less than half (80 of the 180) were involved in single-vehicle collisions but these crashes accounted for almost three-quarters of the drivers who had been drinking or were legally impaired (74.2% and 68.0%, respectively).

The reason for this apparent disparity is because alcohol is overrepresented in single-vehicle crashes. Almost two-fifths of the drivers involved in single-vehicle crashes (36.5%) tested positive for alcohol, compared to only 10.7% of those involved in multiple-vehicle collisions.

4.3 Drivers involved in alcohol-related serious injury crashes

This section presents information on drivers of highway vehicles involved in alcohol-related crashes in which someone was seriously injured in 2017 in British Columbia. A “surrogate” or “indirect” measure is used to estimate alcohol involvement because drivers in serious injury crashes are seldom tested for alcohol. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle at night (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol involvement – i.e., at least one drinking driver in the crash (see Section 2.2.4).

The results are shown in Table 4-3 for drivers grouped in terms of age, sex, type of vehicle driven (see Section 2.2.1 for types of vehicles that are included), and type of collision. The first column shows the number of drivers of highway vehicles involved in serious injury crashes. The number and percent of drivers in such crashes that involved alcohol is shown in the next two columns. The final column expresses the number of drivers involved in alcohol-related serious injury crashes in any row as a

percent of all drivers involved in alcohol-related serious injury crashes.

As shown, by the totals at the bottom of the table, 2,096 drivers were involved in crashes in which someone was seriously injured, and among these 18.7% were alcohol-related crashes.

4.3.1 Driver age. Of all the drivers involved in alcohol-related serious injury crashes, 24.0% were aged 26-35; and 19.4% were over age 55. Drivers under 16 and those aged 16-19 respectively accounted for only 0.0% and 8.4% of those involved in alcohol-related serious injury crashes.

Over one-quarter of the drivers aged 16-19 (26.6%) were involved in alcohol-related serious injury crashes. The lowest incidence of involvement in alcohol-related crashes was found for those under 16 (0.0%) and over 55 (12.9%).

4.3.2 Driver sex. Of all the drivers involved in alcohol-related serious injury crashes, 71.6% were males. The incidence of involvement in alcohol-related serious injury crashes was also greater for males than for females (19.3% and 16.0%, respectively).

4.3.3 Type of vehicle driven. Of all the drivers involved in alcohol-related serious injury crashes, 51.9% were automobile drivers; 35.8% were truck/van drivers; 5.9% were motorcyclists; 5.6% were tractor-trailer drivers; and 0.8% were drivers of other highway vehicles.

The highest incidence of involvement in alcohol-related serious injury crashes was found for tractor-trailer drivers and other highway vehicles (25.0%), compared to 20.5% for truck/van drivers; and 19.4% for automobile drivers. Among motorcyclists, 8.6% were involved in alcohol-related crashes.

Table 4-3
Drivers* in Alcohol-Related Serious Injury Crashes:
British Columbia, 2017

Category of Drivers	Number of Drivers	Alcohol-Related		
		Number	% of total	% of all drivers in alcohol-related crashes
Age				
<16	3	0	0.0	0.0
16-19	124	33	26.6	8.4
20-25	267	63	23.6	16.1
26-35	411	94	22.9	24.0
36-45	313	57	18.2	14.6
46-55	348	53	15.2	13.6
>55	590	76	12.9	19.4
unknown	40	15	37.5	3.8
Sex				
Male	1450	280	19.3	71.6
Female	607	97	16.0	24.8
unknown	39	14	35.9	3.6
Vehicle Type				
Auto	1044	203	19.4	51.9
Truck/Van	683	140	20.5	35.8
Motorcycle	269	23	8.6	5.9
Tractor Trailer	88	22	25.0	5.6
Other Hwy. Vehicle	12	3	25.0	0.8
Collision Type				
Single-Vehicle	700	252	36.0	64.5
Multiple-Vehicle	1396	139	10.0	35.5
TOTAL	2096	391	18.7	100.0

* excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

4.3.4 Type of collision. Of all the drivers involved in alcohol-related serious injury crashes, 64.5% of them were in single-vehicle crashes. The highest incidence of involvement in alcohol-related serious injury crashes was also found among drivers in single-vehicle crashes – 36.0% of these drivers, compared to only 10.0% for drivers involved in multiple-vehicle crashes.

4.4 Drug use among fatally injured drivers

This section presents information on the presence of drugs, exclusively among drivers fatally injured in British Columbia during 2017. A comparison of testing rates of fatally injured drivers for both alcohol and drugs can be found in Table 3-15 on p. 45. Table 4-4 shows the prevalence of drug use among fatally injured drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Section 2.2.5). The table also shows the number of drivers who tested positive for various categories of drugs. A brief description of the different drug categories is provided in Section 2.2.5.

As can be seen, British Columbia had an average testing rate in 2017, with 76.7% of fatally injured drivers being tested for drug use.

Among fatally injured tested drivers, 29 out of 138 (21.0%) were positive for drugs. The most common category of drugs found within drivers testing positive for drug use was CNS stimulants (48.3%). Other

categories of drugs found in fatally injured drivers testing positive for drugs were cannabis (41.4%), narcotic analgesics (10.3%), CNS depressants (6.9%), and hallucinogens (3.4%).

Table 4-4
Drug Use Among Fatally Injured Drivers* of Highway Vehicles: British Columbia, 2017

Prevalence of Drug Use

Total Number of Driver Deaths	Drivers Tested		Positive for Drugs	
	Number	% of total	Number	% of tested
180	138	(76.7)	29	(21.0)

Categories of Drugs Found Among Drivers Testing Positive

Drug Category	Positive for Drug Type	
	Number of Drivers	% of drivers testing positive**
CNS Stimulants	14	(48.3)
Cannabis	12	(41.4)
Narcotic Analgesics	3	(10.3)
CNS Depressants	2	(6.9)
Hallucinogens	1	(3.4)
Dissociative Anesthetics	0	(0.0)
Inhalants	0	(0.0)

* Dying within 30 days in collisions which occurred on public roadways.
** Percentages will not add up to 100% due to multiple drug types found in blood samples of some drivers.

4.5 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

Sections 4.1 through 4.3 examined three indicators of the alcohol-crash problem: (1) the number and percent of people who died in crashes that involved alcohol; (2) the number and percent of fatally injured drivers who had been drinking; and (3) the number and percent of drivers in serious injury crashes that involved alcohol. Section 4.4 examined drug use among fatally injured drivers in 2017. This section examines changes in these four indicators over time.

4.5.1 Deaths involving drinking drivers: 1996-2017. Table 4-5 and Figure 4-2 show the number and percent of people who died in crashes involving a drinking driver from 1996 to 2017. These results differ slightly from those in Section 4.1. In this section, deaths that occur in crashes that involve a drinking pedestrian are not necessarily classified as alcohol-related deaths. The focus here is more restrictive, on deaths that occur in crashes involving at least one drinking driver (see Section 2.2.1 for types of vehicles that are included).

As shown in the figure, the number of deaths in crashes that involved a drinking driver generally dropped from 206 to 49 between 1996 and 2013, rose to 81 in 2015, and fell to 60 in 2017. The percentage of alcohol-related fatalities in British Columbia generally decreased from 46.1% in 1996 to 22.8% in 2013, rose to 26.8% in 2015, and decreased again to a low of 21.0% in 2017.

As shown at the bottom of the table, during the 2011-2015 baseline period there was an average of 72

fatalities involving a drinking driver and they accounted for 24.9% of all fatalities. This means that the percent of fatalities involving a drinking driver decreased by 15.2% from 24.9% in the baseline period (2011-2015) to 21.1% in the 2016-2017 period. And, in terms of the number of persons killed in crashes involving a drinking driver, there has been a 13.9% decrease from an average of 72 in the 2011-2015 baseline period to 62 in the 2016-2017 period.

Table 4-5

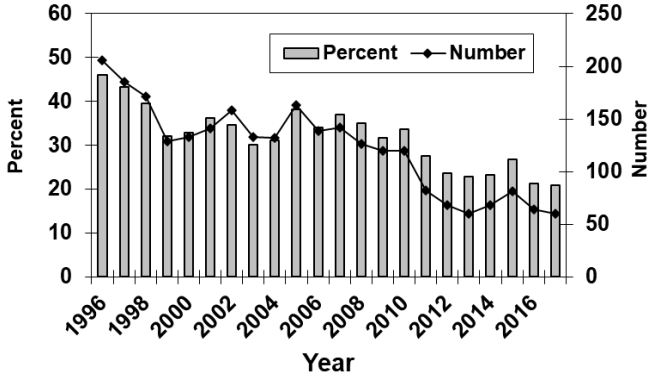
Number* and Percent of Motor Vehicle Deaths** Involving a Drinking Driver: British Columbia, 1996-2017

Year of Death	Number of Deaths	Alcohol-Related Deaths	
		Number	% of total
1996	447	206	46.1
1997	427	185	43.3
1998	432	171	39.6
1999	402	129	32.1
2000	404	133	32.9
2001	389	141	36.2
2002	456	158	34.6
2003	442	133	30.1
2004	425	132	31.1
2005	427	163	38.2
2006	408	139	34.1
2007	383	142	37.1
2008	359	126	35.1
2009	378	120	31.7
2010	357	120	33.6
2011	298	82	27.5
2012	287	68	23.7
2013	263	60	22.8
2014	293	68	23.2
2015	302	81	26.8
2016	302	64	21.2
2017	286	60	21.0
2011-2015 baseline	289	72	24.9
2016-2017 period	294	62	21.1

* numbers are estimates based on the percent of deaths for which information was available to determine alcohol use.

** persons dying within 30 days of collisions which occur on public roadways involving at least one principal vehicle type.

Figure 4-2
Number and Percent of Deaths Involving a Drinking Driver: British Columbia, 1996-2017



4.5.2 Alcohol use among fatally injured drivers. Data on alcohol use among fatally injured drivers of highway vehicles over the 22-year period from 1996-2017 are shown in Table 4-6. Trends are illustrated in Figure 4-3 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the white area); (2) had BACs below the legal limit (shown by the light grey area); and (3) had BACs over the legal limit (the dark grey area). The data reported here are restricted to drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2).

As can be seen, the percent of fatally injured drivers with BACs over the legal limit generally decreased from 1996 (42.3%) to 25.2% in 2012, eventually rose to 31.9% in 2015, and decreased to its lowest level in 2017 (18.1%). The percent of fatally injured drivers with zero BACs generally rose from 1996 (50.0%) to 2013 (72.1%), decreased until 2015 (64.4%), and peaked in 2017 (77.5%). The percent of fatally injured drivers with BACs between 1 and 80 mg% peaked in 2004 (8.9%), dropped to its lowest mark in 2013 (0.0%), and eventually rose to 4.3% in 2017.

When compared to the 2011-2015 baseline period shown at the bottom of Table 4-6, the percentage of fatally injured drivers with zero BACs in the 2016-2017 period increased by 9.3% (from 70.1% to 76.6%). Among drivers with BACs from 1-80 mg%, there a 31.8% increase (from 2.2% to 2.9%). And among those with BACs over 80 mg%, there was a 26.1% decrease (from 27.6% to 20.4%).

Table 4-6
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles:
British Columbia, 1996-2017

Year	Number of Drivers*	Drivers Tested		Drivers Grouped by BAC (mg%)					
		No.	(% Total)	Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1996	223	208	93.3	104	50.0	16	7.7	88	42.3
1997	236	208	88.1	107	51.4	13	6.3	88	42.3
1998	234	213	91.0	121	56.8	17	8.0	75	35.2
1999	227	210	92.5	135	64.3	12	5.7	63	30.0
2000	238	217	91.2	133	61.3	12	5.5	72	33.2
2001	231	206	89.2	114	55.3	11	5.3	81	39.3
2002	279	236	84.6	135	57.2	15	6.4	86	36.4
2003	217	180	82.9	112	62.2	11	6.1	57	31.7
2004	262	224	85.5	142	63.4	20	8.9	62	27.7
2005	265	230	86.8	132	57.4	13	5.7	85	37.0
2006	239	214	89.5	129	60.3	16	7.5	69	32.2
2007	243	222	91.4	122	55.0	19	8.6	81	36.5
2008	218	195	89.4	113	57.9	10	5.1	72	36.9
2009	231	209	90.5	136	65.1	8	3.8	65	31.1
2010	202	175	86.6	115	65.7	11	6.3	49	28.0
2011	169	147	87.0	106	72.1	3	2.0	38	25.9
2012	146	119	81.5	85	71.4	4	3.4	30	25.2
2013	144	129	89.6	93	72.1	0	0.0	36	27.9
2014	157	141	89.8	101	71.6	4	2.8	36	25.5
2015	166	135	81.3	87	64.4	5	3.7	43	31.9
2016	178	136	76.4	104	76.5	1	0.7	31	22.8
2017	180	138	76.7	107	77.5	6	4.3	25	18.1
2011-2015 baseline	156	134	(85.9)	94	(70.1)	3	(2.2)	37	(27.6)
2016-2017 period	179	137	(76.5)	105	(76.6)	4	(2.9)	28	(20.4)

* Dying within 30 days in collisions which occurred on public roadways.

Figure 4-3
Trends in Alcohol Use Among Driver Fatalities: British Columbia, 1996-2016

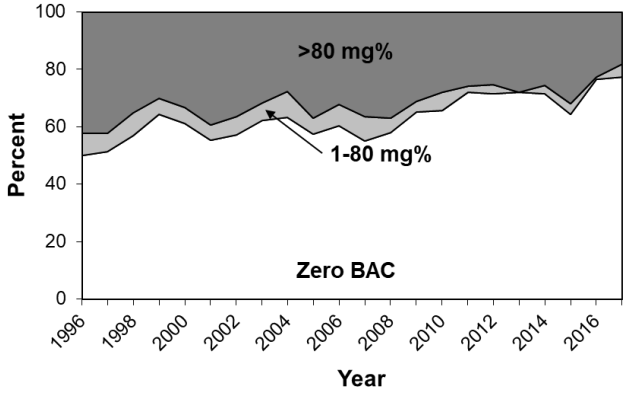


Table 4-7 and Figure 4-4 also show data on alcohol use among fatally injured drivers from 1996 to 2017. Once again, these data are for drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2). However, these results differ from those reported above for two reasons. First, the number of drivers is extrapolated to reflect the BAC distribution of drivers tested for alcohol (see Figure 4-1). Second, drivers are grouped in only two BAC categories: zero and positive.

As can be seen at the bottom of Table 4-7, the percentage of fatally injured drivers testing positive for alcohol from 2011-2015, the baseline period, is 29.5%. In the 2016-2017 period, 22.9% of fatally injured drivers tested positive for alcohol, a 22.4% decrease from the baseline period.

Table 4-7

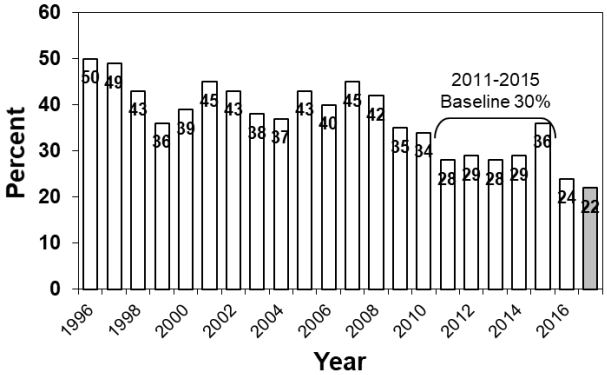
Alcohol Use* Among Fatally Injured Drivers of Highway Vehicles: British Columbia, 1996-2017

Year	Number of Drivers**	Drivers Grouped by BAC (mg%)			
		Zero	(% Tested)	Positive	(% Tested)
1996	223	111	(49.8)	112	(50.2)
1997	236	121	(51.3)	115	(48.7)
1998	234	133	(56.8)	101	(43.2)
1999	227	146	(64.3)	81	(35.7)
2000	238	146	(61.3)	92	(38.7)
2001	231	128	(55.4)	103	(44.6)
2002	279	160	(57.3)	119	(42.7)
2003	217	135	(62.2)	82	(37.8)
2004	262	166	(63.4)	96	(36.6)
2005	265	152	(57.4)	113	(42.6)
2006	239	144	(60.3)	95	(39.7)
2007	243	134	(55.1)	109	(44.9)
2008	218	126	(57.8)	92	(42.2)
2009	231	150	(64.9)	81	(35.1)
2010	203	133	(65.5)	70	(34.5)
2011	169	122	(72.2)	47	(27.8)
2012	146	104	(71.2)	42	(28.8)
2013	144	104	(72.2)	40	(27.8)
2014	157	112	(71.3)	45	(28.7)
2015	166	107	(64.5)	59	(35.5)
2016	178	136	(76.4)	42	(23.6)
2017	180	140	(77.8)	40	(22.2)
2011-2015 baseline	156	110	(70.5)	46	(29.5)
2016-2017 period	179	138	(77.1)	41	(22.9)

* Numbers are estimates based on the BAC distribution of drivers tested for alcohol.

** Dying within 30 days in collisions which occurred on public roadways.

Figure 4-4
Percent of Fatally Injured Drivers*
Positive for Alcohol: British Columbia, 1996-2017



4.5.3 Drivers in serious injury crashes. In British Columbia, data are only available since 2005 to indicate the degree of injury severity for collision victims. Thus, trend tables in this section include data from 2005 to

2017, as opposed to the 1996-2017 period reported for serious injury collisions in most other jurisdictions. Table 4-8 and Figure 4-5 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes.

As can be seen, the incidence of alcohol-involvement in serious injury crashes has increased slightly over this 13-year period. Between 2005 and 2009 the percentage of drivers in serious injury crashes that involved alcohol fluctuated, decreased to 19.8% in 2011, rose to 20.4% in 2012, and eventually decreased to 18.7% in 2017.

As shown in Table 4-8, in the baseline period (2011-2015), an average of 19.6% of drivers in serious injury crashes were in an alcohol-involved crash. In the 2016-2017 period, the incidence of drivers in alcohol-involved serious injury crashes declined to 18.2%, a 7.1% decrease.

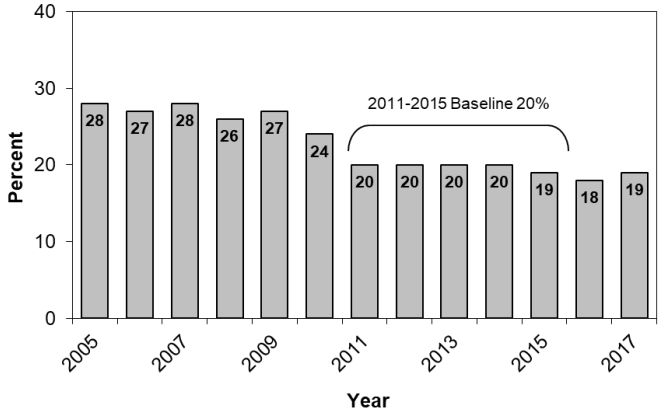
Table 4-8

Number and Percent of Drivers of Highway Vehicles in Serious Injury Crashes* that Involved Alcohol: British Columbia, 2005-2017

Year	Number of Drivers	Number in Alcohol-Involved Crashes	Percent
2005	2655	730	(27.5)
2006	2653	716	(27.0)
2007	2630	723	(27.5)
2008	2397	633	(26.4)
2009	2195	597	(27.2)
2010	2072	494	(23.8)
2011	1837	363	(19.8)
2012	2033	415	(20.4)
2013	1878	369	(19.6)
2014	1941	380	(19.6)
2015	2022	378	(18.7)
2016	2174	386	(17.8)
2017	2096	391	(18.7)
2011-2015 baseline	1942	381	(19.6)
2016-2017 period	2135	389	(18.2)

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

Figure 4-5
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: British Columbia, 2005-2017



4.5.4 Drug use among fatally injured drivers. Table 4-9 and Figure 4-6 show data on drug use among fatally injured drivers of highway vehicles over an 18-year period (2000-2017). Similar to Table 4-6, these results are based on fatally injured drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.5).

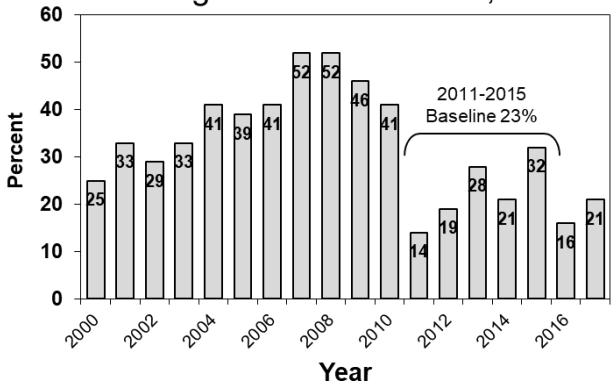
As can be seen at the bottom of Table 4-9, the percentage of fatally injured drivers testing positive for drugs from 2011-2015, the baseline period, is 23.1%. In the 2016-2017 period, the percentage of fatally injured drivers testing positive for drugs was 19.0%, a 17.8% decrease from the baseline period.

Table 4-9
Drug Use Among Fatally Injured Drivers of Highway Vehicles:
British Columbia, 2000-2017

YEAR	Number of Drivers*	Drivers Tested	(% Total)	Drivers Tested for Drugs			
				Negative	(% Tested)	Positive	(% Tested)
2000	238	136	57.1	102	75.0	34	25.0
2001	231	135	58.4	91	67.4	44	32.6
2002	279	135	48.4	96	71.1	39	28.9
2003	217	122	56.2	82	67.2	40	32.8
2004	262	205	78.2	121	59.0	84	41.0
2005	265	205	77.4	125	61.0	80	39.0
2006	239	198	82.8	117	59.1	81	40.9
2007	243	197	81.1	95	48.2	102	51.8
2008	218	186	85.3	90	48.4	96	51.6
2009	231	198	85.7	106	53.5	92	46.5
2010	202	167	82.7	98	58.7	69	41.3
2011	169	146	86.4	125	85.6	21	14.4
2012	146	119	81.5	96	80.7	23	19.3
2013	144	129	89.6	93	72.1	36	27.9
2014	157	141	89.8	111	78.7	30	21.3
2015	166	135	81.3	92	68.1	43	31.9
2016	178	136	76.4	114	83.8	22	16.2
2017	179	138	77.1	109	79.0	29	21.0
2011-2015 baseline	156	134	85.9	103	76.9	31	23.1
2016-2017 period	179	137	76.5	111	81.0	26	19.0

* Dying within 30 days in collisions which occurred on public roadways.

Figure 4-6
Percent of Fatally Injured Drivers
Positive for Drugs: British Columbia, 2000-2017



5.0 ALBERTA

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in Alberta during 2017. It describes data on:

- people who were killed in alcohol-related crashes (Section 5.1);
- alcohol use among fatally injured drivers (Section 5.2);
- drivers involved in alcohol-related serious injury crashes (Section 5.3);
- drug use among fatally injured drivers (Section 5.4); and,
- trends in the alcohol-crash and drug-crash problems (Section 5.5).

5.1 Deaths in alcohol-related crashes

Table 5-1 presents information on people who died in alcohol-related crashes in Alberta during 2017. This table specifically reports upon persons who died within 30 days of a collision which occurred on a public roadway that involved at least one highway vehicle. Motor vehicle deaths are categorized in terms of the victim's age, sex, victim type (see Section 2.1.1) and the type of vehicle they occupied (see Section 2.2.1). The first column in the table presents the number of deaths. The next two columns show the number and percent of these fatalities in which sufficient information was available to determine if alcohol was involved. *A motor vehicle fatality was considered to be alcohol involved if there was at least one drinking driver or drinking pedestrian in the fatal crash*.

For example, 17 people aged 16-19 were killed in motor vehicle crashes in Alberta during 2017. And, in 16 cases (94.1%) it was possible to determine if alcohol was a factor in the crash.

The next column shows the number of people killed in crashes that were known to be alcohol-involved. For example, three people aged 16-19 died in alcohol-related crashes in Alberta during 2017. The next column expresses this as a percentage – i.e., 18.8% of the 16-19 year olds who were killed died in an alcohol-related crash.

The final column (percent of all alcohol-related deaths) expresses the number of deaths in alcohol-related crashes as a percent of all the deaths in such crashes. For example, the alcohol-related deaths among 16-19 year olds represent 3.4% of all the people killed in alcohol-related crashes in Alberta during 2017.

The totals at the bottom of the table provide a summary. As can be seen, 293 persons died within 30 days of a motor vehicle crash in Alberta during 2017. In 270 (92.2%) of these cases, it was possible to determine if alcohol was a factor. Of these known cases, 89 (33.0%) involved alcohol. Extrapolating this figure to the total number of motor vehicle fatalities (293 x .33) it can be estimated that *in Alberta during 2017, 97 persons died in alcohol-related crashes within 30 days of the collision*.

5.1.1 Victim age. Of all the people who died in alcohol-related crashes, 31.5% (see last column) were aged 26-35; 21.3% were aged 36-45; 15.7% were aged over 55; 14.6% were aged 46-55; 13.5% were aged 20-25; and 3.4% were aged 16-19.

The highest incidence of alcohol involvement occurred in the crashes in which persons aged 26-35 and 20-25 died (54.9% and 40.0%, respectively). The lowest incidence of alcohol involvement was found among the youngest and oldest fatalities – 0.0% of persons under 16 and 17.9% of persons over age 55 died in crashes involving alcohol.

Table 5-1
Deaths in Alcohol-Related Crashes: Alberta, 2017

Category of Victim	Total Number of Deaths*	Alcohol Use Known		Alcohol-Related Deaths (ARDs)		
		Number	% of total	Number	% of known cases	% of all ARDs
Age Group						
<16	13	11	84.6	0	0.0	0.0
16-19	17	16	94.1	3	18.8	3.4
20-25	31	30	96.8	12	40.0	13.5
26-35	55	51	92.7	28	54.9	31.5
36-45	52	51	98.1	19	37.3	21.3
46-55	37	33	89.2	13	39.4	14.6
>55	88	78	88.6	14	17.9	15.7
Sex						
Male	208	194	93.3	68	35.1	76.4
Female	85	76	89.4	21	27.6	23.6
Victim Type						
Driver/ Operator	196	188	95.9	67	35.6	75.3
Passenger	61	51	83.6	11	21.6	12.4
Pedestrian	36	31	86.1	11	35.5	12.4
Vehicle Occupied						
Automobiles	88	81	92.0	22	27.2	24.7
Trucks/Vans	132	122	92.4	43	35.2	48.3
Motorcycles	25	25	100.0	10	40.0	11.2
Other Hwy Vehicles	6	5	83.3	1	20.0	1.1
Off-road Vehicles	6	6	100.0	2	33.3	2.2
(Pedestrians)	36	31	86.1	11	35.5	12.4
TOTAL	293	270	92.2	89	33.0	100.0

* Persons dying within 30 days in crashes on public roadways that involved at least one principal highway vehicle.

5.1.2 Sex. Of all the people who died in alcohol-related crashes, 76.4% were males. The incidence of alcohol in crashes in which a male died (35.1%) was greater than the incidence of alcohol in crashes in which a female died (27.6%).

5.1.3 Victim type. Of all the people who died in alcohol-related crashes, 75.3% were drivers/operators of a vehicle; and 12.4% were passengers and pedestrians.

Within each of the principal victim types, the highest incidence of alcohol involvement (35.6%) occurred in the crashes in which a driver/operator died. Alcohol was involved in 35.5% of the crashes in which a pedestrian died and 21.6% of those in which a passenger died.

5.1.4 Type of vehicle occupied. Of all the people who died in alcohol-related crashes, 48.3% were in a truck/van; 24.7% were in an automobile; 11.2% were motorcyclists; 2.2% were off-road vehicle

occupants; and 1.1% were occupants of other highway vehicles.

Within each of these vehicle types, the incidence of alcohol involvement in which a motorcyclist died was greater than the incidence of alcohol in crashes in which a truck/van occupant or automobile occupant died (40.0% versus 35.2% and 27.2%). Among fatally injured off-road vehicle occupants, 33.3% were involved in an alcohol-related crash compared to 20.0% of occupants of other highway vehicles.

5.2 Alcohol in fatally injured drivers

This section presents information on the presence of alcohol, exclusively among drivers fatally injured in Alberta during 2017. Table 5-2 shows the information by age group, sex, vehicle type, and collision type (single vs. multiple) for drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Sections 2.1.1 and 2.2.2).

The first column in the table shows the number of drivers killed. The next columns show the number and percent of these victims who were tested for alcohol. The remaining columns provide information on the results of the alcohol tests – the first three of these present results for drivers who showed any evidence of alcohol; the last three columns present information on drivers who had BACs over the statutory limit of 80 mg%.

To illustrate, among 16-19 year olds there were 11 drivers killed during 2017; 10 of these fatally injured drivers (90.9%) were tested for alcohol. Of those who were tested, two (20.0%) were positive for alcohol. This means that 16-19 year old fatally injured drinking drivers accounted for 3.3% of all drinking drivers who were killed.

Then, in the final three columns, it can be seen that two of the 10 (20.0%) fatally injured 16-19 year olds who were tested for alcohol had a BAC in excess of 80 mg%. This means that both of the drivers who tested positive for alcohol had a BAC in excess of the legal limit. The final column expresses the number of drivers with illegal BACs as a percent of all drivers with BACs over the limit. As can be seen, 16-19 year old drivers accounted for 3.9% of all the drivers with BACs over the legal limit.

The main findings are shown by the totals at the bottom of the table. Alberta had a very high testing rate in 2017, with 97.4% of fatally injured drivers being tested for alcohol use.

In Alberta, 32.8% had been drinking and 51 of 61 (83.6%) fatally injured drinking drivers had BACs over 80 mg%. Although not shown in the table, more refined analyses by different BAC categories show that among tested drivers:

- 67.2% had BACs of zero mg%;
- 3.8% had BACs from 1-49 mg%;
- 1.6% had BACs from 50-80 mg%
- 9.7% had BACs from 81 to 160 mg%; and,
- 17.7% had BACs over 160 mg%.

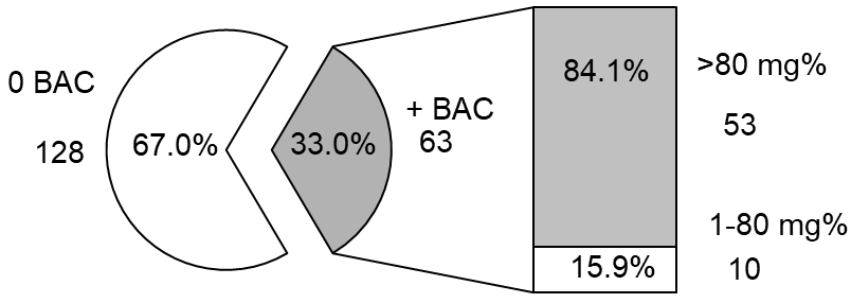
Table 5-2
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Alberta, 2017

Category of Driver	Total Number of Driver Deaths*	Drivers Tested		Positive BAC			BAC >80 mg%		
		No.	% of total	No.	% of tested	% of all drivers with +BAC	No.	% of tested	% of all drivers with BAC >80 mg%
Age Group									
16-19	11	10	90.9	2	20.0	3.3	2	20.0	3.9
20-25	24	24	100.0	10	41.7	16.4	8	33.3	15.7
26-35	36	36	100.0	18	50.0	29.5	16	44.4	31.4
36-45	37	37	100.0	11	29.7	18.0	8	21.6	15.7
46-55	24	24	100.0	8	33.3	13.1	8	33.3	15.7
>55	59	55	93.2	12	21.8	19.7	9	16.4	17.6
Sex									
Male	150	145	96.7	48	33.1	78.7	41	28.3	80.4
Female	41	41	100.0	13	31.7	21.3	10	24.4	19.6
Vehicle Type									
Automobiles	63	60	95.2	17	28.3	27.9	14	23.3	27.5
Trucks/Vans	99	97	98.0	33	34.0	54.1	28	28.9	54.9
Motorcycles	24	24	100.0	10	41.7	16.4	8	33.3	15.7
Tractor Trailers	5	5	100.0	1	20.0	1.6	1	20.0	2.0
Collision Type									
Single vehicle	77	75	97.4	38	50.7	62.3	32	42.7	62.7
Multiple vehicle	114	111	97.4	23	20.7	37.7	19	17.1	37.3
TOTAL	191	186	97.4	61	32.8	100.0	51	27.4	100.0

* Drivers dying within 30 days in crashes on public roadways.

In Figure 5-1, the BAC distribution for tested fatally injured drivers is extrapolated to reflect the BAC distribution for all fatally injured drivers. In this figure, 63 of 191 (33.0%) fatally injured drivers have a positive BAC. And among fatally injured drinking drivers, 53 (84.1%) have BACs over 80 mg%.

Figure 5-1
BACs* Among Fatally Injured Drivers
of Highway Vehicles: Alberta, 2017



* numbers are estimates based on the BAC distribution of drivers tested for alcohol

5.2.1 Age differences. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 29.5% were aged 26-35; 19.7% were over age 55; 18.0% were aged 36-45; 16.4% were aged 20-25; 13.1% were aged 46-55; and 3.3% were aged 16-19.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 31.4% were aged 26-35; 17.6% were over age 55; 15.7% were aged 20-25, 36-45, and 46-55; and 3.9% were aged 16-19.

When comparing the incidence of drinking and driving among fatally injured drivers by age group, fatally injured drivers aged 26-35 were the most likely to have been drinking (50.0%). By contrast, only 20.0% of the tested drivers aged 16-19 had been drinking.

5.2.2 Sex differences. Males dominate the picture – they account for 78.7% of all the fatally injured drivers who had been drinking, and 80.4% of all the fatally injured drivers who were legally impaired.

Males dominate the picture largely because they account for most of the drivers who are killed (150 of the 191 or 78.5% of the fatalities are males). Fatally injured male drivers were slightly more likely to have been drinking than female drivers (33.1% and 31.7%, respectively). And, 85.4% of the male and 76.9% of the female drivers who were drinking had BACs over the legal limit.

5.2.3 Vehicle differences. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 54.1% were truck/van drivers; 27.9% were automobile drivers; 16.4% were motorcyclists; and 1.6% were tractor-trailer drivers.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 54.9% were truck/van drivers; 27.5% were automobile drivers; 15.7% were motorcyclists; and 2.0% were tractor-trailer drivers.

Within each of the vehicle types, 41.7% of motorcyclists, 34.0% of fatally injured truck/van drivers, and 28.3% of automobile drivers had been drinking. One out of five (20.0%) fatally injured tractor-trailer drivers had been drinking.

5.2.4 Collision differences. Less than half of the drivers killed (77 of the 191) were involved in single-vehicle collisions but these crashes accounted for a majority of the drivers who had been drinking or were legally impaired (62.3% and 62.7%, respectively).

The reason for this apparent disparity is because alcohol is overrepresented in single-vehicle crashes. Almost half of the drivers involved in single-vehicle crashes (50.7%) tested positive for alcohol, compared to only 20.7% of those involved in multiple-vehicle collisions.

5.3 Drivers involved in alcohol-related serious injury crashes

This section presents information on drivers of highway vehicles involved in alcohol-related crashes in which someone was seriously injured in 2017 in Alberta. A “surrogate” or “indirect” measure is used to estimate alcohol involvement because drivers in serious injury crashes are seldom tested for alcohol. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle at night (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol involvement – i.e., at least one drinking driver in the

crash (see Section 2.2.4).

The results are shown in Table 5-3 for drivers grouped in terms of age, sex, type of vehicle driven (see Section 2.2.1 for types of vehicles that are included), and type of collision. The first column shows the number of drivers of highway vehicles involved in serious injury crashes. The number and percent of drivers in such crashes that involved alcohol is shown in the next two columns. The final column expresses the number of drivers involved in alcohol-related serious injury crashes in any row as a percent of all drivers involved in alcohol-related serious injury crashes.

As shown, by the totals at the bottom of the table, 3,604 drivers were involved in crashes in which someone was seriously injured, and among these 12.4% were alcohol-related crashes.

Table 5-3
Drivers* in Alcohol-Related Serious Injury Crashes: Alberta, 2017

Category of Drivers	Number of Drivers	Alcohol-Related		
		Number	% of total	% of all drivers in alcohol-related crashes
Age				
<16	9	1	11.1	0.2
16-19	230	31	13.5	6.9
20-25	470	91	19.4	20.4
26-35	811	132	16.3	29.5
36-45	642	74	11.5	16.6
46-55	594	52	8.8	11.6
>55	813	59	7.3	13.2
unknown	35	7	20.0	1.6
Sex				
Male	2341	334	14.3	74.7
Female	1240	107	8.6	23.9
unknown	23	6	26.1	1.3
Vehicle Type				
Auto	1258	169	13.4	37.8
Truck/Van	1950	236	12.1	52.8
Motorcycle	218	20	9.2	4.5
Tractor Trailer	151	20	13.2	4.5
Other Hwy. Vehicle	27	2	7.4	0.4
Collision Type				
Single-Vehicle	962	295	30.7	66.0
Multiple-Vehicle	2642	152	5.8	34.0
TOTAL	3604	447	12.4	100.0

* excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

5.3.1 Driver age. Of all the drivers involved in alcohol-related serious injury crashes, 29.5% were aged 26-35, 20.4% were aged 20-25; and 16.6% were aged 36-45. Drivers under 16 and 16-19 accounted for only 0.2% and 6.9%, respectively, of those involved in alcohol-related serious injury crashes.

One-fifth of the drivers aged 20-25 (19.4%) were involved in alcohol-related serious injury crashes. The lowest incidence of involvement in alcohol-related crashes was found for those over 55 (7.3%).

5.3.2 Driver sex. Of all the drivers involved in alcohol-related serious injury crashes, 74.7% were males. The incidence of involvement in alcohol-related serious injury crashes was also greater for males than

for females (14.3% and 8.6%, respectively).

5.3.3 Type of vehicle driven. Of all the drivers involved in alcohol-related serious injury crashes, 52.8% were truck/van drivers; 37.8% were automobile drivers; 4.5% were motorcyclists and tractor-trailer drivers; and 0.4% were drivers of other highway vehicles.

The highest incidence of involvement in alcohol-related serious injury crashes was found for automobile drivers as 13.4% of these drivers were in crashes that involved alcohol, compared to 13.2% for tractor-trailer drivers; 12.1% for truck/van drivers; and 9.2% for motorcyclists. Among drivers of other highway vehicles, 7.4% were involved in alcohol-related crashes.

5.3.4 Type of collision. Of all the drivers involved in alcohol-related serious injury crashes, 66.0% were in single-vehicle crashes. The highest incidence of involvement in alcohol-related serious injury crashes was also found among drivers in single-vehicle crashes – 30.7% of these drivers, compared to only 5.8% for drivers involved in multiple-vehicle crashes.

5.4 Drug use among fatally injured drivers

This section presents information on the presence of drugs, exclusively among drivers fatally injured in Alberta during 2017. A comparison of testing rates of fatally injured drivers for both alcohol and drugs can be found in Table 3-15 on p. 45. Table 5-4 shows the prevalence of drug use among fatally injured drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Section 2.2.5). The table also shows the number of drivers who tested positive for various categories of drugs. A brief description of the different drug categories is provided in Section 2.2.5.

As can be seen, Alberta had a very high testing rate in 2017, with 96.9% of fatally injured drivers being tested for drug use.

Table 5-4
Drug Use Among Fatally Injured Drivers* of Highway Vehicles: Alberta, 2017

Prevalence of Drug Use

Total Number of Driver Deaths	Drivers Tested		Positive for Drugs	
	Number	% of total	Number	% of tested
191	185	(96.9)	90	(48.6)

Categories of Drugs Found Among Drivers Testing Positive

Drug Category	Positive for Drug Type	
	Number of Drivers	% of drivers testing positive**
CNS Depressants	48	(53.3)
Cannabis	37	(41.1)
CNS Stimulants	29	(32.2)
Narcotic Analgesics	13	(14.4)
Dissociative Anesthetics	1	(1.1)
Hallucinogens	0	(0.0)
Inhalants	0	(0.0)

* Dying within 30 days in collisions which occurred on public roadways.
** Percentages will not add up to 100% due to multiple drug types found in blood samples of some drivers.

Among fatally injured tested drivers, 90 out of 185 (48.6%) were positive for drugs. The most common category of drugs found within drivers testing positive for drug use was CNS depressants (53.3%). Other categories of drugs found in fatally injured drivers testing positive for drugs were cannabis (41.1%), CNS stimulants (32.2%), narcotic analgesics (14.4%), and dissociative anesthetics (1.1%).

5.5 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

Sections 5.1 through 5.3 examined three indicators of the alcohol-crash problem: (1) the number and percent of people who died in crashes that involved alcohol; (2) the number and percent of fatally injured drivers who had been drinking; and (3) the number and percent of drivers in serious injury crashes that involved alcohol. Section 5.4 examined drug use among fatally injured drivers in 2016. This section examines changes in these four indicators over time.

5.5.1 Deaths involving drinking drivers: 1996-2017. Table 5-5 and Figure 5-2 show the number and percent of people who died in crashes involving a drinking driver from 1996 to 2017. These results differ slightly from those in Section 5.1. In this section, deaths that occur in crashes that involve a drinking pedestrian are not necessarily classified as alcohol-related deaths. The focus here is more restrictive, on deaths that occur in crashes involving at least one drinking driver (see Section 2.2.1 for types of vehicles that are included).

Table 5-5

Number* and Percent of Motor Vehicle Deaths** Involving a Drinking Driver: Alberta, 1996-2017

Year of Death	Number of Deaths	Alcohol-Related Deaths	
		Number	% of total
1996	350	156	44.6
1997	432	167	38.7
1998	415	161	38.8
1999	331	127	38.4
2000	354	132	37.3
2001	404	162	40.1
2002	363	124	34.2
2003	365	145	39.7
2004	373	129	34.6
2005	446	156	35.0
2006	434	168	38.7
2007	441	167	37.9
2008	400	152	38.0
2009	332	144	43.4
2010	337	138	40.9
2011	304	108	35.5
2012	332	124	37.3
2013	343	131	38.2
2014	344	115	33.4
2015	326	134	41.1
2016	289	105	36.3
2017	293	87	29.7
2011-2015 baseline	330	122	37.0
2016-2017 period	291	97	33.3

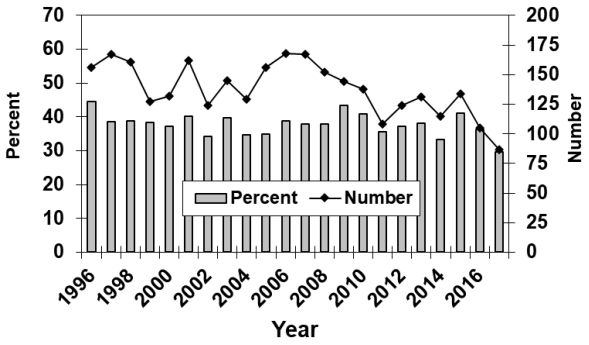
* Numbers are estimates based on the percent of deaths for which information was available to determine alcohol use.

** Persons dying within 30 days of collisions which occur on public roadways involving at least one principal vehicle type.

As shown in the figure, the number of deaths in crashes that involved a drinking driver generally decreased from a high of 167 in 1997 to 108 in 2011, rose to 134 in 2015, and decreased again to 87 in 2017. The percentage of alcohol-related fatalities generally decreased from a high of 44.6% in 1996 to 33.4% in 2014, rose to 41.1% in 2015, and decreased to a low of 29.7% in 2017.

As shown at the bottom of the table, during the 2011-2015 baseline period, there was an average of 122 fatalities involving a drinking driver and they accounted for 37.0% of all fatalities. This means that the percent of fatalities involving a drinking driver decreased by 10.0% from 37.0% in the baseline period (2011-2015) to 33.3% in the 2016-2017 period. And, in terms of the number of persons killed in crashes involving a drinking driver, there has been a 20.4% decrease from an average of 122 in the 2011-2015 baseline period to 97 in the 2016-2017 period.

Figure 5-2
Number and Percent of Deaths Involving a Drinking Driver: Alberta, 1996-2017



5.5.2 Alcohol use among fatally injured drivers. Data on alcohol use among fatally injured drivers of highway vehicles over the 22-year period from 1996-2017 are shown in Table 5-6. Trends are illustrated in Figure 5-3 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the white area); (2) had BACs below the legal limit (shown by the light grey area); and (3) had BACs over the legal limit (the dark grey area). The data reported here are restricted to drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2).

