

Drug-Impaired Driving in the United States

What is the Drug-Impaired Driving Learning Centre (DIDLC)?

The Drug Impaired Driving Learning Centre (DIDLC) is a fully bilingual, web-based educational resource that was developed by the Traffic Injury Research Foundation, in partnership with State Farm®.

This comprehensive, accessible tool was created to inform the development of an evidence-based drug-impaired driving strategy. It was designed to meet the needs of a wide spectrum of diverse stakeholders who are seeking more information about priority issues.

The objective of the DIDLC is to support the work of governments and road safety partners by sharing current knowledge about research and practice, and increasing awareness about drug-impaired driving. A consolidated base of knowledge is essential to build a common understanding of the drug-impaired driving problem, inform discussion, and achieve progress in reducing it.

The Learning Centre contains several modules that are structured in a question and answer format, similar to other TIRF educational programs. Module topics include:

- magnitude and characteristics of the problem
- effects of drugs on driving
- legislation and penalties
- tools and technologies.

To view more fact sheets, or to get more information about drug-impaired driving, visit <http://druggeddriving.tirf.ca>

What is drug-impaired driving?

Drug-impaired driving is defined as the operation of a motor vehicle while under the influence of any type of psychoactive substance (illegal substances, prescription medication, over-the-counter medication) or a combination of drugs and alcohol that is established or likely to impair abilities required for safe driving.¹



What are the different types of drugs that can impair driving?

Drugs that can impair driving are categorized according to the seven drug categories established by the International Drug Evaluation and Classification Program (DECP). These include: cannabis², central nervous system (CNS) depressants, central nervous system (CNS) stimulants, hallucinogens, dissociative anesthetics, narcotic analgesics, and inhalants.



¹ Holmes et al. 2014

² The term "cannabis" refers to the cannabis plant that contains more than 100 cannabinoids. The primary psychoactive component of cannabis is delta-9-tetrahydrocannabinol, commonly known as THC. THC and its psychoactive metabolite, 11-hydroxy-THC or 11-OH-THC, and primary inactive metabolite, 11-nor-9-carboxy-THC or THC-COOH are frequently measured in biological fluids to document cannabis intake.

How is the drug-impaired driving problem studied?

The two central methods to investigate drug-impaired driving are experimental and epidemiological studies³. Experimental studies examine the effects of specific drugs on driving ability. Within a clinical and controlled setting, individuals are administered an active or placebo drug, followed by tests that assess skills and abilities relevant to driving. Typically, the results of the experimental group are compared to those of a control group. The control group receives a placebo and performs the same tests as the experimental group. This enables researchers to determine if there is significant impairment of driving-related skills experienced as a result of the drug. These test results help researchers to infer the level of risk posed by driving under the influence of a drug⁴.

Epidemiological studies seek to determine the prevalence or magnitude of the drug-impaired driving problem. There are two types of epidemiological studies: culpability studies and case-control studies. Culpability studies compare the at-fault rates of crash-involved, drug-positive drivers to that of crash-involved, drug-negative drivers. Case-control studies compare drug use by crash-involved drivers to drug use by non-crash involved drivers and the crash/driver characteristics are matched as closely as possible.⁵

How widespread is the drug-impaired driving problem in the United States?

The number of fatally injured drivers in the United States that tested positive for drugs can be found in the Fatality Analysis Reporting System (FARS) database, maintained by the National Highway Traffic Safety Administration (NHTSA). This database draws on police reports, coroner reports and medical records, containing information on fatal vehicle crashes that occur on American

public roads.⁶ However, it is important to note that the FARS data have limitations that should be considered when examining the prevalence of drugs in drivers. The fatal driver testing rates in FARS are inconsistent and often low in many states. Furthermore, the types of drugs that are tested for are not consistent across states therefore making comparisons difficult and making it unclear if absence implies that the type of drug was not present or that the test did not include this drug type. It is also important to note that not only the types of drugs but the concentration cut-offs for each drug are different across laboratories, and some laboratories test for and report drug-levels at such low concentrations that are not likely to cause impairment.⁷



More than half (63.3%) of all fatally injured drivers were tested for drugs in 2014; among those tested, 43.1% were positive for drugs. Among these fatally injured drivers who were positive for drugs⁸:

- 34.3% tested positive for cannabinoids⁹;
- 19.6% for CNS depressants;

³ Verstraete & Legrand 2014

⁴ Berghaus et al. 2007; European Monitoring Centre for Drugs and Drug Addiction 2007; Neale 2004

⁵ Compton & Berning 2015

⁶ Brady & Li 2013

⁷ Bering & Smither, 2014

⁸ National Highway Traffic Safety Administration. 2015. Fatality Analysis Reporting System (FARS) 2014 Data File.

⁹ Cannabinoid is used to represent the FARS coding system encompassing sub-categories: Delta-9, hashish oil, hashish, marijuana, marinol, tetrahydrocannabinoid, THC & cannabinoid type unknown

- 21.1% for CNS stimulants;
- 0.7% for hallucinogens;
- 0.4% for dissociative anesthetics; and,
- 17.9% for narcotic analgesics.

