Drug Use in Fatal Collisions | 2000 - 2020

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TRAFFIC INJURY RESEARCH FOUNDATION

Key Findings

- According to the **Traffic Injury Research Foundation's (TIRF) National Fatality Database**, the number of fatalities where at least one of the drivers involved was positive for drugs (including cannabis, illicit drugs, prescription drugs, and over-the-counter drugs) increased from 230 in 2000 to 474 in 2020. In addition, during this same period, the percentage of all traffic fatalities that were drug-related increased from 10.7% to 37.1%. Since 2013, there has been a higher percentage of drug-related crashes than those involving alcohol, distraction, or other factors.
- Among drivers who were fatally injured between 2016 and 2020:
  - males (52.9%) were slightly more likely to test positive for drugs than females (49.8%);
  - almost three in five drivers (58.1%) aged 20-34 tested positive for drugs as opposed to 46.5% of drivers aged 65 and older;
  - prior to the legalization of the recreational use of cannabis, 24.0% tested positive for this particular drug while 28.1% tested positive in the period following legalization.
- A larger percentage of drug-related fatal crashes occurred:
  - during night-time hours (6 pm to 5:59 am) as opposed to the rest of the day;
  - in vehicles with one occupant as opposed to multiple occupants.

Introduction

In recent years, a greater percentage of fatally injured drivers tested positive for drugs other than alcohol in Canada. While some of this growth may be due to improvements in data collection, dealing with drugged driving has become more of a priority in road safety planning (Brown et al. 2022). Different drugs may adversely affect one's driving in distinct ways. For example, a driver under the influence of central nervous system stimulants may exhibit more aggressive and risky behaviour behind the wheel (MacDonald et al. 2008) while cannabis use may compromise a driver's ability to stay within one's lane and adversely affect reaction time (Hart et al. 2001). In addition, the presence of both cannabis and alcohol in drivers is generally considered to be more detrimental to one's driving performance than either substance on its own (Simmons et al. 2022).

This fact sheet, sponsored by Desjardins, examines the magnitude and trends regarding the role of drugs in motor vehicle fatalities in Canada from 2000 to 2020. Data from **TIRF's National Fatality Database** were used to prepare this fact sheet which explores trends in the role of drug use among fatally injured victims as well as fatally injured drug-positive drivers. Other topics examined include characteristics of drug-related crashes resulting in fatalities such as time of day, time of week, and the number of vehicle occupants. At the time of publication, coroner data from British Columbia for 2020 were not yet available. Data for Canada exclude this jurisdiction.

A fatality is defined as drug-related if at least one driver in the crash (either dying or surviving) was considered to be positive for drugs (including cannabis, illicit drugs, prescription drugs, and over-the-counter drugs). This is based, in order of importance, upon toxicological data from the coroner or medical examiner, police-reported collision data, and coroner/medical examiner narrative information.

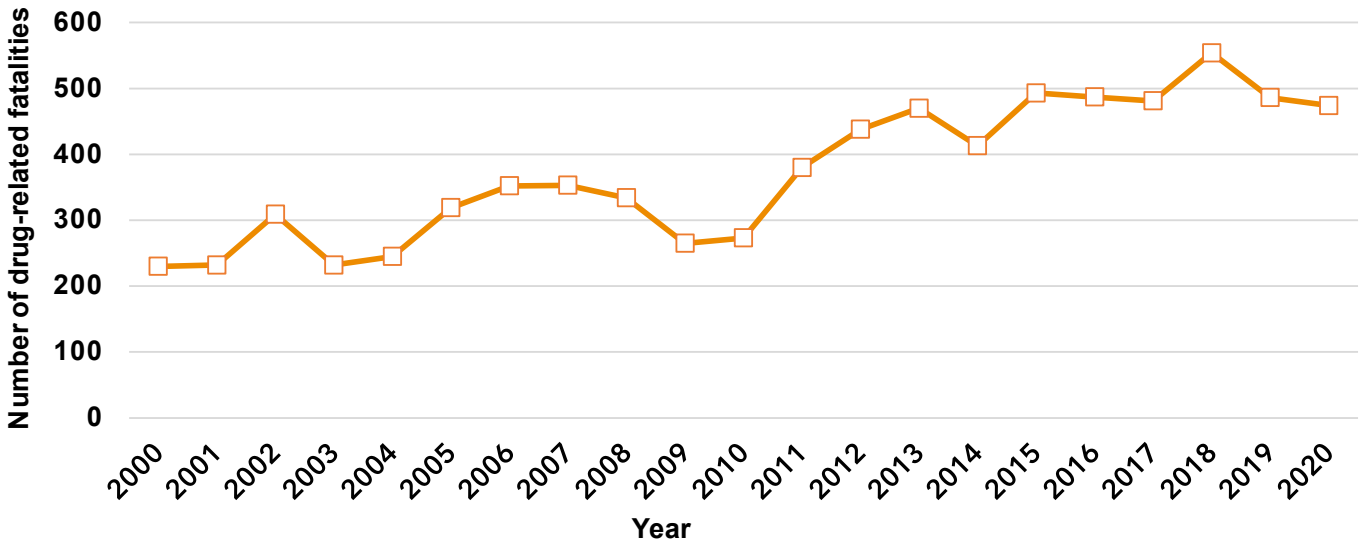
In this fact sheet, TIRF's reporting on the role of driver drug use refers to its presence and does not necessarily mean that drugs were the primary or sole cause of the collision.