As can be seen, the percent of fatally injured drivers with BACs over the legal limit was relatively stable from 1996 (30.3%) to 2009 (33.5%), decreased to 24.6% in 2011, rose in 2012 (30.6%), decreased to its lowest level in 2016 (24.5%), and rose again in 2017 (27.4%). The percent of fatally injured drivers with zero BACs was also stable from 1996 to 2004, peaked in 2014 (68.9%), decreased in 2015 (61.8%), and rose again in 2017 (67.2%). The percent of fatally injured drivers with BACs between 1 and 80 mg% was stable until 2011 (7.3%), decreased to its lowest level in 2012 (2.4%), peaked in 2013 (10.0%), and eventually decreased to 5.4% in 2017.

When compared to the 2011-2015 baseline period shown at the bottom of Table 5-6, the percentage of fatally injured drivers with zero BACs in the 2016-2017 period increased by 2.0% (from 65.5% to 66.8%). Among drivers with BACs from 1-80 mg%, there was an 11.1% increase (from 6.3% to 7.0%). And among those with BACs over 80 mg%, there was a 7.1% decrease (from 28.2% to 26.2%).

Table 5-6
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Alberta, 1996-2017

Year	Number of Drivers*	Drivers Tested		Drivers Grouped by BAC (mg%)					
		No.	(% Total)	Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1996	200	188	94.0	118	62.8	13	6.9	57	30.3
1997	252	240	95.2	162	67.5	12	5.0	66	27.5
1998	243	232	95.5	143	61.6	19	8.2	70	30.2
1999	208	204	98.1	136	66.7	9	4.4	59	28.9
2000	196	193	98.5	123	63.7	12	6.2	58	30.1
2001	225	218	96.9	132	60.6	10	4.6	76	34.9
2002	222	215	96.8	140	65.1	16	7.4	59	27.4
2003	225	216	96.0	133	61.6	13	6.0	70	32.4
2004	218	210	96.3	140	66.7	9	4.3	61	29.0
2005	273	260	95.2	160	61.5	12	4.6	88	33.8
2006	274	266	97.1	163	61.3	15	5.6	88	33.1
2007	262	251	95.8	149	59.4	13	5.2	89	35.5
2008	272	263	96.7	160	60.8	15	5.7	88	33.5
2009	207	200	96.6	117	58.5	12	6.0	71	35.5
2010	215	211	98.1	127	60.2	18	8.5	66	31.3
2011	186	179	96.2	122	68.2	13	7.3	44	24.6
2012	216	209	96.8	140	67.0	5	2.4	64	30.6
2013	217	210	96.8	133	63.3	21	10.0	56	26.7
2014	228	225	98.7	155	68.9	14	6.2	56	24.9
2015	209	204	97.6	126	61.8	9	4.4	69	33.8
2016	191	188	98.4	126	67.0	16	8.5	46	24.5
2017	191	186	97.4	125	67.2	10	5.4	51	27.4
2011-2015 baseline	211	206	(97.6)	135	(65.5)	13	(6.3)	58	(28.2)
2016-2017 period	191	187	(97.9)	125	(66.8)	13	(7.0)	49	(26.2)

* Dying within 30 days in collisions which occurred on public roadways.

Figure 5-3
Trends in Alcohol Use Among Driver Fatalities: Alberta, 1996-2017

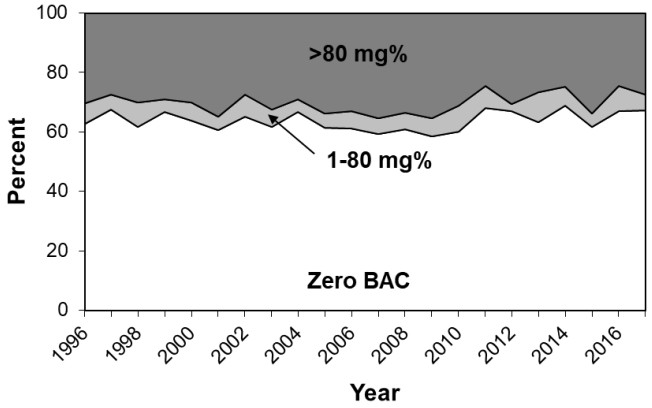


Table 5-7 and Figure 5-4 also show data on alcohol use among fatally injured drivers from 1996 to 2017. Once again, these data are for drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2). However, these results differ from those reported above for two reasons. First, the number of drivers is extrapolated to reflect the BAC distribution of drivers tested for alcohol (see Figure 5-1). Second, drivers are grouped in only two BAC categories: zero and positive.

As can be seen at the bottom of Table 5-7, the percentage of fatally injured drivers testing positive for alcohol from 2011-2015, the baseline period, is 34.1%. In the 2016-2017 period, 33.0% of fatally injured drivers tested positive for alcohol, a 3.2% decrease from the baseline period.

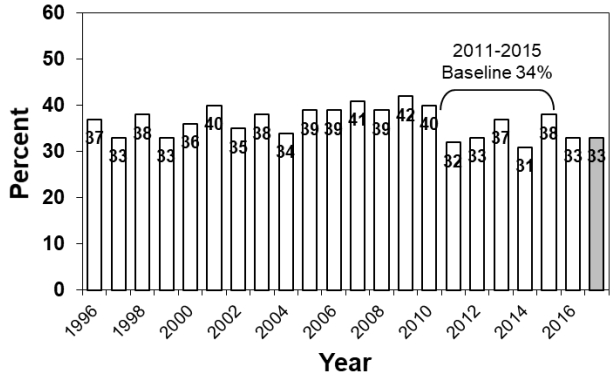
Table 5-7

Alcohol Use* Among Fatally Injured Drivers of Highway Vehicles: Alberta, 1996-2017

Year	Number of Drivers**	Drivers Grouped by BAC (mg%)			
		Zero	(% Tested)	Positive	(% Tested)
1996	200	126	(63.0)	74	(37.0)
1997	252	170	(67.5)	82	(32.5)
1998	243	150	(61.7)	93	(38.3)
1999	208	139	(66.8)	69	(33.2)
2000	196	125	(63.8)	71	(36.2)
2001	225	136	(60.4)	89	(39.6)
2002	222	145	(65.3)	77	(34.7)
2003	225	139	(61.8)	86	(38.2)
2004	218	145	(66.5)	73	(33.5)
2005	273	168	(61.5)	105	(38.5)
2006	274	168	(61.3)	106	(38.7)
2007	262	156	(59.5)	106	(40.5)
2008	272	165	(60.7)	107	(39.3)
2009	207	121	(58.5)	86	(41.5)
2010	215	129	(60.0)	86	(40.0)
2011	186	127	(68.3)	59	(31.7)
2012	216	145	(67.1)	71	(32.9)
2013	217	137	(63.1)	80	(36.9)
2014	228	157	(68.9)	71	(31.1)
2015	209	129	(61.7)	80	(38.3)
2016	191	128	(67.0)	63	(33.0)
2017	191	128	(67.0)	63	(33.0)
2011-2015 baseline	211	139	(65.9)	72	(34.1)
2016-2017 period	191	128	(67.0)	63	(33.0)

* Numbers are estimates based on the BAC distribution of drivers tested for alcohol.
** Dying within 30 days in collisions which occurred on public roadways.

Figure 5-4
Percent of Fatally Injured Drivers* Positive for Alcohol: Alberta, 1996-2017



5.5.3 Drivers in serious injury crashes. Table 5-8 and Figure 5-5 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes. From 1996 to 1997, the percentage of drivers in

serious injury crashes that involved alcohol rose from 20.6% to a high of 25.5%, generally decreased until 2003 (20.3%), rose to 21.8% in 2006, gradually decreased until 2015 (13.2%), rose in 2016 (14.5%), and decreased again in 2017 (12.4%).

As shown Table 5-8, in the baseline period (2011-2015) an average of 15.2% of drivers in serious injury crashes were in an alcohol-involved crash. In the 2016-2017 period, the incidence of drivers in alcohol-involved crashes decreased to 13.4%, an 11.8% decrease.

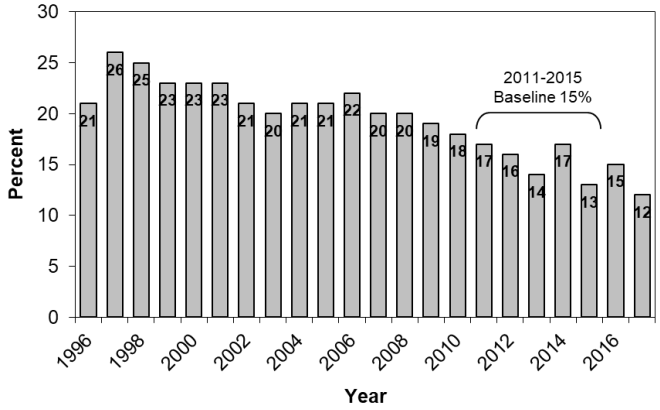
Table 5-8

Number and Percent of Drivers of Highway Vehicles in Serious Injury Crashes* that Involved Alcohol: Alberta, 1996-2017

Year	Number of Drivers	Number in Alcohol-Involved Crashes	Percent
1996	3023	622	(20.6)
1997	2938	749	(25.5)
1998	3332	821	(24.6)
1999	3178	742	(23.3)
2000	3269	741	(22.7)
2001	3534	817	(23.1)
2002	3777	784	(20.8)
2003	3587	727	(20.3)
2004	3641	755	(20.7)
2005	3826	788	(20.6)
2006	4382	954	(21.8)
2007	3967	795	(20.0)
2008	3776	737	(19.5)
2009	3537	660	(18.7)
2010	3564	641	(18.0)
2011	3024	504	(16.7)
2012	3129	492	(15.7)
2013	3607	515	(14.3)
2014	3603	601	(16.7)
2015	3752	497	(13.2)
2016	3331	484	(14.5)
2017	3604	447	(12.4)
2011-2015 period	3423	522	(15.2)
2016-2017 period	3468	466	(13.4)

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

Figure 5-5
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: Alberta, 1996-2017



5.5.4 Drug use among fatally injured drivers. Table 5-9 and Figure 5-6 show data on drug use among fatally injured drivers of highway vehicles over an 18-year period (2000-2017). Similar to Table 5-6, these results are based on fatally injured drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.5).

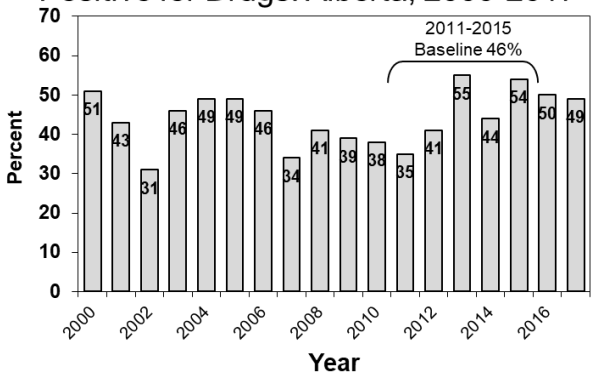
As can be seen at the bottom of Table 5-9, the percentage of fatally injured drivers testing positive for drugs from 2011-2015, the baseline period, is 46.0%. In the 2016-2017 period, the percentage of fatally injured drivers testing positive for drugs was 49.5%, a 7.6% increase from the baseline period.

Table 5-9
Drug Use Among Fatally Injured Drivers of Highway Vehicles: Alberta, 2000-2017

YEAR	Number of Drivers*	Drivers Tested	(% Total)	Drivers Tested for Drugs			
				Negative	(% Tested)	Positive	(% Tested)
2000	196	43	21.9	21	48.8	22	51.2
2001	225	35	15.6	20	57.1	15	42.9
2002	222	49	22.1	34	69.4	15	30.6
2003	225	50	22.2	27	54.0	23	46.0
2004	218	33	15.1	17	51.5	16	48.5
2005	273	53	19.4	27	50.9	26	49.1
2006	274	181	66.1	97	53.6	84	46.4
2007	262	223	85.1	147	65.9	76	34.1
2008	272	239	87.9	142	59.4	97	40.6
2009	207	186	89.9	113	60.8	73	39.2
2010	215	202	94.0	126	62.4	76	37.6
2011	186	170	91.4	110	64.7	60	35.3
2012	216	197	91.2	117	59.4	80	40.6
2013	217	203	93.5	91	44.8	112	55.2
2014	228	224	98.2	126	56.3	98	43.8
2015	209	204	97.6	94	46.1	110	53.9
2016	191	183	95.8	91	49.7	92	50.3
2017	191	185	96.9	95	51.4	90	48.6
2011-2015 baseline	211	200	94.8	108	54.0	92	46.0
2016-2017 period	191	184	96.3	93	50.5	91	49.5

* Dying within 30 days in collisions which occurred on public roadways.

Figure 5-6
Percent of Fatally Injured Drivers
Positive for Drugs: Alberta, 2000-2017



6.0 SASKATCHEWAN

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in Saskatchewan during 2017. It describes data on:

- people who were killed in alcohol-related crashes (Section 6.1);
- alcohol use among fatally injured drivers (Section 6.2);
- drivers involved in alcohol-related serious injury crashes (Section 6.3);
- drug use among fatally injured drivers (Section 6.4); and,
- trends in the alcohol-crash and drug-crash problems (Section 6.5).

6.1 Deaths in alcohol-related crashes

Table 6-1 presents information on people who died in alcohol-related crashes in Saskatchewan during 2017. This table specifically reports upon persons who died within 30 days of a collision which occurred on a public roadway that involved at least one highway vehicle. Motor vehicle deaths are categorized in terms of the victim's age, sex, victim type (see Section 2.1.1) and the type of vehicle they occupied (see Section 2.2.1). The first column in the table presents the number of deaths. The next two columns show the number and percent of these fatalities in which sufficient information was available to determine if alcohol was involved. *A motor vehicle fatality was considered to be alcohol involved if there was at least one drinking driver or drinking pedestrian in the fatal crash*.

For example, it can be seen that five people aged 16-19 were killed in motor vehicle crashes in Saskatchewan during 2017. And, in all five cases (100.0%) it was possible to determine if alcohol was a factor in the crash.

The next column shows the number of people killed in crashes that were known to be alcohol-involved. There were two people aged 16-19 who died in alcohol-related crashes in Saskatchewan during 2017. The next column expresses this as a percentage – i.e., 40.0% of the 16-19 year olds who were killed died in an alcohol-related crash.

The final column (percent of all alcohol-related deaths) expresses the number of deaths in alcohol-related crashes as a percent of all the deaths in such crashes. For example, the alcohol-related deaths among 16-19 year olds represent 5.1% of all the people killed in alcohol-related crashes in Saskatchewan during 2017.

The totals at the bottom of the table provide a summary. As can be seen, 91 persons died within 30 days of a motor vehicle crash in Saskatchewan during 2017. In 90 (98.9%) of these cases, it was possible to determine if alcohol was a factor. Of these known cases, 39 (43.3%) involved alcohol. Extrapolating this

figure to the total number of motor vehicle fatalities (91 x .433) it can be estimated that *in Saskatchewan during 2017, 39 persons died in alcohol-related crashes within 30 days of the collision*.

Table 6-1
Deaths in Alcohol-Related Crashes: Saskatchewan, 2017

Category of Victim	Total Number of Deaths*	Alcohol Use Known		Alcohol-Related Deaths (ARDs)		
		Number	% of total	Number	% of known cases	% of all ARDs
Age Group						
<16	4	4	100.0	1	25.0	2.6
16-19	5	5	100.0	2	40.0	5.1
20-25	13	13	100.0	8	61.5	20.5
26-35	20	20	100.0	10	50.0	25.6
36-45	13	13	100.0	5	38.5	12.8
46-55	9	9	100.0	4	44.4	10.3
>55	27	26	96.3	9	34.6	23.1
Sex						
Male	64	63	98.4	34	54.0	87.2
Female	27	27	100.0	5	18.5	12.8
Victim Type						
Driver/ Operator	56	55	98.2	25	45.5	64.1
Passenger	19	19	100.0	6	31.6	15.4
Pedestrian	16	16	100.0	8	50.0	20.5
Vehicle Occupied						
Automobiles	30	30	100.0	16	53.3	41.0
Trucks/Vans	37	36	97.3	13	36.1	33.3
Motorcycles	3	3	100.0	1	33.3	2.6
Other Vehicles**	5	5	100.0	1	20.0	2.6
(Pedestrians)	16	16	100.0	8	50.0	20.5
TOTAL	91	90	98.9	39	43.3	100.0

* Persons dying within 30 days in crashes on public roadways that involved at least one principal highway vehicle.

** Victims in two types of vehicles have been aggregated to ensure that an individual will not be identified.

6.1.1 Victim age. Of all the people who died in alcohol-related crashes, 25.6% (see last column) were aged 26-35; 23.1% were over age 55; 20.5% were aged 20-25; 12.8% were aged 36-45; 10.3% were aged 46-55; 5.1% were aged 16-19; and 2.6% were under 16.

The highest incidence of alcohol involvement occurred in the crashes in which a person aged 20-25 died (61.5%). The lowest incidence of alcohol involvement was found among the youngest fatalities – 25.0% of the fatalities under 16 years of age died in crashes involving alcohol.

6.1.2 Sex. Of all the people who died in alcohol-related crashes, 87.2% were males. The incidence of alcohol in crashes in which a male died (54.0%) was greater than the incidence of alcohol in crashes in which a female died (18.5%).

6.1.3 Victim type. Of all the people who died in alcohol-related crashes, 64.1% were drivers/operators of a vehicle; 20.5% were pedestrians; and 15.4% were passengers.

Within each of the victim types, the highest incidence of alcohol involvement (50.0%) occurred in the crashes in which a pedestrian died. Alcohol was involved in 45.5% of the crashes in which a driver/operator died and 31.6% of those in which a passenger died.

6.1.4 Type of vehicle occupied. Occupants of other highway vehicles and off-road vehicles have been regrouped (other vehicles) to ensure that individuals cannot be identified. Of all the people who died in alcohol-related crashes, 41.0% were automobile occupants; 33.3% were truck/van occupants; and 2.6% were motorcyclists and occupants of other vehicles.

Within each of these vehicle types, the incidence of alcohol involvement in which an automobile occupant died (53.3%) was greater than the incidence of alcohol crashes in which a truck/van occupant or motorcyclist died (36.1% and 33.3%, respectively). Among occupants of other vehicles, 20.0% died in an alcohol-involved collision.

6.2 Alcohol in fatally injured drivers

This section presents information on the presence of alcohol, exclusively among drivers fatally injured in Saskatchewan during 2017. Table 6-2 shows the information by age group, sex, vehicle type, and collision type (single vs. multiple) for drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Sections 2.1.1 and 2.2.2).

The first column in the table shows the number of drivers killed. The next columns show the number and percent of these victims who were tested for alcohol. The remaining columns provide information on the results of the alcohol tests: the first three of these present results for drivers who showed any evidence of alcohol; the last three columns present information on drivers who had BACs over the statutory limit of 80 mg%.

To illustrate, among 20-25 year olds there were nine drivers killed during 2017; eight of these fatally injured drivers (88.9%) were tested for alcohol. Of those who were tested, four (50.0%) were positive for alcohol. This means that fatally injured drinking drivers aged 20-25 accounted for 20.0% of all drinking drivers who were killed.

Then, in the final three columns, it can be seen that three of the eight (37.5%) fatally injured drivers aged 20-25 who were tested for alcohol had BACs in excess of 80 mg%. This means that three out of four drivers who tested positive for alcohol had BACs in excess of the legal limit. The final column expresses the number of drivers with illegal BACs as a percent of all drivers with BACs over the limit. Thus, drivers aged 20-25 accounted for 20.0% of all the drivers with BACs over the legal limit.

The main findings are shown by the totals at the bottom of the table. Saskatchewan had a very high testing rate in 2017, with 94.5% of fatally injured drivers being tested for alcohol use.

In Saskatchewan, 38.5% had been drinking and 15 of 20 (75.0%) fatally injured drinking drivers had BACs over 80 mg%. Although not shown in the table, more refined analyses by different BAC categories show that among tested drivers:

- 61.5% had BACs of zero mg%;
- 3.8% had BACs from 1-49 mg%;
- 5.8% had BACs from 50-80 mg%

- 11.5% had BACs from 81 to 160 mg%; and,
- 17.3% had BACs over 160 mg%.

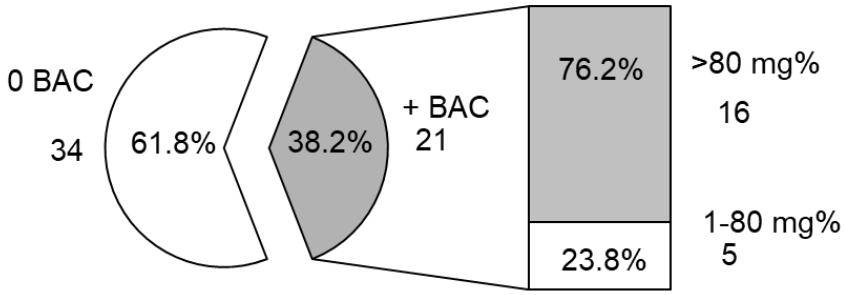
Table 6-2
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Saskatchewan, 2017

Category of Driver	Total Number of Driver Deaths*	Drivers Tested		Positive BAC			BAC >80 mg%		
		No.	% of total	No.	% of tested	% of all drivers with +BAC	No.	% of tested	% of all drivers with BAC >80 mg%
Age Group									
16-19	3	3	100.0	1	33.3	5.0	0	0.0	0.0
20-25	9	8	88.9	4	50.0	20.0	3	37.5	20.0
26-35	16	16	100.0	8	50.0	40.0	6	37.5	40.0
36-45	7	7	100.0	3	42.9	15.0	3	42.9	20.0
46-55	4	3	75.0	1	33.3	5.0	1	33.3	6.7
>55	16	15	93.8	3	20.0	15.0	2	13.3	13.3
Sex									
Male	44	42	95.5	19	45.2	95.0	14	33.3	93.3
Female	11	10	90.9	1	10.0	5.0	1	10.0	6.7
Vehicle Type									
Automobiles	22	21	95.5	8	38.1	40.0	7	33.3	46.7
Trucks/Vans	28	26	92.9	10	38.5	50.0	7	26.9	46.7
Other Vehicles**	5	5	100.0	2	40.0	10.0	1	20.0	6.7
Collision Type									
Single vehicle	13	11	84.6	7	63.6	35.0	4	36.4	26.7
Multiple vehicle	42	41	97.6	13	31.7	65.0	11	26.8	73.3
TOTAL	55	52	94.5	20	38.5	100.0	15	28.8	100.0

* Drivers dying within 30 days in crashes on public roadways.
** Drivers of two vehicle types have been aggregated to ensure that an individual will not be identified.

In Figure 6-1, the BAC distribution for tested fatally injured drivers is extrapolated to reflect the BAC distribution for all fatally injured drivers. In this figure 21 of 55 (38.2%) fatally injured drivers have a positive BAC. And among fatally injured drinking drivers, 16 (76.2%) have BACs over 80 mg%.

Figure 6-1
BACs* Among Fatally Injured Drivers
of Highway Vehicles: Saskatchewan, 2017



* numbers are estimates based on the BAC distribution of drivers tested for alcohol

***6.2.1 Age differences*.** Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 40.0% were aged 26-35; 20.0% were aged 20-25; 15.0% were aged 36-45 and over 55; and 5.0% were aged 16-19 and 46-55.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 40.0% were aged 26-35; 20.0% were aged 20-25 and 36-45; 13.3% were over 55; and 6.7% were aged 46-55.

When comparing the incidence of drinking and driving among fatally injured drivers by age group, fatally injured drivers aged 20-25 and 26-35 were the most likely to have been drinking (50.0%). By contrast, only 20.0% of the tested drivers over age 55 had been drinking.

6.2.2 Sex differences. Males dominate the picture – they account for 95.0% of the fatally injured drivers who had been drinking, and 93.3% of the fatally injured drivers who were legally impaired.

Males dominate the picture largely because they account for most of the drivers who are killed (44 of the 55 drivers are males). Fatally injured male drivers were more likely to have been drinking than female drivers (45.2% and 10.0%, respectively). And, 73.7% of the male and 100.0% of the female drivers who were drinking had BACs over the legal limit.

***6.2.3 Vehicle differences*.** Drivers of motorcycles and tractor-trailers have been regrouped (other vehicles) to ensure that individuals cannot be identified. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 50.0% were truck/van drivers; 40.0% were automobile drivers; and 10.0% were drivers of other vehicles.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 46.7% were automobile drivers and truck/van drivers; and 6.7% were drivers of other vehicles.

Within each of the vehicle types, 40.0% of drivers of other vehicles, 38.5% of fatally injured truck/van drivers, and 38.1% of automobile drivers were found to have been drinking.

6.2.4 Collision differences. Over four-fifths of the drivers killed (42 of the 55) were involved in multiple-

vehicle collisions and these crashes accounted for two-thirds of the drivers who had been drinking or were legally impaired (65.0% and 73.3%, respectively).

However, alcohol is overrepresented in single-vehicle crashes. Over three-fifths of the drivers involved in single-vehicle crashes (63.6%) tested positive for alcohol, compared to only 31.7% of those involved in multiple-vehicle collisions.

6.3 Drivers involved in alcohol-related serious injury crashes

This section presents information on drivers of highway vehicles involved in alcohol-related crashes in which someone was seriously injured in 2017 in Saskatchewan. A “surrogate” or “indirect” measure is used to estimate alcohol involvement because drivers in serious injury crashes are seldom tested for alcohol. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle at night (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol involvement – i.e., at least one drinking driver in the crash (see Section 2.2.4).

The results are shown in Table 6-3 for drivers grouped in terms of age, sex, type of vehicle driven (see Section 2.2.1 for types of vehicles that are included), and type of collision. The first column shows the number of drivers of highway vehicles involved in serious injury crashes. The number and percent of drivers in such crashes that involved alcohol is shown in the next two columns. The final column expresses the number of drivers involved in alcohol-related serious injury crashes in any row as a percent of all drivers involved in alcohol-related serious injury crashes.

Table 6-3
Drivers* in Alcohol-Related Serious Injury Crashes:
Saskatchewan, 2017

Category of Drivers	Number of Drivers	Alcohol-Related		
		Number	% of total	% of all drivers in alcohol-related crashes
Age				
<20**	46	12	26.1	11.1
20-25	51	24	47.1	22.2
26-35	82	25	30.5	23.1
36-45	64	20	31.3	18.5
46-55	41	11	26.8	10.2
>55	88	13	14.8	12.0
unknown	8	3	37.5	2.8
Sex				
Male	265	81	30.6	75.0
Female	107	24	22.4	22.2
unknown	8	3	37.5	2.8
Vehicle Type				
Auto	108	31	28.7	28.7
Truck/Van	225	71	31.6	65.7
Motorcycle	20	2	10.0	1.9
Other Vehicle***	27	4	14.8	3.7
Collision Type				
Single-Vehicle	168	76	45.2	70.4
Multiple-Vehicle	212	32	15.1	29.6
TOTAL	380	108	28.4	100.0

* excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.
** drivers in two age groups have been aggregated to ensure that an individual will not be identified.
*** drivers in two vehicle types have been aggregated to ensure that an individual will not be identified.

As shown, by the totals at the bottom of the table, 380 drivers were involved in crashes in which someone was seriously injured, and among these 28.4% were alcohol-related crashes.

6.3.1 Driver age. Drivers under 16 and 16-19 have been regrouped (<20) to ensure that individuals cannot be identified. Of all the drivers involved in alcohol-related serious injury crashes, 23.1% were aged 26-35 and 22.2% were aged 20-25. Drivers aged 46-55 accounted for only 10.2% of those involved in alcohol-related serious injury crashes.

Almost half of the drivers aged 20-25 were involved in alcohol-related serious injury crashes (47.1%). The lowest incidence of involvement in alcohol-related crashes was found for those under 20 (26.1%) and over age 55 (14.8%).

6.3.2 Driver sex. Of all the drivers involved in alcohol-related serious injury crashes, 75.0% were males. The incidence of involvement in alcohol-related serious injury crashes was greater for males than for females (30.6% and 22.4%, respectively).

6.3.3 Type of vehicle driven. Drivers of tractor-trailers and other highway vehicles have been regrouped (other vehicles) to ensure that individuals cannot be identified. Of all the drivers involved in alcohol-related serious injury crashes, 65.7% were truck/van drivers; 28.7% were automobile drivers; 3.7% were drivers of other vehicles; and 1.9% were motorcyclists.

Among vehicle types, the highest incidence of involvement in alcohol-related serious injury crashes was found for truck/van drivers – 31.6% of these drivers were in crashes that involved alcohol, compared to 28.7% for automobile drivers; 14.8% for drivers of other vehicles; and 10.0% for motorcyclists.

6.3.4 Type of collision. Of all the drivers involved in alcohol-related serious injury crashes, 70.4% of them were in single-vehicle crashes. The highest incidence of involvement in alcohol-related serious injury crashes was also found among drivers in single-vehicle crashes – 45.2% of these drivers, compared to only 15.1% for drivers involved in multiple-vehicle crashes.

6.4 Drug use among fatally injured drivers

This section presents information on the presence of drugs, exclusively among drivers fatally injured in Saskatchewan during 2017. A comparison of testing rates of fatally injured drivers for both alcohol and drugs can be found in Table 3-15 on p. 45. Table 6-4 shows the prevalence of drug use among fatally injured drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Section 2.2.5). The table also shows the number of drivers who tested positive for various categories of drugs. A brief description of the different drug categories is provided in Section 2.2.5.

As can be seen, Saskatchewan had a high testing rate in 2017, with 89.1% of fatally injured drivers being tested for drug use.

Table 6-4
Drug Use Among Fatally Injured Drivers* of Highway Vehicles: Saskatchewan, 2017

Prevalence of Drug Use

Total Number of Driver Deaths	Drivers Tested		Positive for Drugs	
	Number	% of total	Number	% of tested
55	49	(89.1)	19	(38.8)

Categories of Drugs Found Among Drivers Testing Positive

Drug Category	Positive for Drug Type	
	Number of Drivers	% of drivers testing positive**
Narcotic Analgesics	10	(52.6)
Cannabis	6	(31.6)
CNS Stimulants	6	(31.6)
CNS Depressants	3	(15.8)
Dissociative Anesthetics	0	(0.0)
Hallucinogens	0	(0.0)
Inhalants	0	(0.0)

* Dying within 30 days in collisions which occurred on public roadways.
** Percentages will not add up to 100% due to multiple drug types found in blood samples of some drivers.

Among fatally injured tested drivers, 19 out of 49 (38.8%) were positive for drugs. The most common category of drugs found within drivers testing positive for drug use was narcotic analgesics (52.6%). Other categories of drugs found in fatally injured drivers testing positive for drugs were cannabis and CNS stimulants (31.6%) and CNS depressants (15.8%).

6.5 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

Sections 6.1 through 6.3 examined three indicators of the alcohol-crash problem: (1) the number and percent of people who died in crashes that involved alcohol; (2) the number and percent of fatally injured drivers who had been drinking; and (3) the number and percent of drivers in serious injury crashes that involved alcohol. Section 6.4 examined drug use among fatally injured drivers in 2017. This section examines changes in these four indicators over time.

6.5.1 Deaths involving drinking drivers: 1996-2017. Table 6-5 and Figure 6-2 show the number and percent of people who died in crashes involving a drinking driver from 1996 to 2017. These results differ slightly from those in Section 6.1. In this section, deaths that occur in crashes that involve a drinking pedestrian are not necessarily classified as alcohol-related deaths. The focus here is more restrictive, on deaths that occur in crashes involving at least one drinking driver (see Section 2.2.1 for types of vehicles that are included).

Table 6-5
Number* and Percent of Motor Vehicle Deaths Involving a Drinking Driver: Saskatchewan, 1996-2017**

Year of Death	Number of Deaths	Alcohol-Related Deaths	
		Number	% of total
1996	126	52	41.3
1997	154	54	35.1
1998	146	61	41.8
1999	175	77	44.0
2000	142	49	34.5
2001	145	69	47.6
2002	130	45	34.6
2003	136	54	39.7
2004	120	44	36.7
2005	141	44	31.2
2006	123	49	39.8
2007	131	54	41.2
2008	144	73	50.7
2009	154	63	40.9
2010	155	68	43.9
2011	145	62	42.8
2012	169	61	36.1
2013	132	53	40.2
2014	115	49	42.6
2015	109	36	33.0
2016	122	47	38.5
2017	91	31	34.1
2011-2015 baseline	134	52	38.8
2016-2017 period	107	39	36.4

* Numbers are estimates based on the percent of deaths for which information was available to determine alcohol use.

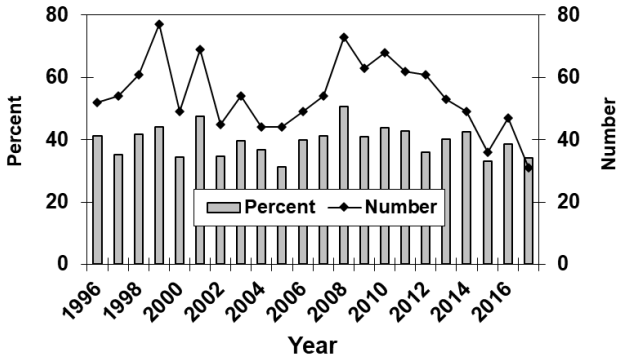
** Persons dying within 30 days of collisions which occur on public roadways involving at least one principal vehicle type.

As shown in the table and figure, the number of deaths in crashes that involved a drinking driver rose from 52 in 1996 to a high of 77 in 1999, decreased to 44 in 2004 and 2005, rose to 73 in 2008, and generally decreased to a low of 31 in 2017. The percentage of alcohol-related fatalities generally increased from

41.3% in 1996 to 47.6% in 2001, dropped to a low of 31.2% in 2005, peaked at 50.7% in 2008, and eventually decreased to 34.1% in 2017.

As shown at the bottom of the table, during the 2011-2015 baseline period there was an average of 52 fatalities involving a drinking driver and they accounted for 38.8% of all fatalities. This means that the percent of fatalities involving a drinking driver decreased by 6.2% from 38.8% in the baseline period (2011-2015) to 36.4% in the 2016-2017 period. And, in terms of the number of persons killed in crashes involving a drinking driver, there has been a 25.0% decrease from an average of 52 in the baseline period (2011-2015) to 39 in the 2016-2017 period.

Figure 6-2
Number and Percent of Deaths Involving a Drinking Driver: Saskatchewan, 1996-2017



6.5.2 Alcohol use among fatally injured drivers. Data on alcohol use among fatally injured drivers of highway vehicles over the 22-year period from 1996-2017 are shown in Table 6-6. Trends are illustrated in Figure 6-3 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the white area); (2) had BACs below the legal limit (shown by the light grey area); and (3) had BACs over the legal limit (the dark grey area). The data reported here are restricted to drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2).

As can be seen, the percent of fatally injured drivers with BACs over the legal limit generally increased from 1996 (30.8%) until 2008 (44.7%), decreased in 2013 (24.3%), rose in 2014 (38.7%), and decreased until 2017 (28.8%). The percent of fatally injured drivers with zero BACs decreased from 1996 (63.1%) to 2001 (50.0%), rose in 2012 (68.5%), decreased until 2015 (55.0%), and rose again in 2017 (61.5%). The percent of fatally injured drivers with BACs from 1-80 mg% decreased from 1996 (6.2%) to its lowest mark in 1998 (1.3%), and eventually peaked in 2017 (9.6%).

When compared to the 2011-2015 baseline period shown at the bottom of Table 6-6, the percentage of fatally injured drivers with zero BACs in the 2016-2017 period decreased by 1.7% (from 60.3% to 59.3%). Among drivers with BACs from 1-80 mg%, there was a 50.0% increase (from 6.8% to 10.2%). And among those with BACs over 80 mg%, there was a 7.3% decrease (from 32.9% to 30.5%).

Table 6-6
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Saskatchewan, 1996-2017

Year	Number of Drivers*	Drivers Tested		Drivers Grouped by BAC (mg%)					
		No.	(% Total)	Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1996	69	65	94.2	41	63.1	4	6.2	20	30.8
1997	72	63	87.5	42	66.7	5	7.9	16	25.4
1998	83	77	92.8	49	63.6	1	1.3	27	35.1
1999	93	85	91.4	47	55.3	8	9.4	30	35.3
2000	81	70	86.4	45	64.3	2	2.9	23	32.9
2001	91	80	87.9	40	50.0	7	8.8	33	41.3
2002	71	58	81.7	31	53.4	4	6.9	23	39.7
2003	89	84	94.4	51	60.7	3	3.6	30	35.7
2004	66	58	87.9	32	55.2	4	6.9	22	37.9
2005	79	66	83.5	40	60.6	4	6.1	22	33.3
2006	81	69	85.2	44	63.8	6	8.7	19	27.5
2007	93	87	93.5	54	62.1	5	5.7	28	32.2
2008	83	76	91.6	37	48.7	5	6.6	34	44.7
2009	101	96	95.0	55	57.3	5	5.2	36	37.5
2010	92	85	92.4	49	57.6	5	5.9	31	36.5
2011	86	79	91.9	44	55.7	4	5.1	31	39.2
2012	95	89	93.7	61	68.5	4	4.5	24	27.0
2013	78	74	94.9	49	66.2	7	9.5	18	24.3
2014	66	62	93.9	35	56.5	3	4.8	24	38.7
2015	67	60	89.6	33	55.0	4	6.7	23	38.3
2016	69	67	97.1	39	58.2	6	9.0	22	32.8
2017	55	52	94.5	32	61.5	5	9.6	15	28.8
2011-2015 baseline	78	73	(93.6)	44	(60.3)	5	(6.8)	24	(32.9)
2016-2017 period	62	59	(95.2)	35	(59.3)	6	(10.2)	18	(30.5)

* Dying within 30 days in collisions which occurred on public roadways.

Figure 6-3
Trends in Alcohol Use Among Driver Fatalities: Saskatchewan, 1996-2017

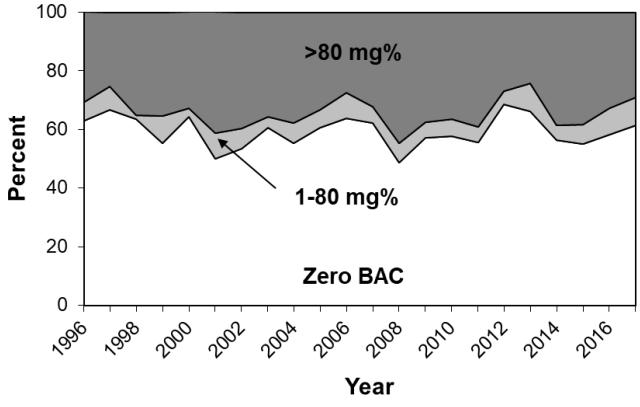


Table 6-7 and Figure 6-4 also show data on alcohol use among fatally injured drivers from 1996 to 2017. Once again, these data are for drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2). However, these results differ from those reported above for two reasons. First, the number of drivers is extrapolated to reflect the BAC distribution of drivers tested for alcohol (see Figure 6-1). Second, drivers are grouped in only two BAC categories: zero and positive.

Table 6-7

Alcohol Use* Among Fatally Injured Drivers of Highway Vehicles: Saskatchewan, 1996-2017

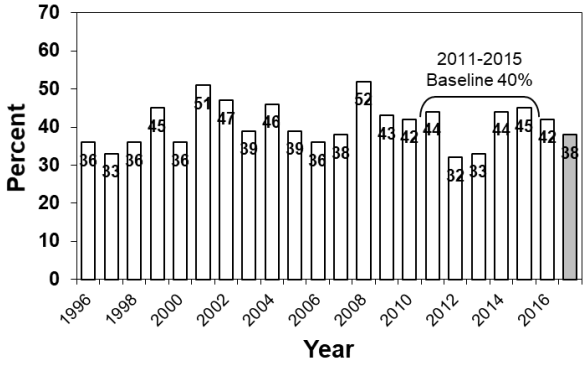
Year	Number of Drivers**	Drivers Grouped by BAC (mg%)			
		Zero	(% Tested)	Positive	(% Tested)
1996	69	44	(63.8)	25	(36.2)
1997	72	48	(66.7)	24	(33.3)
1998	83	53	(63.9)	30	(36.1)
1999	93	51	(54.8)	42	(45.2)
2000	81	52	(64.2)	29	(35.8)
2001	91	45	(49.5)	46	(50.5)
2002	71	38	(53.5)	33	(46.5)
2003	89	54	(60.7)	35	(39.3)
2004	66	36	(54.5)	30	(45.5)
2005	79	48	(60.8)	31	(39.2)
2006	81	52	(64.2)	29	(35.8)
2007	93	58	(62.4)	35	(37.6)
2008	83	40	(48.2)	43	(51.8)
2009	101	58	(57.4)	43	(42.6)
2010	92	53	(57.6)	39	(42.4)
2011	86	48	(55.8)	38	(44.2)
2012	95	65	(68.4)	30	(31.6)
2013	78	52	(66.7)	26	(33.3)
2014	66	37	(56.1)	29	(43.9)
2015	67	37	(55.2)	30	(44.8)
2016	69	40	(58.0)	29	(42.0)
2017	55	34	(61.8)	21	(38.2)
2011-2015 baseline	78	47	(60.3)	31	(39.7)
2016-2017 period	62	37	(59.7)	25	(40.3)

* Numbers are estimates based on the BAC distribution of drivers tested for alcohol.

** Dying within 30 days in collisions which occurred on public roadways.

As can be seen at the bottom of Table 6-7, the percentage of fatally injured drivers testing positive for alcohol from 2011-2015, the baseline period, is 39.7%. In the 2016-2017 period, 40.3% of fatally injured drivers tested positive for alcohol, a 1.5% increase from the baseline period.

Figure 6-4
Percent of Fatally Injured Drivers* Positive for Alcohol: Saskatchewan, 1996-2017



6.5.3 Drivers in serious injury crashes. Table 6-8 and Figure 6-5 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes. Between 1996 and 2008, the percentage of all

drivers in serious injury crashes that involved alcohol generally rose from 25.6% to a high of 33.3% in 2008, decreased to 22.8% in 2014, increased in 2015 (29.5%), fell to a low in 2016 (21.5%), and increased in 2017 (28.4%).

Table 6-8

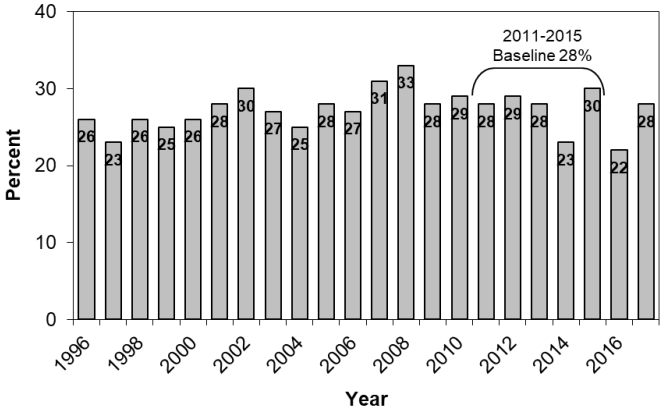
Number and Percent of Drivers of Highway Vehicles in Serious Injury Crashes* that Involved Alcohol: Saskatchewan, 1996-2017

Year	Number of Drivers	Number in Alcohol-Involved Crashes	Percent
1996	656	168	(25.6)
1997	843	197	(23.4)
1998	703	185	(26.3)
1999	757	195	(25.8)
2000	693	183	(26.4)
2001	583	164	(28.1)
2002	599	177	(29.5)
2003	667	177	(26.5)
2004	606	154	(25.4)
2005	443	122	(27.5)
2006	507	136	(26.8)
2007	492	151	(30.7)
2008	540	180	(33.3)
2009	528	146	(27.7)
2010	492	142	(28.9)
2011	460	128	(27.8)
2012	451	129	(28.6)
2013	507	144	(28.4)
2014	381	87	(22.8)
2015	431	127	(29.5)
2016	376	81	(21.5)
2017	380	108	(28.4)
2011-2015 baseline	446	123	(27.6)
2016-2017 period	378	95	(25.1)

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

In the baseline period (2011-2015), an average of 27.6% of highway vehicle drivers in serious injury crashes were in an alcohol-involved crash. In the 2016-2017 period, the percentage of drivers in alcohol-involved crashes declined to 25.1%, a 9.1% decrease from the baseline period.

Figure 6-5
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: Saskatchewan, 1996-2017



6.5.4 Drug use among fatally injured drivers. Table 6-9 and Figure 6-6 show data on drug use among fatally injured drivers of highway vehicles over an 18-year period (2000-2017). Similar to Table 6-6, these results are based on fatally injured drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.5).