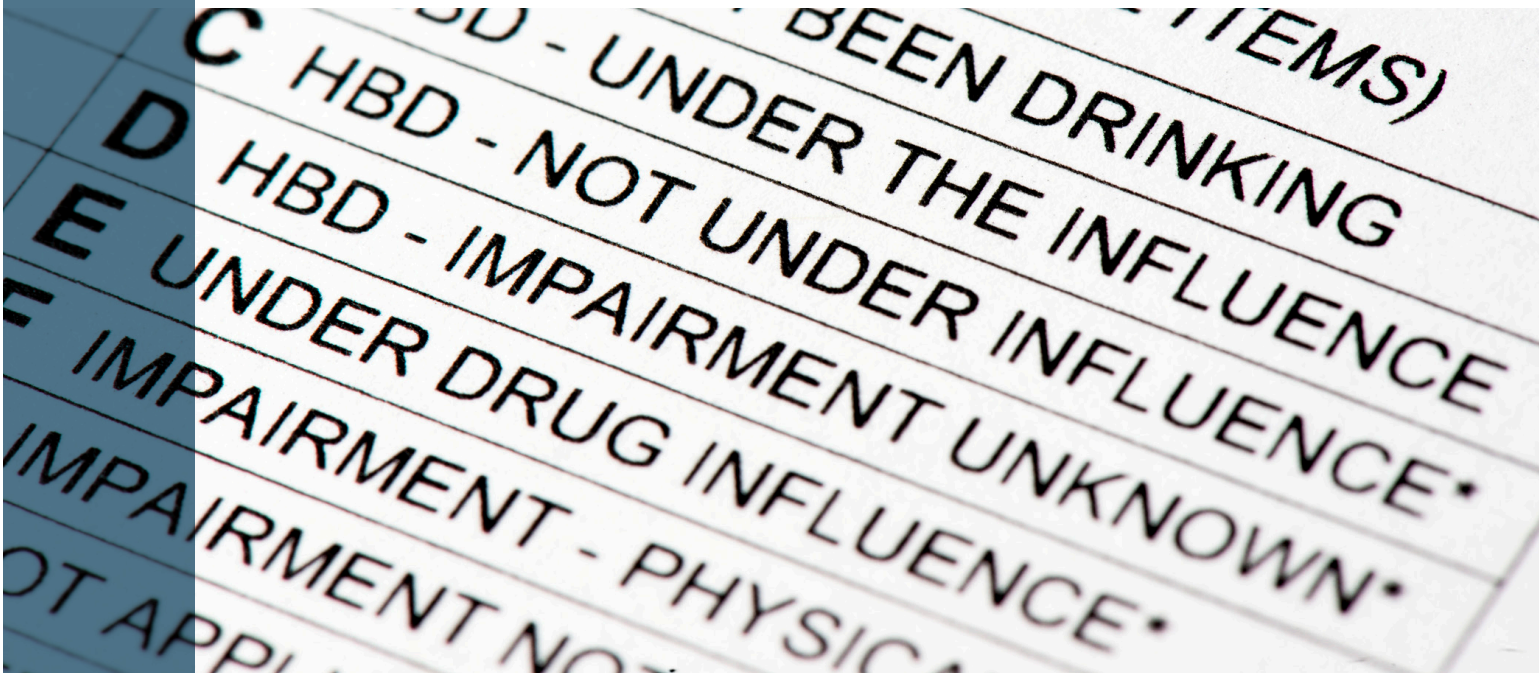
Prevalence of drug-related fatalities

This section deals with the prevalence of drug-related fatalities in Canada over a 21-year period (2000-2020). It should be noted that from 2000 to 2010, only 49.0% of fatally injured drivers were tested for drugs. From 2011 to 2020, 81.1% were tested for the presence of drugs.

The number of drug-related fatalities in Canada between 2000 and 2020 is shown in Figure 1. During this 21-year period, the number of drug-related fatalities generally increased from 230 in 2000 to a high of 554 in 2018 before decreasing to 474 in 2020.

Figure 1 | Drug-related road fatalities: Canada, 2000 - 2020



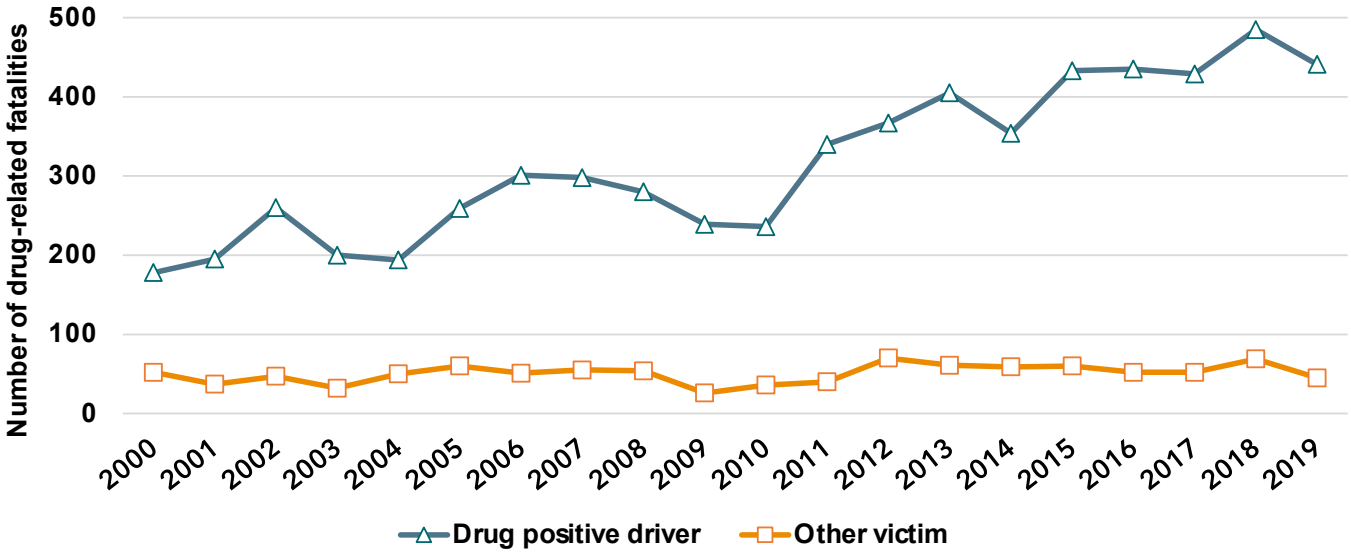


Drug-related fatalities from 2000 to 2020 were re-grouped into three categories. These include cases in which:

- The person killed was the driver who was positive for drugs ("drug-positive driver");
- The person killed was not the driver who was positive for drugs ("other victim"). This includes drivers who collided with a vehicle driven by a drug-positive driver, passengers who died in a crash where at least one of the drivers was drug-positive, or pedestrians who were struck by a drug-positive driver; or,
- It cannot be determined which driver was positive for drugs nor which person in the vehicle was the driver ("not stated").

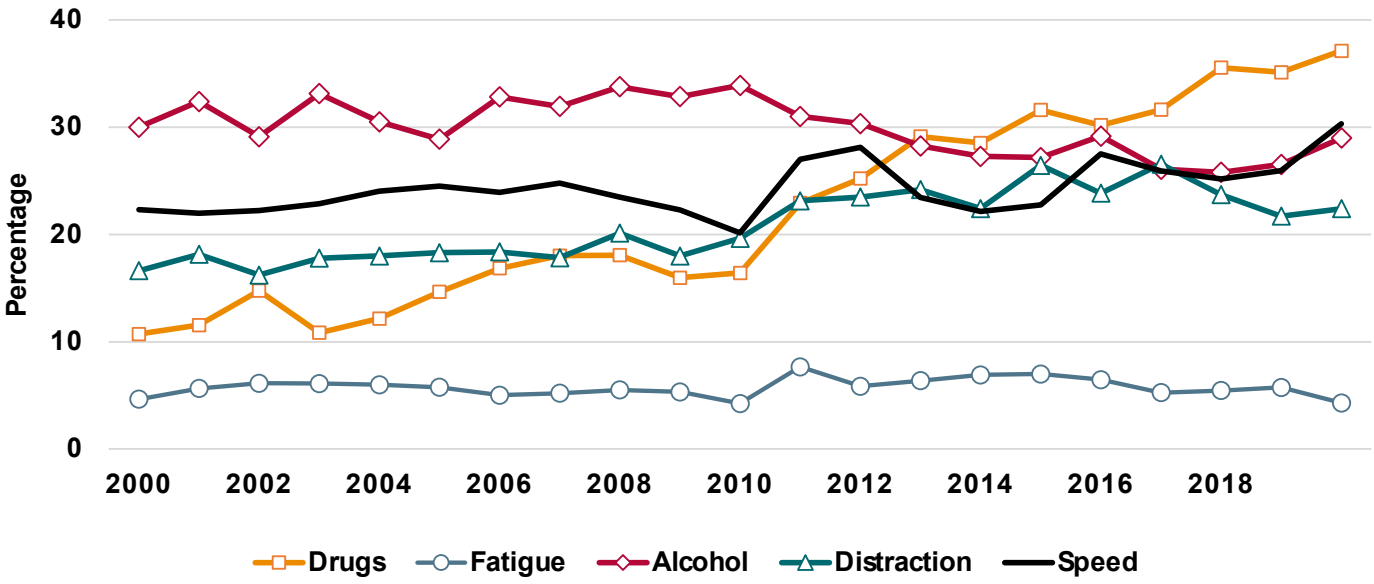
Figure 2 shows most drug-related road fatalities were fatally injured drivers who were positive for drugs. The number of fatalities in which the fatally injured driver was positive for drugs increased from 178 in 2000 to a high of 485 in 2018 before falling to 414 in 2020. Meanwhile, 52 drug-related fatalities in 2000 were due to the other – surviving – driver, peaking at 70 in 2012, before decreasing to 59 in 2020. Since there were only 10 drug-related fatalities in the "not stated" category, this group of victims is not included in the figure.

Figure 2 | Number of drug-related fatalities by category: Canada, 2000 - 2020



In Figure 3, trends in drug-related road fatalities are compared with other notable contributing collision factors – alcohol, distraction, speed and fatigue. The percentage of fatalities that were drug-related rose dramatically from 10.7% in 2000 to 37.1% in 2020. Since 2013, a larger percentage of drug-related fatalities have occurred than those due to other contributing factors. During this 21-year period, there was also noticeable, albeit more modest, increases in distraction-related fatalities from 16.6% in 2000 to 22.4% in 2020 and speed-related fatalities (22.3% to 30.3%). By comparison, fatigue-related fatalities remained steady between 2000 (4.6%) and 2020 (4.3%). Alcohol-related fatalities were the most prevalent during much of this period; in more recent years it was surpassed by drug-related fatalities. However, the percentage of alcohol-related fatalities was relatively stable during this 21-year period (30.0% in 2000 compared to 29.0% in 2020).

Figure 3 | Percentage of total road fatalities that were related to drug use, alcohol use, fatigue, speed, and distraction: Canada, 2000 - 2020



Characteristics of fatally injured drivers who were positive for drugs

This section examines the demographic characteristics of fatally injured drivers to gauge any variation in terms of drug use based on driver sex, age group, and vehicle type over a five-year period (2016-2020). In addition, the percentage of drivers testing positive for cannabis is examined separately during this period.

Figure 4 shows 52.9% of fatally injured male drivers tested positive for drugs compared to 49.8% of fatally injured female drivers.

The age of fatally injured drivers has been re-categorized into the following age groups (16-19, 20-34, 35-49, 50-64, and 65+ years). The percentage of fatally injured drivers in each age group who tested positive for drugs is shown in Figure 5. Drivers aged 20-34 (58.1%) were the most likely to test positive for drugs. Conversely, 46.5% of fatally injured drivers aged 65 and older tested positive for drugs. It should be noted that fatally injured drivers in this age group were more likely to test positive for central nervous system (CNS) depressants while younger drivers were more likely to test positive for cannabis (Brown et al. 2020).

Figure 4 | Percentage of fatally injured drug-positive drivers by sex: Canada, 2016 - 2020