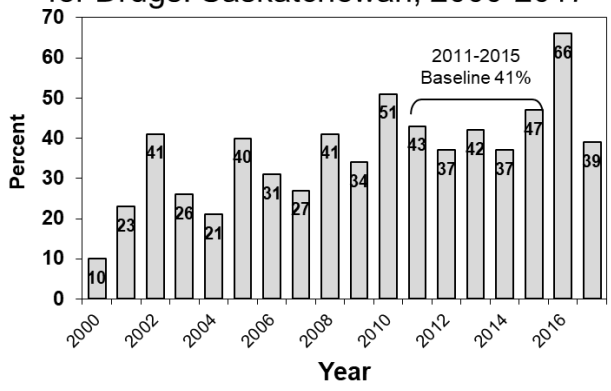
As can be seen at the bottom of Table 6-9, the percentage of fatally injured drivers testing positive for drugs from 2011-2015, the baseline period, is 40.6%. In the 2016-2017 period, the percentage of fatally injured drivers testing positive for drugs was 54.4%, a 34.0% increase from the baseline period.

Table 6-9
Drug Use Among Fatally Injured Drivers of Highway Vehicles:
Saskatchewan, 2000-2017

YEAR	Number of Drivers*	Drivers Tested	(% Total)	Drivers Tested for Drugs			
				Negative	(% Tested)	Positive	(% Tested)
2000	81	63	77.8	57	90.5	6	9.5
2001	91	73	80.2	56	76.7	17	23.3
2002	71	54	76.1	32	59.3	22	40.7
2003	89	82	92.1	61	74.4	21	25.6
2004	66	52	78.8	41	78.8	11	21.2
2005	79	62	78.5	37	59.7	25	40.3
2006	81	67	82.7	46	68.7	21	31.3
2007	93	84	90.3	61	72.6	23	27.4
2008	83	74	89.2	44	59.5	30	40.5
2009	101	92	91.1	61	66.3	31	33.7
2010	92	79	85.9	39	49.4	40	50.6
2011	86	73	84.9	42	57.5	31	42.5
2012	95	83	87.4	52	62.7	31	37.3
2013	78	72	92.3	42	58.3	30	41.7
2014	66	57	86.4	36	63.2	21	36.8
2015	67	58	86.6	31	53.4	27	46.6
2016	69	65	94.2	22	33.8	43	66.2
2017	55	49	89.1	30	61.2	19	38.8
2011-2015 baseline	78	69	88.5	41	59.4	28	40.6
2016-2017 period	62	57	91.9	26	45.6	31	54.4

* Dying within 30 days in collisions which occurred on public roadways.

Figure 6-6
Percent of Fatally Injured Drivers Positive for Drugs: Saskatchewan, 2000-2017



7.0 MANITOBA

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in Manitoba during 2017. It describes data on:

- people who were killed in alcohol-related crashes (Section 7.1);
- alcohol use among fatally injured drivers (Section 7.2);
- drivers involved in alcohol-related serious injury crashes (Section 7.3);
- drug use among fatally injured drivers (Section 7.4); and,
- trends in the alcohol-crash and drug-crash problems (Section 7.5).

7.1 Deaths in alcohol-related crashes

Table 7-1 presents information on people who died in alcohol-related crashes in Manitoba during 2017. This table specifically reports upon persons who died within 30 days of a collision which occurred on a public roadway that involved at least one highway vehicle. Motor vehicle deaths are categorized in terms of the victim's age, sex, victim type (see Section 2.1.1) and the type of vehicle they occupied (see Section 2.2.1). The first column in the table presents the number of deaths. The next two columns show the number and percent of these fatalities in which sufficient information was available to determine if alcohol was involved. *A motor vehicle fatality was considered to be alcohol involved if there was at least one drinking driver or drinking pedestrian in the fatal crash*.

For example, it can be seen that among persons dying within 30 days of the collision, 17 people aged 26-35 were killed in motor vehicle crashes in Manitoba during 2017. And, in all 17 cases (100.0%) it was possible to determine if alcohol was a factor in the crash. The next column shows the number of people killed in crashes that were known to be alcohol-involved. Nine people aged 26-35 died in alcohol-related crashes in Manitoba during 2017. The next column expresses this as a percentage – i.e., 52.9% of the 26-35 year olds who were killed died in an alcohol-related crash.

The final column (percent of all alcohol-related deaths) expresses the number of deaths in alcohol-related crashes as a percent of all the deaths in such crashes. For example, the alcohol-related deaths among 26-35 year olds represent 30.0% of all the people killed in alcohol-related crashes in Manitoba during 2017.

The totals at the bottom of the table provide a summary. As can be seen, 75 persons died within 30 days of a motor vehicle crash in Manitoba during 2017. In 74 (98.7%) of these cases, it was possible to determine if alcohol was a factor. Of these known cases, 30 (40.5%) involved alcohol. Extrapolating this figure to the total number of motor vehicle fatalities (75 x .405) it can be estimated that *in Manitoba during 2017, 30 persons died in alcohol-related crashes within 30 days of the collision*.

Table 7-1
Deaths in Alcohol-Related Crashes: Manitoba, 2017

Category of Victim	Total Number of Deaths*	Alcohol Use Known		Alcohol-Related Deaths (ARDs)		
		Number	% of total	Number	% of known cases	% of all ARDs
Age Group						
<20**	6	6	100.0	0	0.0	0.0
20-25	11	11	100.0	9	81.8	30.0
26-35	17	17	100.0	9	52.9	30.0
36-45	9	9	100.0	5	55.6	16.7
46-55	12	11	91.7	6	54.5	20.0
>55	20	20	100.0	1	5.0	3.3
Sex						
Male	53	52	98.1	22	42.3	73.3
Female	22	22	100.0	8	36.4	26.7
Victim Type						
Driver/ Operator	49	48	98.0	16	33.3	53.3
Passenger	15	15	100.0	7	46.7	23.3
Pedestrian	11	11	100.0	7	63.6	23.3
Vehicle Occupied						
Automobiles	28	28	100.0	13	46.4	43.3
Trucks/Vans	26	26	100.0	9	34.6	30.0
Motorcycles	6	6	100.0	0	0.0	0.0
Other Vehicles***	4	3	75.0	1	33.3	3.3
(Pedestrians)	11	11	100.0	7	63.6	23.3
TOTAL	75	74	98.7	30	40.5	100.0

* Persons dying within 30 days in crashes on public roadways that involved at least one principal highway vehicle.
** Victims in two age groups have been aggregated to ensure that an individual will not be identified.
*** Victims in two types of vehicles have been aggregated to ensure that an individual will not be identified.

7.1.1 Victim age. Victims under 16 and 16-19 have been regrouped (<20) to ensure that individuals cannot be identified. Of all the people who died in alcohol-related crashes, 30.0% (see last column) were aged 20-25 and 26-35; 20.0% were aged 46-55; 16.7% were aged 36-45; and 3.3% were aged over 55.

The highest incidence of alcohol involvement occurred in the crashes in which persons aged 20-25 died (81.8%). The lowest incidence of alcohol involvement was found among persons aged under 20 (0.0%).

7.1.2 Sex. Of all the people who died in alcohol-related crashes, 73.3% were males. The incidence of alcohol in crashes in which a male died (42.3%) was greater than the incidence of alcohol in crashes in which a female died (36.4%).

7.1.3 Victim type. Of all the people who died in alcohol-related crashes, 53.3% were drivers/operators of a vehicle; and 23.3% were passengers and pedestrians.

Within each of the victim types, the highest incidence of alcohol involvement (63.6%) occurred in the crashes in which a pedestrian died. Alcohol was involved in 46.7% of the crashes in which a passenger died and 33.3% of those in which a driver/operator died.

7.1.4 Type of vehicle occupied. Occupants of other highway vehicles and off-road vehicles have been regrouped (other vehicles) to ensure that individuals cannot be identified. Of all the people who died in

alcohol-related crashes, 43.3% were automobile occupants; 30.0% were truck/van occupants; and 3.3% were occupants of other vehicles.

Within each of these vehicle types, the incidence of alcohol involvement in which an automobile occupant died (46.4%) was greater than the incidence of alcohol in crashes in which a truck/van occupant (34.6%) or motorcyclist (0.0%) died. Among occupants of other vehicles, 33.3% died in an alcohol-related crash.

7.2 Alcohol in fatally injured drivers

This section presents information on the presence of alcohol, exclusively among drivers fatally injured in Manitoba during 2017. Table 7-2 shows the information by age group, sex, vehicle type, and collision type (single vs. multiple) for drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Sections 2.1.1 and 2.2.2).

The first column in the table shows the number of drivers killed. The next columns show the number and percent of these victims who were tested for alcohol. The remaining columns provide information on the results of the alcohol tests – the first three of these present results for drivers who showed any evidence of alcohol; the last three columns present information on drivers who had BACs over the statutory limit of 80 mg%.

Table 7-2
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Manitoba, 2017

Category of Driver	Total Number of Driver Deaths*	Drivers Tested		Positive BAC			BAC >80 mg%		
		No.	% of total	No.	% of tested	% of all drivers with +BAC	No.	% of tested	% of all drivers with BAC >80 mg%
Age Group									
16-19	3	2	66.7	0	0.0	0.0	0	0.0	0.0
20-25	6	6	100.0	4	66.7	28.6	3	50.0	25.0
26-35	11	10	90.9	4	40.0	28.6	3	30.0	25.0
36-45	5	5	100.0	2	40.0	14.3	2	40.0	16.7
46-55	6	6	100.0	3	50.0	21.4	3	50.0	25.0
>55	15	11	73.3	1	9.1	7.1	1	9.1	8.3
Sex									
Male	35	30	85.7	10	33.3	71.4	8	26.7	66.7
Female	11	10	90.9	4	40.0	28.6	4	40.0	33.3
Vehicle Type									
Automobiles	22	20	90.9	9	45.0	64.3	7	35.0	58.3
Trucks/Vans	18	15	83.3	5	33.3	35.7	5	33.3	41.7
Other vehicles**	6	5	83.3	0	0.0	0.0	0	0.0	0.0
Collision Type									
Single vehicle	22	19	86.4	11	57.9	78.6	10	52.6	83.3
Multiple vehicle	24	21	87.5	3	14.3	21.4	2	9.5	16.7
TOTAL	46	40	87.0	14	35.0	100.0	12	30.0	100.0

* Drivers dying within 30 days in crashes on public roadways.

** Drivers of two vehicle types have been aggregated to ensure that an individual will not be identified.

To illustrate, among those aged 26-35 there were 11 drivers killed during 2017; 10 of these fatally injured drivers (90.9%) were tested for alcohol. Of those who were tested, four (40.0%) were positive for alcohol. This means fatally injured drinking drivers aged 26-35 accounted for 28.6% of all drinking drivers who were killed.

Then, in the final three columns, it can be seen that three (30.0%) fatally injured drivers aged 26-35 who were tested for alcohol had BACs in excess of 80 mg%. This means that three of the four drivers who were positive for alcohol had BACs in excess of the legal limit. The final column expresses the number of drivers with illegal BACs as a percent of all drivers with BACs over the limit. Thus, drivers aged 26-35 accounted for 25.0% of all the drivers with BACs over the legal limit.

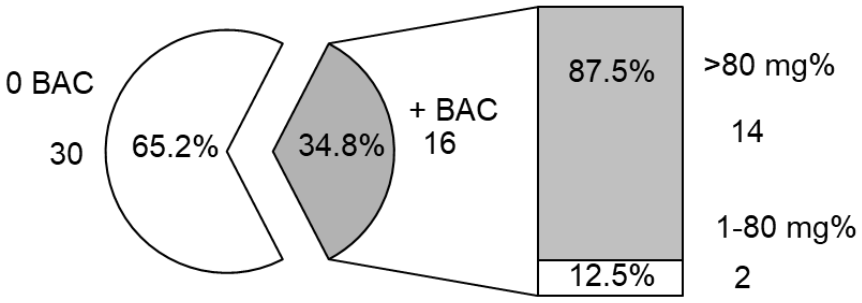
The main findings are shown by the totals at the bottom of the table. Manitoba had a high testing rate in 2017, with 87.0% of fatally injured drivers being tested for alcohol use.

In Manitoba, 35.0% had been drinking and 12 of 14 (85.7%) fatally injured drinking drivers had BACs over 80 mg%. Although not shown in the table, more refined analyses by different BAC categories show that among tested drivers:

- 65.0% had BACs of zero mg%;
- 2.5% had BACs from 1-49 mg%;
- 2.5% had BACs from 50-80 mg%
- 2.5% had BACs from 81 to 160 mg%; and,
- 27.5% had BACs over 160 mg%.

In Figure 7-1, the BAC distribution for tested fatally injured drivers is extrapolated to reflect the BAC distribution for all fatally injured drivers. In this figure, 16 of 46 (34.8%) fatally injured drivers have a positive BAC. And among fatally injured drinking drivers, 14 (87.5%) have BACs over 80 mg%.

Figure 7-1
BACs* Among Fatally Injured Drivers
of Highway Vehicles: Manitoba, 2017



* numbers are estimates based on the BAC distribution of drivers tested for alcohol

7.2.1 Age differences. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 28.6% were aged 20-25 and 26-35; 21.4% were aged 46-55; 14.3% were aged 36-45; and 7.1% were over age 55.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 25.0% were aged 20-25, 26-35 and 46-55; 16.7% were aged 36-45; and 8.3% were over age 55.

When comparing the incidence of drinking and driving among fatally injured drivers by age group, fatally injured drivers aged 20-25 were the most likely to have been drinking (66.7%). By contrast, 0.0% of the tested drivers aged 16-19 had been drinking.

7.2.2 Sex differences. Males dominate the picture as they account for 71.4% of the fatally injured drivers who had been drinking and 66.7% of the fatally injured drivers who were legally impaired.

Males dominate the picture largely because they account for 35 of the 45 drivers (77.8%) who are killed. However, fatally injured female drivers were more likely to have been drinking than male drivers (40.0% and 33.3%, respectively). Most of the male drivers (80.0%) and 100.0% of the female drivers who were drinking had BACs over the legal limit.

7.2.3 Vehicle differences. Drivers of motorcycles and tractor-trailers have been regrouped (other vehicles) to ensure that individuals cannot be identified. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), automobile drivers accounted for 64.3% and 35.7% were truck/van drivers. Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 58.3% were automobile drivers and 41.7% were truck/van drivers.

Within each of the vehicle types, 45.0% of automobile drivers and 33.3% of truck/van drivers had been drinking. None of the drivers of other vehicles had been drinking.

7.2.4 Collision differences. Less than half of the drivers killed (22 of the 46) were involved in single-vehicle collisions but these crashes accounted for a majority of the drivers who had been drinking or were legally impaired (78.6% and 83.3%, respectively).

The reason for this apparent disparity is because alcohol is overrepresented in single-vehicle crashes. Almost three-fifths of the drivers involved in single-vehicle crashes (57.9%) tested positive for alcohol compared to only 14.3% of those involved in multiple-vehicle collisions.

7.3 Drivers involved in alcohol-related serious injury crashes

This section presents information on drivers of highway vehicles involved in alcohol-related crashes in which someone was seriously injured in 2017 in Manitoba. A “surrogate” or “indirect” measure is used to estimate alcohol involvement because drivers in serious injury crashes are seldom tested for alcohol. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle at night (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol involvement – i.e., at least one drinking driver in the crash (see Section 2.2.4).

The results are shown in Table 7-3 for drivers grouped in terms of age, sex, type of vehicle driven (see Section 2.2.1 for types of vehicles that are included), and type of collision. The first column shows the

number of drivers of highway vehicles involved in serious injury crashes. The number and percent of drivers in such crashes that involved alcohol is shown in the next two columns. The final column expresses the number of drivers involved in alcohol-related serious injury crashes in any row as a percent of all drivers involved in alcohol-related serious injury crashes.

As shown, by the totals at the bottom of the table, 590 drivers were involved in crashes in which someone was seriously injured, and among these 11.4% were alcohol-related crashes.

Table 7-3
Drivers* in Alcohol-Related Serious Injury Crashes:
Manitoba, 2017

Category of Drivers	Number of Drivers	Alcohol-Related		
		Number	% of total	% of all drivers in alcohol-related crashes
Age				
<20**	57	11	19.3	16.4
20-25	89	19	21.3	28.4
26-35	120	19	15.8	28.4
36-45	78	5	6.4	7.5
46-55	101	5	5.0	7.5
>55	142	8	5.6	11.9
unknown	3	0	0.0	0.0
Sex				
Male	380	44	11.6	65.7
Female	207	23	11.1	34.3
unknown	3	0	0.0	0.0
Vehicle Type				
Auto	377	42	11.1	62.7
Truck/Van	187	21	11.2	31.3
Other Vehicles***	26	4	15.4	6.0
Collision Type				
Single-Vehicle	188	59	31.4	88.1
Multiple-Vehicle	402	8	2.0	11.9
TOTAL	590	67	11.4	100.0

* excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles
** drivers in two age groups have been aggregated to ensure that an individual will not be identified
*** drivers in two vehicle types have been aggregated to ensure that an individual will not be identified

7.3.1 Driver age. Drivers under 16 and 16-19 have been regrouped (<20) to ensure that individuals cannot be identified. Of all the drivers involved in alcohol-related serious injury crashes, 28.4% were aged 20-25 and 26-35; 16.4% were under age 20; and 11.9% were over 55. Drivers aged 36-45 and 46-55 each accounted for 7.5% of those involved in alcohol-related serious injury crashes.

One-fifth of the drivers aged 20-25 were involved in alcohol-related serious injury crashes (21.3%). The lowest incidence of involvement in alcohol-related crashes was found for those aged 46-55 (5.0%).

7.3.2 Driver sex. Of all the drivers involved in alcohol-related serious injury crashes, 65.7% were males. The incidence of involvement in alcohol-related serious injury crashes was slightly greater for males than

for females (11.6% and 11.1%).

7.3.3 Type of vehicle driven. Motorcyclists and drivers of other highway vehicles have been regrouped (other vehicles) to ensure that individuals cannot be identified. Of all the drivers involved in alcohol-related serious injury crashes, 62.7% were automobile drivers; 31.3% were truck/van drivers; and 6.0% were drivers of other vehicles.

The highest incidence of involvement in alcohol-related serious injury crashes was found for drivers of other vehicles (15.4%) compared to 11.2% for truck/van drivers; and 11.1% for automobile drivers.

7.3.4 Type of collision. Of all the drivers involved in alcohol-related serious injury crashes, 88.1% of them were in single-vehicle crashes. The highest incidence of involvement in alcohol-related serious injury crashes was also found among drivers in single-vehicle crashes – 31.4% of these drivers, compared to only 2.0% for drivers involved in multiple-vehicle crashes.

7.4 Drug use among fatally injured drivers

This section presents information on the presence of drugs, exclusively among drivers fatally injured in Manitoba during 2017. A comparison of testing rates of fatally injured drivers for both alcohol and drugs can be found in Table 3-15 on p. 45. Table 7-4 shows the prevalence of drug use among fatally injured drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Section 2.2.5). The table also shows the number of drivers who tested positive for various categories of drugs. A brief description of the different drug categories is provided in Section 2.2.5.

As can be seen, Manitoba had a high testing rate in 2017, with 87.0% of fatally injured drivers being tested for drug use.

Among fatally injured tested drivers, 19 out of 40 (47.5%) were positive for drugs. The most common categories of drugs found within drivers testing positive for drug use were CNS depressants and CNS stimulants (36.8%). Other categories of drugs found in fatally injured drivers testing positive for drugs were cannabis and narcotic analgesics (15.8% each).

Table 7-4
Drug Use Among Fatally Injured Drivers* of Highway Vehicles: Manitoba, 2017

Prevalence of Drug Use

Total Number of Driver Deaths	Drivers Tested		Positive for Drugs	
	Number	% of total	Number	% of tested
46	40	(87.0)	19	(47.5)

Categories of Drugs Found Among Drivers Testing Positive

Drug Category	Positive for Drug Type	
	Number of Drivers	% of drivers testing positive**
CNS Depressants	7	(36.8)
CNS Stimulants	7	(36.8)
Cannabis	3	(15.8)
Narcotic Analgesics	3	(15.8)
Hallucinogens	0	(0.0)
Dissociative Anesthetics	0	(0.0)
Inhalants	0	(0.0)

* Dying within 30 days in collisions which occurred on public roadways.

** Percentages will not add up to 100% due to multiple drug types found in blood samples of some drivers.

7.5 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

Sections 7.1 through 7.3 examined three indicators of the alcohol-crash problem: (1) the number and percent of people who died in crashes that involved alcohol; (2) the number and percent of fatally injured drivers who had been drinking; and (3) the number and percent of drivers in serious injury crashes that involved alcohol. Section 7.4 examined drug use among fatally injured drivers in 2016. This section examines changes in these four indicators over time.

7.5.1 Deaths involving drinking drivers: 1996-2017. Table 7-5 and Figure 7-2 show the number and percent of people who died in crashes involving a drinking driver from 1996 to 2017. These results differ slightly from those in Section 7.1. In this section, deaths that occur in crashes that involve a drinking pedestrian are not necessarily classified as alcohol-related deaths. The focus here is more restrictive, on deaths that occur in crashes involving at least one drinking driver (see Section 2.2.1 for types of vehicles that are included).

As shown in the table and figure, the number of deaths in crashes that involved a drinking driver generally dropped from 36 to 29 between 1996 and 2001, peaked at 45 in 2007 and 2008, decreased to a low of 19 in 2014, rose to 43 in 2016, and decreased again to 25 in 2017. The percentage of alcohol-related fatalities generally decreased from 37.5% in 1996 to 27.4% in 2005, peaked in 2008 (57.0%), eventually decreased to 26.4% in 2013, rose to 46.2% in 2016, and decreased again to 33.3% in 2017.

Table 7-5

Number* and Percent of Motor Vehicle Deaths Involving a Drinking Driver: Manitoba, 1996-2017**

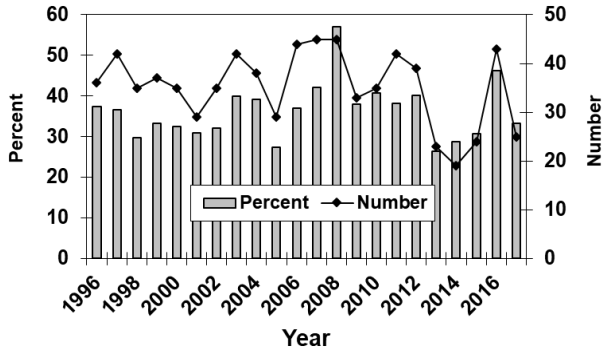
Year of Death	Number of Deaths	Alcohol-Related Deaths	
		Number	% of total
1996	96	36	37.5
1997	115	42	36.5
1998	118	35	29.7
1999	111	37	33.3
2000	108	35	32.4
2001	94	29	30.9
2002	109	35	32.1
2003	105	42	40.0
2004	97	38	39.2
2005	106	29	27.4
2006	119	44	37.0
2007	107	45	42.1
2008	79	45	57.0
2009	87	33	37.9
2010	86	35	40.7
2011	110	42	38.2
2012	97	39	40.2
2013	87	23	26.4
2014	66	19	28.8
2015	78	24	30.8
2016	93	43	46.2
2017	75	25	33.3
2011-2015 baseline	88	29	33.0
2016-2017 period	84	34	40.5

* numbers are estimates based on the percent of deaths for which information was available to determine alcohol use.

** persons dying within 30 days of collisions which occur on public roadways involving at least one principal vehicle type.

As shown at the bottom of the table, during the 2011-2015 baseline period there was an average of 29 fatalities involving a drinking driver and they accounted for 33.0% of all fatalities. This means that the percent of fatalities involving a drinking driver increased by 22.7% from 33.0% in the baseline period (2011-2015) to 40.5% in the 2016-2017 period. In terms of the number of persons killed in crashes involving a drinking driver, there was a 17.2% increase from an average of 29 in the baseline period (2011-2015) to 34 in the 2016-2017 period.

Figure 7-2
Number and Percent of Deaths Involving a Drinking Driver: Manitoba, 1996-2017



7.5.2 Alcohol use among fatally injured drivers. Data on alcohol use among fatally injured drivers of highway vehicles over the 22-year period from 1996-2017 are shown in Table 7-6. Trends are illustrated in Figure 7-3 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the white area); (2) had BACs below the legal limit (shown by the light grey area); and (3) had BACs over the legal limit (the dark grey area). The data reported here are restricted to drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2).

As can be seen, the percent of fatally injured drivers with BACs over the legal limit generally declined from 1996 (50.0%) to 20.8% in 2015, rose in 2016 (36.0%), and decreased again to 30.0% in 2017. The percent of fatally injured drivers with zero BACs generally increased from 43.2% in 1996 to its highest level in 2005 (75.5%), decreased to a low of 37.2% in 2008, fluctuated until 2016 (58.0%), and rose again in 2017 (65.0%). The percent of fatally injured drivers with BACs between 1 and 80 mg% peaked in 2008 (18.6%), dropped to 7.0% in 2011, generally rose until 2014 (9.4%), and decreased to 5.0% in 2017.

When compared to the 2011-2015 baseline period shown at the bottom of Table 7-6, the percentage of fatally injured drivers with zero BACs in the 2016-2017 period decreased by 11.0% (from 67.4% to 60.0%). Among drivers with BACs from 1-80 mg%, there was a 23.0% decrease (from 8.7% to 6.7%). And among those with BACs over 80 mg%, there was a 39.3% increase (from 23.9% to 33.3%).

Table 7-6
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles:
Manitoba, 1996-2017

Year	Number of Drivers*	Drivers Tested		Drivers Grouped by BAC (mg%)					
		No.	(% Total)	Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1996	48	44	91.7	19	43.2	3	6.8	22	50.0
1997	61	55	90.2	34	61.8	5	9.1	16	29.1
1998	62	62	100.0	41	66.1	3	4.8	18	29.0
1999	57	55	96.5	37	67.3	3	5.5	15	27.3
2000	64	62	96.9	39	62.9	4	6.5	19	30.6
2001	62	57	91.9	36	63.2	1	1.8	20	35.1
2002	57	55	96.5	35	63.6	3	5.5	17	30.9
2003	61	57	93.4	27	47.4	5	8.8	25	43.9
2004	54	49	90.7	29	59.2	3	6.1	17	34.7
2005	54	53	98.1	40	75.5	1	1.9	12	22.6
2006	67	64	95.5	39	60.9	3	4.7	22	34.4
2007	65	61	93.8	34	55.7	2	3.3	25	41.0
2008	45	43	95.6	16	37.2	8	18.6	19	44.2
2009	59	53	89.8	32	60.4	8	15.1	13	24.5
2010	44	41	93.2	23	56.1	4	9.8	14	34.1
2011	59	57	96.6	41	71.9	4	7.0	12	21.1
2012	52	49	94.2	25	51.0	7	14.3	17	34.7
2013	48	46	95.8	33	71.7	3	6.5	10	21.7
2014	35	32	91.4	21	65.6	3	9.4	8	25.0
2015	54	48	88.9	35	72.9	3	6.3	10	20.8
2016	52	50	96.2	29	58.0	3	6.0	18	36.0
2017	46	40	87.0	26	65.0	2	5.0	12	30.0
2011-2015 period	50	46	(92.0)	31	(67.4)	4	(8.7)	11	(23.9)
2016-2017 period	49	45	(91.8)	27	(60.0)	3	(6.7)	15	(33.3)

* Dying within 30 days in collisions which occurred on public roadways.

Figure 7-3
Trends in Alcohol Use Among Driver Fatalities: Manitoba, 1996-2017

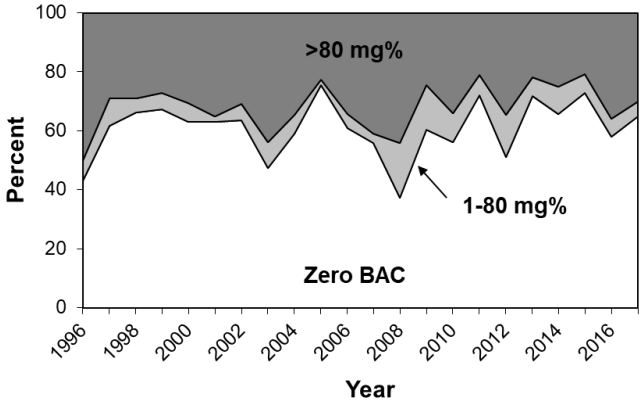


Table 7-7 and Figure 7-4 also show data on alcohol use among fatally injured drivers from 1996 to 2017. Once again, these data are for drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2). However, these results differ from those reported above

for two reasons. First, the number of drivers is extrapolated to reflect the BAC distribution of drivers tested for alcohol (see Figure 7-1). Second, drivers are grouped in only two BAC categories: zero and positive.

As can be seen at the bottom of Table 7-7, the percentage of fatally injured drivers testing positive for alcohol from 2011-2015, the baseline period, is 34.0%. In the 2016-2017 period, 38.8% of fatally injured drivers tested positive for alcohol, a 14.1% increase from the baseline period.

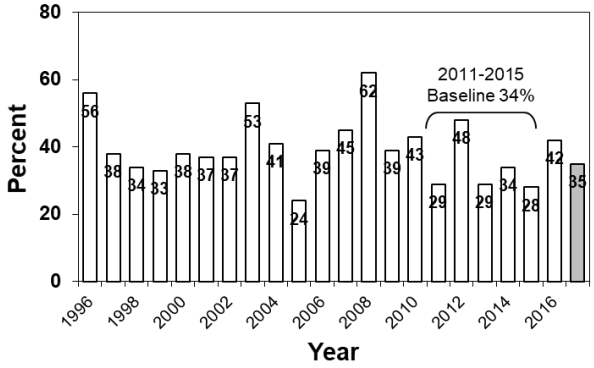
Table 7-7

Alcohol Use* Among Fatally Injured Drivers of Highway Vehicles: Manitoba, 1996-2017

Year	Number of Drivers**	Drivers Grouped by BAC (mg%)			
		Zero	(% Tested)	Positive	(% Tested)
1996	48	21	(43.8)	27	(56.3)
1997	61	38	(62.3)	23	(37.7)
1998	62	41	(66.1)	21	(33.9)
1999	57	38	(66.7)	19	(33.3)
2000	64	40	(62.5)	24	(37.5)
2001	62	39	(62.9)	23	(37.1)
2002	57	36	(63.2)	21	(36.8)
2003	61	29	(47.5)	32	(52.5)
2004	54	32	(59.3)	22	(40.7)
2005	54	41	(75.9)	13	(24.1)
2006	67	41	(61.2)	26	(38.8)
2007	65	36	(55.4)	29	(44.6)
2008	45	17	(37.8)	28	(62.2)
2009	59	36	(61.0)	23	(39.0)
2010	44	25	(56.8)	19	(43.2)
2011	59	42	(71.2)	17	(28.8)
2012	52	27	(51.9)	25	(48.1)
2013	48	34	(70.8)	14	(29.2)
2014	35	23	(65.7)	12	(34.3)
2015	54	39	(72.2)	15	(27.8)
2016	52	30	(57.7)	22	(42.3)
2017	46	30	(65.2)	16	(34.8)
2011-2015 period	50	33	(66.0)	17	(34.0)
2016-2017 period	49	30	(61.2)	19	(38.8)

* Numbers are estimates based on the BAC distribution of drivers tested for alcohol.
** Dying within 30 days in collisions which occurred on public roadways.

Figure 7-4
Percent of Fatally Injured Drivers*
Positive for Alcohol: Manitoba, 1996-2017



7.5.3 Drivers in serious injury crashes. Table 7-8 and Figure 7-5 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes. Between 1996 and 1997, the percentage of all drivers in serious injury crashes that involved alcohol generally rose from 21.6% to a high of 25.7%, generally decreased to 10.7% in 2012, rose in 2013 (13.1%), decreased to its lowest level in 2015 (9.4%), and rose in 2017 (11.4%).

In the baseline period (2011-2015), an average of 11.8% of highway vehicle drivers in serious injury crashes were in an alcohol-involved crash. In the 2016-2017 period, the percentage of drivers in alcohol-involved crashes declined to 10.7%, a 9.3% decrease from the baseline period.

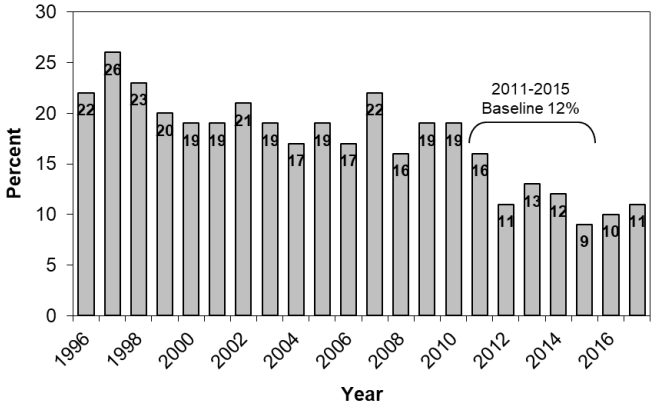
Table 7-8

Number and Percent of Drivers of Highway Vehicles in Serious Injury Crashes* that Involved Alcohol: Manitoba, 1996-2017

Year	Number of Drivers	Number in Alcohol-Involved Crashes	Percent
1996	804	174	(21.6)
1997	630	162	(25.7)
1998	657	151	(23.0)
1999	595	120	(20.2)
2000	587	110	(18.7)
2001	597	115	(19.3)
2002	525	108	(20.6)
2003	532	102	(19.2)
2004	550	95	(17.3)
2005	482	92	(19.1)
2006	526	91	(17.3)
2007	467	103	(22.1)
2008	437	68	(15.6)
2009	452	85	(18.8)
2010	341	63	(18.5)
2011	403	63	(15.6)
2012	438	47	(10.7)
2013	398	52	(13.1)
2014	398	47	(11.8)
2015	562	53	(9.4)
2016	606	61	(10.1)
2017	590	67	(11.4)
2011-2015 baseline	440	52	(11.8)
2016-2017 period	598	64	(10.7)

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

Figure 7-5
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: Manitoba, 1996-2017



7.5.4 Drug use among fatally injured drivers. Table 7-9 and Figure 7-6 show data on drug use among fatally injured drivers of highway vehicles over an 18-year period (2000-2017). Similar to Table 7-6, these results are based on fatally injured drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.5).

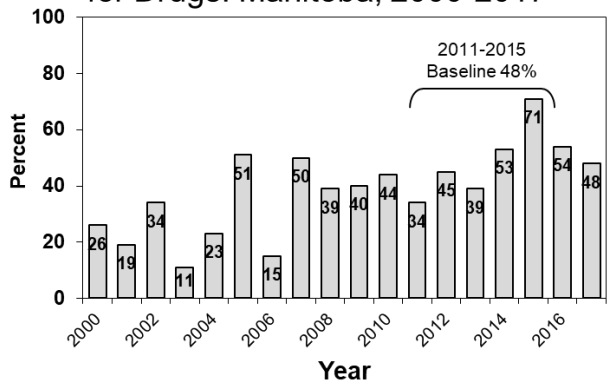
As can be seen at the bottom of Table 7-9, the percentage of fatally injured drivers testing positive for drugs from 2011-2015, the baseline period, is 47.8%. In the 2016-2017 period, 51.1% of fatally injured drivers tested positive for drugs, a 6.9% increase from the baseline period.

Table 7-9
Drug Use Among Fatally Injured Drivers of Highway Vehicles:
Manitoba, 2000-2017

YEAR	Number of Drivers*	Drivers Tested	(% Total)	Drivers Tested for Drugs			
				Negative	(% Tested)	Positive	(% Tested)
2000	64	58	90.6	43	74.1	15	25.9
2001	62	54	87.1	44	81.5	10	18.5
2002	57	53	93.0	35	66.0	18	34.0
2003	61	56	91.8	50	89.3	6	10.7
2004	54	47	87.0	36	76.6	11	23.4
2005	54	51	94.4	25	49.0	26	51.0
2006	67	62	92.5	53	85.5	9	14.5
2007	65	60	92.3	30	50.0	30	50.0
2008	45	41	91.1	25	61.0	16	39.0
2009	59	53	89.8	32	60.4	21	39.6
2010	44	41	93.2	23	56.1	18	43.9
2011	59	56	94.9	37	66.1	19	33.9
2012	52	49	94.2	27	55.1	22	44.9
2013	48	46	95.8	28	60.9	18	39.1
2014	35	32	91.4	15	46.9	17	53.1
2015	54	48	88.9	14	29.2	34	70.8
2016	52	50	96.2	23	46.0	27	54.0
2017	46	40	87.0	21	52.5	19	47.5
2011-2015 period	50	46	92.0	24	52.2	22	47.8
2016-2017 period	49	45	91.8	22	48.9	23	51.1

* Dying within 30 days in collisions which occurred on public roadways.

Figure 7-6
Percent of Fatally Injured Drivers Positive for Drugs: Manitoba, 2000-2017



8.0 ONTARIO

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in Ontario during 2017. It describes data on:

- people who were killed in alcohol-related crashes (Section 8.1);
- alcohol use among fatally injured drivers (Section 8.2);
- drivers involved in alcohol-related serious injury crashes (Section 8.3);
- drug use among fatally injured drivers (Section 8.4); and,
- trends in the alcohol-crash and drug-crash problems (Section 8.5).

8.1 Deaths in alcohol-related crashes

Table 8-1 presents information on people who died in alcohol-related crashes in Ontario during 2017. This table specifically reports upon persons who died within 30 days of a collision which occurred on a public roadway that involved at least one highway vehicle. Motor vehicle deaths are categorized in terms of the victim's age, sex, victim type (see Section 2.1.1) and the type of vehicle they occupied (see Section 2.2.1). The first column in the table presents the number of deaths. The next two columns show the number and percent of these fatalities in which sufficient information was available to determine if alcohol was involved. *A motor vehicle fatality was considered to be alcohol involved if there was at least one drinking driver or drinking pedestrian in the fatal crash*.

For example, 31 people aged 16-19 were killed in motor vehicle crashes in Ontario during 2017. And, in all 31 cases (100.0%) it was possible to determine if alcohol was a factor in the crash.

The next column shows the number of people killed in crashes that were known to be alcohol-involved. For example, 11 people aged 16-19 died in alcohol-related crashes in Ontario during 2017. The next column expresses this as a percentage – i.e., 35.5% of the 16-19 year olds who were killed died in an alcohol-related crash.

The final column (percent of all alcohol-related deaths) expresses the number of deaths in alcohol-related crashes as a percent of all the deaths in such crashes. For example, the alcohol-related deaths among 16-19 year olds represent 6.8% of all the people killed in alcohol-related crashes in Ontario during 2017.

The totals at the bottom of the table provide a summary. As can be seen, 643 persons died within 30 days of a motor vehicle crash in Ontario during 2017. In 588 (91.4%) of these cases, it was possible to determine if alcohol was a factor. Of these known cases, 161 (27.4%) involved alcohol. Extrapolating this figure to the total number of motor vehicle fatalities (643 x .274) it can be estimated that *in Ontario during 2017, 176 persons died in alcohol-related crashes within 30 days of the collision*.

8.1.1 Victim age. Of all the people who died in alcohol-related crashes, 19.9% (see last column) were aged 26-35; 19.3% were aged 20-25; 18.0% were aged 36-45 and over 55; 13.7% were aged 46-55; 6.8% were aged 16-19; and 4.3% were under 16.

Table 8-1
Deaths in Alcohol-Related Crashes: Ontario, 2017

Category of Victim	Total Number of Deaths*	Alcohol Use Known		Alcohol-Related Deaths (ARDs)		
		Number	% of total	Number	% of known cases	% of all ARDs
Age Group						
<16	24	22	91.7	7	31.8	4.3
16-19	31	31	100.0	11	35.5	6.8
20-25	72	69	95.8	31	44.9	19.3
26-35	104	96	92.3	32	33.3	19.9
36-45	75	71	94.7	29	40.8	18.0
46-55	89	84	94.4	22	26.2	13.7
>55	248	215	86.7	29	13.5	18.0
Sex						
Male	448	417	93.1	136	32.6	84.5
Female	195	171	87.7	25	14.6	15.5
Victim Type						
Driver/ Operator	435	409	94.0	116	28.4	72.0
Passenger	95	84	88.4	24	28.6	14.9
Pedestrian	113	95	84.1	21	22.1	13.0
Vehicle Occupied						
Automobiles	312	291	93.3	83	28.5	51.6
Trucks/Vans	103	95	92.2	31	32.6	19.3
Motorcycles	71	68	95.8	21	30.9	13.0
Other Hwy Vehicles	21	20	95.2	1	5.0	0.6
Off-road Vehicles	23	19	82.6	4	21.1	2.5
(Pedestrians)	113	95	84.1	21	22.1	13.0
TOTAL	643	588	91.4	161	27.4	100.0

* Persons dying within 30 days in crashes on public roadways that involved at least one principal highway vehicle.

The highest incidence of alcohol involvement occurred in the crashes in which persons aged 20-25 died (44.9%). The lowest incidence of alcohol involvement was found among the oldest fatalities – 13.5% of the fatalities over 55 years of age died in crashes involving alcohol.

8.1.2 Sex. Of all the people who died in alcohol-related crashes, 84.5% were males. The incidence of alcohol in crashes in which a male died (32.6%) was greater than the incidence of alcohol in crashes in which a female died (14.6%).

8.1.3 Victim type. Of all the people who died in alcohol-related crashes, 72.0% were driver/operators of a vehicle; 14.9% were passengers; and 13.0% were pedestrians.

Within each of the victim types, the highest incidence of alcohol involvement (28.6%) occurred in the crashes in which a passenger died. Alcohol was involved in 28.4% of crashes in which a driver/operator died and 22.1% of the crashes in which a pedestrian died.

8.1.4 Type of vehicle occupied. Of all the people who died in alcohol-related crashes, 51.6% were automobile occupants; 19.3% were truck/van occupants; 13.0% were motorcyclists; 2.5% were off-road

vehicle occupants; and 0.6% were occupants of other highway vehicles.

Within each of these vehicle types, the incidence of alcohol involvement in which a truck/van occupant died was greater than the incidence of alcohol in crashes in which a motorcyclist or automobile occupant died (32.6% versus 30.9% and 28.5%). Among off-road vehicle occupants, 22.2% were involved in an alcohol-related crash compared to 5.0% of occupants of other highway vehicles.

8.2 Alcohol in fatally injured drivers

This section presents information on the presence of alcohol, exclusively among drivers fatally injured in Ontario during 2017. Table 8-2 shows the information by age group, sex, vehicle type, and collision type (single vs. multiple) for drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Sections 2.1.1 and 2.2.2).

The first column in the table shows the number of drivers killed. The next columns show the number and percent of these victims who were tested for alcohol. The remaining columns provide information on the results of the alcohol tests: the first three of these present results for drivers who showed any evidence of alcohol; the last three columns present information on drivers who had BACs over the statutory limit of 80 mg%.

To illustrate, among 20-25 year olds there were 48 drivers killed during 2017; 45 of these fatally injured drivers (93.8%) were tested for alcohol. Of those who were tested, 20 (44.4%) were positive for alcohol. This means that 20-25 year old fatally injured drinking drivers accounted for 20.2% of all drinking drivers who were killed.

Then, in the final three columns, it can be seen that 17 of the 45 (37.8%) fatally injured 20-25 year olds who were tested for alcohol had BACs in excess of 80 mg%. This means that 17 of the 20 drivers who tested positive for alcohol had BACs in excess of the legal limit. The final column expresses the number of drivers with illegal BACs as a percent of all drivers with BACs over the limit. Thus, 20-25 year old drivers accounted for 21.8% of all the drivers with BACs over the legal limit.

The main findings are shown by the totals at the bottom of the table. Ontario had a high testing rate in 2017, with 86.9% of fatally injured drivers being tested for alcohol use.

In Ontario, 27.6% had been drinking and 78 of 99 (78.8%) fatally injured drinking drivers had BACs over 80 mg%. Although not shown in the table, more refined analyses by different BAC categories show that among tested drivers:

- 72.4% had BACs of zero mg%;
- 5.0% had BACs from 1-49 mg%;
- 0.8% had BACs from 50-80 mg%
- 8.4% had BACs from 81 to 160 mg%; and,
- 13.4% had BACs over 160 mg%.