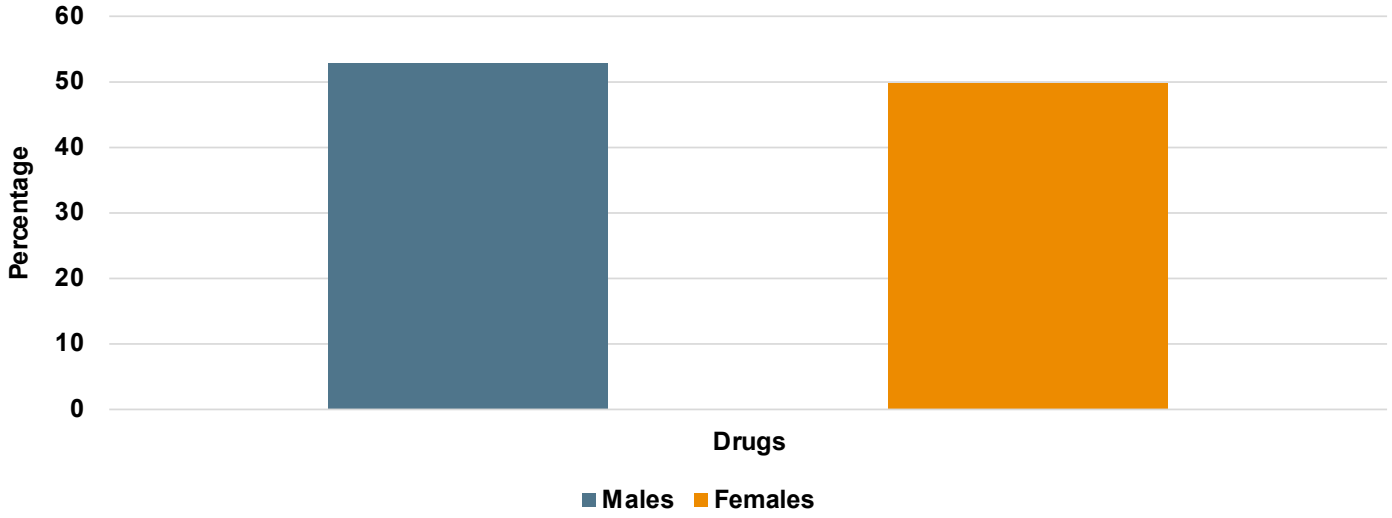
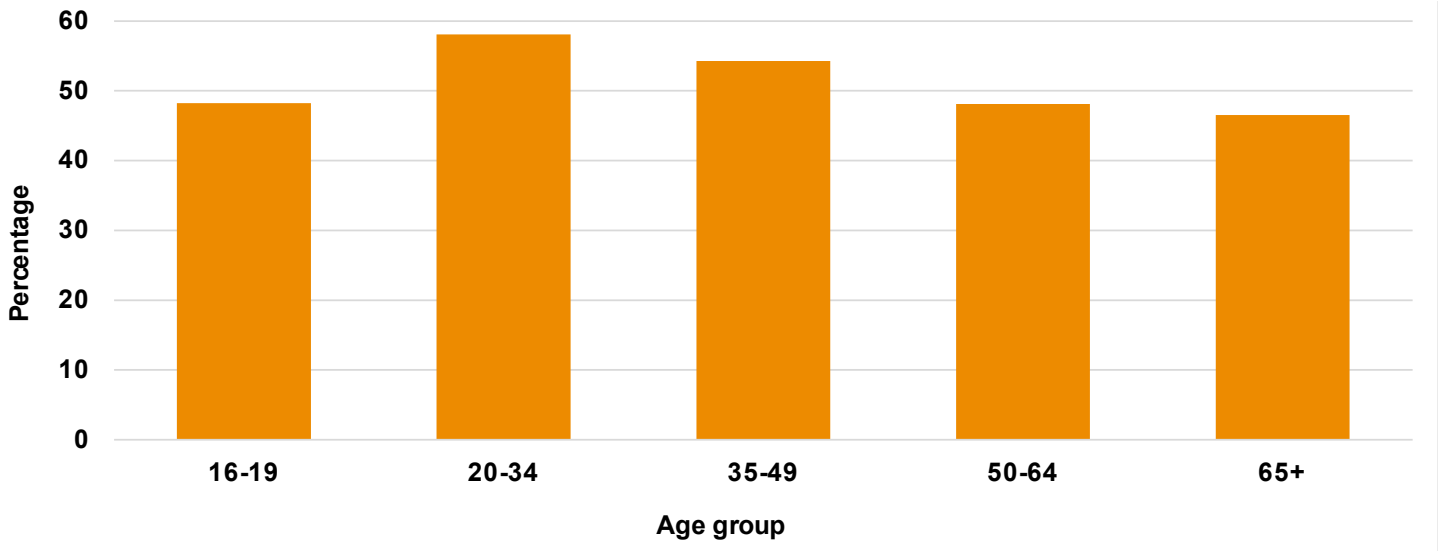


Figure 5 | Percentage of fatally injured drivers who were positive for drugs by age group: Canada, 2016 - 2020



The prevalence of drug use among fatally injured drivers of different vehicle types is shown in Figure 6. Fatally injured drivers of automobiles (53.4%) and trucks/vans (52.9%) were the most likely to test positive for drugs compared to 50.3% of motorcyclists and only 39.8% of tractor-trailer drivers.

On October 16, 2018, the recreational use of cannabis was legalized by the Government of Canada. Differences in the percentage of fatally injured drivers who tested positive for cannabis in a pre-legalization period (January 1, 2016 to October 15, 2018) and legalization period (October 16, 2018 until the end of 2020) are shown in Figure 7. The percentage of fatally injured drivers who tested positive for cannabis rose from 23.4% in 2016 to 30.1% in 2020. There was also an increase (from 24.0% to 28.1%) in the percentage of drivers who tested positive in the pre-legalization period compared to the legalization period.

Figure 6 | Percentage of fatally injured drivers who were positive for drugs by vehicle type: Canada, 2016 - 2020

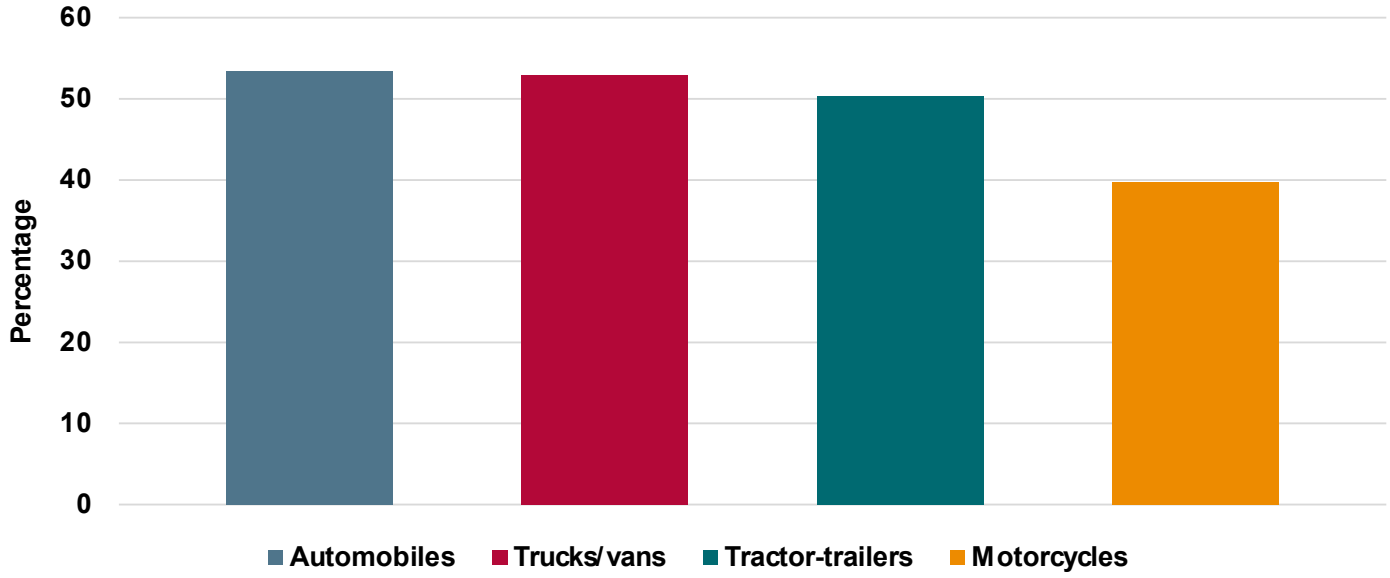
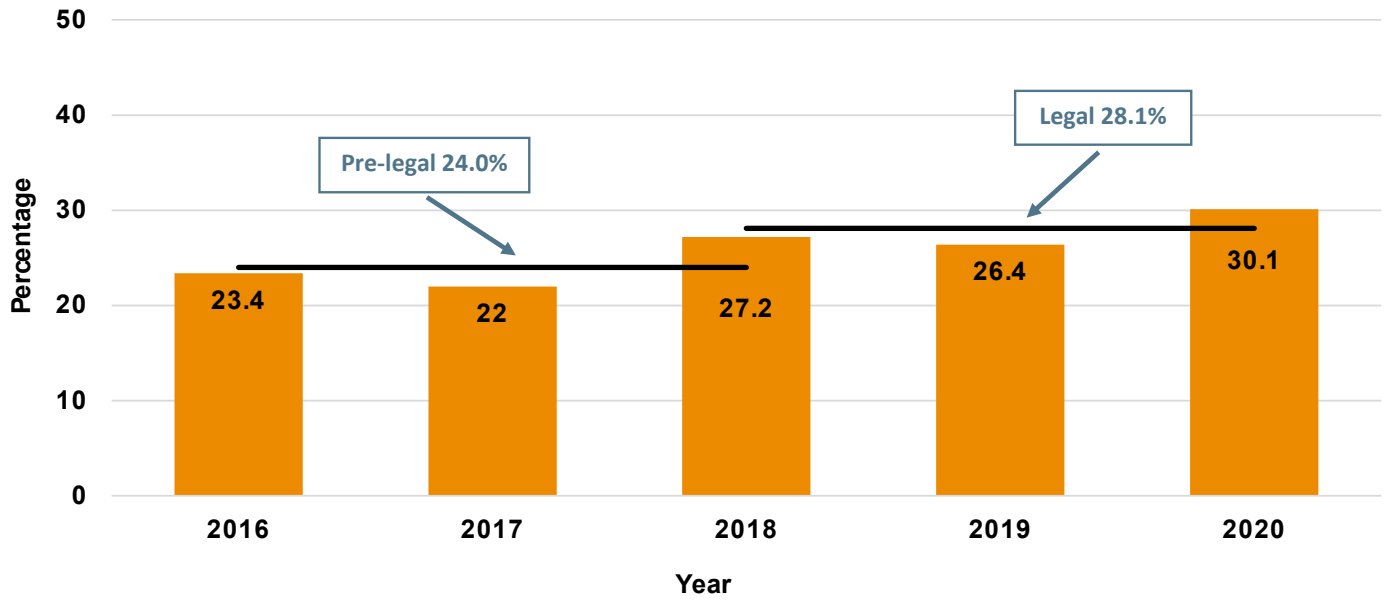


Figure 7 | Percent of fatally injured drivers testing positive for cannabis in a pre-legalization and legalization period: Canada, 2016 - 2020



Using the same pre-legalization and legalization periods for cannabis use among fatally injured drivers, a comparison can be made in the percentage of fatally injured drivers who tested positive for cannabis among drivers in different age groups. Figure 8 shows the percentage of 16-19-year-old fatally injured drivers testing positive dropped from 40.1% in the pre-legal period to 34.4 in the legal period. However, among other age groups, the percentage of fatally injured drivers testing positive rose from the pre-legal period to the legal period, particularly among 20-34-year-old drivers (35.9% to 44.4%) and drivers aged 65 and older (4.6% to 10.4%).

Although there was no new legislation governing the legality of the use of alcohol or other drugs, a comparison is made in the percentage of fatally injured drivers testing positive for cannabis, alcohol, CNS depressants, narcotic analgesics, and CNS stimulants from 2016-2020. Figure 9 presents the percentage of fatally injured drivers who tested positive for these substances in the pre-legal and legal periods. As mentioned earlier, the percentage of fatally injured drivers testing positive for cannabis rose from 24.0% in the pre-legalization period to 28.1% in the legalization period. Similarly, there was an increase in the percentage of fatally injured drivers testing positive for CNS stimulants (from 15.8%

Figure 8 | Percent of fatally injured drivers in different age groups testing positive for cannabis in the pre-legalization and legalization periods: Canada, 2016 - 2020