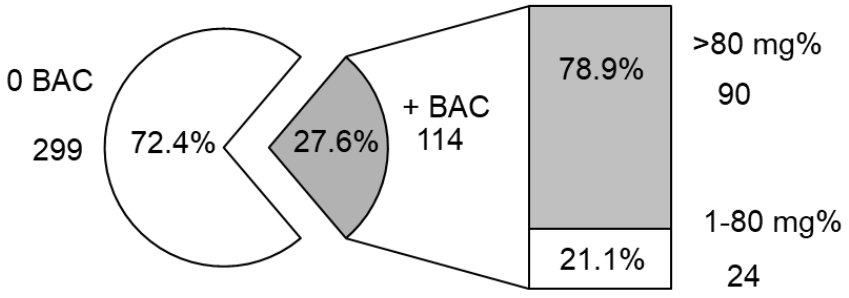
Table 8-2
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Ontario, 2017

Category of Driver	Total Number of Driver Deaths*	Drivers Tested		Positive BAC			BAC >80 mg%		
		No.	% of total	No.	% of tested	% of all drivers with +BAC	No.	% of tested	% of all drivers with BAC >80 mg%
Age Group									
<20**	22	22	100.0	8	36.4	8.1	8	36.4	10.3
20-25	48	45	93.8	20	44.4	20.2	17	37.8	21.8
26-35	78	69	88.5	24	34.8	24.2	19	27.5	24.4
36-45	51	47	92.2	16	34.0	16.2	10	21.3	12.8
46-55	65	60	92.3	18	30.0	18.2	14	23.3	17.9
>55	149	116	77.9	13	11.2	13.1	10	8.6	12.8
Sex									
Male	324	280	86.4	89	31.8	89.9	72	25.7	92.3
Female	89	79	88.8	10	12.7	10.1	6	7.6	7.7
Vehicle Type									
Automobiles	246	207	84.1	61	29.5	61.6	53	25.6	67.9
Trucks/Vans	82	74	90.2	23	31.1	23.2	17	23.0	21.8
Motorcycles	67	60	89.6	14	23.3	14.1	8	13.3	10.3
Other Vehicles***	18	18	100.0	1	5.6	1.0	0	0.0	0.0
Collision Type									
Single vehicle	158	132	83.5	62	47.0	62.6	55	41.7	70.5
Multiple vehicle	255	227	89.0	37	16.3	37.4	23	10.1	29.5
TOTAL	413	359	86.9	99	27.6	100.0	78	21.7	100.0

* Drivers dying within 30 days in crashes on public roadways.
** Drivers of two age groups have been aggregated to ensure that an individual will not be identified.
*** Drivers of two vehicle types have been aggregated to ensure that an individual will not be identified.

In Figure 8-1, the BAC distribution for tested fatally injured drivers is extrapolated to reflect the BAC distribution for all fatally injured drivers. In this figure, 114 of 413 (27.6%) fatally injured drivers have a positive BAC. And among fatally injured drinking drivers, 90 (78.9%) have BACs over 80 mg%.

Figure 8-1
BACs* Among Fatally Injured Drivers
of Highway Vehicles: Ontario, 2017



* numbers are estimates based on the BAC distribution of drivers tested for alcohol

***8.2.1 Age differences*.** Drivers under age 16 and 16-19 have been regrouped (<20 age group) have been regrouped to ensure that individuals cannot be identified. Of all the fatally injured drinking drivers (i.e.,

those with a positive BAC), 24.2% were aged 26-35; 20.2% were aged 20-25; 18.2% were aged 46-55; 16.2% were aged 36-45; 13.1% were over age 55; and 8.1% were under age 20.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 24.4% were aged 26-35; 21.8% were aged 20-25; 17.9% were aged 46-55; 12.8% were aged 36-45 and over age 55; and 10.3% were under age 20.

When comparing the incidence of drinking and driving among fatally injured drivers by age group, fatally injured drivers aged 20-25 were the most likely to have been drinking (44.4%). By contrast, 11.2% of those over age 55 had been drinking.

8.2.2 Sex differences. Males dominate the picture as they account for 89.9% of the fatally injured drivers who had been drinking and 92.3% of the fatally injured drivers who were legally impaired.

Males dominate the picture largely because they account for most of the drivers who are killed (324 of the 413 drivers are males). Fatally injured male drivers were more likely to have been drinking than female drivers (31.8% and 12.7%, respectively). And, 80.9% of the male and 60.0% of the female drivers who were drinking had BACs over the legal limit.

***8.2.3 Vehicle differences*.** Drivers of tractor-trailers and other highway vehicles have been regrouped (other vehicles) to ensure that individuals cannot be identified. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 61.6% were automobile drivers; 23.2% were truck/van drivers; 14.1% were motorcyclists; and 1.0% were drivers of other vehicles.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 67.9% were automobile drivers, 21.8% were truck/van drivers; and 10.3% were motorcyclists.

Within each of the vehicle types, 31.1% of truck/van drivers, 29.5% of fatally injured automobile drivers, 23.3% of motorcyclists, and 5.6% of drivers of other vehicles had been drinking.

8.2.4 Collision differences. Less than two-fifths of the drivers killed (158 of the 413) were involved in single-vehicle collisions but these crashes accounted for over three-fifths of the drivers who had been drinking or were legally impaired (62.6% and 70.5%, respectively).

The reason for this apparent disparity is because alcohol is overrepresented in single-vehicle crashes. Almost half of the drivers involved in single-vehicle crashes (47.0%) tested positive for alcohol, compared to only 16.3% of those involved in multiple-vehicle collisions.

8.3 Drivers involved in alcohol-related serious injury crashes

This section presents information on drivers of highway vehicles involved in alcohol-related crashes in which someone was seriously injured in 2017 in Ontario. A “surrogate” or “indirect” measure is used to estimate alcohol involvement because drivers in serious injury crashes are seldom tested for alcohol. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle at night (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol involvement – i.e., at least one drinking driver in the crash (see Section 2.2.4).

The results are shown in Table 8-3 for drivers grouped in terms of age, sex, type of vehicle driven (see Section 2.2.1 for types of vehicles that are included), and type of collision. The first column shows the number of drivers of highway vehicles involved in serious injury crashes. The number and percent of drivers in such crashes that involved alcohol is shown in the next two columns. The final column expresses the number of drivers involved in alcohol-related serious injury crashes in any row as a percent of all drivers involved in alcohol-related serious injury crashes.

As shown, by the totals at the bottom of the table, 2,852 drivers were involved in crashes in which someone was seriously injured, and among these 13.3% were alcohol-related crashes.

8.3.1 Driver age. Of all the drivers involved in alcohol-related serious injury crashes, 20.3% were aged 20-25; 20.0% were aged 26-35; 17.4% were aged 36-45; and 15.8% were over age 55. Drivers aged 16-19 accounted for only 0.3% and drivers aged 16-19 accounted for only 7.9% of those involved in alcohol-related serious injury crashes. One-third of drivers under age 16 (33.3%) and 20.7% of drivers aged 20-25 were involved in alcohol-related serious injury crashes. The lowest incidence of involvement in alcohol-related crashes was found for those aged 16-19 (16.8%) and over 55 (7.8%).

Table 8-3
Drivers in Alcohol-Related Serious Injury Crashes: Ontario, 2017

Category of Drivers	Number of Drivers	Alcohol-Related		
		Number	% of total	% of all drivers in alcohol-related crashes
Age				
<16	3	1	33.3	0.3
16-19	179	30	16.8	7.9
20-25	372	77	20.7	20.3
26-35	534	76	14.2	20.0
36-45	450	66	14.7	17.4
46-55	484	57	11.8	15.0
>55	765	60	7.8	15.8
unknown	65	13	20.0	3.4
Sex				
Male	1988	312	15.7	82.1
Female	802	55	6.9	14.5
unknown	62	13	21.0	3.4
Vehicle Type				
Auto	1841	260	14.1	68.4
Truck/Van	561	75	13.4	19.7
Motorcycle	315	36	11.4	9.5
Tractor Trailer	88	5	5.7	1.3
Other Hwy. Vehicle	47	4	8.5	1.1
Collision Type				
Single-Vehicle	830	262	31.6	68.9
Multiple-Vehicle	2022	118	5.8	31.1
TOTAL	2852	380	13.3	100.0

* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

8.3.2 Driver sex. Of all the drivers involved in alcohol-related serious injury crashes, 82.1% were males. The incidence of involvement in alcohol-related serious injury crashes was also greater for males than for females (15.7% and 6.9%, respectively).

8.3.3 Type of vehicle driven. Of all the drivers involved in alcohol-related serious injury crashes, 68.4% were automobile drivers; 19.7% were truck/van drivers; 9.5% were motorcyclists; 1.3% were tractor-trailer drivers; and 1.1% were drivers of other highway vehicles.

The highest incidence of involvement in alcohol-related serious injury crashes was found for automobile drivers – 14.1% of these drivers were in crashes that involved alcohol, compared to 13.4% of truck/van drivers; 11.4% for motorcyclists; 8.5% for drivers of other highway vehicles; and 5.7% of tractor-trailer drivers.

8.3.4 Type of collision. Of all the drivers involved in alcohol-related serious injury crashes, 68.9% of them were in single-vehicle crashes. The highest incidence of involvement in alcohol-related serious injury crashes was also found among drivers in single-vehicle crashes – 31.6% of these drivers, compared to only 5.8% for drivers involved in multiple-vehicle crashes.

8.4 Drug use among fatally injured drivers

This section presents information on the presence of drugs, exclusively among drivers fatally injured in Ontario during 2017. A comparison of testing rates of fatally injured drivers for both alcohol and drugs can be found in Table 3-15 on p. 45. Table 8-4 shows the prevalence of drug use among fatally injured drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Section 2.2.5). The table also shows the number of drivers who tested positive for various categories of drugs. A brief description of the different drug categories is provided in Section 2.2.5.

As can be seen, Ontario had a high testing rate in 2017, with 85.2% of fatally injured drivers being tested for drug use.

Among fatally injured tested drivers, 168 out of 352 (47.7%) were positive for drugs. The most common category of drugs found within drivers testing positive for drug use was cannabis (48.8%). Other categories of drugs found in fatally injured drivers testing positive for drugs were CNS depressants (41.7%), narcotic analgesics (28.0%), CNS stimulants (27.4%), dissociative anesthetics (1.8%), and inhalants (0.6%).

Table 8-4
Drug Use Among Fatally Injured Drivers* of Highway Vehicles: Ontario, 2017

Prevalence of Drug Use

Total Number of Driver Deaths	Drivers Tested		Positive for Drugs	
	Number	% of total	Number	% of tested
413	352	(85.2)	168	(47.7)

Categories of Drugs Found Among Drivers Testing Positive

Drug Category	Positive for Drug Type	
	Number of Drivers	% of drivers testing positive**
Cannabis	82	(48.8)
CNS Depressants	70	(41.7)
Narcotic Analgesics	47	(28.0)
CNS Stimulants	46	(27.4)
Dissociative Anesthetics	3	(1.8)
Inhalants	1	(0.6)
Hallucinogens	0	(0.0)

* Dying within 30 days in collisions which occurred on public roadways.
** Percentages will not add up to 100% due to multiple drug types found in blood samples of some drivers.

8.5 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

Sections 8.1 through 8.3 examined three indicators of the alcohol-crash problem: (1) the number and percent of people who died in crashes that involved alcohol; (2) the number and percent of fatally injured drivers who had been drinking; and (3) the number and percent of drivers in serious injury crashes that involved alcohol. Section 8.4 examined drug use among fatally injured drivers in 2017. This section examines changes in these four indicators over time.

8.5.1 Deaths involving drinking drivers: 1996-2017. Table 8-5 and Figure 8-2 show the number and percent of people who died in crashes involving a drinking driver from 1996 to 2017. These results differ slightly from those in Section 8.1. In this section, deaths that occur in crashes that involve a drinking pedestrian are not necessarily classified as alcohol-related deaths. The focus here is more restrictive, on deaths that occur in crashes involving at least one drinking driver (see Section 2.2.1 for types of vehicles that are included).

As shown in the figure, the number of deaths in crashes that involved a drinking driver generally dropped from 291 in 1996 to a low of 124 in 2015 before rising to 157 in 2017. The percentage of alcohol-related fatalities generally declined from 32.3% in 1996 to a low of 21.9% in 2015, and rose to 24.4% in 2017.

Table 8-5
Number* and Percent of Motor Vehicle Deaths Involving a Drinking Driver: Ontario, 1996-2017**

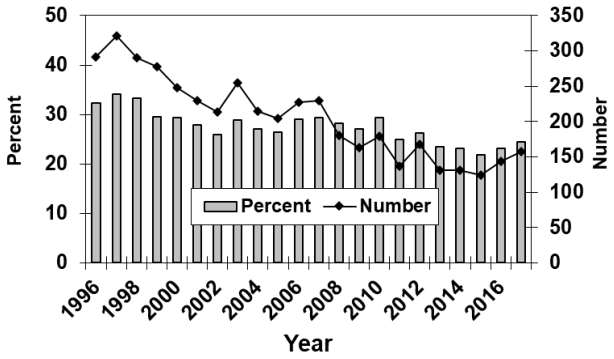
Year of Death	Number of Deaths	Alcohol-Related Deaths	
		Number	% of total
1996	902	291	32.3
1997	942	321	34.1
1998	872	290	33.3
1999	939	278	29.6
2000	844	248	29.4
2001	823	230	27.9
2002	826	214	25.9
2003	883	255	28.9
2004	793	215	27.1
2005	777	205	26.4
2006	782	227	29.0
2007	785	230	29.3
2008	638	180	28.2
2009	603	163	27.0
2010	611	179	29.3
2011	550	137	24.9
2012	640	168	26.3
2013	557	131	23.5
2014	564	131	23.2
2015	567	124	21.9
2016	621	144	23.2
2017	643	157	24.4
2011-2015 baseline	576	138	24.0
2016-2017 period	633	151	23.9

* numbers are estimates based on the percent of deaths for which information was available to determine alcohol use.

** persons dying within 30 days of collisions which occur on public roadways involving at least one principal vehicle type.

As shown at the bottom of the table, during the 2011-2015 baseline period there was an average of 138 fatalities involving a drinking driver and they accounted for 24.0% of all fatalities. Thus, it can be seen that the percent of fatalities involving a drinking driver decreased by 0.4% from 24.0% in the baseline period (2011-2015) to 23.9% in the 2016-2017 period. And, in terms of the number of persons killed in crashes involving a drinking driver, there has been a 9.4% increase from an average of 138 in the baseline period (2011-2015) to 151 in the 2016-2017 period.

Figure 8-2
Number and Percent of Deaths Involving a Drinking Driver: Ontario, 1996-2017



8.5.2 Alcohol use among fatally injured drivers. Data on alcohol use among fatally injured drivers of highway vehicles over the 22-year period from 1996-2017 are shown in Table 8-6. Trends are illustrated in Figure 8-3 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the white area); (2) had BACs below the legal limit (shown by the light grey area); and (3) had BACs over the legal limit (the dark grey area). The data reported here are restricted to drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2).

As can be seen, the percent of fatally injured drivers with BACs over the legal limit generally declined from 1996 (28.7%) to a low in 2014 (17.6%), rose until 2016 (22.8%), and decreased again in 2017 (21.7%). The percent of fatally injured drivers with zero BACs generally increased from 1996 (63.1%) to its highest level in 2014 (77.9%), and generally decreased until 2017 (72.4%). The percent of fatally injured drivers with BACs decreased from 8.1% in 1996 to 4.2% in 2001, generally increased until 2007 (8.0%), decreased until 2009 (4.4%), and fluctuated until 2017 (5.8%).

When compared to the 2011-2015 baseline period, the percentage of fatally injured drivers with zero BACs in the 2016-2017 period decreased by 1.5% (from 72.9% to 71.8%). Among drivers with BACs from 1-80 mg%, there was a 9.1% increase (from 5.5% to 6.0%). Among drivers with BACs over 80 mg%, there was a 2.8% increase (from 21.6% to 22.2%).

Table 8-6
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Ontario, 1996-2017

Year	Number of Drivers*	Drivers Tested		Drivers Grouped by BAC (mg%)					
		No.	(% Total)	Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1996	475	407	85.7	257	63.1	33	8.1	117	28.7
1997	550	450	81.8	290	64.4	34	7.6	126	28.0
1998	483	413	85.5	266	64.4	27	6.5	120	29.1
1999	546	467	85.5	331	70.9	24	5.1	112	24.0
2000	495	422	85.3	289	68.5	31	7.3	102	24.2
2001	484	429	88.6	302	70.4	18	4.2	109	25.4
2002	482	432	89.6	316	73.1	22	5.1	94	21.8
2003	500	446	89.2	306	68.6	25	5.6	115	25.8
2004	483	444	91.9	312	70.3	26	5.9	106	23.9
2005	461	408	88.5	287	70.3	20	4.9	101	24.8
2006	446	390	87.4	265	67.9	30	7.7	95	24.4
2007	474	425	89.7	292	68.7	34	8.0	99	23.3
2008	401	345	86.0	254	73.6	16	4.6	75	21.7
2009	350	293	83.7	206	70.3	13	4.4	74	25.3
2010	371	320	86.3	215	67.2	16	5.0	89	27.8
2011	319	275	86.2	197	71.6	16	5.8	62	22.5
2012	354	305	86.2	211	69.2	15	4.9	79	25.9
2013	324	276	85.2	198	71.7	15	5.4	63	22.8
2014	348	312	89.7	243	77.9	14	4.5	55	17.6
2015	326	284	87.1	210	73.9	20	7.0	54	19.0
2016	345	307	89.0	218	71.0	19	6.2	70	22.8
2017	413	359	86.9	260	72.4	21	5.8	78	21.7
2011-2015 period	334	291	(87.1)	212	(72.9)	16	(5.5)	63	(21.6)
2016-2017 period	379	333	(87.9)	239	(71.8)	20	(6.0)	74	(22.2)

* Dying within 30 days in collisions which occurred on public roadways.

Figure 8-3
Trends in Alcohol Use Among Driver Fatalities: Ontario, 1996-2017

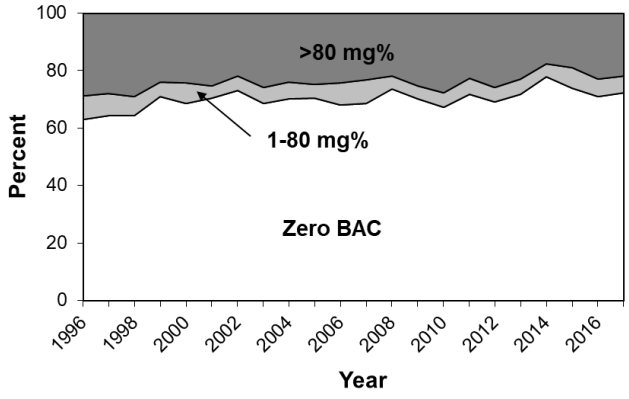


Table 8-7 and Figure 8-4 also show data on alcohol use among fatally injured drivers from 1996 to 2017. Once again, these data are for drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2). However, these results differ from those reported above for two reasons. First, the number of drivers is extrapolated to reflect the BAC distribution of drivers tested for alcohol (see Figure 8-1). Second, drivers are grouped in only two BAC categories: zero and positive.

Table 8-7

Alcohol Use* Among Fatally Injured Drivers of Highway Vehicles: Ontario, 1996-2017

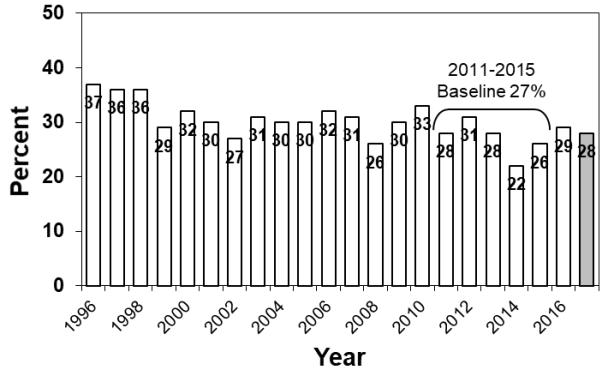
Year	Number of Drivers**	Drivers Grouped by BAC (mg%)			
		Zero	(% Tested)	Positive	(% Tested)
1996	475	300	(63.2)	175	(36.8)
1997	550	354	(64.4)	196	(35.6)
1998	483	311	(64.4)	172	(35.6)
1999	546	387	(70.9)	159	(29.1)
2000	495	339	(68.5)	156	(31.5)
2001	484	341	(70.5)	143	(29.5)
2002	482	353	(73.2)	129	(26.8)
2003	500	343	(68.6)	157	(31.4)
2004	483	339	(70.2)	144	(29.8)
2005	461	324	(70.3)	137	(29.7)
2006	446	303	(67.9)	143	(32.1)
2007	474	326	(68.8)	148	(31.2)
2008	401	295	(73.6)	106	(26.4)
2009	350	246	(70.3)	104	(29.7)
2010	371	249	(67.1)	122	(32.9)
2011	319	229	(71.8)	90	(28.2)
2012	354	245	(69.2)	109	(30.8)
2013	324	232	(71.6)	92	(28.4)
2014	349	272	(77.9)	77	(22.1)
2015	326	241	(73.9)	85	(26.1)
2016	345	245	(71.0)	100	(29.0)
2017	413	299	(72.4)	114	(27.6)
2011-2015 period	334	244	(73.1)	90	(26.9)
2016-2017 period	379	272	(71.8)	107	(28.2)

* Numbers are estimates based on the BAC distribution of drivers tested for alcohol.

** Dying within 30 days in collisions which occurred on public roadways.

As can be seen at the bottom of Table 8-7, the percentage of fatally injured drivers testing positive for alcohol from 2011-2015, the baseline period, is 26.9%. In the 2016-2017 period, 28.2% of fatally injured drivers tested positive for alcohol, a 4.8% increase from the baseline period.

Figure 8-4
Percent of Fatally Injured Drivers*
Positive for Alcohol: Ontario, 1996-2017



8.5.3 Drivers in serious injury crashes. Table 8-8 and Figure 8-5 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes. Between 1996 and 2015, the percentage of all

drivers in serious injury crashes that involved alcohol generally decreased from 22.1% to 12.9%, rose in 2016 (13.8%), and decreased again in 2017 (13.3%).

In the baseline period (2011-2015), an average of 14.1% of highway vehicle drivers in serious injury crashes were in an alcohol-involved crash. In the 2016-2017 period, the percentage of drivers in alcohol-involved crashes declined to 13.6%, a 3.5% decrease from the baseline period.

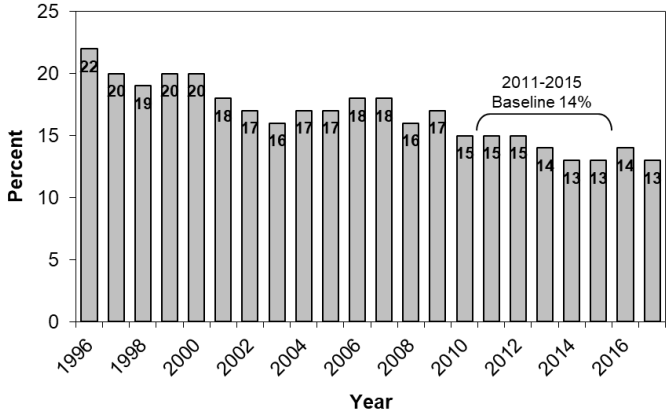
Table 8-8

Number and Percent of Drivers of Highway Vehicles in Serious Injury Crashes* that Involved Alcohol: Ontario, 1996-2017

Year	Number of Drivers	Number in Alcohol-Involved Crashes	Percent
1996	6003	1326	(22.1)
1997	5442	1106	(20.3)
1998	5402	1026	(19.0)
1999	5486	1088	(19.8)
2000	5126	1030	(20.1)
2001	5199	916	(17.6)
2002	5468	939	(17.2)
2003	5086	829	(16.3)
2004	4568	787	(17.2)
2005	4724	783	(16.6)
2006	4155	759	(18.3)
2007	4312	763	(17.7)
2008	4096	669	(16.3)
2009	3306	556	(16.8)
2010	3292	477	(14.5)
2011	3238	497	(15.3)
2012	3255	488	(15.0)
2013	3135	425	(13.6)
2014	2975	396	(13.3)
2015	3013	390	(12.9)
2016	3372	466	(13.8)
2017	2852	380	(13.3)
2011-2015 baseline	3123	439	(14.1)
2016-2017 period	3112	423	(13.6)

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

Figure 8-5
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: Ontario, 1996-2017



8.5.4 Drug use among fatally injured drivers. Table 8-9 and Figure 8-6 show data on drug use among fatally injured drivers of highway vehicles over an 18-year period (2000-2017). Similar to Table 8-6, these results are based on fatally injured drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.5).

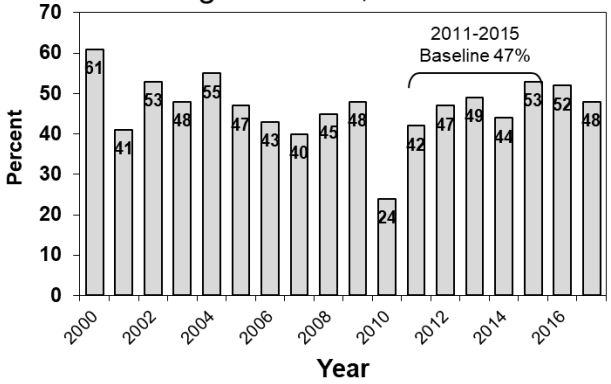
As can be seen at the bottom of Table 8-9, the percentage of fatally injured drivers testing positive for drugs from 2011-2015, the baseline period, is 46.9%. In the 2016-2017 period, 49.7% of fatally injured drivers tested positive for drugs, a 6.0% increase from the baseline period.

Table 8-9
Drug Use Among Fatally Injured Drivers of Highway Vehicles:
Ontario, 2000-2017

YEAR	Number of Drivers*	Drivers Tested	(% Total)	Drivers Tested for Drugs			
				Negative	(% Tested)	Positive	(% Tested)
2000	495	69	13.9	27	39.1	42	60.9
2001	484	93	19.2	55	59.1	38	40.9
2002	482	100	20.7	47	47.0	53	53.0
2003	500	113	22.6	59	52.2	54	47.8
2004	483	114	23.6	51	44.7	63	55.3
2005	461	144	31.2	76	52.8	68	47.2
2006	446	155	34.8	89	57.4	66	42.6
2007	474	173	36.5	104	60.1	69	39.9
2008	401	42	10.5	23	54.8	19	45.2
2009	350	29	8.3	15	51.7	14	48.3
2010	371	41	11.1	31	75.6	10	24.4
2011	319	226	70.8	132	58.4	94	41.6
2012	354	262	74.0	138	52.7	124	47.3
2013	324	265	81.8	136	51.3	129	48.7
2014	348	276	79.3	156	56.5	120	43.5
2015	326	260	79.8	123	47.3	137	52.7
2016	345	295	85.5	142	48.1	153	51.9
2017	413	352	85.2	184	52.3	168	47.7
2011-2015 period	334	258	77.2	137	53.1	121	46.9
2016-2017 period	379	324	85.5	163	50.3	161	49.7

* Dying within 30 days in collisions which occurred on public roadways.

Figure 8-6
Percent of Fatally Injured Drivers Positive for Drugs: Ontario, 2000-2017



9.0 QUEBEC

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in Quebec during 2017. It describes data on:

- people who were killed in alcohol-related crashes (Section 9.1);
- alcohol use among fatally injured drivers (Section 9.2);
- drivers involved in alcohol-related serious injury crashes (Section 9.3);
- drug use among fatally injured drivers (Section 9.4); and,
- trends in the alcohol-crash and drug-crash problems (Section 9.5).

9.1 Deaths in alcohol-related crashes

Table 9-1 presents information on people who died in alcohol-related crashes in Quebec during 2017. This table specifically reports upon persons who died within 30 days of a collision which occurred on a public roadway that involved at least one highway vehicle. Motor vehicle deaths are categorized in terms of the victim's age, sex, victim type (see Section 2.1.1) and the type of vehicle they occupied (see Section 2.2.1). The first column in the table presents the number of deaths. The next two columns show the number and percent of these fatalities in which sufficient information was available to determine if alcohol was involved. *A motor vehicle fatality was considered to be alcohol involved if there was at least one drinking driver or drinking pedestrian in the fatal crash*.

For example, 36 people aged 26-35 were killed in motor vehicle crashes in Quebec during 2017. And, in 35 cases (97.2%) it was possible to determine if alcohol was a factor in the crash.

The next column shows the number of people killed in crashes that were known to be alcohol-involved. For example, 16 people aged 26-35 died in alcohol-related crashes in Quebec during 2017. The next column expresses this as a percentage – i.e., 45.7% of the 26-35 year olds who were killed died in an alcohol-related crash.

The final column (percent of all alcohol-related deaths) expresses the number of deaths in alcohol-related crashes as a percent of all the deaths in such crashes. For example, the alcohol-related deaths among 26-35 year olds represent 23.2% of all the people killed in alcohol-related crashes in Quebec during 2017.

The totals at the bottom of the table provide a summary. As can be seen, 346 persons died within 30 days of a motor vehicle crash in Quebec during 2017. In 319 (92.2%) of these cases, it was possible to determine if alcohol was a factor. Of these known cases, 69 (21.6%) involved alcohol. Extrapolating this figure to the total number of motor vehicle fatalities (346 x .216) it can be estimated that *in Quebec during 2017, 75 persons died in alcohol-related crashes within 30 days of the collision*.

9.1.1 Victim age. Of all the people who died in alcohol-related crashes, 23.2% (see last column) were aged 26-35; 20.3% were aged 20-25; 18.8% were over age 55; 15.9% were aged 36-45; 13.0% were aged 46-55; and 8.7% were aged 16-19.

Table 9-1
Deaths in Alcohol-Related Crashes: Quebec, 2017

Category of Victim	Total Number of Deaths*	Alcohol Use Known		Alcohol-Related Deaths (ARDs)		
		Number	% of total	Number	% of known cases	% of all ARDs
Age Group						
<16	11	9	81.8	0	0.0	0.0
16-19	36	31	86.1	6	19.4	8.7
20-25	49	47	95.9	14	29.8	20.3
26-35	36	35	97.2	16	45.7	23.2
36-45	43	41	95.3	11	26.8	15.9
46-55	37	32	86.5	9	28.1	13.0
>55	134	124	92.5	13	10.5	18.8
Sex						
Male	231	214	92.6	49	22.9	71.0
Female	115	105	91.3	20	19.0	29.0
Victim Type						
Driver/ Operator	231	214	92.6	51	23.8	73.9
Passenger	53	49	92.5	10	20.4	14.5
Pedestrian	62	56	90.3	8	14.3	11.6
Vehicle Occupied						
Automobiles	182	174	95.6	44	25.3	63.8
Trucks/Vans	33	29	87.9	9	31.0	13.0
Motorcycles	49	46	93.9	7	15.2	10.1
Other Hwy Vehicles	5	4	80.0	0	0.0	0.0
Off-road Vehicles	15	10	66.7	1	10.0	1.4
(Pedestrians)	62	56	90.3	8	14.3	11.6
TOTAL	346	319	92.2	69	21.6	100.0

* Persons dying within 30 days in crashes on public roadways that involved at least one principal highway vehicle.

The highest incidence of alcohol involvement occurred in the crashes in which persons aged 26-35 died (45.7%). The lowest incidence of alcohol involvement was found among the youngest and oldest fatalities as 0.0% of persons under 16 years of age and 10.5% of persons over age 55 died in crashes involving alcohol.

9.1.2 Sex. Of all the people who died in alcohol-related crashes, 71.0% were males. The incidence of alcohol in crashes in which a male died (22.9%) was greater than the incidence of alcohol in crashes in which a female died (19.0%).

9.1.3 Victim type. Of all the people who died in alcohol-related crashes, 73.9% were drivers/operators of a vehicle; 14.5% were passengers; and 11.6% were pedestrians.

Within each of the victim types, the highest incidence of alcohol involvement (23.8%) occurred in crashes in which a driver/operator died. Alcohol was involved in 20.4% of the crashes in which a passenger died and 14.3% of those in which a pedestrian died.

9.1.4 Type of vehicle occupied. Of all the people who died in alcohol-related crashes, 63.8% were in an automobile; 13.0% were truck/van occupants; 10.1% were motorcyclists; and 1.4% were off-road vehicle

occupants.

Within each of these vehicle types, the incidence of alcohol involvement in which a truck/van occupant died was greater than the incidence of alcohol in crashes in which an automobile occupant died (31.0% versus 25.3%). Among motorcyclists, 15.2% died in an alcohol-related crash compared to 10.0% of off-road vehicle occupants.

9.2 Alcohol in fatally injured drivers

This section presents information on the presence of alcohol, exclusively among drivers fatally injured in Quebec during 2017. Table 9-2 shows the information by age group, sex, vehicle type, and collision type (single vs. multiple) for drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Sections 2.1.1 and 2.2.2).

The first column in the table shows the number of drivers killed. The next columns show the number and percent of these victims who were tested for alcohol. The remaining columns provide information on the results of the alcohol tests – the first three of these present results for drivers who showed any evidence of alcohol; the last three columns present information on drivers who had BACs over the statutory limit of 80 mg%.

To illustrate, among 16-19 year olds there were 21 drivers killed during 2017; 16 of these fatally injured drivers (76.2%) were tested for alcohol. Of those who were tested, two (12.5%) was positive for alcohol. This means that 16-19 year old fatally injured drinking drivers accounted for 4.8% of all drinking drivers who were killed.

Then, in the final three columns, it can be seen that two of the 16 (12.5%) fatally injured 16-19 year olds who were tested for alcohol had BACs in excess of 80 mg%. This means that both drivers who tested positive for alcohol had BACs in excess of the legal limit. The final column expresses the number of drivers with illegal BACs as a percent of all drivers with BACs over the limit. Thus, 16-19 year old drivers accounted for 5.4% of all the drivers with BACs over the legal limit.

The main findings are shown by the totals at the bottom of the table. Quebec had an average testing rate in 2017, with 72.9% of fatally injured drivers being tested for alcohol use.

In Quebec, 26.4% had been drinking and 37 of 42 (88.1%) fatally injured drinking drivers had BACs over 80 mg%. Although not shown in the table, more refined analyses by different BAC categories show that among tested drivers:

- 73.6% had BACs of zero mg%;
- 1.3% had BACs from 1-49 mg%;
- 1.9% had BACs from 50-80 mg%;
- 8.8% had BACs from 81 to 160 mg%; and,
- 14.4% had BACs over 160 mg%.

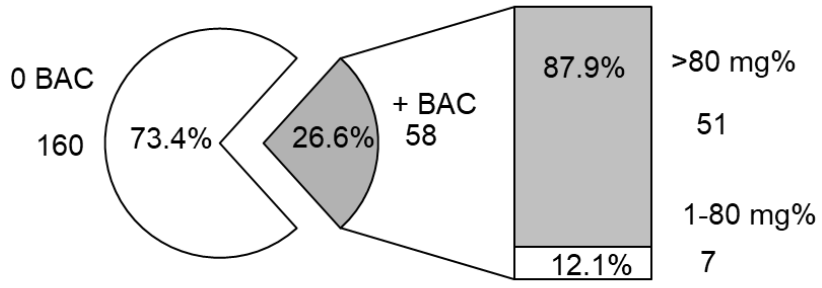
Table 9-2
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Quebec, 2017

Category of Driver	Total Number of Driver Deaths*	Drivers Tested		Positive BAC			BAC >80 mg%		
		No.	% of total	No.	% of tested	% of all drivers with +BAC	No.	% of tested	% of all drivers with BAC >80 mg%
Age Group									
16-19	21	16	76.2	2	12.5	4.8	2	12.5	5.4
20-25	33	23	69.7	10	43.5	23.8	9	39.1	24.3
26-35	29	24	82.8	11	45.8	26.2	8	33.3	21.6
36-45	34	27	79.4	6	22.2	14.3	6	22.2	16.2
46-55	26	20	76.9	5	25.0	11.9	4	20.0	10.8
>55	75	49	65.3	8	16.3	19.0	8	16.3	21.6
Sex									
Male	167	123	73.7	33	26.8	78.6	28	22.8	75.7
Female	51	36	70.6	9	25.0	21.4	9	25.0	24.3
Vehicle Type									
Automobiles	145	108	74.5	29	26.9	69.0	27	25.0	73.0
Trucks/Vans	25	18	72.0	7	38.9	16.7	6	33.3	16.2
Motorcycles	44	32	72.7	6	18.8	14.3	4	12.5	10.8
Tractor Trailers	4	1	25.0	0	0.0	0.0	0	0.0	0.0
Collision Type									
Single vehicle	77	62	80.5	27	43.5	64.3	24	38.7	64.9
Multiple vehicle	141	97	68.8	15	15.5	35.7	13	13.4	35.1
TOTAL	218	159	72.9	42	26.4	100.0	37	23.3	100.0

* Drivers dying within 30 days in crashes on public roadways.

In Figure 9-1, the BAC distribution for tested fatally injured drivers is extrapolated to reflect the BAC distribution for all fatally injured drivers. In this figure, 58 of 218 (26.6%) fatally injured drivers have a positive BAC. And among fatally injured drinking drivers, 51 (87.9%) have BACs over 80 mg%.

Figure 9-1
BACs* Among Fatally Injured Drivers
of Highway Vehicles: Quebec, 2017



* numbers are estimates based on the BAC distribution of drivers tested for alcohol

9.2.1 Age differences. Of all the fatally injured drinking drivers (i.e., those with positive BAC), 26.2% were aged 26-35; 23.8% were aged 20-25, 19.0% were over age 55; 14.3% were aged 36-45; 11.9% were aged 46-55; and 4.8% were aged 16-19.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 24.3% were aged 20-25; 21.6% were aged 26-35 and over 55; 16.2% were aged 36-45; 10.8% were aged 46-55; and 5.4% were aged 16-19.

When comparing the incidence of drinking and driving among fatally injured drivers by age group, fatally injured drivers aged 26-35 were the most likely to have been drinking (45.8%). By contrast, only 12.5% of the tested drivers aged 16-19 had been drinking.

9.2.2 Sex differences. Males dominate the picture as they account for 78.6% of all the fatally injured drivers who had been drinking and 75.7% of all the fatally injured drivers who were legally impaired.

Males dominate the picture largely because they account for most of the drivers who are killed (167 of the 218 fatalities or 76.6% are males). Fatally injured male drivers were slightly more likely to have been drinking than female drivers (26.8% and 25.0%, respectively). And, 84.8% of the male and 100.0% of the female drivers who were drinking had BACs over the legal limit.

9.2.3 Vehicle differences. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 69.0% were automobile drivers; 16.7% were truck/van drivers; and 14.3% were motorcyclists.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 73.0% were automobile drivers; 16.2% were truck/van drivers; and 10.8% were motorcyclists.

Within each of the vehicle types, 38.9% of truck/van drivers, 26.9% of fatally injured automobile drivers, and 18.8% of motorcyclists had been drinking. The lone fatally injured tested tractor-trailer driver had not been drinking.

9.2.4 Collision differences. Less than half of the drivers killed (77 of the 218) were involved in single-vehicle collisions but these crashes accounted for almost two-thirds of the drivers who had been drinking or were legally impaired (64.3% and 64.9%, respectively). The reason for this apparent disparity is because alcohol is overrepresented in single-vehicle crashes. Over two-fifths of the drivers involved in single-vehicle crashes (43.5%) tested positive for alcohol, compared to only 15.5% of those involved in multiple-vehicle collisions.

9.3 Drivers involved in alcohol-related serious injury crashes

This section presents information on drivers of highway vehicles involved in alcohol-related crashes in which someone was seriously injured in 2017 in Quebec. A “surrogate” or “indirect” measure is used to estimate alcohol involvement because drivers in serious injury crashes are seldom tested for alcohol. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle at night (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol involvement – i.e., at least one drinking driver in the crash (see Section 2.2.4).

The results are shown in Table 9-3 for drivers grouped in terms of age, sex, type of vehicle driven (see Section 2.2.1 for types of vehicles that are included), and type of collision. The first column shows the number of drivers of highway vehicles involved in serious injury crashes. The number and percent of drivers in such crashes that involved alcohol is shown in the next two columns. The final column expresses the number of drivers of involved in alcohol-related serious injury crashes in any row as a percent of all drivers involved in alcohol-related serious injury crashes.

As shown by the totals at the bottom of the table, 1,924 drivers were involved in crashes in which someone was seriously injured, and among these 17.4% were alcohol-related crashes.

9.3.1 Driver age. Of all the drivers involved in alcohol-related serious injury crashes, 22.8% were aged 20-25; 22.5% were aged 26-35; and 13.5% were aged 36-45. Drivers under 16 accounted for 0.6% and drivers aged 16-19 accounted for 8.4% of those involved in alcohol-related serious injury crashes.

Almost one-third of the drivers aged 20-25 were involved in alcohol-related serious injury crashes (32.1%). The lowest incidence of involvement in alcohol-related crashes was found for those over age 55 (8.1%).

9.3.2 Driver sex. Of all the drivers involved in alcohol-related serious injury crashes, 72.8% were males. The incidence of involvement in alcohol-related serious injury crashes was also greater for males than for females (18.3% and 15.3%, respectively).

Table 9-3
Drivers* in Alcohol-Related Serious Injury Crashes:
Quebec, 2017

Category of Drivers	Number of Drivers	Alcohol-Related		
		Number	% of total	% of all drivers in alcohol-related crashes
Age				
<16	11	2	18.2	0.6
16-19	119	28	23.5	8.4
20-25	237	76	32.1	22.8
26-35	296	75	25.3	22.5
36-45	252	45	17.9	13.5
46-55	261	35	13.4	10.5
>55	372	30	8.1	9.0
unknown	376	43	11.4	12.9
Sex				
Male	1327	243	18.3	72.8
Female	484	74	15.3	22.2
unknown	113	17	15.0	5.1
Vehicle Type				
Auto and Truck/Van**	1577	300	19.0	89.8
Motorcycle	249	25	10.0	7.5
Tractor-Trailer	73	4	5.5	1.2
Other Hwy. Vehicle	25	5	20.0	1.5
Collision Type				
Single-Vehicle	643	245	38.1	73.4
Multiple-Vehicle	1281	89	6.9	26.6
TOTAL	1924	334	17.4	100.0

* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

** Automobiles and light trucks have been regrouped in collison data as of March 2010.

9.3.3 Type of vehicle driven. Drivers of automobiles and light trucks have been merged in this table as Quebec has regrouped these vehicle types into one category in its collision data since March 2010. Of all the drivers involved in alcohol-related serious injury crashes, 89.8% were automobile-truck/van drivers; 7.5% were motorcyclists; 1.5% were drivers of other highway vehicles; and 1.2% were tractor-trailer drivers.

The highest incidence of involvement in alcohol-related serious injury crashes was found for drivers of other highway vehicles – 20.0% of these drivers were in crashes that involved alcohol, compared to 19.0% for automobile-truck/van drivers and 10.0% for motorcyclists. Among tractor-trailer drivers, 5.5% were involved in alcohol-related crashes.

9.3.4 Type of collision. Of all the drivers involved in alcohol-related serious injury crashes, 73.4% of them were in single-vehicle crashes. The highest incidence of involvement in alcohol-related serious injury crashes was also found among drivers in single-vehicle crashes – 38.1% of these drivers, compared to only 6.9% for drivers involved in multiple-vehicle crashes.

9.4 Drug use among fatally injured drivers

This section presents information on the presence of drugs, exclusively among drivers fatally injured in Quebec during 2017. A comparison of testing rates of fatally injured drivers for both alcohol and drugs

can be found in Table 3-15 on p. 45. Table 9-4 shows the prevalence of drug use among fatally injured drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Section 2.2.5). The table also shows the number of drivers who tested positive for various categories of drugs. A brief description of the different drug categories is provided in Section 2.2.5.

As can be seen, Quebec had a below average testing rate in 2017, with 57.3% of fatally injured drivers being tested for drug use.

Table 9-4
Drug Use Among Fatally Injured Drivers of Highway Vehicles: Quebec, 2017

Prevalence of Drug Use

Total Number of Driver Deaths	Drivers Tested		Positive for Drugs	
	Number	% of total	Number	% of tested
218	125	(57.3)	59	(47.2)

Categories of Drugs Found Among Drivers Testing Positive

Drug Category	Positive for Drug Type	
	Number of Drivers	% of drivers testing positive*
Cannabis	34	(57.6)
CNS Stimulants	26	(44.1)
CNS Depressants	25	(42.4)
Narcotic Analgesics	8	(13.6)
Dissociative Anesthetics	4	(6.8)
Hallucinogens	1	(1.7)
Inhalants	0	(0.0)

* Percentages will not add up to 100% due to multiple drug types found in blood samples of some drivers.

Among fatally injured tested drivers, 59 out of 125 (47.2%) were positive for drugs. The most common category of drugs found within drivers testing positive for drug use was cannabis (57.6%). Other categories of drugs found in fatally injured drivers testing positive for drugs were CNS stimulants (44.1%), CNS depressants (42.4%), narcotic analgesics (13.6%), dissociative anesthetics (6.8%), and hallucinogens (1.7%).

9.5 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

Sections 9.1 through 9.3 examined three indicators of the alcohol-crash problem: (1) the number and percent of people who died in crashes that involved alcohol; (2) the number and percent of fatally injured drivers who had been drinking; and (3) the number and percent of drivers in serious injury crashes that involved alcohol. Section 9.4 examined drug use among fatally injured drivers in 2017. This section examines changes in these four indicators over time.