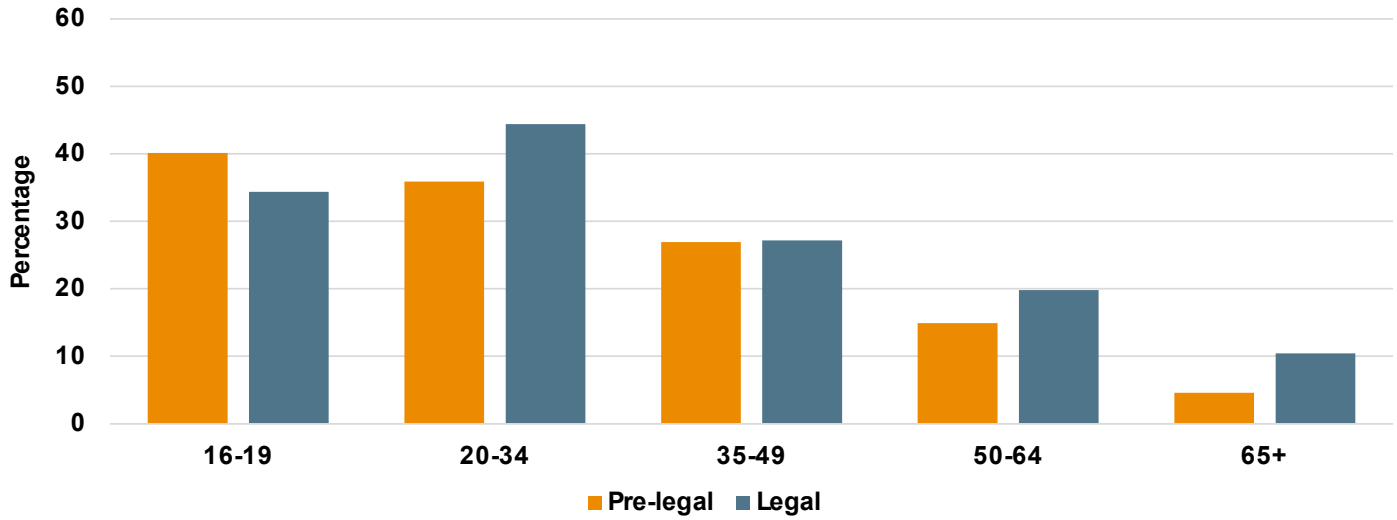
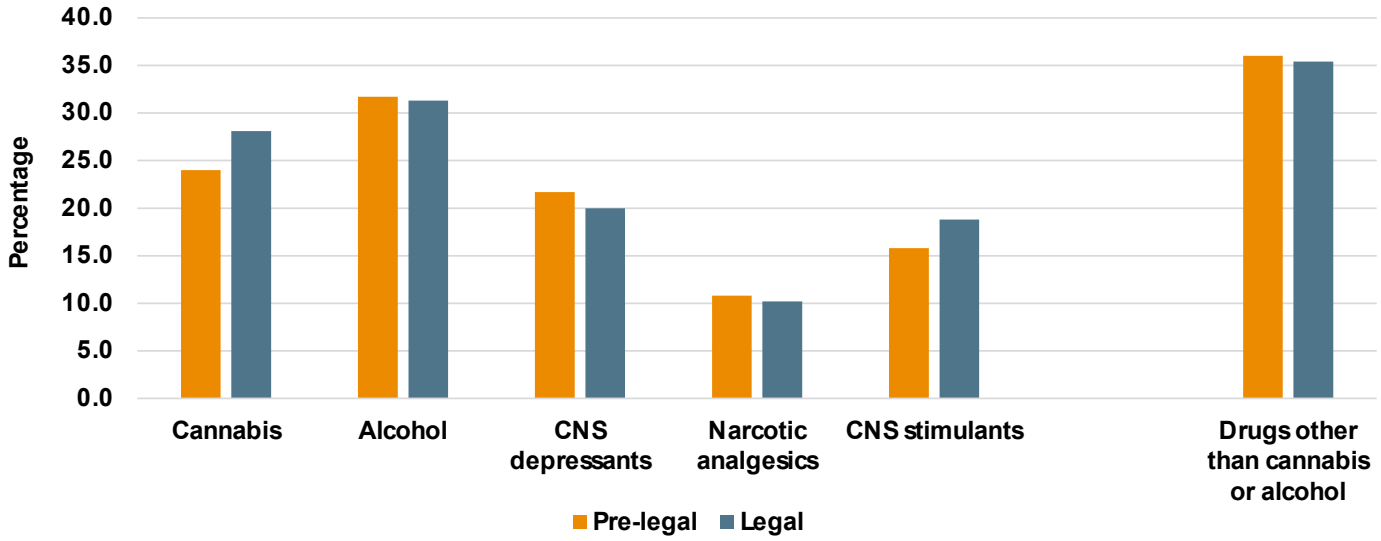


Figure 9 | Percent of fatally injured drivers testing positive for cannabis and other drugs in the pre-legalization and legalization periods: Canada, 2016 - 2020



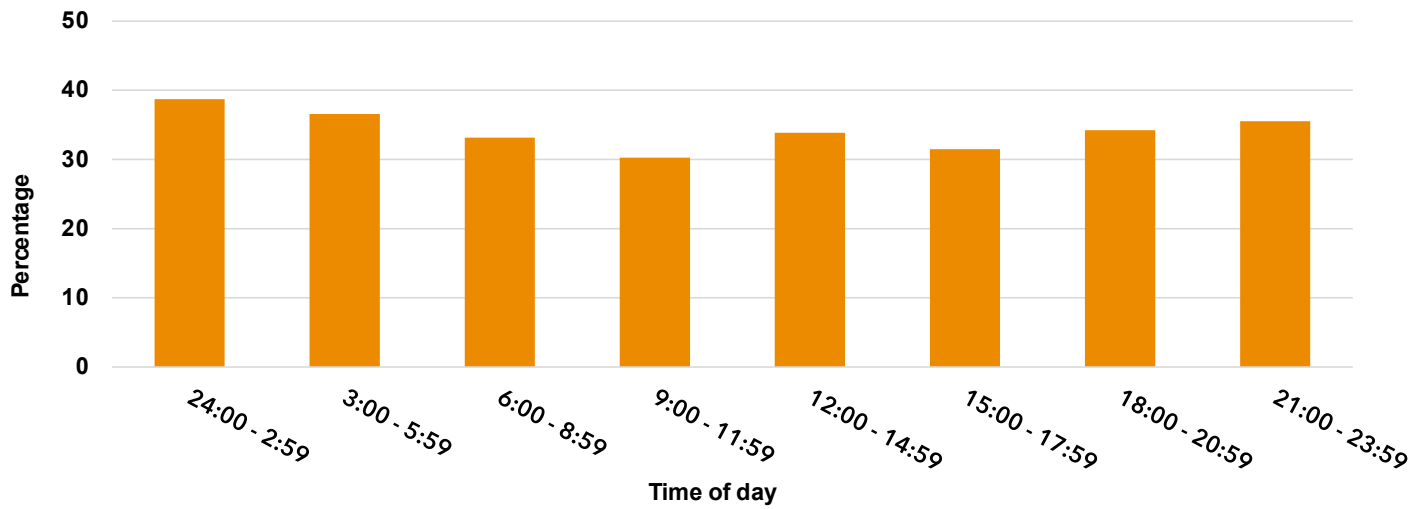
to 18.8%). By comparison, there was a slight decrease in the percentage of fatally injured drivers who tested positive for alcohol, CNS depressants, and narcotic analgesics from the pre-legalization period to the legalization period. In addition, the percentage of drivers who tested positive for drugs excluding cannabis and alcohol decreased slightly from the pre-legalization period (36.0%) to the legalization period (35.4%).

Collision characteristics of drug-related fatalities

This section examines the collision characteristics of drug-related fatalities in terms of time of day, day of week, season, number of occupants in the vehicle, object with which the vehicle collided, and use of safety equipment for fatal collisions during the past five years (2016-2020).