9.5.1 Deaths involving drinking drivers: 1996-2017. Table 9-5 and Figure 9-2 show the number and percent of people who died in crashes involving a drinking driver from 1996 to 2017. These results differ slightly from those in Section 9.1. In this section, deaths that occur in crashes that involve a drinking

pedestrian are not necessarily classified as alcohol-related deaths. The focus here is more restrictive, on deaths that occur in crashes involving at least one drinking driver (see Section 2.2.1 for types of vehicles that are included).

As shown in the table and figure, the number of deaths in crashes that involved a drinking driver generally dropped from 236 to a low of 70 in 2017. The percentage of alcohol-related fatalities fluctuated between 1996 and 2003, decreased to 21.9% in 2007, rose to 28.6% in 2010, decreased to a low of 20.1% in 2015, rose in 2016 (23.7%), and fell again in 2017 (20.2%).

As shown at the bottom of the table, during the 2011-2015 baseline period there was an average of 94 fatalities involving a drinking driver and they accounted for 24.0% of all fatalities. This means that the percent of fatalities involving a drinking driver decreased by 8.8% from 24.0% in the baseline period (2011-2015) to 21.9% in 2016-2017 period. In terms of the number of persons killed in crashes involving a drinking driver, there has been a 23.4% decrease from an average of 94 in the baseline period (2011-2015) to 72 in the 2016-2017 period.

Table 9-5

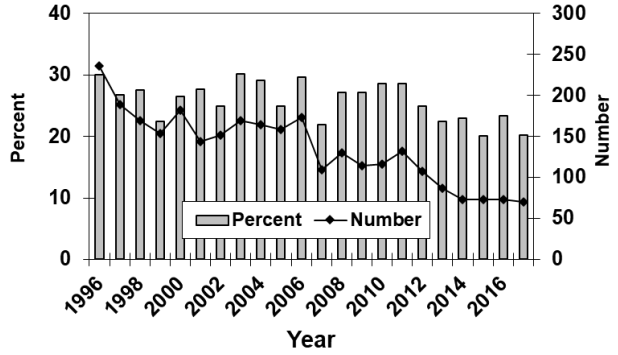
Number* and Percent of Motor Vehicle Deaths Involving a Drinking Driver: Quebec, 1996-2017**

Year of Death	Number of Deaths	Alcohol-Related Deaths	
		Number	% of total
1996	785	236	30.1
1997	706	189	26.8
1998	616	169	27.4
1999	683	154	22.5
2000	686	182	26.5
2001	519	144	27.7
2002	611	152	24.9
2003	561	169	30.1
2004	563	164	29.1
2005	636	159	25.0
2006	584	173	29.6
2007	497	109	21.9
2008	478	130	27.2
2009	421	114	27.1
2010	405	116	28.6
2011	462	132	28.6
2012	428	107	25.0
2013	388	87	22.4
2014	318	73	23.0
2015	364	73	20.1
2016	312	73	23.4
2017	346	70	20.2
2011-2015 baseline	392	94	24.0
2016-2017 period	329	72	21.9

* numbers are estimates based on the percent of deaths for which information was available to determine alcohol use.

** persons dying within 30 days of collisions which occur on public roadways involving at least one principal vehicle type.

Figure 9-2
Number and Percent of Deaths Involving a Drinking Driver: Quebec, 1996-2017



9.5.2 Alcohol use among fatally injured drivers. Data on alcohol use among fatally injured drivers of highway vehicles over the 22-year period from 1996-2017 are shown in Table 9-6. Trends are illustrated in Figure 9-3 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the white area); (2) had BACs below the legal limit (shown by the light grey area); and (3) had BACs over the legal limit (the dark grey area). The data reported here are restricted to drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2).

As can be seen, the percent of fatally injured drivers with BACs over the legal limit generally declined from 1996 (37.2%) to 1999 (22.0%), peaked at 38.7% in 2003, eventually decreased to 21.2% in 2015, rose in 2016 (25.0%), and decreased again in 2017 (23.3%). The percent of fatally injured drivers with zero BACs generally increased from 1996 (57.3%) to its highest level in 2015 (74.1%), decreased in 2016 (68.2%), and rose again in 2017 (73.6%). The percent of fatally injured drivers with BACs between 1 and 80 mg% peaked in 2004 (9.1%) and eventually decreased to a low of 3.1% in 2017.

When compared to the 2011-2015 baseline period shown at the bottom of Table 9-6, the percentage of fatally injured drivers with zero BACs in the 2016-2017 period increased by 5.3% (from 67.6% to 71.2%). Among drivers with BACs from 1-80 mg%, there was a 2.0% decrease (from 4.9% to 4.8%). And among those with BACs over 80 mg%, there was a 12.7% decrease (from 27.5% to 24.0%).

Table 9-6
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles:
Quebec, 1996-2017

Year	Number of Drivers*	Drivers Tested		Drivers Grouped by BAC (mg%)					
		No.	(% Total)	Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1996	454	344	75.8	197	57.3	19	5.5	128	37.2
1997	389	275	70.7	160	58.2	19	6.9	96	34.9
1998	368	262	71.2	152	58.0	15	5.7	95	36.3
1999	412	313	76.0	225	71.9	19	6.1	69	22.0
2000	407	311	76.4	199	64.0	23	7.4	89	28.6
2001	326	244	74.8	152	62.3	18	7.4	74	30.3
2002	394	300	76.1	199	66.3	14	4.7	87	29.0
2003	352	253	71.9	140	55.3	15	5.9	98	38.7
2004	347	243	70.0	145	59.7	22	9.1	76	31.3
2005	419	300	71.6	191	63.7	20	6.7	89	29.7
2006	380	266	70.0	162	60.9	23	8.6	81	30.5
2007	321	207	64.5	139	67.1	12	5.8	56	27.1
2008	304	236	77.6	140	59.3	13	5.5	83	35.2
2009	276	182	65.9	105	57.7	12	6.6	65	35.7
2010	255	167	65.5	105	62.9	11	6.6	51	30.5
2011	300	201	67.0	124	61.7	11	5.5	66	32.8
2012	286	193	67.5	128	66.3	9	4.7	56	29.0
2013	257	194	75.5	131	67.5	11	5.7	52	26.8
2014	213	153	71.8	107	69.9	5	3.3	41	26.8
2015	247	170	68.8	126	74.1	8	4.7	36	21.2
2016	196	132	67.3	90	68.2	9	6.8	33	25.0
2017	218	159	72.9	117	73.6	5	3.1	37	23.3
2011-2015 period	261	182	(69.7)	123	(67.6)	9	(4.9)	50	(27.5)
2016-2017 period	207	146	(70.5)	104	(71.2)	7	(4.8)	35	(24.0)

* Dying within 30 days in collisions which occurred on public roadways.

Figure 9-3
Trends in Alcohol Use Among Driver Fatalities: Quebec, 1996-2017

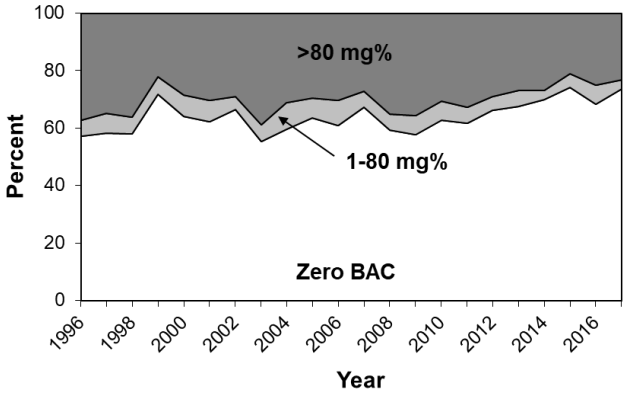


Table 9-7 and Figure 9-4 also show data on alcohol use among fatally injured drivers from 1996 to 2017. Once again, these data are for drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2). However, these results differ from those reported above for two reasons. First, the number of drivers is extrapolated to reflect the BAC distribution of drivers tested for alcohol (see Figure 9-1). Second, drivers are grouped in only two BAC categories: zero and positive.

As can be seen at the bottom of Table 9-7, the percentage of fatally injured drivers testing positive for alcohol from 2011-2015, the baseline period, is 32.6%. In the 2016-2017 period, 29.0% of fatally injured drivers tested positive for alcohol, an 11.0% decrease from the baseline period.

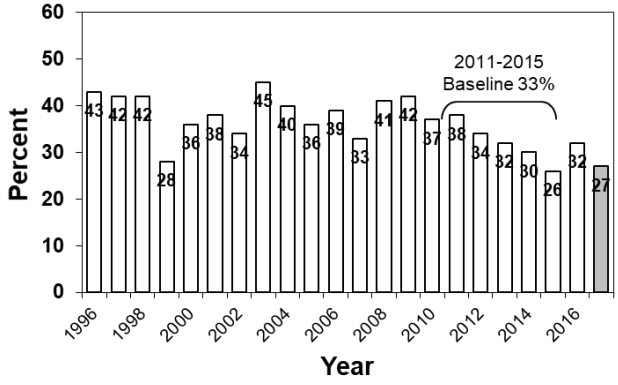
Table 9-7

Alcohol Use* Among Fatally Injured Drivers of Highway Vehicles: Quebec, 1996-2017

Year	Number of Drivers**	Drivers Grouped by BAC (mg%)			
		Zero	(% Tested)	Positive	(% Tested)
1996	454	260	(57.3)	194	(42.7)
1997	389	226	(58.1)	163	(41.9)
1998	368	213	(57.9)	155	(42.1)
1999	412	296	(71.8)	116	(28.2)
2000	407	260	(63.9)	147	(36.1)
2001	326	203	(62.3)	123	(37.7)
2002	394	261	(66.2)	133	(33.8)
2003	352	195	(55.4)	157	(44.6)
2004	347	207	(59.7)	140	(40.3)
2005	419	267	(63.7)	152	(36.3)
2006	380	231	(60.8)	149	(39.2)
2007	321	216	(67.3)	105	(32.7)
2008	304	180	(59.2)	124	(40.8)
2009	276	159	(57.6)	117	(42.4)
2010	255	160	(62.7)	95	(37.3)
2011	300	185	(61.7)	115	(38.3)
2012	286	190	(66.4)	96	(33.6)
2013	257	174	(67.7)	83	(32.3)
2014	213	149	(70.0)	64	(30.0)
2015	247	183	(74.1)	64	(25.9)
2016	196	134	(68.4)	62	(31.6)
2017	218	160	(73.4)	58	(26.6)
2011-2015 period	261	176	(67.4)	85	(32.6)
2016-2017 period	207	147	(71.0)	60	(29.0)

* Numbers are estimates based on the BAC distribution of drivers tested for alcohol.
** Dying within 30 days in collisions which occurred on public roadways.

Figure 9-4
Percent of Fatally Injured Drivers* Positive for Alcohol: Quebec, 1996-2017



9.5.3 Drivers in serious injury crashes. Table 9-8 and Figure 9-5 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes. Between 1996 and 2005, the percentage of all drivers in serious injury crashes that involved alcohol generally decreased from 18.9% to 15.3%, rose to 18.3% in 2010, decreased to 13.4% in 2015, and rose slightly to 17.4% in 2017.

In the baseline period (2011-2015), an average of 15.9% of highway vehicle drivers in serious injury crashes were in an alcohol-involved crash. In the 2016-2017 period, the average percentage of drivers in alcohol-involved crashes declined to 15.6%, a 1.9% decrease from the baseline period.

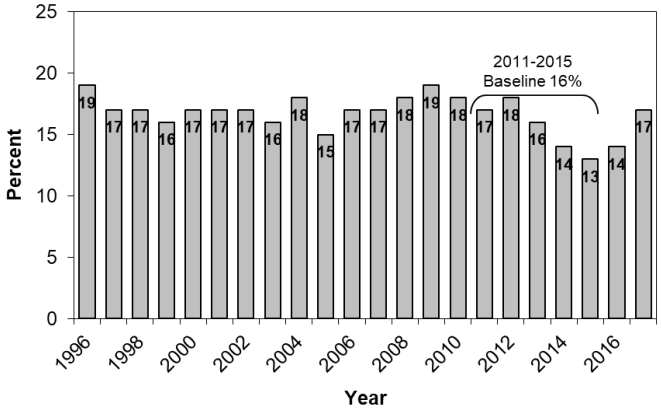
Table 9-8

Number and Percent of Drivers of Highway Vehicles in Serious Injury Crashes* that Involved Alcohol: Quebec, 1996-2017

Year	Number of Drivers	Number in Alcohol-Involved Crashes	Percent
1996	5382	1018	(18.9)
1997	5146	871	(16.9)
1998	4782	800	(16.7)
1999	4557	740	(16.2)
2000	4455	750	(16.8)
2001	4179	699	(16.7)
2002	4323	746	(17.3)
2003	4386	679	(15.5)
2004	4337	761	(17.5)
2005	4856	745	(15.3)
2006	4404	741	(16.8)
2007	3350	584	(17.4)
2008	2812	508	(18.1)
2009	2740	515	(18.8)
2010	2895	531	(18.3)
2011	2542	443	(17.4)
2012	2490	446	(17.9)
2013	2218	345	(15.6)
2014	2074	298	(14.4)
2015	2099	282	(13.4)
2016	1862	256	(13.7)
2017	1924	334	(17.4)
2011-2015 baseline	2285	363	(15.9)
2016-2017 period	1893	295	(15.6)

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

Figure 9-5
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: Quebec, 1996-2017



9.5.4 Drug use among fatally injured drivers. Table 9-9 and Figure 9-6 show data on drug use among fatally injured drivers of highway vehicles over an 18-year period (2000-2017). Similar to Table 9-6, these results are based on fatally injured drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.5).

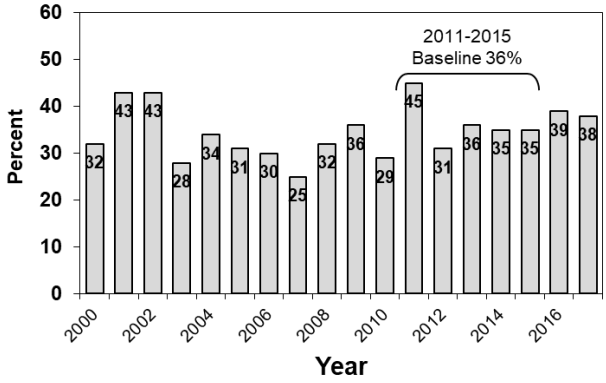
As can be seen at the bottom of Table 9-9, the percentage of fatally injured drivers testing positive for drugs from 2011-2015, the baseline period, is 35.8%. In the 2016-2017 period, 38.5% of fatally injured drivers tested positive for drugs, a 7.4% increase from the baseline period.

Table 9-9
Drug Use Among Fatally Injured Drivers of Highway Vehicles: Quebec, 2000-2017

YEAR	Number of Drivers*	Drivers Tested	(% Total)	Drivers Tested for Drugs			
				Negative	(% Tested)	Positive	(% Tested)
2000	407	189	46.4	128	67.7	61	32.3
2001	326	210	64.4	120	57.1	90	42.9
2002	394	256	65.0	145	56.6	111	43.4
2003	352	211	59.9	153	72.5	58	27.5
2004	347	167	48.1	110	65.9	57	34.1
2005	419	219	52.3	152	69.4	67	30.6
2006	380	244	64.2	170	69.7	74	30.3
2007	321	197	61.4	147	74.6	50	25.4
2008	304	216	71.1	147	68.1	69	31.9
2009	276	137	49.6	88	64.2	49	35.8
2010	255	151	59.2	107	70.9	44	29.1
2011	300	186	62.0	103	55.4	83	44.6
2012	286	190	66.4	132	69.5	58	30.5
2013	257	186	72.4	120	64.5	66	35.5
2014	213	152	71.4	99	65.1	53	34.9
2015	247	168	68.0	110	65.5	58	34.5
2016	196	130	66.3	80	61.5	50	38.5
2017	218	155	71.1	96	61.9	59	38.1
2011-2015 period	261	176	67.4	113	64.2	63	35.8
2016-2017 period	207	143	69.1	88	61.5	55	38.5

* Dying within 30 days in collisions which occurred on public roadways.

Figure 9-6
Percent of Fatally Injured Drivers
Positive for Drugs: Quebec, 2000-2017



10.0 NEW BRUNSWICK

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in New Brunswick during 2017. It describes data on:

- people who were killed in alcohol-related crashes (Section 10.1);
- alcohol use among fatally injured drivers (Section 10.2);
- drivers involved in alcohol-related serious injury crashes (Section 10.3);
- drug use among fatally injured drivers (Section 10.4); and,
- trends in the alcohol-crash and drug-crash problems (Section 10.5).

10.1 Deaths in alcohol-related crashes

Table 10-1 presents information on people who died in alcohol-related crashes in New Brunswick during 2017. This table specifically reports upon persons who died within 30 days of a collision which occurred on a public roadway that involved at least one highway vehicle. Motor vehicle deaths are categorized in terms of the victim's age, sex, victim type (see Section 2.1.1) and the type of vehicle they occupied (see Section 2.2.1). The first column in the table presents the number of deaths. The next two columns show the number and percent of these fatalities in which sufficient information was available to determine if alcohol was involved. *A motor vehicle fatality was considered to be alcohol involved if there was at least one drinking driver or drinking pedestrian in the fatal crash*.

For example, eight people aged 20-25 were killed in motor vehicle crashes in New Brunswick during 2017. And, in all eight cases (100.0%) it was possible to determine if alcohol was a factor in the crash.

The next column shows the number of people killed in crashes that were known to be alcohol-involved. There were five people aged 20-25 who died in alcohol-related crashes in New Brunswick during 2017. The next column expresses this as a percentage – i.e., 62.5% of the 20-25 year olds who were killed died in an alcohol-related crash.

The final column (percent of all alcohol-related deaths) expresses the number of deaths in alcohol-related crashes as a percent of all the deaths in such crashes. For example, the alcohol-related deaths among 20-25 year olds represent 25.0% of all the people killed in alcohol-related crashes in New Brunswick during 2017.

The totals at the bottom of the table provide a summary. As can be seen, 65 persons died within 30 days of a motor vehicle crash in New Brunswick during 2017. In 64 (98.5%) of these cases, it was possible to determine if alcohol was a factor. Of these known cases, 20 (31.3%) involved alcohol. Extrapolating this figure to the total number of motor vehicle fatalities (65 x .313) it can be estimated that *in New Brunswick during 2017, 20 persons died in alcohol-related crashes within 30 days of the collision*.

Table 10-1
Deaths in Alcohol-Related Crashes: New Brunswick, 2017

Category of Victim	Total Number of Deaths*	Alcohol Use Known		Alcohol-Related Deaths (ARDs)		
		Number	% of total	Number	% of known cases	% of all ARDs
Age Group						
<20**	7	7	100.0	1	14.3	5.0
20-25	8	8	100.0	5	62.5	25.0
26-35	7	7	100.0	1	14.3	5.0
36-45	10	9	90.0	2	22.2	10.0
46-55	12	12	100.0	6	50.0	30.0
>55	21	21	100.0	5	23.8	25.0
Sex						
Male	45	44	97.8	18	40.9	90.0
Female	20	20	100.0	2	10.0	10.0
Victim Type						
Driver/ Operator	49	48	98.0	18	37.5	90.0
Passenger	9	9	100.0	2	22.2	10.0
Pedestrian	7	7	100.0	0	0.0	0.0
Vehicle Occupied						
Automobiles	32	32	100.0	8	25.0	40.0
Trucks/Vans	11	11	100.0	7	63.6	35.0
Motorcycles	12	11	91.7	4	36.4	20.0
Off-road Vehicles	3	3	100.0	1	33.3	5.0
(Pedestrians)	7	7	100.0	0	0.0	0.0
TOTAL	65	64	98.5	20	31.3	100.0

* Persons dying within 30 days in crashes on public roadways that involved at least one principal highway vehicle.
** Victims in two age groups have been aggregated to ensure that an individual will not be identified.

10.1.1 Victim age. Victims under 16 and aged 16-19 have been regrouped (<20 age group) to ensure that individuals cannot be identified. Of all the people who died in alcohol-related crashes, 30.0% (see last column) were aged 46-55; 25.0% were aged 20-25 and over 55; and 5.0% were aged under 20 and 26-35.

The highest incidence of alcohol involvement occurred in the crashes in which a person aged 20-25 died (62.5%). The lowest incidence of alcohol involvement was found among fatalities under 20 and 26-35 – 14.3% of persons in these age groups died in crashes involving alcohol.

10.1.2 Sex. Of all the people who died in alcohol-related crashes, 90.0% were males. The incidence of alcohol in crashes in which a male died (40.9%) was greater than the incidence of alcohol in crashes in which a female died (10.0%).

10.1.3 Victim type. Of all the people who died in alcohol-related crashes, 90.0% were drivers/operators of a vehicle and 10.0% were passengers.

Within each of the victim types, the highest incidence of alcohol involvement (37.5%) occurred in the crashes in which a driver/operator died. Alcohol was involved in 22.2% of the crashes in which a passenger died and 0.0% of those in which a pedestrian died.

10.1.4 Type of vehicle occupied. Of all the people who died in alcohol-related crashes, 40.0% were automobile occupants; 35.0% were truck/van occupants; 20.0% were motorcyclists; and 5.0% were occupants of off-road vehicles.

Within each of these vehicle types, the incidence of alcohol involvement in which a truck/van occupant died was greater than the incidence of alcohol in crashes in which a motorcyclist died (63.6% versus 36.4%). Among automobile occupants, 25.0% died in a crash involving alcohol compared to 33.3% of off-road vehicle occupants.

10.2 Alcohol in fatally injured drivers

This section presents information on the presence of alcohol, exclusively among drivers fatally injured in New Brunswick during 2017. Table 10-2 shows the information by age group, sex, vehicle type, and collision type (single vs. multiple) for drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Sections 2.1.1 and 2.2.2).

The first column in the table shows the number of drivers killed. The next columns show the number and percent of these victims who were tested for alcohol. The remaining columns provide information on the results of the alcohol tests: the first three of these present results for drivers who showed any evidence of alcohol; the last three columns present information on drivers who had BACs over the statutory limit of 80 mg%.

To illustrate, among 26-35 year olds there were five drivers killed during 2017; four of these fatally injured drivers (80.0%) were tested for alcohol. Of those who were tested, one (25.0%) were positive for alcohol. This means that fatally injured drinking drivers aged 26-35 accounted for 6.3% of all drinking drivers who were killed.

Table 10-2
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: New Brunswick, 2017

Category of Driver	Total Number of Driver Deaths*	Drivers Tested		Positive BAC			BAC >80 mg%		
		No.	% of total	No.	% of tested	% of all drivers with +BAC	No.	% of tested	% of all drivers with BAC >80 mg%
Age Group									
16-19	5	4	80.0	1	25.0	6.3	1	25.0	6.7
20-25	4	4	100.0	3	75.0	18.8	3	75.0	20.0
26-35	5	4	80.0	1	25.0	6.3	1	25.0	6.7
36-45	10	8	80.0	2	25.0	12.5	2	25.0	13.3
46-55	10	8	80.0	5	62.5	31.3	4	50.0	26.7
>55	12	10	83.3	4	40.0	25.0	4	40.0	26.7
Sex									
Male	34	28	82.4	14	50.0	87.5	13	46.4	86.7
Female	12	10	83.3	2	20.0	12.5	2	20.0	13.3
Vehicle Type									
Automobiles	25	20	80.0	7	35.0	43.8	7	35.0	46.7
Trucks/Vans	9	8	88.9	5	62.5	31.3	4	50.0	26.7
Motorcycles	12	10	83.3	4	40.0	25.0	4	40.0	26.7
Collision Type									
Single vehicle	24	20	83.3	13	65.0	81.3	13	65.0	86.7
Multiple vehicle	22	18	81.8	3	16.7	18.8	2	11.1	13.3
TOTAL	46	38	82.6	16	42.1	100.0	15	39.5	100.0

* Drivers dying within 30 days in crashes on public roadways.

Then, in the final three columns, it can be seen that one of the four (25.0%) fatally injured 26-35 year olds who were tested for alcohol had BACs in excess of 80 mg%. This means that the driver who tested positive for alcohol had a BAC above the legal limit. The final column expresses the number of drivers with illegal BACs as a percent of all drivers with BACs over the limit. Thus, 26-35 year old drivers accounted for 6.7% of all the drivers with BACs over the legal limit.

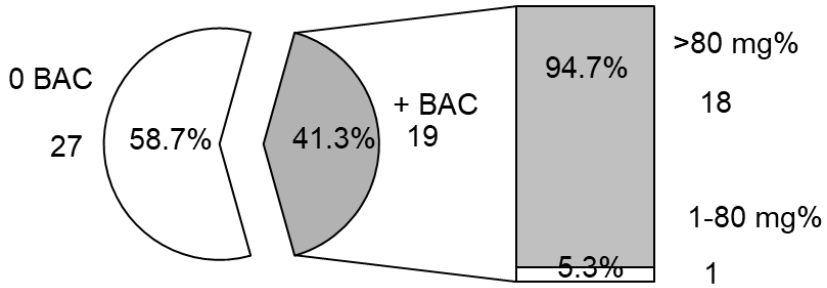
The main findings are shown by the totals at the bottom of the table. New Brunswick had a high testing rate in 2017, with 82.6% of fatally injured drivers being tested for alcohol use.

In New Brunswick, 42.1% had been drinking and 15 out of 16 (93.8%) fatally injured drinking drivers had BACs >80 mg%. Although not shown in the table, more refined analyses by different BAC categories show that among tested drivers:

- 57.9% had BACs of zero mg%;
- 0.0% had BACs from 1-49 mg%;
- 2.6% had BACs from 50-80 mg%
- 26.3% had BACs from 81 to 160 mg%; and,
- 13.2% had BACs over 160 mg%.

In Figure 10-1, the BAC distribution for tested fatally injured drivers is extrapolated to reflect the BAC distribution for all fatally injured drivers. In this figure 19 of 46 (41.3%) fatally injured drivers have a positive BAC. And among fatally injured drinking drivers, 18 (94.7%) have BACs over 80 mg%.

Figure 10-1
BACs* Among Fatally Injured Drivers of Highway Vehicles: New Brunswick, 2017



* numbers are estimates based on the BAC distribution of drivers tested for alcohol

10.2.1 Age differences. Of all the fatally injured drinking drivers (i.e., those with positive BAC), 31.3% were aged 46-55; 25.0% were over age 55; 18.8% were aged 20-25; 12.5% were aged 36-45; and 6.3% were aged 16-19 and 26-35.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 26.7% were aged 46-55 and over 55; 20.0% were aged 20-25; 13.3% were aged 36-45; and 6.7% were aged 16-19 and 26-35.

When comparing the incidence of drinking and driving among fatally injured drivers by age group, fatally injured drivers aged 20-25 were the most likely to have been drinking (75.0%). By contrast, 25.0% of the tested drivers aged 16-19, 20-25 and 26-35 had been drinking.

10.2.2 Sex differences. Males dominate the picture – they account for 87.5% of the fatally injured drivers who had been drinking and 86.7% of those who were legally impaired.

Males dominate the picture largely because they account for most of the drivers who are killed (34 of the 46 fatalities or 73.9% are males). Fatally injured male drivers were more likely to have been drinking than female drivers (50.0% and 20.0%, respectively). And, 92.9% of the male drivers and 100.0% of the female drivers who were drinking had BACs over the legal limit.

10.2.3 Vehicle differences. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 43.8% were automobile drivers; 31.3% were truck/van drivers; and 25.0% were motorcyclists.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 46.7% were automobile drivers; and 26.7% were truck/van drivers and motorcyclists.

Within each of the vehicle types, 62.5% of fatally injured truck/van drivers, 40.0% of motorcyclists, and 35.0% of automobile drivers had been drinking.

10.2.4 Collision differences. Slightly more than half of the drivers killed (24 of the 46) were involved in

single-vehicle collisions but these crashes accounted for 81.3% of the drivers who had been drinking and 86.7% of those who were legally impaired.

The reason for this apparent disparity is because alcohol is overrepresented in single-vehicle crashes. Almost two-thirds of the drivers involved in single-vehicle crashes (65.0%) tested positive for alcohol, compared to 16.7% of those involved in multiple-vehicle collisions.

10.3 Drivers involved in alcohol-related serious injury crashes

This section presents information on drivers of highway vehicles involved in alcohol-related crashes in which someone was seriously injured in 2016 in New Brunswick. At the time this report was being prepared, collision data from 2017 for New Brunswick were not available. For this reason, 2016 data will be reported in this section. A "surrogate" or "indirect" measure is used to estimate alcohol involvement because drivers in serious injury crashes are seldom tested for alcohol. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle at night (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol involvement – i.e., at least one drinking driver in the crash (see Section 2.2.4).

The results are shown in Table 10-3 for drivers grouped in terms of age, sex, type of vehicle driven (see Section 2.2.1 for types of vehicles that are included), and type of collision. The first column shows the number of drivers of highway vehicles involved in serious injury crashes. The number and percent of drivers in such crashes that involved alcohol is shown in the next two columns. The final column expresses the number of drivers involved in alcohol-related serious injury crashes in any row as a percent of all drivers involved in alcohol-related serious injury crashes.

As shown, by the totals at the bottom of the table, 248 drivers were involved in crashes in which someone was seriously injured, and among these 27.4% were involved in alcohol-related crashes.

10.3.1 Driver age. Of all the drivers involved in alcohol-related serious injury crashes, 20.6% were aged 20-25 and 26-35; 19.1% were aged 36-45; 14.7% were aged 16-19 and over 55, and 8.8% were aged 46-55.

One-half of the drivers aged 16-19 were involved in alcohol-related serious injury crashes (52.6%). The lowest incidence of involvement in alcohol-related crashes was found for those aged over 55 (13.9%).

10.3.2 Driver sex. Of all the drivers involved in alcohol-related serious injury crashes, 70.6% were males. The incidence of involvement in alcohol-related serious injury crashes was also greater for males than for females (29.8% and 23.2%, respectively).

Table 10-3
Drivers* in Alcohol-Related Serious Injury Crashes:
New Brunswick, 2016

Category of Drivers	Number of Drivers	Alcohol-Related		
		Number	% of total	% of all drivers in alcohol-related crashes
Age				
16-19	19	10	52.6	14.7
20-25	36	14	38.9	20.6
26-35	39	14	35.9	20.6
36-45	38	13	34.2	19.1
46-55	39	6	15.4	8.8
>55	72	10	13.9	14.7
unknown	5	1	20.0	1.5
Sex				
Male	161	48	29.8	70.6
Female	82	19	23.2	27.9
unknown	5	1	20.0	1.5
Vehicle Type				
Auto	123	41	33.3	60.3
Truck/Van	82	20	24.4	29.4
Motorcycle	33	3	9.1	4.4
Tractor-Trailer	10	4	40.0	5.9
Collision Type				
Single-Vehicle	101	56	55.4	82.4
Multiple-Vehicle	147	12	8.2	17.6
TOTAL	248	68	27.4	100.0

* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

10.3.3 Type of vehicle driven. Of all the drivers involved in alcohol-related serious injury crashes, 60.3% were automobile drivers; 29.4% were truck/van drivers; 5.9% were tractor-trailer drivers; and 4.4% were motorcyclists.

The highest incidence of involvement in alcohol-related serious injury crashes was found for tractor-trailer drivers – 40.0% of these drivers were in crashes that involved alcohol, compared to 33.3% for automobile drivers, 24.4% for truck/van drivers; and 9.1% for motorcyclists.

10.3.4 Type of collision. Of all the drivers involved in alcohol-related serious injury crashes, 82.4% of them were in single-vehicle crashes. The highest incidence of involvement in alcohol-related serious injury crashes was also found among drivers in single-vehicle crashes – 55.4% of these drivers, compared to only 8.2% for drivers involved in multiple-vehicle crashes.

10.4 Drug use among fatally injured drivers

This section presents information on the presence of drugs, exclusively among drivers fatally injured in New Brunswick during 2017. A comparison of testing rates of fatally injured drivers for both alcohol and drugs can be found in Table 3-15 on p. 45. Table 10-4 shows the prevalence of drug use among fatally injured drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Section 2.2.5). The table also shows the number of drivers who tested positive for various

categories of drugs. A brief description of the different drug categories is provided in Section 2.2.5.

As can be seen, New Brunswick had a high testing rate in 2017, with 76.1% of fatally injured drivers being tested for drug use.

Among fatally injured tested drivers, 20 out of 35 (57.1%) were positive for drugs. The most common category of drugs found within drivers testing positive for drug use was cannabis (60.0%). Other categories of drugs found in fatally injured drivers testing positive for drugs were CNS depressants (55.0%), CNS stimulants (30.0%), narcotic analgesics (15.0%), and hallucinogens (5.0%).

Table 10-4
Drug Use Among Fatally Injured Drivers* of Highway Vehicles: New Brunswick, 2017

Prevalence of Drug Use

Total Number of Driver Deaths	Drivers Tested		Positive for Drugs	
	Number	% of total	Number	% of tested
46	35	(76.1)	20	(57.1)

Categories of Drugs Found Among Drivers Testing Positive

Drug Category	Positive for Drug Type	
	Number of Drivers	% of drivers testing positive**
Cannabis	12	(60.0)
CNS Depressants	11	(55.0)
CNS Stimulants	6	(30.0)
Narcotic Analgesics	3	(15.0)
Hallucinogens	1	(5.0)
Dissociative Anesthetics	0	(0.0)
Inhalants	0	(0.0)

* Dying within 30 days in collisions which occurred on public roadways.
** Percentages will not add up to 100% due to multiple drug types found in blood samples of some drivers.

10.5 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

Sections 10.1 through 10.3 examined three indicators of the alcohol-crash problem: (1) the number and percent of people who died in crashes that involved alcohol; (2) the number and percent of fatally injured drivers who had been drinking; and (3) the number and percent of drivers in serious injury crashes that involved alcohol. Section 10.4 examined drug use among fatally injured drivers in 2017. This section examines changes in these four indicators over time.

10.5.1 Deaths involving drinking drivers: 1996-2017. Table 10-5 and Figure 10-2 show the number and percent of people who died in crashes involving a drinking driver from 1996 to 2017. These results differ slightly from those in Section 10.1. In this section, deaths that occur in crashes that involve a drinking pedestrian are not necessarily classified as alcohol-related deaths. The focus here is more restrictive, on deaths that occur in crashes involving at least one drinking driver (see Section 2.2.1 for types of vehicles that are included).

As shown in the figure, the number of deaths in crashes that involved a drinking driver generally dropped from 34 in 1996 to 25 in 2008, peaked at 39 in 2010, fell to a low of nine in 2014, and rose to 25 in 2016, and decreased again to 20 in 2017. The percentage of alcohol-related fatalities generally decreased from 35.4% in 1996 to 26.9% in 2000, peaked at 41.1% in 2010, decreased to its lowest level in 2014 (17.6%), rose in 2015 (34.9%), and decreased in 2017 (30.8%).

Table 10-5

Number* and Percent of Motor Vehicle Deaths Involving a Drinking Driver: New Brunswick, 1996-2017**

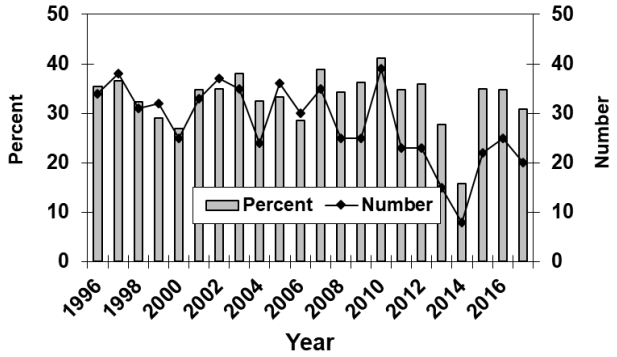
Year of Death	Number of Deaths	Alcohol-Related Deaths	
		Number	% of total
1996	96	34	35.4
1997	104	38	36.5
1998	96	31	32.3
1999	110	32	29.1
2000	93	25	26.9
2001	95	33	34.7
2002	106	37	34.9
2003	92	35	38.0
2004	74	24	32.4
2005	108	36	33.3
2006	105	30	28.6
2007	90	35	38.9
2008	73	25	34.2
2009	69	25	36.2
2010	95	39	41.1
2011	66	23	34.8
2012	64	23	35.9
2013	54	16	29.6
2014	51	9	17.6
2015	63	22	34.9
2016	72	25	34.7
2017	65	20	30.8
2011-2015 baseline	60	19	31.7
2016-2017 period	69	23	33.3

* numbers are estimates based on the percent of deaths for which information was available to determine alcohol use.

** persons dying within 30 days of collisions which occur on public roadways involving at least one principal vehicle type.

As shown at the bottom of the table, during the 2011-2015 baseline period there was an average of 19 fatalities involving a drinking driver and they accounted for 31.7% of all fatalities. This means that the percent of fatalities involving a drinking driver increased by 5.0% from 31.7% in the baseline period (2011-2015) to 33.3% in the 2016-2017 period. In terms of the number of persons killed in crashes involving a drinking driver, there has been a 21.1% increase from an average of 19 in the baseline period (2011-2015) to 23 in the 2016-2017 period.

Figure 10-2
Number and Percent of Deaths Involving a Drinking Driver: New Brunswick, 1996-2017



10.5.2 Alcohol use among fatally injured drivers. Data on alcohol use among fatally injured drivers of highway vehicles over the 22-year period from 1996-2017 are shown in Table 10-6. Trends are illustrated in Figure 10-3 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the white area); (2) had BACs below the legal limit (shown by the light grey area); and (3) had BACs over the legal limit (the dark grey area). The data reported here are restricted to drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2).

As can be seen, the percentage of fatally injured drivers with BACs over the legal limit fluctuated, peaked in 2010 (45.6%) generally decreased until 2013 (16.1%), and rose again in 2017 (39.5%). The percent of fatally injured drivers with zero BACs generally decreased from 1996 (62.5%) to 2001 (46.5%), eventually peaked in 2014 (77.8%), and dropped to 57.9% in 2017. The percent of fatally injured drivers with BACs between 1 and 80 mg% generally rose from 1996 (8.3%) until 2001 (11.6%), fluctuated until 2013 (12.9%), fell to 0.0% in 2014, peaked in 2016 (15.4%), and decreased again to 2.6% in 2017.

When compared to the 2011-2015 baseline period shown at the bottom of Table 10-6, the percentage of fatally injured drivers with zero BACs in the 2016-2017 period decreased by 16.6% (from 67.6% to 56.4%). Among drivers with BACs from 1-80 mg%, there was a 161.0% increase (from 5.9% to 10.3%). And among drivers with BACs over 80 mg%, there was a 25.7 increase (from 26.5% to 33.3%).

Table 10-6
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles:
New Brunswick, 1996-2017

Year	Number of Drivers*	Drivers Tested		Drivers Grouped by BAC (mg%)					
		No.	(% Total)	Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1996	56	48	85.7	30	62.5	4	8.3	14	29.2
1997	58	52	89.7	30	57.7	4	7.7	18	34.6
1998	57	50	87.7	29	58.0	2	4.0	19	38.0
1999	60	49	81.7	32	65.3	2	4.1	15	30.6
2000	51	40	78.4	24	60.0	2	5.0	14	35.0
2001	56	43	76.8	20	46.5	5	11.6	18	41.9
2002	61	49	80.3	30	61.2	2	4.1	17	34.7
2003	59	53	89.8	31	58.5	4	7.5	18	34.0
2004	42	37	88.1	25	67.6	2	5.4	10	27.0
2005	60	54	90.0	35	64.8	3	5.6	16	29.6
2006	65	58	89.2	39	67.2	3	5.2	16	27.6
2007	50	45	90.0	23	51.1	5	11.1	17	37.8
2008	41	38	92.7	20	52.6	2	5.3	16	42.1
2009	48	46	95.8	28	60.9	2	4.3	16	34.8
2010	60	57	95.0	29	50.9	2	3.5	26	45.6
2011	45	40	88.9	27	67.5	1	2.5	12	30.0
2012	40	37	92.5	25	67.6	1	2.7	11	29.7
2013	34	31	91.2	22	71.0	4	12.9	5	16.1
2014	30	27	90.0	21	77.8	0	0.0	6	22.2
2015	45	36	80.0	23	63.9	3	8.3	10	27.8
2016	45	39	86.7	22	56.4	6	15.4	11	28.2
2017	46	38	82.6	22	57.9	1	2.6	15	39.5
2011-2015 baseline	39	34	(87.2)	23	(67.6)	2	(5.9)	9	(26.5)
2016-2017 period	46	39	(84.8)	22	(56.4)	4	(10.3)	13	(33.3)

* Dying within 30 days in collisions which occurred on public roadways.

Figure 10-3
Trends in Alcohol Use Among Driver Fatalities: New Brunswick, 1996-2017

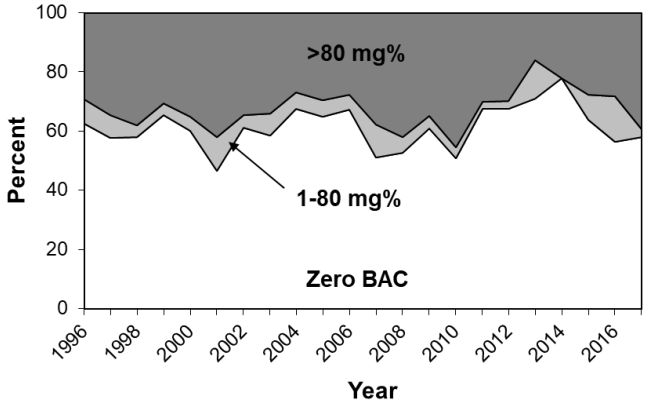


Table 10-7 and Figure 10-4 also show data on alcohol use among fatally injured drivers from 1996 to 2017. Once again, these data are for drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2). However, these results differ from those reported above for two reasons. First, the number of drivers is extrapolated to reflect the BAC distribution of drivers tested for alcohol (see Figure 10-1). Second, drivers are grouped in only two BAC categories: zero and positive.

As can be seen at the bottom of Table 10-7, the percentage of fatally injured drivers testing positive for alcohol from 2011-2015, the baseline period, is 30.8%. In the 2016-2017 period, 43.5% of fatally injured drivers tested positive for alcohol, a 41.2% increase from the baseline period.

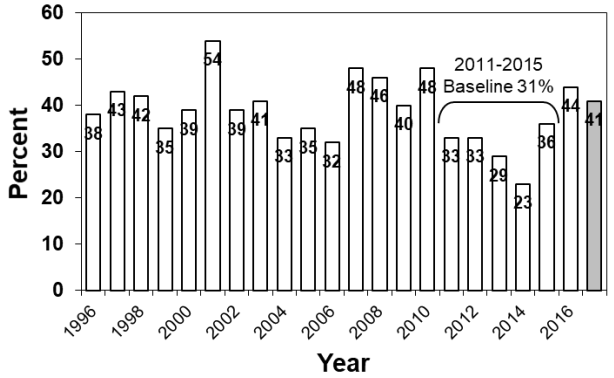
Table 10-7

Alcohol Use* Among Fatally Injured Drivers of Highway Vehicles: New Brunswick, 1996-2017

Year	Number of Drivers**	Drivers Grouped by BAC (mg%)			
		Zero	(% Tested)	Positive	(% Tested)
1996	56	35	(62.5)	21	(37.5)
1997	58	33	(56.9)	25	(43.1)
1998	57	33	(57.9)	24	(42.1)
1999	60	39	(65.0)	21	(35.0)
2000	51	31	(60.8)	20	(39.2)
2001	56	26	(46.4)	30	(53.6)
2002	61	37	(60.7)	24	(39.3)
2003	59	35	(59.3)	24	(40.7)
2004	42	28	(66.7)	14	(33.3)
2005	60	39	(65.0)	21	(35.0)
2006	65	44	(67.7)	21	(32.3)
2007	50	26	(52.0)	24	(48.0)
2008	41	22	(53.7)	19	(46.3)
2009	48	29	(60.4)	19	(39.6)
2010	60	31	(51.7)	29	(48.3)
2011	45	30	(66.7)	15	(33.3)
2012	40	27	(67.5)	13	(32.5)
2013	34	24	(70.6)	10	(29.4)
2014	30	23	(76.7)	7	(23.3)
2015	45	29	(64.4)	16	(35.6)
2016	45	25	(55.6)	20	(44.4)
2017	46	27	(58.7)	19	(41.3)
2011-2015 baseline	39	27	(69.2)	12	(30.8)
2016-2017 period	46	26	(56.5)	20	(43.5)

* Numbers are estimates based on the BAC distribution of drivers tested for alcohol.
** Dying within 30 days in collisions which occurred on public roadways.