The time of day for drug-related road fatalities is aggregated into three-hour increments (e.g., midnight to 2:59 am). Figure 10 compares the number of drug-related fatalities by time of day over five years (2016-2020). The largest percentage of drivers testing positive for drugs was among drivers who were in crashes occurring between midnight and

Figure 10 | Percentage of road fatalities that were drug-related by time of day: Canada, 2016 - 2020



2:59 am (38.7%). There was a gradual decrease in the percentage of drivers testing positive for drugs until the 9:00 am-11:59 am time period (30.2%). There was a general increase in the percentage of drivers testing positive for drugs later in the day (35.5% in the 9 pm-11:59 pm period).

Drug-related fatalities were also re-grouped into those which resulted from collisions occurring on the weekend (between 6 p.m. Friday and 5:59 pm on Sunday) as opposed to the weekday (from 6 pm Sunday to 5:59 p.m. on Friday). In Figure 11, a comparison is made between weekend and weekday drug-related fatalities over five years (2016-2020).

Crash season is defined in the following manner: Spring (March-May), Summer (June-August), Fall (September-November), and Winter (December-February). Seasonal variations in the percentage of fatalities that were drug-related are presented in Figure 12. The largest percentage of drug-related fatalities occurred in the Summer (36.0%) while the lowest occurred in the Winter (30.1%).

Figure 11 | Percentage of fatalities that were drug-related during weekends and weekdays: Canada, 2016 - 2020

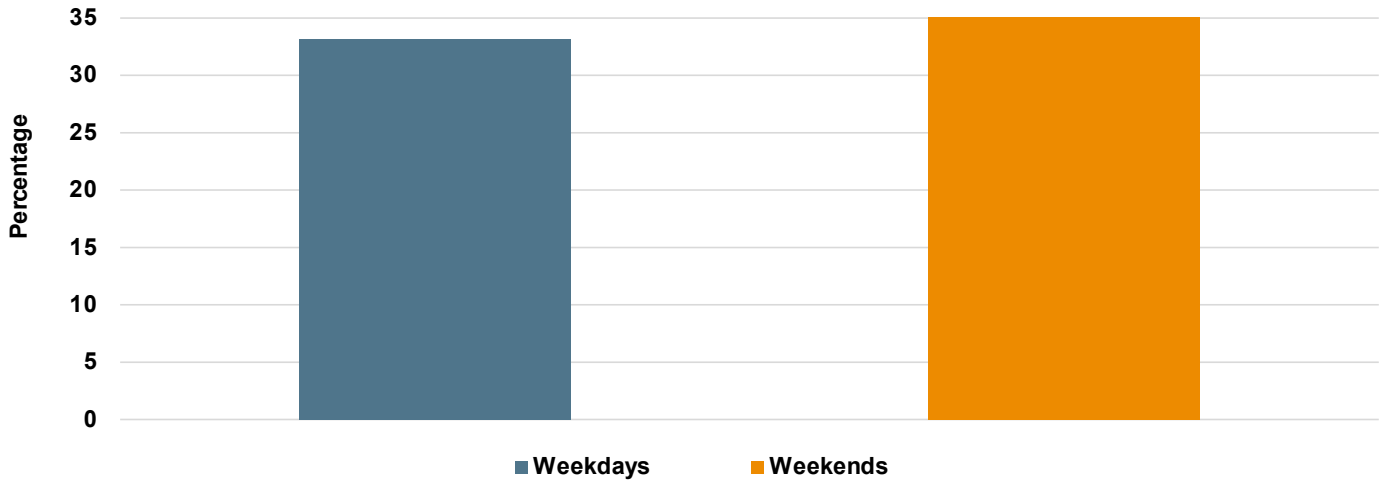
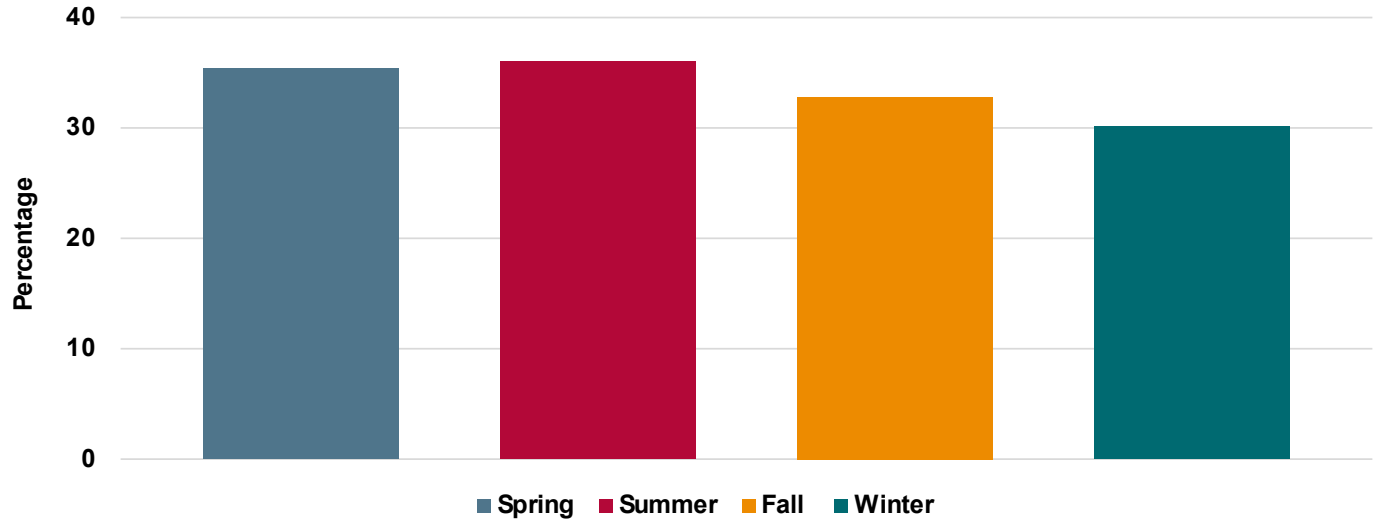