Figure 10-4
Percent of Fatally Injured Drivers* Positive for Alcohol: New Brunswick, 1996-2017



10.5.3 Drivers in serious injury crashes. Table 10-8 and Figure 10-5 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes. Collision data from 2013 for New Brunswick were

not available at the time this report was being prepared. For this reason, the 2011-2015 baseline period in this table only includes data for 2011, 2012, 2014, and 2015. And since 2017 crash data were not available at the time this report was being prepared, data from the 2011-2015 baseline period will be compared with data from 2016. From 1996 to 2001, the percentage of all drivers in serious injury crashes that involved alcohol generally rose from 24.5% to a high of 27.8%. Since then, the incidence declined until 2005 (23.8%), rose in 2010 (27.5%), decreased until 2014 (23.9%), and rose again until 2016 (27.4%).

In the baseline period (2011-2015), an average of 25.5% of drivers in serious injury crashes were in an alcohol-involved crash. In 2016, the percentage of drivers in serious injury crashes involving alcohol was 27.4%, resulting in a 7.4% increase.

Table 10-8

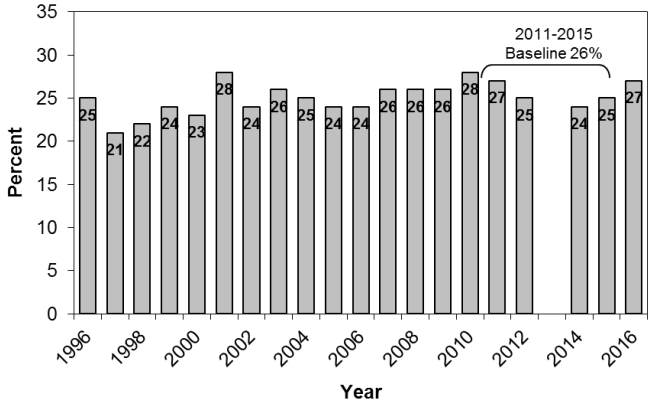
Number and Percent of Drivers of Highway Vehicles in Serious Injury Crashes* that Involved Alcohol: New Brunswick, 1996-2016

Year	Number of Drivers	Number in Alcohol-Involved Crashes	Percent
1996	597	146	(24.5)
1997	561	118	(21.0)
1998	542	121	(22.3)
1999	512	124	(24.2)
2000	493	112	(22.7)
2001	511	142	(27.8)
2002	439	105	(23.9)
2003	426	110	(25.8)
2004	425	108	(25.4)
2005	429	102	(23.8)
2006	369	89	(24.1)
2007	327	85	(26.0)
2008	302	78	(25.8)
2009	313	80	(25.6)
2010	309	85	(27.5)
2011	277	76	(27.4)
2012	230	57	(24.8)
2013			
2014	222	53	(23.9)
2015	228	56	(24.6)
2016	248	68	(27.4)
2011-2015 baseline**	239	61	(25.5)

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

** 2013 data were not available at the time of publication; the 2011-2015 period only includes 2011, 2012, 2014 and 2015.

Figure 10-5
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: New Brunswick, 1996-2016



10.5.4 Drug use among fatally injured drivers. Table 10-9 and Figure 10-6 show data on drug use among fatally injured drivers of highway vehicles over an 18-year period (2000-2017). Similar to Table 10-6, these results are based on fatally injured drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.5).

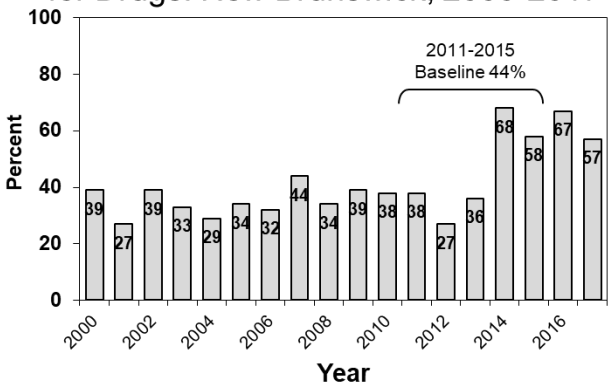
As can be seen at the bottom of Table 10-9, the percentage of fatally injured drivers testing positive for drugs from 2011-2015, the baseline period, is 43.8%. In the 2016-2017 period, 62.2% of fatally injured drivers tested positive for drugs, a 42.0% increase from the baseline period.

Table 10-9
Drug Use Among Fatally Injured Drivers of Highway Vehicles:
New Brunswick, 2000-2017

YEAR	Number of Drivers*	Drivers Tested	(% Total)	Drivers Tested for Drugs			
				Negative	(% Tested)	Positive	(% Tested)
2000	51	39	76.5	24	61.5	15	38.5
2001	56	37	66.1	27	73.0	10	27.0
2002	61	44	72.1	27	61.4	17	38.6
2003	59	52	88.1	35	67.3	17	32.7
2004	42	35	83.3	25	71.4	10	28.6
2005	60	50	83.3	33	66.0	17	34.0
2006	65	56	86.2	38	67.9	18	32.1
2007	50	43	86.0	24	55.8	19	44.2
2008	41	35	85.4	23	65.7	12	34.3
2009	48	44	91.7	27	61.4	17	38.6
2010	60	56	93.3	35	62.5	21	37.5
2011	45	34	75.6	21	61.8	13	38.2
2012	40	33	82.5	24	72.7	9	27.3
2013	34	31	91.2	20	64.5	11	35.5
2014	30	25	83.3	8	32.0	17	68.0
2015	45	36	80.0	15	41.7	21	58.3
2016	45	39	86.7	13	33.3	26	66.7
2017	46	35	76.1	15	42.9	20	57.1
2011-2015 baseline	39	32	82.1	18	56.3	14	43.8
2016-2017 period	46	37	80.4	14	37.8	23	62.2

* Dying within 30 days in collisions which occurred on public roadways.

Figure 10-6
Percent of Fatally Injured Drivers Positive for Drugs: New Brunswick, 2000-2017



11.0 NOVA SCOTIA

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in Nova Scotia during 2017. It describes data on:

- people who were killed in alcohol-related crashes (Section 11.1);
- alcohol use among fatally injured drivers (Section 11.2);
- drivers involved in alcohol-related serious injury crashes (Section 11.3);
- drug use among fatally injured drivers (Section 11.4); and,
- trends in the alcohol-crash and drug-crash problems (Section 11.5).

11.1 Deaths in alcohol-related crashes

Table 11-1 presents information on people who died in alcohol-related crashes in Nova Scotia during 2017. This table specifically reports upon persons who died within 30 days of a collision which occurred on a public roadway that involved at least one highway vehicle. Motor vehicle deaths are categorized in terms of the victim's age, sex, victim type (see Section 2.1.1) and the type of vehicle they occupied (see Section 2.2.1). The first column in the table presents the number of deaths. The next two columns show the number and percent of these fatalities in which sufficient information was available to determine if alcohol was involved. *A motor vehicle fatality was considered to be alcohol involved if there was at least one drinking driver or drinking pedestrian in the fatal crash*.

For example, nine people aged 46-55 were killed in motor vehicle crashes in Nova Scotia during 2017. And, in all nine cases (100.0%) it was possible to determine if alcohol was a factor in the crash.

The next column shows the number of people killed in crashes that were known to be alcohol-involved. There were five people aged 46-55 who died in alcohol-related crashes in Nova Scotia during 2017. The next column expresses this as a percentage – i.e., 55.6% of the 46-55 year olds who were killed died in an alcohol-related crash.

The final column (percent of all alcohol-related deaths) expresses the number of deaths in alcohol-related crashes as a percent of all the deaths in such crashes. For example, the alcohol-related deaths among 46-55 year olds represent 33.3% of all the people killed in alcohol-related crashes in Nova Scotia during 2017.

The totals at the bottom of the table provide a summary. As can be seen, 45 persons died within 30 days of a motor vehicle crash in Nova Scotia during 2017. In 42 (93.3%) of these cases, it was possible to determine if alcohol was a factor. Of these known cases, 15 (35.7%) involved alcohol. Extrapolating this figure to the total number of motor vehicle fatalities (45 x .357) it can be estimated that *in Nova Scotia during 2017, 16 persons died in alcohol-related crashes within 30 days of the collision*.

Table 11-1
Deaths in Alcohol-Related Crashes: Nova Scotia, 2017

Category of Victim	Total Number of Deaths*	Alcohol Use Known		Alcohol-Related Deaths (ARDs)		
		Number	% of total	Number	% of known cases	% of all ARDs
Age Group						
16-25**	8	8	100.0	5	62.5	33.3
26-45**	8	6	75.0	4	66.7	26.7
46-55	9	9	100.0	5	55.6	33.3
>55	20	19	95.0	1	5.3	6.7
Sex						
Male	37	36	97.3	15	41.7	100.0
Female	8	6	75.0	0	0.0	0.0
Victim Type						
Driver/ Operator	28	28	100.0	9	32.1	60.0
Passenger	11	10	90.9	5	50.0	33.3
Pedestrian	6	4	66.7	1	25.0	6.7
Vehicle Occupied						
Automobiles	20	19	95.0	8	42.1	53.3
Trucks/Vans	12	12	100.0	5	41.7	33.3
Motorcycles	3	3	100.0	0	0.0	0.0
Other Vehicles***	4	4	100.0	1	25.0	6.7
(Pedestrians)	6	4	66.7	1	25.0	6.7
TOTAL	45	42	93.3	15	35.7	100.0

* Persons dying within 30 days in crashes on public roadways that involved at least one principal highway vehicle.
** Victims in two age groups have been aggregated to ensure that an individual will not be identified.
*** Victims in two types of vehicles have been aggregated to ensure that an individual will not be identified.

11.1.1 Victim age. Victims aged 16-19 and 20-25 have been regrouped (16-25 age group) and victims aged 26-35 and 36-45 have been regrouped (26-45 age group) to ensure that individuals cannot be identified. Of all the people who died in alcohol-related crashes, 33.3% (see last column) were aged 16-25 and 46-55; 26.7% were aged 26-45; and 6.7% were over age 55.

The highest incidence of alcohol involvement occurred in the crashes in which a person aged 26-45 died (66.7%). The lowest incidence of alcohol involvement was found among those aged over 55 (5.3%).

11.1.2 Sex. Of all the people who died in alcohol-related crashes, 100.0% were males. The incidence of alcohol in crashes in which a male died (41.7%) was greater than the incidence of alcohol in crashes in which a female died (0.0%).

11.1.3 Victim type. Of all the people who died in alcohol-related crashes, 60.0% were drivers/operators of a vehicle; 33.3% were passengers; and 6.7% were pedestrians.

Within each of the victim types, the highest incidence of alcohol involvement (50.0%) occurred in the crashes in which a passenger died. Alcohol was involved in 32.1% of the crashes in which a driver/operator died and 25.0% of those in which a pedestrian died.

11.1.4 Type of vehicle occupied. Victims who were occupants of other highway vehicles and off-road vehicles have been regrouped (other vehicles) to ensure that individuals cannot be identified. Of all the people who died in alcohol-related crashes, 53.3% were automobile occupants; 33.3% were truck/van

occupants; and 6.7% were occupants of other vehicles.

Within each of these vehicle types, the incidence of alcohol involvement in which an automobile occupant died (42.1%) was slightly greater than the incidence of alcohol in crashes in which a truck/van occupant died (41.7%).

11.2 Alcohol in fatally injured drivers

This section presents information on the presence of alcohol, exclusively among drivers fatally injured in Nova Scotia during 2017. Table 11-2 shows the information by age group, sex, vehicle type, and collision type (single vs. multiple) for drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Sections 2.1.1 and 2.2.2).

The first column in the table shows the number of drivers killed. The next columns show the number and percent of these victims who were tested for alcohol. The remaining columns provide information on the results of the alcohol tests – the first three of these present results for drivers who showed any evidence of alcohol; the last three columns present information on drivers who had BACs over the statutory limit of 80 mg%.

To illustrate, among 46-55 year olds there were six drivers killed during 2017; all six of these fatally injured drivers (100.0%) were tested for alcohol. Of those who were tested, four (66.7%) were positive for alcohol. This means that 46-55 year old fatally injured drinking drivers accounted for 50.0% of all drinking drivers who were killed.

Table 11-2
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Nova Scotia, 2017

Category of Driver	Total Number of Driver Deaths*	Drivers Tested		Positive BAC			BAC >80 mg%		
		No.	% of total	No.	% of tested	% of all drivers with +BAC	No.	% of tested	% of all drivers with BAC >80 mg%
Age Group									
16-25**	4	4	100.0	2	50.0	25.0	2	50.0	25.0
26-45**	4	4	100.0	2	50.0	25.0	2	50.0	25.0
46-55	6	6	100.0	4	66.7	50.0	4	66.7	50.0
>55	12	11	91.7	0	0.0	0.0	0	0.0	0.0
Sex									
Male	23	22	95.7	8	36.4	100.0	8	36.4	100.0
Female	3	3	100.0	0	0.0	0.0	0	0.0	0.0
Vehicle Type									
Automobiles	12	11	91.7	4	36.4	50.0	4	36.4	50.0
Trucks/Vans	10	10	100.0	4	40.0	50.0	4	40.0	50.0
Other Vehicles***	4	4	100.0	0	0.0	0.0	0	0.0	0.0
Collision Type									
Single vehicle	16	15	93.8	6	40.0	75.0	6	40.0	75.0
Multiple vehicle	10	10	100.0	2	20.0	25.0	2	20.0	25.0
TOTAL	26	25	96.2	8	32.0	100.0	8	32.0	100.0

* Drivers dying within 30 days in crashes on public roadways.
** Drivers in two age groups have been aggregated to ensure that an individual will not be identified.
*** Drivers of two types of vehicles have been aggregated to ensure that an individual will not be identified.

Then, in the final three columns, it can be seen that four of the six (66.7%) fatally injured 46-55 year olds who were tested for alcohol had BACs in excess of 80 mg%. The final column expresses the number of drivers with illegal BACs as a percent of all drivers with BACs over the limit. Thus, 46-55 year old drivers accounted for 50.0% of all the drivers with BACs over the legal limit.

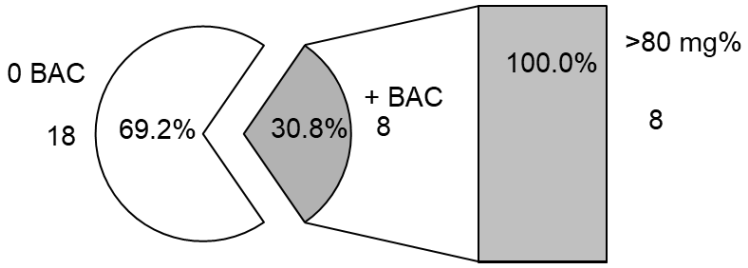
The main findings are shown by the totals at the bottom of the table. Nova Scotia had a very high testing rate in 2017, with 96.2% of fatally injured drivers being tested for alcohol use.

In Nova Scotia, 32.0% had been drinking and all eight (100.0%) fatally injured drinking drivers had BACs over 80 mg%. Although not shown in the table, more refined analyses by different BAC categories show that among tested drivers:

- 68.0% had BACs of zero mg%
- 0.0% had BACs from 1-49 mg%;
- 0.0% had BACs from 50-80 mg%
- 12.0% had BACs from 81 to 160 mg%; and,
- 20.0% had BACs over 160 mg%.

The BAC distribution for fatally injured drivers is shown in Figure 11-1. In this figure eight of 26 (30.8%) fatally injured drivers have a positive BAC. And among fatally injured drinking drivers, eight (100.0%) have BACs over 80 mg%.

Figure 11-1
BACs* Among Fatally Injured Drivers of Highway Vehicles: Nova Scotia, 2017



* numbers are estimates based on the BAC distribution of drivers tested for alcohol

11.2.1 Age differences. Drivers aged 16-19 and 20-25 have been regrouped (16-25 age group) and drivers aged 26-35 and 36-45 have been regrouped (26-45 age group) to ensure that individuals cannot be identified. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 50.0% were aged 46-55; and 25.0% were aged 16-25 and 26-45.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 50.0% were aged 46-55; and 25.0% were aged 16-25 and 26-45.

When comparing the incidence of drinking and driving among fatally injured drivers by age group, fatally injured drivers aged 46-55 were the most likely to have been drinking (66.7%). By contrast, 0.0% of the tested drivers over age 55 had been drinking.

11.2.2 Sex differences. Males dominate the picture – they account for 100.0% of the fatally injured drivers who had been drinking and 100.0% of those who were legally impaired.

Males dominate the picture largely because they account for most of the drivers who are killed (23 of the 26 fatalities or 88.4% are males). Fatally injured male drivers were more likely to have been drinking than female drivers (36.4% and 0.0%, respectively). And 100.0% of the male drivers who were drinking had BACs over the legal limit.

11.2.3 Vehicle differences. Drivers of motorcycles and tractor-trailers have been regrouped (other vehicles) to ensure that individuals cannot be identified. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 50.0% were automobile drivers and truck/van drivers.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 50.0% were automobile drivers and truck/van drivers.

Within each of the vehicle types, 40.0% of fatally injured truck/van drivers and 36.4% of automobile drivers were found to have been drinking. None of the fatally injured drivers of other vehicles had been

drinking.

11.2.4 Collision differences. Almost two-thirds of the drivers killed (16 of the 26) were involved in single-vehicle collisions but these crashes accounted for 75.0% of the drivers who had been drinking and 75.0% of the drivers who were legally impaired.

The reason for this apparent disparity is because alcohol is overrepresented in single-vehicle crashes. Over half of the drivers involved in single-vehicle crashes (40.0%) tested positive for alcohol, compared to only 20.0% of those involved in multiple-vehicle collisions.

11.3 Drivers involved in alcohol-related serious injury crashes

This section presents information on drivers of highway vehicles involved in alcohol-related crashes in which someone was seriously injured in 2017 in Nova Scotia. A "surrogate" or "indirect" measure is used to estimate alcohol involvement because drivers in serious injury crashes are seldom tested for alcohol. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle at night (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol involvement – i.e., at least one drinking driver in the crash (see Section 2.2.4).

The results are shown in Table 11-3 for drivers grouped in terms of age, sex, type of vehicle driven (see Section 2.2.1 for types of vehicles that are included), and type of collision. The first column shows the number of drivers of highway vehicles involved in serious injury crashes. The number and percent of drivers in such crashes that involved alcohol is shown in the next two columns. The final column expresses the number of drivers involved in alcohol-related serious injury crashes in any row as a percent of all drivers involved in alcohol-related serious injury crashes.

As shown, by the totals at the bottom of the table, 413 drivers were involved in crashes in which someone was seriously injured, and among these 22.5% were alcohol-related crashes.

11.3.1 Driver age. Of all the drivers involved in alcohol-related serious injury crashes, 20.4% were aged 46-55 and over age 55; 16.1% were aged 26-35; 14.0% were aged 16-19 and 20-25; and 12.9% were aged 36-45.

Almost one-third of drivers aged 16-19 (29.5%) were involved in alcohol-related serious injury crashes. The lowest incidence of involvement in alcohol-related crashes was found for those over age 55 (14.7%).

Table 11-3
Drivers* in Alcohol-Related Serious Injury Crashes:
Nova Scotia, 2017

Category of Drivers	Number of Drivers	Alcohol-Related		
		Number	% of total	% of all drivers in alcohol-related crashes
Age				
16-19	44	13	29.5	14.0
20-25	48	13	27.1	14.0
26-35	62	15	24.2	16.1
36-45	49	12	24.5	12.9
46-55	70	19	27.1	20.4
>55	129	19	14.7	20.4
unknown	11	2	18.2	2.2
Sex				
Male	285	73	25.6	78.5
Female	117	18	15.4	19.4
unknown	11	2	18.2	2.2
Vehicle Type				
Auto	209	48	23.0	51.6
Truck/Van	128	25	19.5	26.9
Motorcycle	64	20	31.3	21.5
Tractor-Trailer	6	0	0.0	0.0
Other Hwy. Vehicle	6	0	0.0	0.0
Collision Type				
Single-Vehicle	158	70	44.3	75.3
Multiple-Vehicle	255	23	9.0	24.7
TOTAL	413	93	22.5	100.0

* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

11.3.2 Driver sex. Of all the drivers involved in alcohol-related serious injury crashes, 78.5% were males. The incidence of involvement in alcohol-related serious injury crashes was greater for males than for females (25.6% and 15.4%, respectively).

11.3.3 Type of vehicle driven. Of all the drivers involved in alcohol-related serious injury crashes, 51.6% were automobile drivers; 26.9% were truck/van drivers; and 21.5% were motorcyclists.

Among motorcyclists, 31.3% were involved in alcohol-related crashes compared to 23.0% of automobile drivers and 19.5% of truck/van drivers. None of the tractor-trailer drivers or drivers of other highway vehicles had been drinking.

11.3.4 Type of collision. Of all the drivers involved in alcohol-related serious injury crashes, 75.3% of them were in single-vehicle crashes. The highest incidence of involvement in alcohol-related serious injury crashes was also found among drivers in single-vehicle crashes – 44.3% of these drivers, compared to only 9.0% for drivers involved in multiple-vehicle crashes.

11.4 Drug use among fatally injured drivers

This section presents information on the presence of drugs, exclusively among drivers fatally injured in Nova Scotia during 2017. A comparison of testing rates of fatally injured drivers for both alcohol and drugs can be found in Table 3-15 on p. 45. Table 11-4 shows the prevalence of drug use among fatally

injured drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Section 2.2.5). The table also shows the number of drivers who tested positive for various categories of drugs. A brief description of the different drug categories is provided in Section 2.2.5.

As can be seen, Nova Scotia had a high testing rate in 2017, with 96.2% of fatally injured drivers being tested for drug use.

Among fatally injured tested drivers, 16 out of 25 (64.0%) were positive for drugs. The most common category of drugs found within drivers testing positive for drug use was cannabis (62.5%). Other categories of drugs found in fatally injured drivers testing positive for drugs were CNS depressants (50.0%), CNS stimulants (25.0%), narcotic analgesics (12.5%) and hallucinogens (6.3%).

Table 11-4
Drug Use Among Fatally Injured Drivers* of Highway Vehicles: Nova Scotia, 2017

Prevalence of Drug Use

Total Number of Driver Deaths	Drivers Tested		Positive for Drugs	
	Number	% of total	Number	% of tested
26	25	(96.2)	16	(64.0)

Categories of Drugs Found Among Drivers Testing Positive

Drug Category	Positive for Drug Type	
	Number of Drivers	% of drivers testing positive**
Cannabis	10	(62.5)
CNS Depressants	8	(50.0)
CNS Stimulants	4	(25.0)
Narcotic Analgesics	2	(12.5)
Hallucinogens	1	(6.3)
Dissociative Anesthetics	0	(0.0)
Inhalants	0	(0.0)

* Dying within 30 days in collisions which occurred on public roadways.
** Percentages will not add up to 100% due to multiple drug types found in blood samples of some drivers.

11.5 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

Sections 11.1 through 11.3 examined three indicators of the alcohol-crash problem: (1) the number and percent of people who died in crashes that involved alcohol; (2) the number and percent of fatally injured drivers who had been drinking; and (3) the number and percent of drivers in serious injury crashes that involved alcohol. Section 11.4 examined drug use among fatally injured drivers in 2017. This section examines changes in these four indicators over time.

11.5.1 Deaths involving drinking drivers: 1996-2017. Table 11-5 and Figure 11-2 show the number and percent of people who died in crashes involving a drinking driver from 1996 to 2017. These results differ slightly from those in Section 11.1. In this section, deaths that occur in crashes that involve a drinking pedestrian are not necessarily classified as alcohol-related deaths. The focus here is more restrictive, on

deaths that occur in crashes involving at least one drinking driver (see Section 2.2.1 for types of vehicles that are included).

As shown in the figure, the number of deaths in crashes that involved a drinking driver generally decreased from 39 in 1996 to 22 in 2004, increased to 35 in 2007, decreased to a low of 10 in 2015, and rose to 15 in 2016 and 2017. The percentage of alcohol-related fatalities decreased from 34.8% in 1996 to 23.6% in 2013, rose to 26.9% in 2014, decreased to a low of 17.5% in 2015, and rose again in 2017 (33.3%).

Table 11-5

Number* and Percent of Motor Vehicle Deaths Involving a Drinking Driver: Nova Scotia, 1996-2017**

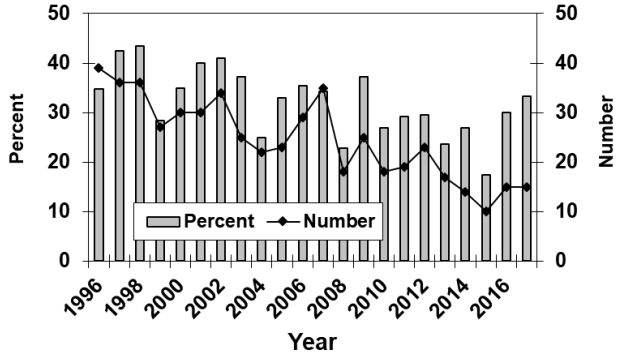
Year of Death	Number of Deaths	Alcohol-Related Deaths	
		Number	% of total
1996	112	39	34.8
1997	85	36	42.4
1998	83	36	43.4
1999	95	27	28.4
2000	86	30	34.9
2001	75	30	40.0
2002	83	34	41.0
2003	67	25	37.3
2004	88	22	25.0
2005	70	23	32.9
2006	82	29	35.4
2007	102	35	34.3
2008	79	18	22.8
2009	67	25	37.3
2010	67	18	26.9
2011	65	19	29.2
2012	78	23	29.5
2013	72	17	23.6
2014	52	14	26.9
2015	57	10	17.5
2016	50	15	30.0
2017	45	15	33.3
2011-2015 baseline	65	16	24.6
2016-2017 period	48	15	31.3

* numbers are estimates based on the percent of deaths for which information was available to determine alcohol use.

** persons dying within 30 days of collisions which occur on public roadways involving at least one principal vehicle type.

As shown at the bottom of the table, during the 2011-2015 baseline period there was an average of 16 fatalities involving a drinking driver and they accounted for 24.6% of all fatalities. This means that the percent of fatalities involving a drinking driver increased by 27.2% from 24.6% in the baseline period (2011-2015) to 31.3% in the 2016-2017 period. In terms of the number of persons killed in crashes involving a drinking driver, there has been a 6.3% decrease from an average of 16 in the baseline period (2011-2015) to 15 in the 2016-2017 period.

Figure 11-2
Number and Percent of Deaths Involving a Drinking Driver: Nova Scotia, 1996-2017



11.5.2 Alcohol use among fatally injured drivers. Data on alcohol use among fatally injured drivers of highway vehicles over the 22-year period from 1996-2017 are shown in Table 11-6. Trends are illustrated in Figure 11-3 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the white area); (2) had BACs below the legal limit (shown by the light grey area); and (3) had BACs over the legal limit (the dark grey area). The data reported here are restricted to drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2).

As can be seen, the percent of fatally injured drivers with BACs over the legal limit peaked in 1998 (52.6%), generally decreased until 2013 (14.0%), rose in 2014 (23.3%), decreased in 2015 (15.4%), and rose again in 2017 (32.0%). The percent of fatally injured drivers with zero BACs generally increased from 1996 (56.1%) to its highest level in 2015 (80.8%), decreased in 2016 (65.6%), and rose again in 2017 (68.0%). The percent of fatally injured drivers with BACs between 1 and 80 mg% generally increased from 1996 (4.9%) to its highest level in 2002 (22.2%), remained relatively stable until 2014 (3.3%), rose until 2016 (9.4%), and fell to 0.0% in 2017.

When compared to the 2011-2015 baseline period shown at the bottom of Table 11-6, the percentage of fatally injured drivers with zero BACs in the 2016-2017 period decreased by 10.3% (from 73.0% to 65.5%). Among drivers with BACs from 1-80 mg%, there was a 27.8% increase (from 5.4% to 6.9%). And among drivers with BACs over 80 mg%, there was a 27.8% increase (from 21.6% to 27.6%).

Table 11-6
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles:
Nova Scotia, 1996-2017

Year	Number of Drivers*	Drivers Tested		Drivers Grouped by BAC (mg%)					
		No.	(% Total)	Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1996	57	41	71.9	23	56.1	2	4.9	16	39.0
1997	46	38	82.6	21	55.3	4	10.5	13	34.2
1998	51	38	74.5	17	44.7	1	2.6	20	52.6
1999	59	40	67.8	24	60.0	3	7.5	13	32.5
2000	56	45	80.4	22	48.9	1	2.2	22	48.9
2001	52	46	88.5	25	54.3	4	8.7	17	37.0
2002	40	36	90.0	16	44.4	8	22.2	12	33.3
2003	47	44	93.6	26	59.1	1	2.3	17	38.6
2004	44	38	86.4	29	76.3	2	5.3	7	18.4
2005	41	40	97.6	21	52.5	3	7.5	16	40.0
2006	46	41	89.1	27	65.9	2	4.9	12	29.3
2007	54	47	87.0	29	61.7	4	8.5	14	29.8
2008	54	51	94.4	40	78.4	2	3.9	9	17.6
2009	47	43	91.5	25	58.1	1	2.3	17	39.5
2010	40	40	100.0	26	65.0	3	7.5	11	27.5
2011	40	33	82.5	20	60.6	2	6.1	11	33.3
2012	59	54	91.5	40	74.1	1	1.9	13	24.1
2013	47	43	91.5	34	79.1	3	7.0	6	14.0
2014	36	30	83.3	22	73.3	1	3.3	7	23.3
2015	34	26	76.5	21	80.8	1	3.8	4	15.4
2016	37	32	86.5	21	65.6	3	9.4	8	25.0
2017	26	25	96.2	17	68.0	0	0.0	8	32.0
2011-2015 period	43	37	(86.0)	27	(73.0)	2	(5.4)	8	(21.6)
2016-2017 period	32	29	(90.6)	19	(65.5)	2	(6.9)	8	(27.6)

* Dying within 30 days in collisions which occurred on public roadways.

Figure 11-3
Trends in Alcohol Use Among Driver Fatalities: Nova Scotia, 1996-2017

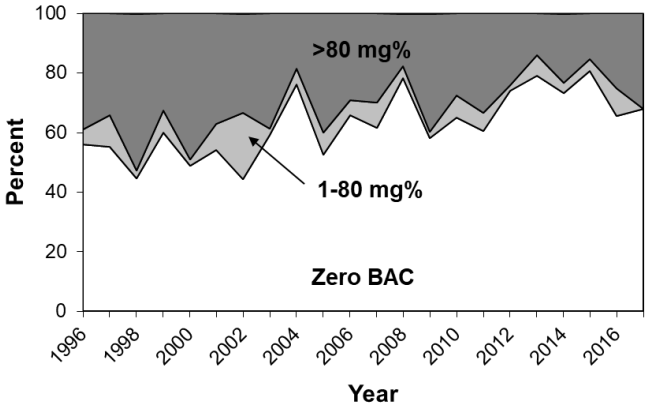


Table 11-7 and Figure 11-4 also show data on alcohol use among fatally injured drivers from 1996 to 2017. Once again, these data are for drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2). However, these results differ from those reported above for two reasons. First, the number of drivers is extrapolated to reflect the BAC distribution of drivers tested for alcohol (see Figure 11-1). Second, drivers are grouped in only two BAC categories: zero and positive.

As can be seen at the bottom of Table 11-7, the percentage of fatally injured drivers testing positive for alcohol from 2011-2015, the baseline period, is 25.6%. In the 2016-2017 period, 34.4% of fatally injured drivers tested positive for alcohol, a 34.4% increase from the baseline period.

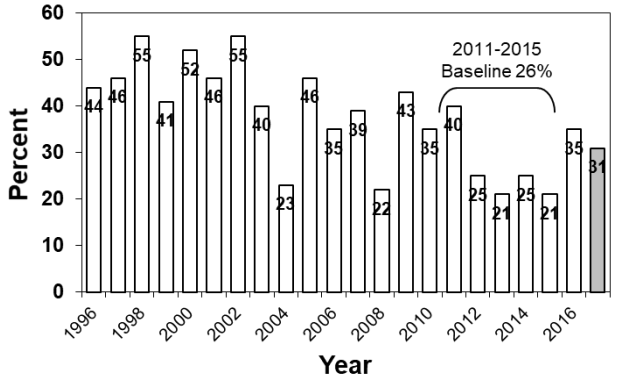
Table 11-7

Alcohol Use* Among Fatally Injured Drivers of Highway Vehicles: Nova Scotia, 1996-2017

Year	Number of Drivers**	Drivers Grouped by BAC (mg%)			
		Zero	(% Tested)	Positive	(% Tested)
1996	57	32	(56.1)	25	(43.9)
1997	46	25	(54.3)	21	(45.7)
1998	51	23	(45.1)	28	(54.9)
1999	59	35	(59.3)	24	(40.7)
2000	56	27	(48.2)	29	(51.8)
2001	52	28	(53.8)	24	(46.2)
2002	40	18	(45.0)	22	(55.0)
2003	47	28	(59.6)	19	(40.4)
2004	44	34	(77.3)	10	(22.7)
2005	41	22	(53.7)	19	(46.3)
2006	46	30	(65.2)	16	(34.8)
2007	54	33	(61.1)	21	(38.9)
2008	54	42	(77.8)	12	(22.2)
2009	47	27	(57.4)	20	(42.6)
2010	40	26	(65.0)	14	(35.0)
2011	40	24	(60.0)	16	(40.0)
2012	59	44	(74.6)	15	(25.4)
2013	47	37	(78.7)	10	(21.3)
2014	36	27	(75.0)	9	(25.0)
2015	34	27	(79.4)	7	(20.6)
2016	37	24	(64.9)	13	(35.1)
2017	26	18	(69.2)	8	(30.8)
2011-2015 period	43	32	(74.4)	11	(25.6)
2016-2017 period	32	21	(65.6)	11	(34.4)

* Numbers are estimates based on the BAC distribution of drivers tested for alcohol.
** Dying within 30 days in collisions which occurred on public roadways.

Figure 11-4
Percent of Fatally Injured Drivers* Positive for Alcohol: Nova Scotia, 1996-2017



11.5.3 Drivers in serious injury crashes. Table 11-8 and Figure 11-5 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes. From 1996 to 1998, the percentage of drivers in serious injury crashes that involved alcohol decreased from 24.9% to 20.4%, generally increased to 25.8% in 2010, decreased to a low of 14.7% in 2015, and rose until 2017 (22.5%).

As shown Table 11-8, in the baseline period (2011-2015) an average of 16.5% of drivers in serious injury crashes were in an alcohol-involved crash. In the 2016-2017 period, the incidence of drivers in alcohol-involved crashes rose to 21.3%, a 29.1% increase.

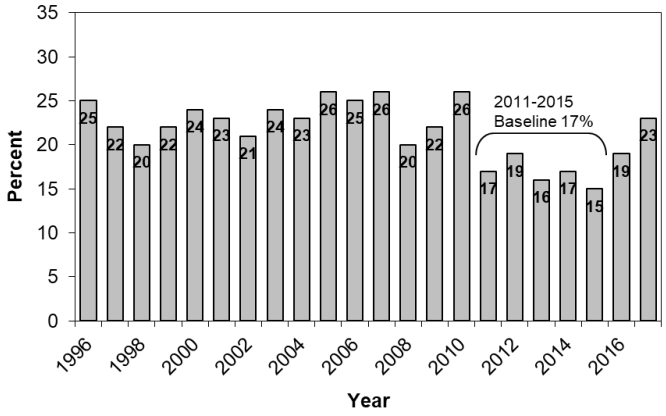
Table 11-8

Number and Percent of Drivers of Highway Vehicles in Serious Injury Crashes* that Involved Alcohol: Nova Scotia, 1996-2017

Year	Number of Drivers	Number in Alcohol-Involved Crashes	Percent
1996	458	114	(24.9)
1997	458	102	(22.3)
1998	427	87	(20.4)
1999	577	125	(21.7)
2000	390	92	(23.6)
2001	400	93	(23.3)
2002	383	81	(21.1)
2003	332	78	(23.5)
2004	351	81	(23.1)
2005	330	86	(26.1)
2006	325	81	(24.9)
2007	336	88	(26.2)
2008	288	58	(20.1)
2009	332	73	(22.0)
2010	299	77	(25.8)
2011	345	59	(17.1)
2012	345	64	(18.6)
2013	285	45	(15.8)
2014	308	51	(16.6)
2015	326	48	(14.7)
2016	283	54	(19.1)
2017	413	93	(22.5)
2011-2015 baseline	322	53	(16.5)
2016-2017 period	348	74	(21.3)

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

Figure 11-5
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: Nova Scotia, 1996-2017



11.5.4 Drug use among fatally injured drivers. Table 11-9 and Figure 11-6 show data on drug use among fatally injured drivers of highway vehicles over an 18-year period (2000-2017). Similar to Table 11-6, these results are based on fatally injured drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.5).

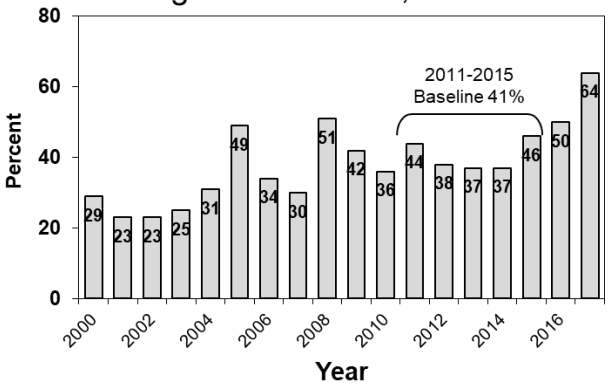
As can be seen at the bottom of Table 11-9, the percentage of fatally injured drivers testing positive for drugs from 2011-2015, the baseline period, is 40.5%. In the 2016-2017 period, 55.2% of fatally injured drivers tested positive for drugs, a 36.3% increase from the baseline period.

Table 11-9
Drug Use Among Fatally Injured Drivers of Highway Vehicles:
Nova Scotia, 2000-2017

YEAR	Number of Drivers*	Drivers Tested	(% Total)	Drivers Tested for Drugs			
				Negative	(% Tested)	Positive	(% Tested)
2000	56	35	62.5	25	71.4	10	28.6
2001	52	40	76.9	31	77.5	9	22.5
2002	40	35	87.5	27	77.1	8	22.9
2003	47	40	85.1	30	75.0	10	25.0
2004	44	32	72.7	22	68.8	10	31.3
2005	41	35	85.4	18	51.4	17	48.6
2006	46	35	76.1	23	65.7	12	34.3
2007	54	44	81.5	31	70.5	13	29.5
2008	54	43	79.6	21	48.8	22	51.2
2009	47	43	91.5	25	58.1	18	41.9
2010	40	39	97.5	25	64.1	14	35.9
2011	40	32	80.0	18	56.3	14	43.8
2012	59	53	89.8	33	62.3	20	37.7
2013	47	43	91.5	27	62.8	16	37.2
2014	36	30	83.3	19	63.3	11	36.7
2015	34	26	76.5	14	53.8	12	46.2
2016	37	32	86.5	16	50.0	16	50.0
2017	26	25	96.2	9	36.0	16	64.0
2011-2015 period	43	37	86.0	22	59.5	15	40.5
2016-2017 period	32	29	90.6	13	44.8	16	55.2

* Dying within 30 days in collisions which occurred on public roadways.

Figure 11-6
Percent of Fatally Injured Drivers Positive for Drugs: Nova Scotia, 2000-2017



12.0 PRINCE EDWARD ISLAND

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in Prince Edward Island during 2017. It describes data on:

- people who were killed in alcohol-related crashes (Section 12.1);
- alcohol use among fatally injured drivers (Section 12.2);
- drivers involved in alcohol-related serious injury crashes (Section 12.3);
- drug use among fatally injured drivers (Section 12.4); and,
- trends in the alcohol-crash and drug-crash problems (Section 12.5).

12.1 Deaths in alcohol-related crashes

Table 12-1 presents information on people who died in alcohol-related crashes in Prince Edward Island during 2017. This table specifically reports upon persons who died within 30 days of a collision which occurred on a public roadway that involved at least one highway vehicle. Motor vehicle deaths are categorized in terms of the victim's age, sex, victim type (see Section 2.1.1) and the type of vehicle they occupied (see Section 2.2.1). The first column in the table presents the number of deaths. The next two columns show the number and percent of these fatalities in which sufficient information was available to determine if alcohol was involved. *A motor vehicle fatality was considered to be alcohol-involved if there was at least one drinking driver or drinking pedestrian in the fatal crash.*

For example, six people over 45 years of age were killed in motor vehicle crashes in Prince Edward Island during 2017. And in all six cases (100.0%) it was possible to determine if alcohol was a factor in the crash.

The next column shows the number of people killed in crashes that were known to be alcohol-involved. For example, two persons over 45 years of age died in an alcohol-related crash in Prince Edward Island during 2017. The next column expresses this as a percentage – i.e., 33.3% of those over 45 years of age who were killed died in an alcohol-related crash.

The final column (percent of all alcohol-related deaths) expresses the number of deaths in alcohol-related crashes as a percent of all the deaths in such crashes. For example, the alcohol-related deaths among those over 45 years of age represents 40.0% of all the people killed in alcohol-related crashes in Prince Edward Island during 2017.

The totals at the bottom of the table provide a summary. As can be seen, 13 persons died within 30 days of a motor vehicle crash in Prince Edward Island during 2017. In 12 (92.3%) of these cases, it was possible to determine if alcohol was a factor. Of these cases, five (41.7%) involved alcohol. Extrapolating this figure to

the total number of motor vehicle fatalities (13 x .417) it can be estimated that *in Prince Edward Island during 2017, five persons died in alcohol-related crashes within 30 days of the collision*.

12.1.1 Victim age. Victims aged 20-25 and 26-35 (20-35 age group) and drivers aged 46-55 and over 55 (>45 age group) have been regrouped to ensure that individuals cannot be identified. Of all the people who died in alcohol-related crashes, 40.0% (see last column) were aged 36-45 and over 45 while 20.0% were aged 20-35.

The highest incidence of alcohol involvement occurred in the crashes in which a person aged 36-45 died (66.7%). The lowest incidence of alcohol involvement was found among persons aged 20-35 and over 45 (33.3% each).

Table 12-1
Deaths in Alcohol-Related Crashes: Prince Edward Island, 2017

Category of Victim	Total Number of Deaths*	Alcohol Use Known		Alcohol-Related Deaths (ARDs)		
		Number	% of total	Number	% of known cases	% of all ARDs
Age Group						
20-35**	4	3	75.0	1	33.3	20.0
36-45	3	3	100.0	2	66.7	40.0
>45**	6	6	100.0	2	33.3	40.0
Vehicle Occupied						
Automobiles	8	7	87.5	3	42.9	60.0
Other Victims***	5	5	100.0	2	40.0	40.0
TOTAL	13	12	92.3	5	41.7	100.0

* Persons dying within 30 days in crashes on public roadways that involved at least one principal highway vehicle.

** Two age groups have been aggregated to ensure that an individual will not be identified.

*** Other occupant groups have been aggregated to ensure that an individual will not be identified.

12.1.2 Sex. Detailed results are not provided for victim sex to ensure confidentiality.

12.1.3 Victim type. Detailed results are not provided for victim type to ensure confidentiality.

12.1.4 Type of vehicle occupied. Truck/van occupants, motorcyclists, occupants of other highway vehicles, and pedestrians have been regrouped (other victims) to ensure that an individual will not be identified. Of all the people who died in alcohol-related crashes, 60.0% were automobile occupants and 40.0% were other victims.

Within each of these vehicle types, the incidence of alcohol involvement in which automobile occupants died (42.9%) was slightly greater than the incidence of alcohol in crashes in which another victim died (40.0%).

12.2 Alcohol in fatally injured drivers

This section presents information on the presence of alcohol, exclusively among drivers fatally injured in Prince Edward Island during 2017. Table 12-2 shows the information by age group, sex, vehicle type, and

collision type (single vs. multiple) for drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Sections 2.1.1 and 2.2.2).

The first column in the table shows the number of drivers killed. The next columns show the number and percent of these victims who were tested for alcohol. The remaining columns provide information on the results of the alcohol tests – the first three of these present results for drivers who showed any evidence of alcohol; the last three columns present information on drivers who had BACs over the statutory limit of 80 mg%.

To illustrate, among 20-35 year olds there were four drivers killed during 2017; three of these fatally injured drivers (75.0%) were tested for alcohol. Of those who were tested, one (33.3%) was positive for alcohol. This means that fatally injured drinking drivers aged 20-35 accounted for 33.3% of all drinking drivers who were killed.

Table 12-2
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Prince Edward Island, 2017

Category of Driver	Total Number of Driver Deaths*	Drivers Tested		Positive BAC			BAC >80 mg%		
		No.	% of total	No.	% of tested	% of all drivers with +BAC	No.	% of tested	% of all drivers with BAC >80 mg%
Age Group									
20-35**	4	3	75.0	1	33.3	33.3	1	33.3	33.3
36-45	3	2	66.7	1	50.0	33.3	1	50.0	33.3
>45	5	4	80.0	1	25.0	33.3	1	25.0	33.3
Vehicle Type									
Automobiles	8	6	75.0	2	33.3	66.7	2	33.3	66.7
Other Vehicles***	4	3	75.0	1	33.3	33.3	1	33.3	33.3
Collision Type									
Single vehicle	6	5	83.3	1	20.0	33.3	1	20.0	33.3
Multiple vehicle	6	4	66.7	2	50.0	66.7	2	50.0	66.7
TOTAL	12	9	75.0	3	33.3	100.0	3	33.3	100.0

* Drivers dying within 30 days in crashes on public roadways.
** Drivers in two age groups have been aggregated to ensure that an individual will not be identified.
*** Drivers of three vehicle types have been aggregated to ensure that an individual will not be identified.

Then, in the final three columns, it can be seen that one of the three fatally injured 20-35 year olds (33.3%) who were tested for alcohol had BACs in excess of 80 mg%. This means that the driver who was positive for alcohol had a BAC in excess of the legal limit. The final column expresses the number of drivers with illegal BACs as a percent of all drivers with BACs over the limit. As can be seen, drivers aged 20-35 accounted for 33.3% of all the drivers with BACs over the legal limit.

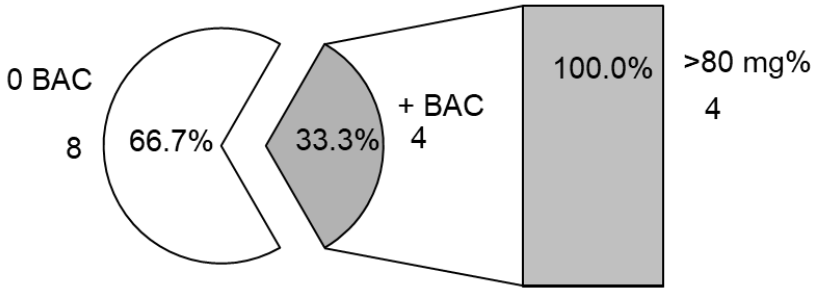
The main findings are shown by the totals at the bottom of the table. Prince Edward Island had an average testing rate in 2017, with 75.0% of fatally injured drivers being tested for alcohol use.

In Prince Edward Island, 33.3% had been drinking and all fatally injured drinking drivers (100.0%) had BACs over 80 mg%. Although not shown in the table, more refined analyses by different BAC categories show that among tested drivers:

- 66.7% had BACs of zero mg%;
- 0.0% had BACs from 1-49 mg%;
- 0.0% had BACs from 50-80 mg%;
- 0.0% had BACs from 81-160 mg%; and,
- 33.3% had BACs over 160 mg%.

The BAC distribution for fatally injured drivers is shown in Figure 12-1. As can be seen, four of 12 (33.3%) fatally injured drivers had positive BACs. And among fatally injured drinking drivers, four (100.0%) had BACs over 80 mg%.

Figure 12-1
BACs* Among Fatally Injured Drivers of Highway Vehicles: Prince Edward Island, 2017



* numbers are estimates based on the BAC distribution of drivers tested for alcohol

12.2.1 Age differences. Drivers aged 20-25 and 26-35 (20-35 age group) and drivers aged 46-55 and over 55 (>45 age group) have been regrouped to ensure that individuals cannot be identified. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 33.3% were aged 20-35, 36-45 and over 45. Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 33.3% were aged 20-35, 36-45 and over 45.

When comparing the incidence of drinking and driving among fatally injured drivers by age group, fatally injured drivers aged 36-45 were the most likely to have been drinking (50.0%). By contrast, 33.3% of the tested drivers aged 20-35 and 25.0% those over age 45 had been drinking.

12.2.2 Sex differences. Detailed results are not provided for driver sex to ensure confidentiality.

12.2.3 Vehicle differences. Drivers of trucks/vans, motorcycles and tractor-trailers have been regrouped (other vehicles) to ensure that individuals cannot be identified. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 66.7% were automobile drivers and 33.3% were drivers of other vehicles.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 66.7% were automobile drivers and 33.3% were drivers of other vehicles.

Within each of the vehicle types, 33.3% of automobile drivers and drivers of other highway vehicles had been drinking.

12.2.4 Collision differences. Half of the drivers killed (six of the 12) were involved in multiple-vehicle collisions but these crashes accounted for 66.7% of the drivers who had been drinking and 66.7% of the drivers who were legally impaired.

The reason for this apparent disparity is because alcohol is overrepresented in multiple-vehicle crashes. Over half of the drivers involved in multiple-vehicle crashes (50.0%) tested positive for alcohol, compared to only 20.0% of those involved in single-vehicle collisions.

12.3 Drivers involved in alcohol-related serious injury crashes

This section presents information on drivers of highway vehicles involved in alcohol-related crashes in which someone was seriously injured in 2017 in Prince Edward Island. A "surrogate" or "indirect" measure is used to estimate alcohol involvement because drivers in serious injury crashes are seldom tested for alcohol. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle at night (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol involvement – i.e., at least one drinking driver in the crash (see Section 2.2.4).

The results are shown in Table 12-3 for drivers grouped in terms of age, sex, type of vehicle driven (Section 2.2.1), and type of collision. The first column shows the number of drivers of highway vehicles involved in serious injury crashes. The number and percent of drivers in such crashes that involved alcohol is shown in the next two columns. The final column expresses the number of drivers involved in alcohol-related serious injury crashes in any row as a percent of all drivers involved in alcohol-related serious injury crashes.

As shown, by the totals at the bottom of the table, 48 drivers were involved in crashes in which someone was seriously injured, and among these 20.8% were alcohol-related crashes.

12.3.1 Driver age. Of all the drivers involved in alcohol-related serious injury crashes, 30.0% were aged 20-25; 20.0% were aged 36-45 and over 55; and 10.0% were aged 16-19, 26-35, and 46-55.

One-half of the drivers aged 36-45 were involved in alcohol-related serious injury crashes (50.0%). The lowest incidence of involvement in alcohol-related crashes was found for those over age 55 (11.1%).

Table 12-3
Drivers* in Alcohol-Related Serious Injury Crashes:
Prince Edward Island, 2017

Category of Drivers	Number of Drivers	Alcohol-Related		
		Number	% of total	% of all drivers in alcohol-related crashes
Age				
16-19	3	1	33.3	10.0
20-25	9	3	33.3	30.0
26-35	7	1	14.3	10.0
36-45	4	2	50.0	20.0
46-55	7	1	14.3	10.0
>55	18	2	11.1	20.0
Sex				
Male	32	8	25.0	80.0
Female	16	2	12.5	20.0
Vehicle Type				
Auto	36	8	22.2	80.0
Truck/Van	5	2	40.0	20.0
Motorcycle	4	0	0.0	0.0
Other Hwy. Vehicle	3	0	0.0	0.0
Collision Type				
Single-Vehicle	20	8	40.0	80.0
Multiple-Vehicle	28	2	7.1	20.0
TOTAL	48	10	20.8	100.0

* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

12.3.2 Driver sex. Of all the drivers involved in alcohol-related serious injury crashes, 80.0% were males. The incidence of involvement in alcohol-related serious injury crashes was greater for males than for females (25.0% and 12.5%, respectively).

12.3.3 Type of vehicle driven. Of all the drivers involved in alcohol-related serious injury crashes, 80.0% were automobile drivers and 20.0% were truck/van drivers.

The highest incidence of involvement in alcohol-related serious injury crashes was found for truck/van drivers (40.0%) compared to 22.2% for automobile drivers. Among motorcyclists and drivers of other highway vehicles, 0.0% were involved in alcohol-related crashes.

12.3.4 Type of collision. Of all the drivers involved in alcohol-related serious injury crashes, 80.0% of them were in single-vehicle crashes. The highest incidence of involvement in alcohol-related serious injury crashes was also found among drivers in single-vehicle crashes – 40.0% of these drivers, compared to 7.1% for drivers involved in multiple-vehicle crashes.

12.4 Drug use among fatally injured drivers

This section presents information on the presence of drugs, exclusively among drivers fatally injured in Prince Edward Island during 2017. A comparison of testing rates of fatally injured drivers for both

alcohol and drugs can be found in Table 3-15 on p. 45. Table 12-4 shows the prevalence of drug use among fatally injured drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Section 2.2.5). The table also shows the number of drivers who tested positive for various categories of drugs. A brief description of the different drug categories is provided in Section 2.2.5.

As can be seen, Prince Edward Island had a high testing rate in 2017, with 75.0% of fatally injured drivers being tested for drug use.

Among fatally injured tested drivers, six out of nine (66.7%) were positive for drugs. The most common category of drugs found within drivers testing positive for drug use was cannabis (50.0%). CNS depressants were found among 33.3% of fatally injured drivers who tested positive for drugs, and 16.7% each tested positive for narcotic analgesics and CNS stimulants.

Table 12-4
Drug Use Among Fatally Injured Drivers* of Highway Vehicles: Prince Edward Island, 2017

Prevalence of Drug Use

Total Number of Driver Deaths	Drivers Tested		Positive for Drugs	
	Number	% of total	Number	% of tested
12	9	(75.0)	6	(66.7)

Categories of Drugs Found Among Drivers Testing Positive

Drug Category	Positive for Drug Type	
	Number of Drivers	% of drivers testing positive**
Cannabis	3	(50.0)
CNS Depressants	2	(33.3)
Narcotic Analgesics	1	(16.7)
CNS Stimulants	1	(16.7)
Hallucinogens	0	(0.0)
Dissociative Anesthetics	0	(0.0)
Inhalants	0	(0.0)

* Dying within 30 days in collisions which occurred on public roadways.
** Percentages will not add up to 100% due to multiple drug types found in blood samples of some drivers.

12.5 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

Sections 12.1 through 12.3 examined three indicators of the alcohol-crash problem: (1) the number and percent of people who died in crashes that involved alcohol; (2) the number and percent of fatally injured drivers who had been drinking; and (3) the number and percent of drivers in serious injury crashes that involved alcohol. Section 12.4 examined drug use among fatally injured drivers in 2017. This section examines changes in these four indicators over time.

12.5.1 Deaths involving drinking drivers: 1996-2017. Table 12-5 and Figure 12-2 show the number and percent of people who died in crashes involving a drinking driver from 1996 to 2017. These results differ

slightly from those in Section 12.1. In this section, deaths that occur in crashes that involve a drinking pedestrian are not necessarily classified as alcohol-related deaths. The focus here is more restrictive, on deaths that occur in crashes involving at least one drinking driver (see Section 2.2.1 for types of vehicles that are included).

As shown in the table and figure, the number of deaths in crashes that involved a drinking driver generally increased from four to 14 between 1996 and 2006, decreased to one in 2010, rose to nine in 2011, and eventually decreased to four in 2017. The percentage of alcohol-related fatalities generally increased from 26.7% in 1996 to 61.5% in 2003, fell to 11.1% in 2010, peaked at 72.7% in 2012, and generally decreased to 28.6% in 2017.

As shown at the bottom of the table, during the 2011-2015 baseline period, there was an average of six fatalities involving a drinking driver and they accounted for 46.2% of all fatalities. Thus, it can be seen that the percent of fatalities involving a drinking driver decreased by 7.3% from 46.2% in the baseline period (2011-2015) to 35.7% in the 2016-2017 period. In terms of the number of persons killed in crashes involving a drinking driver, there was a 16.7% decrease from an average of six in the baseline period (2011-2015) to five in the 2016-2017 period.

Table 12-5

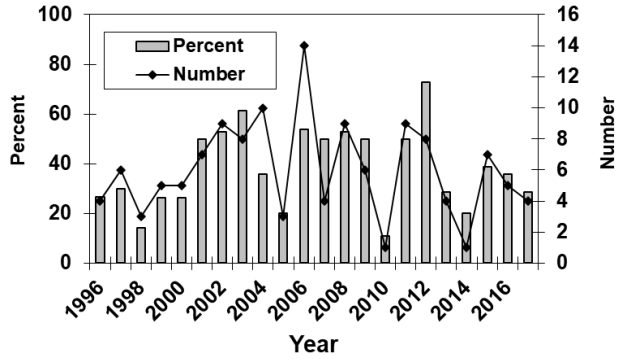
Number* and Percent of Motor Vehicle Deaths Involving a Drinking Driver: Prince Edward Island, 1996-2017**

Year of Death	Number of Deaths	Alcohol-Related Deaths	
		Number	% of total
1996	15	4	26.7
1997	20	6	30.0
1998	21	3	14.3
1999	19	5	26.3
2000	19	5	26.3
2001	14	7	50.0
2002	17	9	52.9
2003	13	8	61.5
2004	28	10	35.7
2005	15	3	20.0
2006	26	14	53.8
2007	8	4	50.0
2008	17	9	52.9
2009	12	6	50.0
2010	9	1	11.1
2011	18	9	50.0
2012	11	8	72.7
2013	14	4	28.6
2014	5	1	20.0
2015	18	7	38.9
2016	14	5	35.7
2017	14	4	28.6
2011-2015 baseline	13	6	46.2
2016-2017 period	14	5	35.7

* numbers are estimates based on the percent of deaths for which information was available to determine alcohol use.

** persons dying within 30 days of collisions which occur on public roadways involving at least one principal vehicle type.

Figure 12-2
Number and Percent of Deaths Involving a Drinking Driver: Prince Edward Island, 1996-2017



12.5.2 Alcohol use among fatally injured drivers. Data on alcohol use among fatally injured drivers of highway vehicles over the 22-year period from 1996-2017 are shown in Table 12-6. Trends are illustrated in Figure 12-3 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the white area); (2) had BACs below the legal limit (shown by the light grey area); and (3) had BACs over the legal limit (the dark grey area). The data reported here are restricted to drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2).

As can be seen, the percent of fatally injured drivers with BACs over the legal limit generally increased from 1996 (18.2%) to its highest level in 2007 (75.0%), decreased in 2010 (0.0%), rose in 2011 (45.5%), decreased until 2016 (25.0%), and rose again in 2017 (33.3%). The percent of fatally injured drivers with zero BACs generally decreased from 1996 (72.7%) to 2007 (25.0%), rose in 2010 (83.3%), fell to its lowest point in 2012 (16.7%), and generally rose until 2017 (66.7%). The percent of fatally injured drivers with BACs between 1 and 80 mg% was 0.0% for most years from 1998 to 2009, peaked in 2012 (50.0%), decreased until 2015 (0.0%), rose in 2016 (25.0%), and decreased again in 2017 (0.0%).

Table 12-6
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles:
Prince Edward Island, 1996-2017

Year	Number of Drivers*	Drivers Tested		Drivers Grouped by BAC (mg%)					
		No.	(% Total)	Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1996	11	11	100.0	8	72.7	1	9.1	2	18.2
1997	10	9	90.0	5	55.6	2	22.2	2	22.2
1998	11	8	72.7	7	87.5	0	0.0	1	12.5
1999	10	7	70.0	5	71.4	0	0.0	2	28.6
2000	12	9	75.0	6	66.7	0	0.0	3	33.3
2001	5	5	100.0	3	60.0	0	0.0	2	40.0
2002	10	10	100.0	6	60.0	0	0.0	4	40.0
2003	8	7	87.5	4	57.1	1	14.3	2	28.6
2004	16	14	87.5	8	57.1	1	7.1	5	35.7
2005	13	8	61.5	5	62.5	0	0.0	3	37.5
2006	13	12	92.3	9	75.0	0	0.0	3	25.0
2007	4	4	100.0	1	25.0	0	0.0	3	75.0
2008	12	12	100.0	4	33.3	0	0.0	8	66.7
2009	10	10	100.0	5	50.0	0	0.0	5	50.0
2010	6	6	100.0	5	83.3	1	16.7	0	0.0
2011	11	11	100.0	4	36.4	2	18.2	5	45.5
2012	6	6	100.0	1	16.7	3	50.0	2	33.3
2013	10	9	90.0	6	66.7	1	11.1	2	22.2
2014	3	3	100.0	2	66.7	0	0.0	1	33.3
2015	13	11	84.6	7	63.6	0	0.0	4	36.4
2016	10	8	80.0	4	50.0	2	25.0	2	25.0
2017	12	9	75.0	6	66.7	0	0.0	3	33.3
2011-2015 baseline	9	8	(88.9)	4	(50.0)	1	(12.5)	3	(37.5)
2016-2017 period	11	9	(81.8)	5	(55.6)	1	(11.1)	3	(33.3)

* Dying within 30 days in collisions which occurred on public roadways.

When compared to the 2011-2015 baseline period, the percentage of fatally injured drivers with zero BACs in the 2016-2017 period rose by 11.2% (50.0% to 55.6%). Among drivers with BACs from 1-80 mg%, there was a 11.2% decrease from 12.5% to 11.1%. Among drivers with BACs over 80 mg%, there was a 11.2% decrease from 37.5% in the baseline period to 33.3%.

Figure 12-3
Trends in Alcohol Use Among Driver Fatalities:
Prince Edward Island, 1996-2017

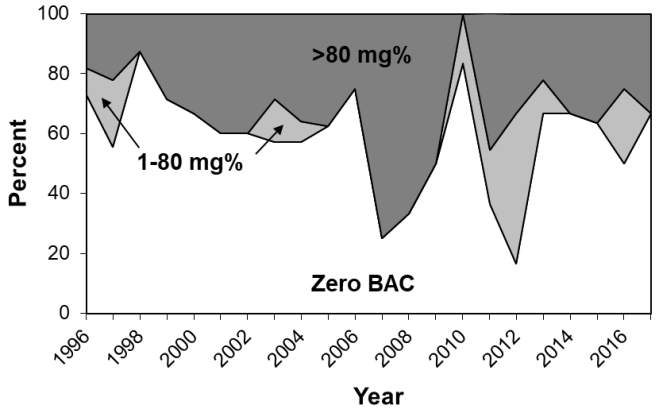


Table 12-7 and Figure 12-4 also show data on alcohol use among fatally injured drivers from 1996 to 2017. Once again, these data are for drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2). However, these results differ from those reported above for two reasons. First, the number of drivers is extrapolated to reflect the BAC distribution of drivers tested for alcohol (see Figure 12-1). Second, drivers are grouped in only two BAC categories: zero and positive.

As can be seen at the bottom of Table 12-7, the percentage of fatally injured drivers testing positive for alcohol from 2011-2015, the baseline period, is 50.0%. In the 2016-2017 period, 45.5% of fatally injured drivers tested positive for alcohol, a 9.0% decrease from the baseline period.

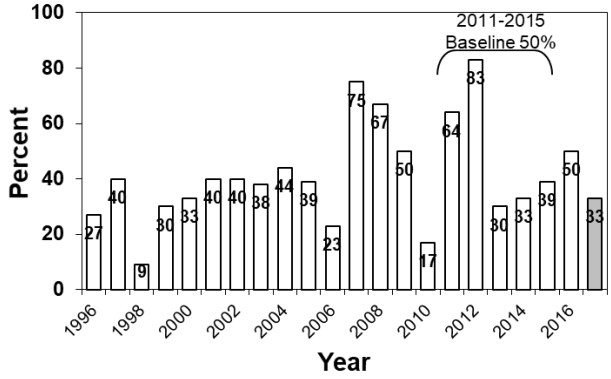
Table 12-7

Alcohol Use* Among Fatally Injured Drivers of Highway Vehicles:
Prince Edward Island, 1996-2017

Year	Number of Drivers**	Drivers Grouped by BAC (mg%)			
		Zero	(% Tested)	Positive	(% Tested)
1996	11	8	(72.7)	3	(27.3)
1997	10	6	(60.0)	4	(40.0)
1998	11	10	(90.9)	1	(9.1)
1999	10	7	(70.0)	3	(30.0)
2000	12	8	(66.7)	4	(33.3)
2001	5	3	(60.0)	2	(40.0)
2002	10	6	(60.0)	4	(40.0)
2003	8	5	(62.5)	3	(37.5)
2004	16	9	(56.3)	7	(43.8)
2005	13	8	(61.5)	5	(38.5)
2006	13	10	(76.9)	3	(23.1)
2007	4	1	(25.0)	3	(75.0)
2008	12	4	(33.3)	8	(66.7)
2009	10	5	(50.0)	5	(50.0)
2010	6	5	(83.3)	1	(16.7)
2011	11	4	(36.4)	7	(63.6)
2012	6	1	(16.7)	5	(83.3)
2013	10	7	(70.0)	3	(30.0)
2014	3	2	(66.7)	1	(33.3)
2015	13	8	(61.5)	5	(38.5)
2016	10	5	(50.0)	5	(50.0)
2017	12	8	(66.7)	4	(33.3)
2011-2015 baseline	8	4	(50.0)	4	(50.0)
2016-2017 period	11	6	(54.5)	5	(45.5)

* Numbers are estimates based on the BAC distribution of drivers tested for alcohol.
** Dying within 30 days in collisions which occurred on public roadways.

Figure 12-4
Percent of Fatally Injured Drivers* Positive
for Alcohol: Prince Edward Island, 1996-2017



12.5.3 Drivers in serious injury crashes. Table 12-8 and Figure 12-5 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes. Between 1996 and 2003 the percentage of drivers in serious injury crashes that involved alcohol generally decreased from 29.7% to 16.2%, peaked in 2009 (31.0%), stabilized from 2010 to 2014 (25.0%), decreased to its lowest level in 2015 (11.1%), and rose again in 2017 (20.8%).

As shown in Table 12-8, in the baseline period (2011-2015) an average of 22.4% of drivers in serious injury crashes were in an alcohol-involved crash. In the 2016-2017 period, the incidence of drivers in alcohol-involved crashes decreased to 17.0%, a 24.1% decrease.

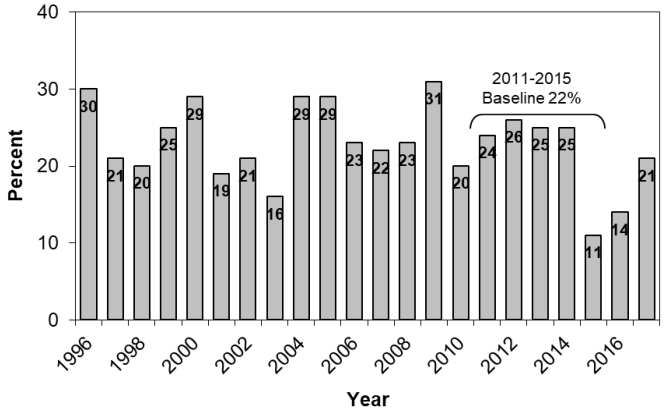
Table 12-8

Number and Percent of Drivers of Highway Vehicles in Serious Injury Crashes* that Involved Alcohol: Prince Edward Island, 1996-2017

Year	Number of Drivers	Number in Alcohol-Involved Crashes	Percent
1996	74	22	(29.7)
1997	102	21	(20.6)
1998	108	22	(20.4)
1999	130	33	(25.4)
2000	110	32	(29.1)
2001	83	16	(19.3)
2002	80	17	(21.3)
2003	111	18	(16.2)
2004	92	27	(29.3)
2005	66	19	(28.8)
2006	77	18	(23.4)
2007	68	15	(22.1)
2008	35	8	(22.9)
2009	58	18	(31.0)
2010	66	13	(19.7)
2011	62	15	(24.2)
2012	62	16	(25.8)
2013	53	13	(24.5)
2014	48	12	(25.0)
2015	63	7	(11.1)
2016	57	8	(14.0)
2017	48	10	(20.8)
2011-2015 baseline	58	13	(22.4)
2016-2017 period	53	9	(17.0)

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

Figure 12-5
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: Prince Edward Island, 1996-2017



12.5.4 Drug use among fatally injured drivers. Table 12-9 and Figure 12-6 show data on drug use among fatally injured drivers of highway vehicles over an 18-year period (2000-2017). Similar to Table 12-6, these results are based on fatally injured drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.5).

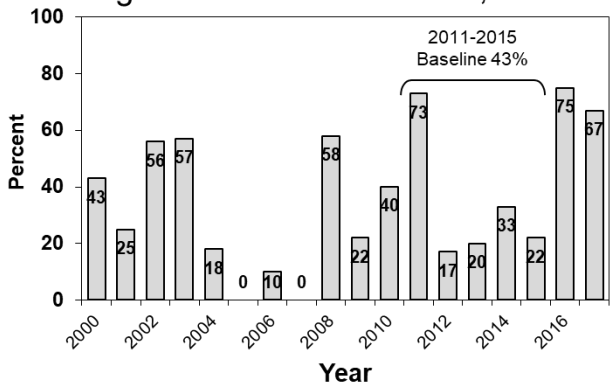
As can be seen at the bottom of Table 12-9, the percentage of fatally injured drivers testing positive for drugs from 2011-2015, the baseline period, is 42.9%. In the 2016-2017 period, 66.7% of fatally injured drivers tested positive for drugs, a 55.4% increase from the baseline period.

Table 12-9
Drug Use Among Fatally Injured Drivers of Highway Vehicles:
Prince Edward Island, 2000-2017

YEAR	Number of Drivers*	Drivers Tested	(% Total)	Drivers Tested for Drugs			
				Negative	(% Tested)	Positive	(% Tested)
2000	12	7	58.3	4	57.1	3	42.9
2001	5	4	80.0	3	75.0	1	25.0
2002	10	9	90.0	4	44.4	5	55.6
2003	8	7	87.5	3	42.9	4	57.1
2004	16	11	68.8	9	81.8	2	18.2
2005	13	8	61.5	8	100.0	0	0.0
2006	13	10	76.9	9	90.0	1	10.0
2007	4	3	75.0	3	100.0	0	0.0
2008	12	12	100.0	5	41.7	7	58.3
2009	10	9	90.0	7	77.8	2	22.2
2010	6	5	83.3	3	60.0	2	40.0
2011	11	11	100.0	3	27.3	8	72.7
2012	6	6	100.0	5	83.3	1	16.7
2013	10	5	50.0	4	80.0	1	20.0
2014	3	3	100.0	2	66.7	1	33.3
2015	13	9	69.2	7	77.8	2	22.2
2016	10	8	80.0	2	25.0	6	75.0
2017	12	9	75.0	3	33.3	6	66.7
2011-2015 period	9	7	77.8	4	57.1	3	42.9
2016-2017 period	11	9	81.8	3	33.3	6	66.7

* Dying within 30 days in collisions which occurred on public roadways.

Figure 12-6
Percent of Fatally Injured Drivers Positive for Drugs: Prince Edward Island, 2000-2017



13.0 NEWFOUNDLAND AND LABRADOR

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in Newfoundland and Labrador during 2017. It describes data on:

- people who were killed in alcohol-related crashes (Section 13.1);
- alcohol use among fatally injured drivers (Section 13.2);
- drivers involved in alcohol-related serious injury crashes (Section 13.3);
- drug use among fatally injured drivers (Section 13.4); and,
- trends in the alcohol-crash and drug-crash problems (Section 13.5).

13.1 Deaths in alcohol-related crashes

Table 13-1 presents information on people who died in alcohol-related crashes in Newfoundland and Labrador during 2016. *At the time this report was being prepared, coroner data from 2017 for Newfoundland and Labrador were not available. For this reason, 2016 data will be reported in this section.* This table specifically reports upon persons who died within 30 days of a collision which occurred on a public roadway that involved at least one highway vehicle. Motor vehicle deaths are categorized in terms of the victim's age, sex, victim type (see Section 2.1.1) and the type of vehicle they occupied (see Section 2.2.1). The first column in the table presents the number of deaths. The next two columns show the number and percent of these fatalities in which sufficient information was available to determine if alcohol was involved. *A motor vehicle fatality was considered to be alcohol involved if there was at least one drinking driver or drinking pedestrian in the fatal crash*.

For example, seven people aged 36-45 were killed in motor vehicle crashes in Newfoundland and Labrador during 2016. And, in six cases (85.7%) it was possible to determine if alcohol was a factor in the crash.

The next column shows the number of people killed in crashes that were known to be alcohol-involved. For example, two persons aged 36-45 died in an alcohol-related crash in Newfoundland and Labrador during 2016. The next column expresses this as a percentage – i.e., 33.3% of the 36-45 year olds who were killed died in an alcohol-related crash.

The final column (percent of all alcohol-related deaths) expresses the number of deaths in alcohol-related crashes as a percent of all the deaths in such crashes. For example, the alcohol-related deaths among 36-45 year olds represent 18.2% of all the people killed in alcohol-related crashes in Newfoundland and Labrador during 2016.

The totals at the bottom of the table provide a summary. As can be seen, 42 persons died within 30 days of a motor vehicle crash in Newfoundland and Labrador during 2016. In 32 (76.2%) of these cases, it was

possible to determine if alcohol was a factor. Of these known cases, 11 (34.4%) involved alcohol. Extrapolating this figure to the total number of motor vehicle fatalities (42 x .344) it can be estimated that *in Newfoundland and Labrador during 2016, 14 persons died in alcohol-related crashes within 30 days of the collision*.

13.1.1 Victim age. Victims under age 16, aged 16-19 and 20-25 have been regrouped (<26 age group) to ensure that individuals cannot be identified. Of all the people who died in alcohol-related crashes, 27.3% (see last column) were under age 26; and 18.2% were aged 26-35, 36-45, 46-55, and over age 55.

The highest incidence of alcohol involvement occurred in the crashes in which persons under age 26 died (50.0%). The lowest incidence of alcohol involvement was found among persons over age 55 (22.2%).

Table 13-1
Deaths in Alcohol-Related Crashes: Newfoundland and Labrador, 2016

Category of Victim	Total Number of Deaths*	Alcohol Use Known		Alcohol-Related Deaths (ARDs)		
		Number	% of total	Number	% of known cases	% of all ARDs
Age Group						
<26**	6	6	100.0	3	50.0	27.3
26-35	10	6	60.0	2	33.3	18.2
36-45	7	6	85.7	2	33.3	18.2
46-55	5	5	100.0	2	40.0	18.2
>55	14	9	64.3	2	22.2	18.2
Sex						
Male	26	21	80.8	6	28.6	54.5
Female	16	11	68.8	5	45.5	45.5
Victim Type						
Driver/ Operator	20	17	85.0	5	29.4	45.5
Passenger	13	11	84.6	3	27.3	27.3
Pedestrian	5	4	80.0	3	75.0	27.3
Unknown	4	0	0.0	0	0.0	0.0
Vehicle Occupied						
Automobiles	9	5	55.6	2	40.0	18.2
Trucks/Vans	23	18	78.3	5	27.8	45.5
Other Vehicles***	5	5	100.0	1	20.0	9.1
(Pedestrians)	5	4	80.0	3	75.0	27.3
TOTAL	42	32	76.2	11	34.4	100.0

* Persons dying within 30 days in crashes on public roadways that involved at least one principal highway vehicle.

** Persons in three age groups have been aggregated to ensure that an individual will not be identified.

** Persons occupying three different vehicle types have been aggregated to ensure that an individual will not be identified.

13.1.2 Sex. Of all the people who died in alcohol-related crashes, 54.5% were males. However, the incidence of alcohol in crashes in which a female died (45.5%) was greater than the incidence of alcohol in crashes in which a male died (28.6%).

13.1.3 Victim type. Of all the people who died in alcohol-related crashes, 45.5% were drivers/operators of a vehicle; and 27.3% were passengers and pedestrians.

Within each of the victim types, the highest incidence of alcohol involvement (75.0%) occurred in the

crashes in which a pedestrian died. Alcohol was involved in 29.4% of the crashes in which a driver/operator died and 27.3% of the crashes in which a passenger died.

13.1.4 Type of vehicle occupied. Occupants of motorcycles, other highway vehicles, and off-road vehicles have been regrouped (other vehicles) to ensure that individuals cannot be identified. Of all the people who died in alcohol-related crashes, 45.5% were truck/van occupants; 18.2% were automobile occupants; and 9.1% were other vehicle occupants.

Within each of these vehicle types, the incidence of alcohol involvement in which an automobile occupant died (40.0%) was greater than the incidence of alcohol in crashes in which a truck/van occupant died (27.8%). One-fifth of fatally injured occupants of other vehicles (20.0%) died in an alcohol-related collision.

13.2 Alcohol in fatally injured drivers

This section presents information on the presence of alcohol, exclusively among drivers fatally injured in Newfoundland and Labrador during 2016. *At the time this report was being prepared, coroner data from 2017 for Newfoundland and Labrador were not available. For this reason, 2016 data will be reported in this section.* Table 13-2 shows the information by age group, sex, vehicle type, and collision type (single vs. multiple) for drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Sections 2.1.1 and 2.2.2).

The first column in the table shows the number of drivers killed. The next columns show the number and percent of these victims who were tested for alcohol. The remaining columns provide information on the results of the alcohol tests – the first three of these present results for drivers who showed any evidence of alcohol; the last three columns present information on drivers who had BACs over the statutory limit of 80 mg%.

To illustrate, among drivers aged 36-45 there were three drivers killed during 2016; all three of these fatally injured drivers (100.0%) were tested for alcohol. Of those who were tested, two (66.7%) were positive for alcohol. This means that fatally injured drinking drivers aged 36-45 accounted for 50.0% of all drinking drivers who were killed.

Then, in the final three columns, it can be seen that one of the three (33.3%) fatally injured drivers aged 36-45 who were tested for alcohol had BACs in excess of 80 mg%. This means one of the two drivers who were positive for alcohol had a BAC in excess of the legal limit. The final column expresses the number of drivers with illegal BACs as a percent of all drivers with BACs over the limit. Thus, drivers aged 36-45 accounted for 50.0% of all the drivers with BACs over the legal limit.

The main findings are shown by the totals at the bottom of the table. Newfoundland and Labrador had a very high testing rate in 2016, with 100.0% of fatally injured drivers being tested for alcohol use.

In Newfoundland and Labrador, 21.1% had been drinking and two out of four (50.0%) fatally injured drinking drivers had BACs over 80 mg%. Although not shown in the table, more refined analyses by different BAC categories show that among tested drivers:

- 78.9% had BACs of zero mg%;
- 5.3% had BACs from 1-49 mg%;
- 5.3% had BACs from 50-80 mg%;
- 0.0% had BACs from 81 to 160 mg%; and,
- 10.5% had BACs over 160 mg%.

Table 13-2
Alcohol Use Among Fatally Injured Drivers of Highway Vehicles: Newfoundland and Labrador, 2016

Category of Driver	Total Number of Driver Deaths*	Drivers Tested		Positive BAC			BAC >80 mg%		
		No.	% of total	No.	% of tested	% of all drivers with +BAC	No.	% of tested	% of all drivers with BAC >80 mg%
Age Group									
20-35**	5	5	100.0	1	20.0	25.0	1	20.0	50.0
36-55**	5	5	100.0	3	60.0	75.0	1	20.0	50.0
>55	9	9	100.0	0	0.0	0.0	0	0.0	0.0
Sex									
Male	15	15	100.0	3	20.0	75.0	2	13.3	100.0
Female	4	4	100.0	1	25.0	25.0	0	0.0	0.0
Vehicle Type									
Automobiles	4	4	100.0	0	0.0	0.0	0	0.0	0.0
Truck/Van	11	11	100.0	3	27.3	75.0	2	18.2	100.0
Other Vehicles***	4	4	100.0	1	25.0	25.0	0	0.0	0.0
Collision Type									
Single vehicle	11	11	100.0	4	36.4	100.0	2	18.2	100.0
Multiple vehicle	8	8	100.0	0	0.0	0.0	0	0.0	0.0
TOTAL	19	19	100.0	4	21.1	100.0	2	10.5	100.0

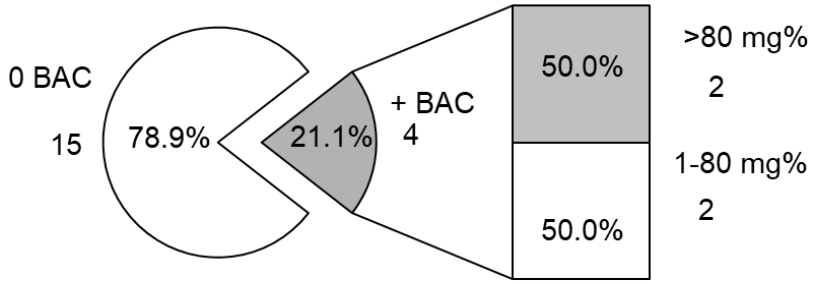
* Drivers dying within 30 days in crashes on public roadways.

** Drivers in two age groups have been aggregated to ensure that an individual will not be identified.

** Drivers of two different vehicle types have been aggregated to ensure that an individual will not be identified.

In Figure 13-1, the BAC distribution for tested fatally injured drivers is extrapolated to reflect the BAC distribution for all fatally injured drivers. In this figure four of 19 (21.1%) fatally injured drivers have a positive BAC. And among fatally injured drinking drivers, two (50.0%) have BACs over 80 mg%.

Figure 13-1
BACs* Among Fatally Injured Drivers of Highway Vehicles: Newfoundland and Labrador, 2016



* numbers are estimates based on the BAC distribution of drivers tested for alcohol

***13.2.1 Age differences*.** Drivers aged 20-25 and 26-35 (20-35) and 36-45 and 46-55 (36-55) have been regrouped to ensure that individuals cannot be identified. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 50.0% were aged 36-55; and 25.0% were aged 20-35 and 46-55.

Of all the fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 50.0% were aged 20-35 and 36-55.

When comparing the incidence of drinking and driving among fatally injured drivers by age group, fatally injured drivers aged 36-55 were the most likely to have been drinking (75.0%). By contrast, 0.0% of fatally injured drivers over age 55 had been drinking.

13.2.2 Sex differences. Males dominate the picture – they account for 75.0% of the fatally injured drivers who had been drinking and 100.0% of those who were legally impaired.

Males dominate the picture largely because they account for most of the drivers who are killed (15 of the 19 fatalities or 78.9% are males). However, fatally injured female drivers were more likely to have been drinking than male drivers (25.0% and 20.0%, respectively). Two of the three male drivers (66.7%) who were drinking had BACs over the legal limit while the lone female drinking driver did not have a BAC over the legal limit.

13.2.3 Vehicle differences. Motorcyclists and tractor-trailer drivers have been regrouped (other vehicles) to ensure that individuals cannot be identified. Of all the fatally injured drinking drivers (i.e., those with a positive BAC), 75.0% were truck/van drivers and 25.0% were drivers of other vehicles. Among fatally injured legally impaired drivers (i.e., those with BACs over 80 mg%), 100.0% were truck/van drivers.

Within each of the vehicle types, 27.3% of fatally injured truck/van drivers and 25.0% of fatally injured drivers of other vehicles were found to have been drinking, compared to 0.0% of fatally injured automobile drivers.

13.2.4 Collision differences. Slightly less than three-fifths of the drivers killed (11 of the 19) were involved in single-vehicle collisions but these crashes accounted for 100.0% of drivers who had been

drinking and 100.0% of drivers who were legally impaired.

The reason for this apparent disparity is because alcohol is usually overrepresented in single-vehicle crashes. Over one-third of the drivers involved in single-vehicle crashes (36.4%) tested positive for alcohol, compared to 0.0% of those involved in multiple-vehicle collisions.

13.3 Drivers involved in alcohol-related serious injury crashes

This section presents information on drivers of highway vehicles involved in alcohol-related crashes in which someone was seriously injured in 2017 in Newfoundland and Labrador. A “surrogate” or “indirect” measure is used to estimate alcohol involvement because drivers in serious injury crashes are seldom tested for alcohol. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle at night (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol involvement – i.e., at least one drinking driver in the crash (see Section 2.2.4).

The results are shown in Table 13-3 for drivers grouped in terms of age, sex, type of vehicle driven (see Section 2.2.1 for types of vehicles that are included), and type of collision. The first column shows the number of drivers of highway vehicles involved in serious injury crashes. The number and percent of drivers in such crashes that involved alcohol is shown in the next two columns. The final column expresses the number of drivers involved in alcohol-related serious injury crashes in any row as a percent of all drivers involved in alcohol-related serious injury crashes.

As shown, by the totals at the bottom of the table, 113 drivers were involved in crashes in which someone was seriously injured, and among these 13.3% were alcohol-related crashes.

13.3.1 Driver age. Of all the drivers involved in alcohol-related serious injury crashes, 33.3% were aged 26-35, 26.7% were aged 20-25, and 20.0% were aged 16-19. Drivers aged 36-45 accounted for 6.7% of those involved in alcohol-related serious injury crashes.

Almost one-third of the drivers aged 16-19 were involved in alcohol-related serious injury crashes (30.0%). The lowest incidence of involvement in alcohol-related crashes was found for those aged under 16, 46-55, and over 55 (0.0%).

13.3.2 Driver sex. Of all the drivers involved in alcohol-related serious injury crashes, 86.7% were males. The incidence of involvement in alcohol-related serious injury crashes was greater for males than for females (19.1% and 0.0%, respectively).

Table 13-3
Drivers* in Alcohol-Related Serious Injury Crashes:
Newfoundland and Labrador, 2017

Category of Drivers	Number of Drivers	Alcohol-Related		
		Number	% of total	% of all drivers in alcohol-related crashes
Age				
<16	2	0	0.0	0.0
16-19	10	3	30.0	20.0
20-25	16	4	25.0	26.7
26-35	18	5	27.8	33.3
36-45	10	1	10.0	6.7
46-55	13	0	0.0	0.0
>55	27	0	0.0	0.0
Unknown	17	2	11.8	13.3
Sex				
Male	68	13	19.1	86.7
Female	28	0	0.0	0.0
unknown	17	2	11.8	13.3
Vehicle Type				
Auto	54	5	9.3	33.3
Truck/Van	44	8	18.2	53.3
Motorcycle	14	2	14.3	13.3
Other Hwy. Vehicle	1	0	0.0	0.0
Collision Type				
Single-Vehicle	62	15	24.2	100.0
Multiple-Vehicle	51	0	0.0	0.0
TOTAL	113	15	13.3	100.0

* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

13.3.3 Type of vehicle driven. Of all the drivers involved in alcohol-related serious injury crashes, 53.3% were truck/van drivers; 33.3% were automobile drivers; and 13.3% were motorcyclists.

The highest incidence of involvement in alcohol-related serious injury crashes was found for truck/van drivers (18.2%) and motorcyclists (14.3%), compared to 9.3% for automobile drivers and 0.0% for drivers of other highway vehicles.

13.3.4 Type of collision. Of all the drivers involved in alcohol-related serious injury crashes, 100.0% of them were in single-vehicle crashes. The highest incidence of involvement in alcohol-related serious injury crashes was also found among drivers in single-vehicle crashes (24.2%) compared to 0.0% for drivers involved in multiple-vehicle crashes.

13.4 Drug use among fatally injured drivers

This section presents information on the presence of drugs, exclusively among drivers fatally injured in Newfoundland and Labrador during 2016. *At the time this report was being prepared, coroner data from 2017 for Newfoundland and Labrador were not available. For this reason, 2016 data will be reported in this section.* A comparison of testing rates of fatally injured drivers for both alcohol and drugs can be found in Table 3-15 on p. 45. Table 13-4 shows the prevalence of drug use among fatally injured drivers

of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Section 2.2.5). The table also shows the number of drivers who tested positive for various categories of drugs. A brief description of the different drug categories is provided in Section 2.2.5.

As can be seen, Newfoundland and Labrador had a low testing rate in 2016, with 36.8% of fatally injured drivers being tested for drug use.

Among fatally injured tested drivers, five out of seven (71.4%) were positive for drugs. The most common categories of drugs found within drivers testing positive for drug use were cannabis and CNS stimulants (60.0%), and CNS depressants and narcotic analgesics (40.0%).

Table 13-4
Drug Use Among Fatally Injured Drivers* of Highway Vehicles: Newfoundland and Labrador, 2016

Prevalence of Drug Use

Number of Drivers	Drivers Tested		Positive for Drugs	
	Number	% of total	Number	% of tested
19	7	(36.8)	5	(71.4)

Categories of Drugs Found Among Drivers Testing Positive

Drug Category	Positive for Drug Type	
	Number of Drivers	% of drivers testing positive**
Cannabis	3	(60.0)
CNS Stimulants	3	(60.0)
CNS Depressants	2	(40.0)
Narcotic Analgesics	2	(40.0)
Hallucinogens	0	(0.0)
Dissociative Anesthetics	0	(0.0)
Inhalants	0	(0.0)

* Dying within 30 days in collisions which occurred on public roadways.
** Percentages will not add up to 100% due to multiple drug types found in blood samples of some drivers.