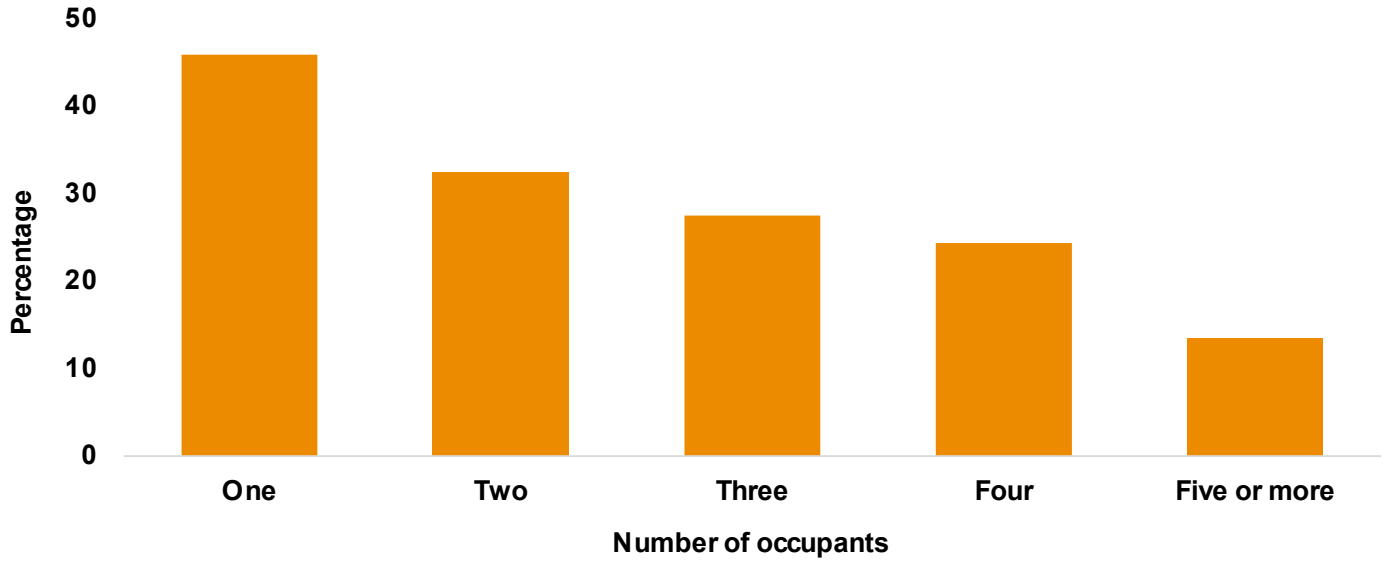
Figure 12 | Percentage of fatalities that were drug-related by season: Canada, 2016 - 2020



For the 2016-2020 period, the percentage of fatalities that were drug-related were compared based upon the number of occupants in the vehicle. Figure 13 shows the percentage of fatalities that were drug-related decreased as the number of vehicle occupants increased.

45.9% of fatalities in crashes with only one vehicle occupant were drug-related, and only 13.5% of fatalities were drug-related where there were five or more vehicle occupants.

Figure 13 | Percentage of fatalities that were drug-related by number of occupants: Canada, 2016 - 2020



Conclusions

According to TIRF's National Fatality Database, there was an upward trend in the number of drug-related fatalities in Canada between 2000 and 2020. This may be due, in part, to a larger percentage of fatally injured drivers being tested for drugs in the years since 2011. For drug-related crashes, the majority of victims were fatally injured drivers testing for drugs. This is similar to alcohol-related fatalities where most persons killed were the fatally injured drinking driver.

Among fatally injured drivers, a slightly larger percentage of males tested positive for drugs than females. Fatally injured drivers aged 20-34 were the most likely to be positive for drugs and there was a progressive decrease among older age groups.

From 2016-2020, an increasing percentage of fatally injured drivers tested positive for cannabis. While it may have been anticipated that a larger percentage of fatally injured drivers who were tested for drugs would test positive for cannabis in the *legalization* period compared to the pre-legalization period, it should be noted there was also an increase in the percentage of drivers who tested positive for CNS stimulants. Overall, if one looks at drugs excluding cannabis and alcohol, there was a slight decrease in the presence of these substances among fatally injured drivers in the legalization period compared to the pre-legalization period, suggesting legalization of recreational cannabis did lead to an increase in cannabis-related fatalities.

Drug-related fatal collisions most frequently occurred between midnight and 6 am. There was little variability in the percentage of persons dying in drug-related crashes on weekdays compared to weekends. Drug-related fatal collisions were most common in Summer. In general, temporal factors played less of a role in predicting drug-related fatal crashes than alcohol-related fatal crashes.

The percentage of drug-related fatalities was lower in vehicles with multiple occupants than those with a sole occupant. Perhaps drivers carrying passengers felt a greater sense of responsibility. This contrasts with the role of distraction where there appears to be a greater percentage of distraction-related fatalities among vehicles with multiple occupants (Brown et al. 2023). Historically, education campaigns have informed passengers on the dangers of riding with a drinking driver. Perhaps the public should also be informed of the perils of riding with a driver under the influence of drugs.

In past years, there were limitations associated with the reporting of the role of drugs in collisions. More recently, testing rates for drug use among fatally injured drivers have increased, particularly in the past decade. Increasingly, police-reported collision data have reported drug use among surviving drivers more routinely. It should also be noted that as more police officers receive drug recognition expert (DRE) training, drug use among surviving drivers may be documented more frequently and accurately.

In conclusion, data show there has been an increase in drug-related fatalities since 2000. In addition, the percentage of fatalities that are drug-related has surpassed fatalities involving alcohol, distraction, and speed in recent years.

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Fatality Database Disclaimer

Data from TIRF's National Fatality Database may be subject to change as the closure of cases is ongoing. As such, there may be minor differences in this document compared to previous documents reporting on the same topic.

TRAFFIC INJURY RESEARCH FOUNDATION

The vision of the Traffic Injury Research Foundation (TIRF) is to ensure people using roads make it home safely every day by eliminating road deaths, serious injuries and their social costs. TIRF's mission is to be the knowledge source for safe road users and a world leader in research, program and policy development, evaluation, and knowledge transfer. TIRF is a registered charity and depends on grants, awards, and donations to provide services for the public.

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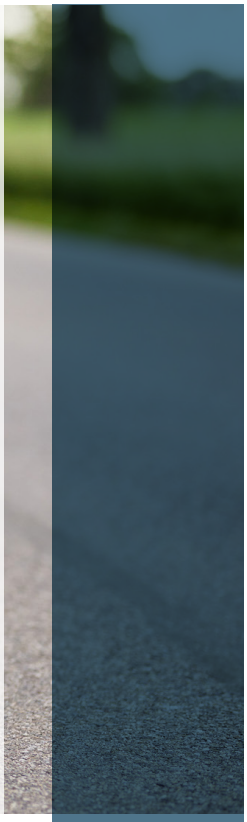

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