13.5 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

Sections 13.1 through 13.3 examined three indicators of the alcohol-crash problem: (1) the number and percent of people who died in crashes that involved alcohol; (2) the number and percent of fatally injured drivers who had been drinking; and (3) the number and percent of drivers in serious injury crashes that involved alcohol. Section 13.4 examined drug use among fatally injured drivers in 2016. This section examines changes in these four indicators over time.

13.5.1 Deaths involving drinking drivers: 1996-2017. *As mentioned earlier in Section 13.1, at the time this report was being prepared, medical examiner data from 2017 for Newfoundland and Labrador were not available. For this reason, 1996-2016 data will be reported in this section.* Table 13-5 and Figure 13-2 show the number and percent of people who died in crashes involving a drinking driver from 1996 to 2016. These results differ slightly from those in Section 13.1. In this section, deaths that occur in crashes

that involve a drinking pedestrian are not necessarily classified as alcohol-related deaths. The focus here is more restrictive, on deaths that occur in crashes involving at least one drinking driver (see Section 2.2.1 for types of vehicles that are included).

As shown in the table and the figure, the number of deaths in crashes that involved a drinking driver was 17 in 1996, decreased to four in 2000, peaked at 21 in 2008, decreased to 10 in 2014, and rose again to 13 in 2016. Between 1996 and 2000, the percentage of alcohol-related fatalities generally decreased from 39.5% to a low of 8.9%, peaked at 58.3% in 2008, decreased to 18.8% in 2009, rose to 37.2% in 2011, and fluctuated until 2016 (31.0%).

Table 13-5

Number* and Percent of Motor Vehicle Deaths Involving a Drinking Driver: Newfoundland and Labrador, 1996-2016**

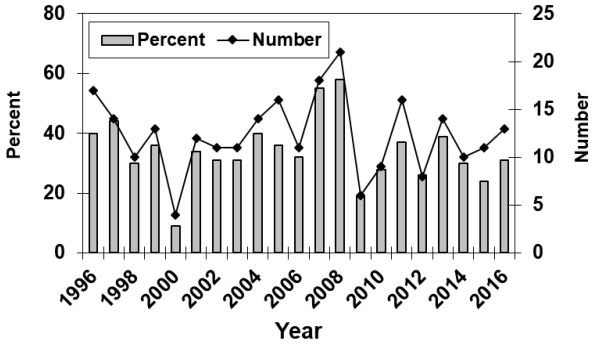
Year of Death	Number of Deaths	Alcohol-Related Deaths	
		Number	% of total
1996	43	17	39.5
1997	32	14	43.8
1998	33	10	30.3
1999	36	13	36.1
2000	45	4	8.9
2001	35	12	34.3
2002	35	11	31.4
2003	35	11	31.4
2004	35	14	40.0
2005	45	16	35.6
2006	34	11	32.4
2007	33	18	54.5
2008	36	21	58.3
2009	32	6	18.8
2010	32	9	28.1
2011	43	16	37.2
2012	31	8	25.8
2013	36	14	38.9
2014	33	10	30.3
2015	45	11	24.4
2016	42	13	31.0
2011-2015 period	38	12	31.6

* numbers are estimates based on the percent of deaths for which information was available to determine alcohol use.

** persons dying within 30 days of collisions which occur on public roadways involving at least one principal vehicle type.

As shown at the bottom of the table, during the 2011-2015 baseline period there was an average of 12 fatalities involving a drinking driver and they accounted for 31.6% of all fatalities. This means that the percent of fatalities involving a drinking driver decreased by 1.9% from 31.6% in the baseline period (2011-2015) to 31.0% in 2016. And, in terms of the number of persons killed in crashes involving a drinking driver, there has been an 8.3% increase from an average of 12 in the baseline period (2011-2015) to 13 in 2016.

Figure 13-2
Number and Percent of Deaths Involving a Drinking Driver: Newfoundland and Labrador, 1996-2016



13.5.2 Alcohol use among fatally injured drivers. *As mentioned earlier in Section 13.2, at the time this report was being prepared, medical examiner data from 2017 for Newfoundland and Labrador were not available. For this reason, 1996-2016 data will be reported in this section.* Data on alcohol use among fatally injured drivers of highway vehicles over the 21-year period from 1996-2016 are shown in Table 13-6. Trends are illustrated in Figure 13-3 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the white area); (2) had BACs below the legal limit (shown by the light grey area); and (3) had BACs over the legal limit (the dark grey area). The data reported here are restricted to drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2).

As can be seen, the percentage of fatally injured drivers with BACs over the legal limit peaked in 1999 (57.1%), decreased to 14.3% in 2009, generally increased until 2014 (31.6%), then fell to a low in 2016 (10.5%). The percent of fatally injured drivers with zero BACs increased from 1996 (41.7%) until 2000 (85.7%), fell to 13.3% in 2007, rose until 2009 (85.7%), decreased until 2013 (59.1%), and rose in 2016 (78.9%). The percentage of fatally injured drivers with BACs from 1-80 mg% was 8.3% in 1996, peaked in 2007 (40.0%), decreased to 0.0% from 2009 until 2011, and eventually rose to 10.5% in 2016.

When compared to the 2011-2015 baseline period, the percentage of fatally injured drivers with zero BACs in 2016 increased by 13.4% (from 69.6% to 78.9%). Among drivers with BACs from 1-80 mg%, there was a 144.2% increase (from 4.3% to 10.5%). And among drivers with BACs over 80 mg%, there was a 59.8% decrease (from 26.1% to 10.5%).

Table 13-6

Alcohol Use Among Fatally Injured Drivers of Highway Vehicles:
Newfoundland and Labrador, 1996-2016

Year	Number of Drivers*	Drivers Tested		Drivers Grouped by BAC (mg%)					
		No.	(% Total)	Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1996	17	12	70.6	5	41.7	1	8.3	6	50.0
1997	17	17	100.0	8	47.1	3	17.6	6	35.3
1998	19	16	84.2	9	56.3	2	12.5	5	31.3
1999	18	14	77.8	5	35.7	1	7.1	8	57.1
2000	24	21	87.5	18	85.7	0	0.0	3	14.3
2001	17	15	88.2	8	53.3	3	20.0	4	26.7
2002	20	18	90.0	12	66.7	2	11.1	4	22.2
2003	18	18	100.0	11	61.1	3	16.7	4	22.2
2004	16	14	87.5	8	57.1	1	7.1	5	35.7
2005	18	16	88.9	7	43.8	4	25.0	5	31.3
2006	22	19	86.4	13	68.4	0	0.0	6	31.6
2007	18	15	83.3	2	13.3	6	40.0	7	46.7
2008	23	22	95.7	6	27.3	6	27.3	10	45.5
2009	23	21	91.3	18	85.7	0	0.0	3	14.3
2010	18	18	100.0	12	66.7	0	0.0	6	33.3
2011	29	25	86.2	20	80.0	0	0.0	5	20.0
2012	25	23	92.0	16	69.6	1	4.3	6	26.1
2013	22	22	100.0	13	59.1	2	9.1	7	31.8
2014	21	19	90.5	12	63.2	1	5.3	6	31.6
2015	30	29	96.7	21	72.4	1	3.4	7	24.1
2016	19	19	100.0	15	78.9	2	10.5	2	10.5
2011-2015 baseline	25	23	(92.0)	16	(69.6)	1	(4.3)	6	(26.1)

* Dying within 30 days in collisions which occurred on public roadways.

Figure 13-3

Trends in Alcohol Use Among Driver Fatalities:
Newfoundland and Labrador, 1996-2016

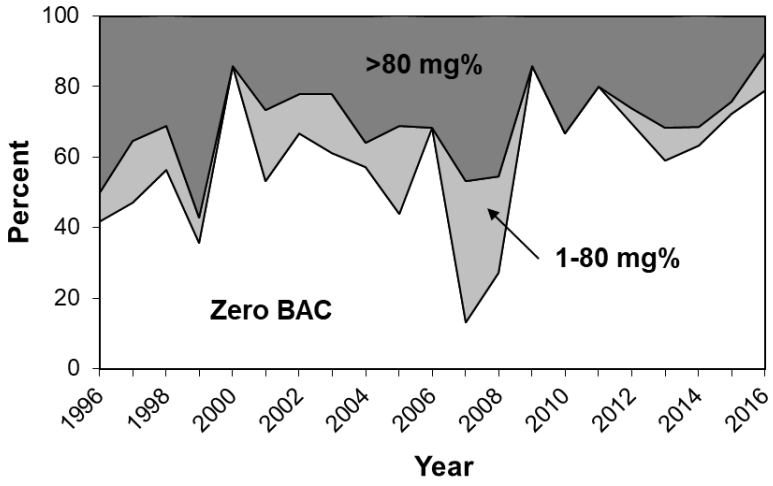


Table 13-7 and Figure 13-4 also show data on alcohol use among fatally injured drivers from 1996 to 2016. Once again, these data are for drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.2). However, these results differ from those reported above for two reasons. First, the number of drivers is extrapolated to reflect the BAC distribution of drivers tested for alcohol (see Figure 13-1). Second, drivers are grouped in only two BAC categories: zero and positive.

As can be seen at the bottom of Table 13-7, the percentage of fatally injured drivers testing positive for alcohol from 2011-2015, the baseline period, is 32.0%. In 2016, 21.1% of fatally injured drivers tested positive for alcohol, a 34.1% decrease from the baseline period.

Table 13-7

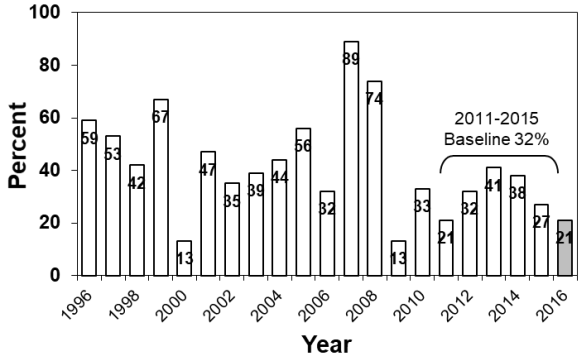
Alcohol Use* Among Fatally Injured Drivers of Highway Vehicles: Newfoundland and Labrador, 1996-2016

Year	Number of Drivers**	Drivers Grouped by BAC (mg%)			
		Zero	(% Tested)	Positive	(% Tested)
1996	17	7	(41.2)	10	(58.8)
1997	17	8	(47.1)	9	(52.9)
1998	19	11	(57.9)	8	(42.1)
1999	18	6	(33.3)	12	(66.7)
2000	24	21	(87.5)	3	(12.5)
2001	17	9	(52.9)	8	(47.1)
2002	20	13	(65.0)	7	(35.0)
2003	18	11	(61.1)	7	(38.9)
2004	16	9	(56.3)	7	(43.8)
2005	18	8	(44.4)	10	(55.6)
2006	22	15	(68.2)	7	(31.8)
2007	18	2	(11.1)	16	(88.9)
2008	23	6	(26.1)	17	(73.9)
2009	23	20	(87.0)	3	(13.0)
2010	18	12	(66.7)	6	(33.3)
2011	29	23	(79.3)	6	(20.7)
2012	25	17	(68.0)	8	(32.0)
2013	22	13	(59.1)	9	(40.9)
2014	21	13	(61.9)	8	(38.1)
2015	30	22	(73.3)	8	(26.7)
2016	19	15	(78.9)	4	(21.1)
2011-2015 period	25	17	(68.0)	8	(32.0)

* Numbers are estimates based on the BAC distribution of drivers tested for alcohol.

** Dying within 30 days in collisions which occurred on public roadways.

Figure 13-4
Percent of Fatally Injured Drivers* Positive for Alcohol: Newfoundland and Labrador, 1996-2016



13.5.3 Drivers in serious injury crashes. Collision data from 2009 to 2011 for Newfoundland and Labrador were not available at the time this report was being prepared. Thus, the comparative baseline in the serious-injury trend tables and figures in this sub-section will only report data from 2012 to 2015. These data will be compared with the 2016-2017 period. Table 13-8 and Figure 13-5 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes. The percentage of drivers in serious-injury crashes that involved alcohol generally increased from 1996 (20.9%) to 1999 (25.2%), dropped to 15.7% in 2000, generally rose to 23.3% in 2004, fell to a low of 7.4% in 2014, rose until 2016 (15.2%), and decreased again in 2017 (13.3%).

As shown in Table 13-8, in the baseline period (2012-2015), an average of 14.7% of drivers in serious injury crashes were in an alcohol-involved crash. In the 2016-2017 period, the incidence of drivers in alcohol-involved crashes was 14.3%, representing a 2.7% decrease.

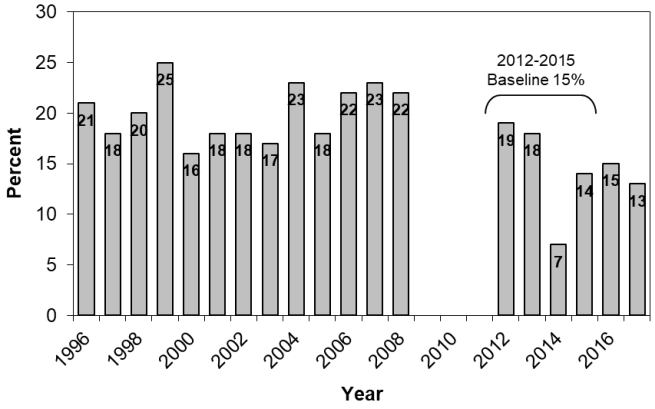
Table 13-8

Number and Percent of Drivers of Highway Vehicles in Serious Injury Crashes* that Involved Alcohol: Newfoundland and Labrador, 1996-2017

Year	Number of Drivers	Number in Alcohol-Involved Crashes	Percent
1996	296	62	(20.9)
1997	262	46	(17.6)
1998	243	48	(19.8)
1999	230	58	(25.2)
2000	249	39	(15.7)
2001	223	40	(17.9)
2002	191	34	(17.8)
2003	197	34	(17.3)
2004	163	38	(23.3)
2005	136	25	(18.4)
2006	131	29	(22.1)
2007	129	29	(22.5)
2008	129	28	(21.7)
2009			
2010			
2011			
2012	156	29	(18.6)
2013	151	27	(17.9)
2014	149	11	(7.4)
2015	168	24	(14.3)
2016	138	21	(15.2)
2017	113	15	(13.3)
2012-2015 baseline	156	23	(14.7)
2016-2017 period	126	18	14.3

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

Figure 13-5
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: Newfoundland and Labrador, 1996-2017



13.5.4 Drug use among fatally injured drivers. Table 13-9 and Figure 13-6 show data on drug use among fatally injured drivers of highway vehicles over a 17-year period (2000-2016). *At the time this report was being prepared, coroner data from 2017 for Newfoundland and Labrador were not available.* Similar to

Table 13-6, these results are based on fatally injured drivers of highway vehicles who died within 30 days in collisions which occurred on public roadways (see Section 2.2.5).

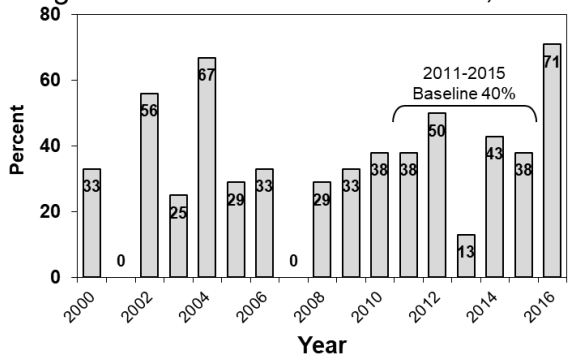
As can be seen at the bottom of Table 13-9, the percentage of fatally injured drivers testing positive for drugs from 2011-2015, the baseline period, is 40.0%. In 2016, the average percentage of fatally injured drivers testing positive for drugs was 71.4%, a 78.5% increase from the baseline period.

Table 13-9
Drug Use Among Fatally Injured Drivers of Highway Vehicles:
Newfoundland and Labrador, 2000-2016

YEAR	Number of Drivers*	Drivers Tested	(% Total)	Drivers Tested for Drugs			
				Negative	(% Tested)	Positive	(% Tested)
2000	24	6	25.0	4	66.7	2	33.3
2001	17	6	35.3	6	100.0	0	0.0
2002	20	9	45.0	4	44.4	5	55.6
2003	18	4	22.2	3	75.0	1	25.0
2004	16	6	37.5	2	33.3	4	66.7
2005	18	7	38.9	5	71.4	2	28.6
2006	22	9	40.9	6	66.7	3	33.3
2007	18	4	22.2	4	100.0	0	0.0
2008	23	7	30.4	5	71.4	2	28.6
2009	23	9	39.1	6	66.7	3	33.3
2010	18	8	44.4	5	62.5	3	37.5
2011	29	8	27.6	5	62.5	3	37.5
2012	25	12	48.0	6	50.0	6	50.0
2013	22	8	36.4	7	87.5	1	12.5
2014	21	7	33.3	4	57.1	3	42.9
2015	30	16	53.3	10	62.5	6	37.5
2016	19	7	36.8	2	28.6	5	71.4
2011-2015 period	25	10	40.0	6	60.0	4	40.0

* Dying within 30 days in collisions which occurred on public roadways.

Figure 13-6
Percent of Fatally Injured Drivers Positive for Drugs: Newfoundland and Labrador, 2000-2016



14.0 YUKON

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in the Yukon during 2017. It describes data on:

- people who were killed in alcohol-related crashes (Section 14.1);
- alcohol use among fatally injured drivers (Section 14.2);
- drivers involved in alcohol-related serious injury crashes (Section 14.3);
- drug use among fatally injured drivers (Section 14.4); and,
- trends in the alcohol-crash and drug-crash problems (Section 14.5).

Detailed results are not provided in Sections 14.1, 14.2 and 14.4 because the small number of deaths – only six – and drivers fatally injured – only five – makes the results unreliable.

14.1 Deaths in alcohol-related crashes

This section specifically reports upon persons who died within 30 days of a motor vehicle collision which occurred on a public road that involved at least one highway vehicle. A motor vehicle fatality was considered to be alcohol involved if there was at least one drinking driver or drinking pedestrian in the fatal crash.

During 2017, six persons died in motor vehicle crashes in the Yukon. And, in all of these cases (100.0%), it was possible to determine if alcohol was a factor in the crash. Of these cases, four (66.7%) involved alcohol.

14.2 Alcohol in fatally injured drivers

This section presents information on the presence of alcohol, exclusively among drivers fatally injured in the Yukon during 2017. It reports upon drivers of highway vehicles who died within 30 days of a crash which occurred on a public roadway (see Sections 2.1.1 and 2.2.2).

The Yukon had only five fatally injured drivers in 2017. Four of them (80.0%) were tested for alcohol. Due to the small number of cases, detailed analysis on alcohol/drug use is not available.

14.3 Drivers involved in alcohol-related serious injury crashes

This section presents information on drivers of highway vehicles involved in alcohol-related crashes in which someone was seriously injured in 2017 in the Yukon. A “surrogate” or “indirect” measure is used to estimate alcohol involvement because drivers in serious injury crashes are seldom tested for alcohol. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle at night (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol involvement – i.e., at least one drinking driver in

the crash (see Section 2.2.4).

The results are shown in Table 14-1 for drivers grouped in terms of age, sex, type of vehicle driven (see Section 2.2.1 for types of vehicles that are included), and type of collision. The first column shows the number of drivers of highway vehicles involved in serious injury crashes. The number and percent of drivers in such crashes that involved alcohol are shown in the next two columns. The final column expresses the number of drivers involved in alcohol-related serious injury crashes in any row as a percent of all drivers involved in alcohol-related serious injury crashes.

As shown, by the totals at the bottom of the table, 18 drivers were involved in crashes in which someone was seriously injured, and among these 22.2% were alcohol-related crashes.

Table 14-1
Drivers* in Alcohol-Related Serious Injury Crashes:
Yukon, 2017

Category of Drivers	Total Number of Drivers	Alcohol-Related		
		Number	% of total	% of all drivers in alcohol-related crashes
Age				
20-45**	5	3	60.0	75.0
>45**	12	1	8.3	25.0
unknown	1	0	0.0	0.0
Sex				
Male	12	1	8.3	25.0
Female	6	3	50.0	75.0
Vehicle Type				
Auto	5	3	60.0	75.0
Truck/Van	10	1	10.0	25.0
Motorcycle	3	0	0.0	0.0
Collision Type				
Single-Vehicle	12	4	33.3	100.0
Multiple-Vehicle	6	0	0.0	0.0
TOTAL	18	4	22.2	100.0

* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.
** Drivers in several age groups have been aggregated to ensure that an individual will not be identified.

14.3.1 Driver age. Drivers aged 20-25, 26-35, and 36-45 have been regrouped (20-45) and drivers aged 46-55 and over 55 have been regrouped (>45) to ensure that individuals cannot be identified. Of all the drivers involved in alcohol-related serious injury crashes, 75.0% were aged 20-45 and 25.0% were over 45.

Within each of the age groups, 60.0% of the drivers aged 20-45 were involved in alcohol-related serious injury crashes. The lowest incidence of involvement in alcohol-related crashes was found for those over age 45 (8.3%).

14.3.2 Driver sex. Of all the drivers involved in alcohol-related serious injury crashes, 75.0% were

females. The incidence of involvement in alcohol-related serious injury crashes was greater for females (50.0%) than males (8.3%).

14.3.3 Type of vehicle driven. Of all the drivers involved in alcohol-related serious injury crashes, 75.0% were automobile drivers and 25.0% were truck/van drivers.

The highest incidence of involvement in alcohol-related serious injury crashes was found for automobile drivers – 60.0% of these drivers were in crashes that involved alcohol, compared to 10.0% for truck/van drivers and 0.0% for motorcyclists.

14.3.4 Type of collision. Of all the drivers involved in alcohol-related serious injury crashes, 100.0% of them were in single-vehicle crashes. The highest incidence of involvement in alcohol-related serious injury crashes was also found among drivers in multiple-vehicle crashes (33.3%), compared to 0.0% for drivers involved in single-vehicle crashes.

14.4 Drug use among fatally injured drivers

The Yukon had only one five fatally injured drivers of a highway vehicle in 2017. Two were tested for the presence of drugs. Due to the small number of cases, detailed analysis on alcohol/drug use is not available.

14.5 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

Sections 14.1 through 14.3 examined three indicators of the alcohol-crash problem: (1) the number and percent of people who died in crashes that involved alcohol; (2) the number and percent of fatally injured drivers who had been drinking; and (3) the number and percent of drivers in serious injury crashes that involved alcohol. Section 14.4 examined drug use among fatally injured drivers in 2017. This section examines changes in these four indicators over time.

14.5.1 Deaths involving drinking drivers: 1996-2017. Table 14-2 and Figure 14-1 show the number and percent of people who died in crashes involving a drinking driver from 1996 to 2017. These results differ slightly from those in Section 14.1. In this section, deaths that occur in crashes that involve a drinking pedestrian are not necessarily classified as alcohol-related deaths. The focus here is more restrictive, on deaths that occur in crashes involving at least one drinking driver (see Section 2.2.1 for types of vehicles that are included).

As shown in the figure, the number of deaths in crashes that involved a drinking driver generally increased from four to seven between 1996 and 1998, fell to zero in 2001, rose to six in 2002, decreased to zero in 2012, and eventually rose to four in 2017. The percentage of alcohol-related fatalities generally decreased from 1996 (66.7%) to 2001 (0.0%), peaked in 2010 (75.0%), decreased to 25.0% in 2013, and eventually rose in 2017 (66.7%).

It can be seen that during the 2011-2015 baseline period that there was an average of two fatalities involving a drinking driver and they accounted for 50.0% of all fatalities. This means that the percent of fatalities involving a drinking driver increased by 20.0% from 50.0% in the baseline period (2011-2015)

to 60.0% in the 2016-2017 period. In terms of the number of persons killed in crashes involving a drinking driver, there was a 50% increase from an average of two in the baseline period (2011-2015) to three in the 2016-2017 period.

Table 14-2

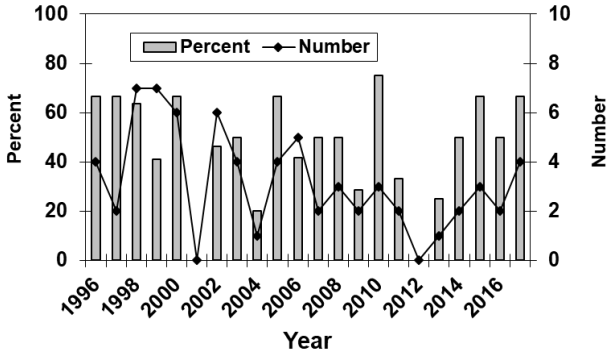
Number* and Percent of Motor Vehicle Deaths Involving a Drinking Driver: Yukon, 1996-2017**

Year of Death	Number of Deaths	Alcohol-Related Deaths	
		Number	% of total
1996	6	4	66.7
1997	3	2	66.7
1998	11	7	63.6
1999	17	7	41.2
2000	9	6	66.7
2001	4	0	0.0
2002	13	6	46.2
2003	8	4	50.0
2004	5	1	20.0
2005	6	4	66.7
2006	12	5	41.7
2007	4	2	50.0
2008	6	3	50.0
2009	7	2	28.6
2010	4	3	75.0
2011	6	2	33.3
2012	1	0	0.0
2013	4	1	25.0
2014	4	2	50.0
2015	4	3	75.0
2016	4	2	50.0
2017	6	4	66.7
2011-2015 baseline	4	2	50.0
2016-2017 period	5	3	60.0

* numbers are estimates based on the percent of deaths for which information was available to determine alcohol use.

** persons dying within 30 days of collisions which occur on public roadways involving at least one principal vehicle type.

Figure 14-1
Number and Percent of Deaths Involving a Drinking Driver: Yukon, 1996-2017



14.5.2 Alcohol use among fatally injured drivers. Due to the small number of cases – e.g., five fatally injured drivers in 2017 – any trends would be unreliable, and therefore, are not presented in tables and figures.

14.5.3 Drivers in serious injury crashes. Table 14-3 and Figure 14-2 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes. Between 1998 (40.0%) and 2003 (24.1%) the percentage of all drivers in injury crashes that involved alcohol fluctuated, eventually decreased to a low in 2016 (11.1%), and rose again in 2017 (22.2%).

As shown in Table 14-3, in the baseline period (2011-2015), an average of 25.0% of drivers in injury crashes were in an alcohol-involved crash. In the 2016-2017 period, the incidence of drivers in alcohol-involved crashes was 17.4%, representing a 30.4% decrease.

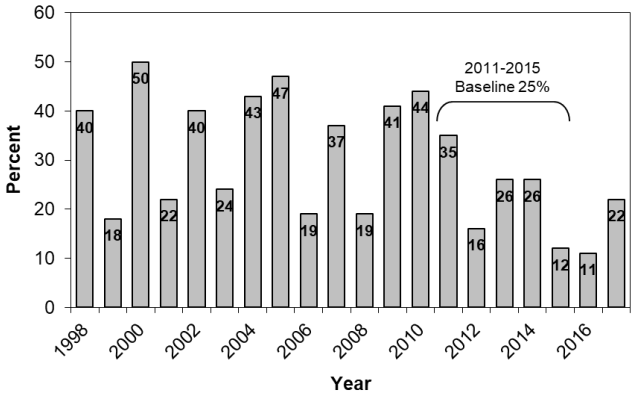
Table 14-3

Number and Percent of Drivers of Highway Vehicles in Serious Injury Crashes* that Involved Alcohol: Yukon, 1998-2017

Year	Total Number of Drivers	Number in Alcohol-Involved Crashes	Percent
1998	35	14	(40.0)
1999	57	10	(17.5)
2000	34	17	(50.0)
2001	36	8	(22.2)
2002	43	17	(39.5)
2003	29	7	(24.1)
2004	21	9	(42.9)
2005	36	17	(47.2)
2006	27	5	(18.5)
2007	27	10	(37.0)
2008	27	5	(18.5)
2009	27	11	(40.7)
2010	25	11	(44.0)
2011	26	9	(34.6)
2012	19	3	(15.8)
2013	23	6	(26.1)
2014	27	7	(25.9)
2015	26	3	(11.5)
2016	27	3	(11.1)
2017	18	4	(22.2)
2011-2015 baseline	24	6	(25.0)
2016-2017 period	23	4	17.4

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

Figure 14-2
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: Yukon, 1998-2017



14.5.4 Drug use among fatally injured drivers. Due to the small number of cases – e.g., five fatally injured drivers in 2017 – any trends would be unreliable, and therefore, are not presented in tables and figures.

15.0 NORTHWEST TERRITORIES

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in the Northwest Territories during 2017. It describes data on:

- people who were killed in alcohol-related crashes (Section 15.1);
- alcohol use among fatally injured drivers (Section 15.2);
- drivers involved in alcohol-related serious injury crashes (Section 15.3);
- drug use among fatally injured drivers (Section 15.4); and,
- trends in the alcohol-crash and drug-crash problems (Section 15.5).

Detailed results are not provided in Sections 15.1, 15.2, 15.3 and 15.4 because the small number of deaths – only three – and drivers fatally injured – two – makes the results unreliable.

15.1 Deaths in alcohol-related crashes

This section specifically reports upon persons who died within 30 days of a motor vehicle collision which occurred on a public road that involved at least one highway vehicle. A motor vehicle fatality was considered to be alcohol involved if there was at least one drinking driver or drinking pedestrian in the fatal crash.

During 2017, three persons died in motor vehicle crashes in the Northwest Territories. And, in all three of these cases (100.0%), it was possible to determine if alcohol was a factor in the crash. Of these cases, two (66.7%) involved alcohol.

15.2 Alcohol use among fatally injured drivers

The Northwest Territories had two fatally injured drivers in 2017. Due to the small number of cases, detailed analysis on alcohol/drug use is not available.

15.3 Drivers involved in alcohol-related serious injury crashes

This section presents information on drivers of highway vehicles involved in alcohol-related crashes in which someone was seriously injured in 2017 in the Northwest Territories. A “surrogate” or “indirect” measure is used to estimate alcohol involvement because drivers in serious injury crashes are seldom tested for alcohol. A driver is identified as having been involved in an alcohol-related serious injury crash if the crash in which someone was seriously injured involved a single vehicle at night (SVN), or if, in the case of a non-SVN serious injury crash, the police reported alcohol involvement – i.e., at least one drinking driver in the crash (see Section 2.2.4).

Five drivers were involved in crashes in which someone was seriously injured, and among these one (20.0%) were involved in an alcohol-related crash.

15.4 Drug use among fatally injured drivers

The Northwest Territories had two fatally injured drivers in 2017. Due to the small number of cases, detailed analysis on alcohol/drug use is not available.

15.5 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

Sections 15.1 through 15.3 examined three indicators of the alcohol-crash problem: (1) the number and percent of people who died in crashes that involved alcohol; (2) the number and percent of fatally injured drivers who had been drinking; and (3) the number and percent of drivers in serious injury crashes that involved alcohol. Section 15.4 examined drug use among fatally injured drivers in 2017. This section examines changes in these four indicators over time.

15.5.1 Deaths involving drinking drivers: 1996-2017. Due to the small number of fatalities in crashes on public roadways involving highway vehicles (e.g., three in 2017) any trends would be unreliable, and therefore are not reported.

15.5.2 Alcohol use among fatally injured drivers. Due to the small number of cases – e.g., two fatally injured drivers in 2017 – any trends would be unreliable, and therefore are not reported.

15.5.3 Drivers in serious injury crashes. Table 15-1 and Figure 15-1 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes. Between 1996 and 2000 the percentage of all drivers in serious injury crashes that involved alcohol generally increased from 25.0% to its highest level (66.7%), decreased to 0.0% in 2011 and 2012, rose in 2013 (37.5%), decreased in 2014 (0.0%), rose in 2016 (62.5%), and decreased in 2017 (20.0%).

In the baseline period (2011-2015), an average of 25.0% of highway vehicle drivers in serious injury crashes were in an alcohol-involved crash. In the 2016-2017 period, the average percentage of drivers in alcohol-involved crashes rose to 42.9%, a 71.6% increase from the baseline period.

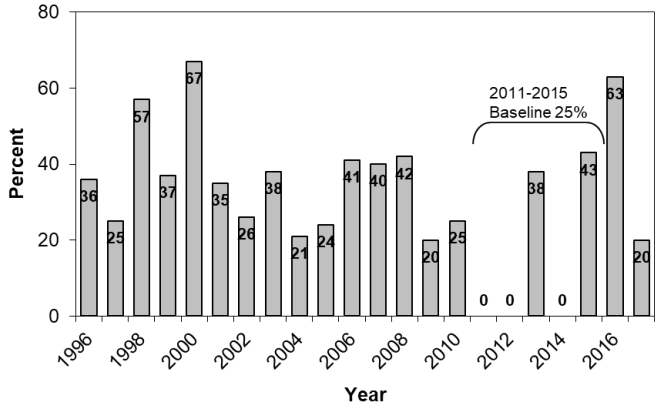
Table 15-1

Number and Percent of Drivers of Highway Vehicles in Serious Injury Crashes* that Involved Alcohol: Northwest Territories, 1996-2017

Year	Number of Drivers	Number in Alcohol-Involved Crashes	Percent
1996	14	5	(35.7)
1997	12	3	(25.0)
1998	14	8	(57.1)
1999	19	7	(36.8)
2000	6	4	(66.7)
2001	20	7	(35.0)
2002	19	5	(26.3)
2003	16	6	(37.5)
2004	14	3	(21.4)
2005	21	5	(23.8)
2006	17	7	(41.2)
2007	10	4	(40.0)
2008	12	5	(41.7)
2009	10	2	(20.0)
2010	12	3	(25.0)
2011	3	0	(0.0)
2012	8	0	(0.0)
2013	16	6	(37.5)
2014	7	0	(0.0)
2015	7	3	(42.9)
2016	8	5	(62.5)
2017	5	1	(20.0)
2011-2015 baseline	8	2	(25.0)
2016-2017 period	7	3	42.9

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

Figure 15-1
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: Northwest Territories, 1996-2017



15.5.4 Drug use among fatally injured drivers. Due to the small number of cases – e.g., two fatally injured drivers in 2017 – any trends would be unreliable, and therefore are not reported.

16.0 NUNAVUT

This section of the report reviews the major findings on alcohol involvement in fatal and serious injury motor vehicle collisions as well as drug involvement in fatal motor vehicle collisions in Nunavut during 2017. It describes data on:

- people who were killed in alcohol-related crashes (Section 16.1);
- alcohol use among fatally injured drivers (Section 16.2);
- drivers involved in alcohol-related serious injury crashes (Section 16.3);
- drug use among fatally injured drivers (Section 16.4); and,
- trends in the alcohol-crash and drug-crash problems (Section 16.5).

Detailed results are not provided in Sections 16.1, 16.2 and 16.4 because the small number of deaths and drivers fatally injured – none – makes the results unreliable.

16.1 Deaths in alcohol-related crashes

At the time this report was being prepared, neither collision nor coroner data from 2017 for Nunavut were available. For this reason, 2016 data will be reported in this section. A motor vehicle fatality was considered to be alcohol involved if there was at least one drinking driver or drinking pedestrian in the fatal crash. During 2016, there were no fatally injured victims of motor vehicle collisions which occurred on public roadways.

16.2 Alcohol in fatally injured drivers

Nunavut had no fatally injured drivers of highway vehicles in 2016.

16.3 Drivers involved in alcohol-related serious injury crashes

Nunavut had four drivers of highway vehicles involved in a serious injury crash in 2016. None of these drivers were involved in an alcohol-related crash.

16.4 Drug use among fatally injured drivers

Nunavut had no fatally injured drivers of highway vehicles in 2016.

16.5 Trends in alcohol and drug use among drivers involved in fatal and serious injury crashes

Sections 16.1 through 16.3 examined three indicators of the alcohol-crash problem: (1) the number and percent of people who died in crashes that involved alcohol; (2) the number and percent of fatally injured drivers who had been drinking; and (3) the number and percent of drivers in serious injury crashes that involved alcohol. Section 16.4 examined drug use among fatally injured drivers in 2016. This

section examines changes in these four indicators over time.

16.5.1 Deaths involving drinking drivers: 1996-2017. Due to the small number of crashes on public roadways involving highway vehicles (e.g., no deaths in 2016) any trends would be unreliable, and therefore are not reported.

16.5.2 Alcohol use among fatally injured drivers. Due to the small number of cases – e.g., no fatally injured drivers in 2016 – any trends would be unreliable, and therefore are not reported.

16.5.3 Drivers in serious injury crashes. Table 16-1 and Figure 16-1 show information on drivers of highway vehicles involved in alcohol-related serious injury crashes. Between 1996 and 1997 the percentage of all drivers in serious injury crashes that involved alcohol decreased from 50.0% to 0.0%. Since then, the incidence peaked at 75.0% in 1998, generally decreased to 0.0% in 2005, rose to 33.3% in 2006 and 2007, and dropped again to 0.0% from 2008 to 2010. Serious injury collision data were not available in 2011. In 2012 and 2013, none of the drivers involved in serious injury collisions were in an alcohol-related crash. In 2014, there were no drivers of highway vehicles involved in serious injury crashes. In 2015, the lone driver of a highway vehicle was involved in an alcohol-related serious injury crash. And in 2016, 0.0% of drivers were involved in an alcohol-related serious injury crash.

As shown in Table 16-1, in the baseline period (2011-2015), an average of 0.0% of drivers in serious injury crashes were in an alcohol-involved crash. In 2016, the percentage of drivers in alcohol-related serious injury collisions was 0.0%.

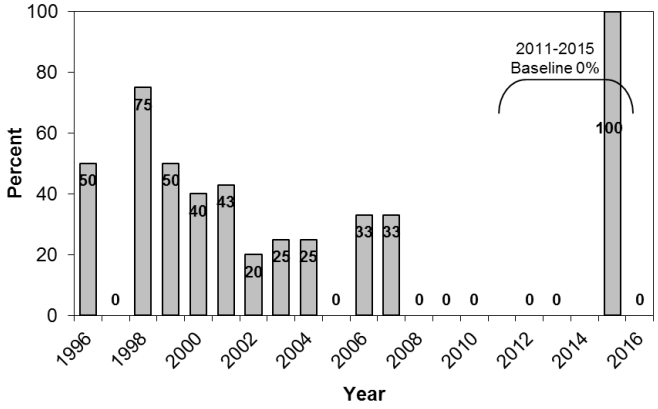
Table 16-1

Number and Percent of Drivers of Highway Vehicles in Serious Injury Crashes* that Involved Alcohol: Nunavut, 1996-2016

Year	Number of Drivers	Number in Alcohol-Involved Crashes	Percent
1996	2	1	(50.0)
1997	2	0	(0.0)
1998	4	3	(75.0)
1999	2	1	(50.0)
2000	5	2	(40.0)
2001	7	3	(42.9)
2002	5	1	(20.0)
2003	4	1	(25.0)
2004	4	1	(25.0)
2005	6	0	(0.0)
2006	9	3	(33.3)
2007	3	1	(33.3)
2008	2	0	(0.0)
2009	4	0	(0.0)
2010	1	0	(0.0)
2011			
2012	1	0	(0.0)
2013	2	0	(0.0)
2014	0	0	(0.0)
2015	1	1	(100.0)
2016	4	0	
2011-2015 baseline	1	0	(0.0)

* single-vehicle nighttime crashes (SVN) as well as non-SVN crashes that have police-reported alcohol involvement

Figure 16-1
Percent of Drivers of Highway Vehicles in Serious Injury Crashes that Involved Alcohol: Nunavut, 1996-2016



16.5.4 Drug use among fatally injured drivers. Due to the small number of cases – e.g., no fatally injured drivers in 2016 – any trends would be unreliable, and therefore are not reported.

17.0 REFERENCES

Blomberg, R.D.; Peck, R.C.; Moskowitz, H.; Burns, M; and Fiorentino, D. 2009. **The Long Beach/Fort Lauderdale relative risk study**, Journal of Safety Research 40(4): 285-292.

Brown, S.W.; Vanlaar, W.G.M.; and Mayhew, D.R. 2013. **The Alcohol-Crash Problem in Canada: 2010.** Ottawa, Ontario: Canadian Council of Motor Transport Administrators; and Transport Canada, Road Safety and Motor Vehicle Regulation.

Brown, S.W.; Vanlaar, W.G.M.; and Robertson, R.D. 2015. **The Alcohol and Drug-Crash Problems in Canada: 2011.** Ottawa, Ontario: Canadian Council of Motor Transport Administrators.

Brown, S.W.; Vanlaar, W.G.M.; and Robertson, R.D. 2015. **The Alcohol and Drug-Crash Problems in Canada: 2012.** Ottawa, Ontario: Canadian Council of Motor Transport Administrators.

Brown, S.W.; Vanlaar, W.G.M.; and Robertson, R.D. 2017. **The Alcohol and Drug-Crash Problems in Canada: 2013.** Ottawa, Ontario: Canadian Council of Motor Transport Administrators.

Brown, S.W.; Vanlaar, W.G.M.; and Robertson, R.D. 2018. **The Alcohol and Drug-Crash Problems in Canada: 2014.** Ottawa, Ontario: Canadian Council of Motor Transport Administrators.

Brown, S.W.; Vanlaar, W.G.M.; and Robertson, R.D. 2020. **The Alcohol and Drug-Crash Problems in Canada: 2015.** Ottawa, Ontario: Canadian Council of Motor Transport Administrators.

Brown, S.W.; Vanlaar, W.G.M.; and Robertson, R.D. 2020. **The Alcohol and Drug-Crash Problems in Canada: 2016.** Ottawa, Ontario: Canadian Council of Motor Transport Administrators.

Jonah, B. 2012. **Drugs and Driving Framework**. Ottawa, Ontario: Canadian Council of Motor Transport Administrators.

Mayhew, D.R.; Beirness, D.J.; and Simpson, H.M. 1997. **Indicators of the Alcohol-Crash Problem**. Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Mayhew, D.R.; Brown, S.W.; and Simpson, H.M. 1999. **Alcohol Use Among Drivers and Pedestrians Fatally Injured in Motor Vehicle Accidents**. Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Mayhew, D.R.; Brown, S.W.; and Simpson, H.M. 2000. **The Alcohol-Crash Problem in Canada**: **1998.** Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Mayhew, D.R.; Brown, S.W.; and Simpson, H.M. 2001. **The Alcohol-Crash Problem in Canada**: **1999.** Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Mayhew, D.R.; Brown, S.W.; and Simpson, H.M. 2002. **The Alcohol-Crash Problem in Canada**: **2000.** Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Mayhew, D.R.; Brown, S.W.; and Simpson, H.M. 2003. **The Alcohol-Crash Problem in Canada**: **2001.** Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Mayhew, D.R.; Brown, S.W.; and Simpson, H.M. 2004. **The Alcohol-Crash Problem in Canada**: **2002.** Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Mayhew, D.R.; Brown, S.W.; and Simpson, H.M. 2005. **The Alcohol-Crash Problem in Canada**: **2003.** Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Mayhew, D.R.; Brown, S.W.; and Simpson, H.M. 2006. **The Alcohol-Crash Problem in Canada**: **2004.** Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Mayhew, D.R.; Brown, S.W.; and Simpson, H.M. 2007. **The Alcohol-Crash Problem in Canada**: **2005.** Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Mayhew, D.R.; Brown, S.W.; and Simpson, H.M. 2009. **The Alcohol-Crash Problem in Canada**: **2006.** Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Mayhew, D.R.; Brown, S.W.; and Simpson, H.M. 2010. **The Alcohol-Crash Problem in Canada**: **2007.** Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Mayhew, D.R.; Brown, S.W.; and Simpson, H.M. 2010. **The Alcohol-Crash Problem in Canada**: **2008.** Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Mayhew, D.R.; Brown, S.W.; and Simpson, H.M. 2011. **The Alcohol-Crash Problem in Canada**: **2009.** Ottawa, Ontario: Transport Canada, Road Safety and Motor Vehicle Regulation.

Moskowitz, H.; Burns, M.; Fiorentino, D.; Smiley, A.; and Zador, P. 2000. **Driver characteristics and impairment at various BACs**. Southern California Research Institute. 223. Available from the World Wide Web at: http://ntl.bts.gov/lib/9000/9500/9512/impairment.pdf

Traffic Injury Research Foundation. 2020. **Drug Impaired Driving Learning Centre**. https://druggeddriving.tirf.ca/

Traffic Injury Research Foundation of Canada. 1975. **Analysis of Fatal Traffic Crashes in Canada**, **1973. Focus: The Impaired Driver**. Ottawa, Ontario: Traffic Injury Research Foundation.

Zador, P.; Krawchuk, S.; and Voas, R. 2000. Alcohol-related relative risk of driver fatalities and driver involvement in fatal crashes in relation to driver age and gender: an update using 1996 data. **Journal of Studies on Alcohol** 61: 387-395.