Similarly, in the general population, the prevalence of drugs in drivers can be measured via roadside surveys. The NHTSA National Roadside Survey (NRS) 2013-2014 examined the use of drugs, including illegal drugs, prescription, and over-the-counter drugs by day and time of use. Blood and/or oral fluid results from weekday daytime drivers showed that illegal drugs were present in 12.1% of drivers, and medicinal drugs (prescription and over-the-counter) were present in 8.4% of drivers. Blood and/or oral fluid results from weekend nighttime drivers showed that illegal drugs were present in 15.2% of drivers and medicinal drugs were present in 7.3%. When comparing the results from the latest 2013-2014 NRS to the previous 2007 NRS, it was observed that cannabis use in the general United States driving population increased by 48% over a six year period. The authors speculated that this increase may be due to changes in state policies for medical and legal recreational cannabis, although it is not certain that this is the case without individual state data.

It is important to note that not all drivers provided both oral fluid and blood samples, some drivers only provided one.¹⁰ Although oral fluid drug screening is non-invasive, it can have high reliability and validity due to the shorter window of drug detection, and quantitative oral fluid drug concentrations can be performed in the laboratory. The analysis of drugs in blood allows for precise quantification of drug concentrations and correlate better than oral fluid with impairment, but blood collection is more invasive and requires greater training in sample collection.¹¹

Are there differences between male and female drivers in terms of drug type and frequency of drug-impaired driving?

Results from fatal crash data and the national roadside survey in the U.S. revealed a sex difference with respect to specific drug type. Male drivers were more likely to test positive for illegal substances such as cannabis and cocaine, whereas female drivers were more likely to test positive for narcotics and depressants. However, male and female drivers were equally likely to test positive for drugs.¹²

Does the drug type and frequency of drug-impaired driving differ according to age group?



According to FARS data, the highest prevalence of overall drug positive results was among fatally injured drivers aged 35 to 64. In regards to the drug type by age group, a larger percentage of fatally injured young drivers tested positive for cannabis, CNS stimulants and multiple drugs, whereas a higher percentage of fatally injured older drivers tested positive for CNS depressants and narcotic analgesics. Results of roadside surveys revealed that among daytime drivers,

¹⁰ Berning et al. 2015

¹¹ Langel 2014

¹² Brady & Li 2013; Romano & Pollini 2013; Lacey et al. 2009; Drug testing and drug-involved driving of fatally injured drivers in the United States: 2005-2009, 2011

positive drug tests were most prevalent among those aged 45 to 64, and among nighttime drivers it was most prevalent among those aged 16 to 44. Consistent with the above crash data, the National Roadside Surveys (NRS) showed that younger drivers were more likely to test positive for THC and its' inactive metabolite (THC-COOH), whereas older drivers were more likely to test positive for narcotic analgesics.¹³

Does the drug type and frequency of drug-impaired driving differ according to the time of day and day of week?

An analysis of FARS data from 1998-2010 did show that CNS depressants and narcotics were more prevalent during daytime hours, whereas cannabinoids and CNS stimulants were more prevalent during nighttime hours. However, the number of drug positive drivers was equally present and did not differ according to the time of day or day of the week.¹⁴ The 2013/2014 NRS also indicated that illegal drugs were more prevalent during nighttime hours, and medicinal drugs were more prevalent during daytime hours. However, the overall prevalence of all types of drugs was not different between and did not differ according to the time of the day or day of the week.¹⁵

Are certain types of drivers at higher risk for drug-impaired driving?

Young drivers are identified as a high-risk population for drug-impaired driving. In general, the crash risk of younger drivers is 2-3 times that of adult drivers.¹⁶ This, in combination with their higher rates of drug use makes young drivers a greater concern for drug-impaired driving. Studies from Canada, the United States, Europe and Australia showed that a much larger proportion of young drivers self-report drug-impaired driving, as compared to national percentages.¹⁷

Drug users are also considered a high-risk population as a considerably large percentage of drug users and nightclub/rave attendees in Canada, the United Kingdom and Australia reported drug-impaired driving frequently in the previous year. Of concern, they also reported intention to engage in the behaviour again. In general, permissive attitudes were held by drug users and nightclub/rave attendees towards drug-impaired driving.¹⁸



Is there social concern and awareness of drug-impaired driving?

Results of the Road Safety Monitor: 2015, conducted by TIRF, revealed that the majority of Canadian drivers (63.3%) agreed that drug-impaired driving was a very or extremely serious road safety issue. However, 36.7% felt that it was not an issue or only posed a lesser problem for traffic safety. A significantly larger percentage of female drivers (67.2%) agreed drugged-driving was a very or extremely serious issue as compared to male drivers (58.9%). A larger percentage of drivers aged 65 and older (77%) and drivers between 45 and 64 (63.1%) agreed it was a very or extremely serious issue as compared to younger drivers.¹⁹ Public opinion surveys in the United

¹³ Berning et al. 2015

¹⁴ Romano & Pollini 2013

¹⁵ Berning et al. 2015

¹⁶ TIRF Young & New Driver Resource Centre, 2016

¹⁷ Adalf et al. 2003; Lewis et al. 2005;

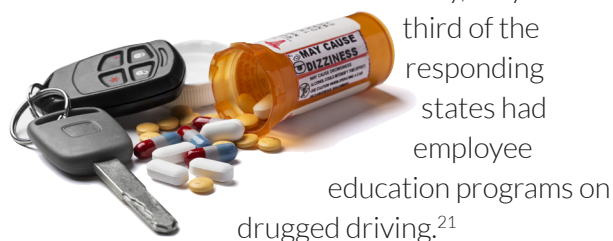
¹⁸ Fisher et al. 2006; Albery et al. 2000; Duff & Rowland 2006

¹⁹ TIRF 2015. The Road Safety Monitor 2015: Drinking and Driving in Canada

States, and Europe reported similar results, such that the majority of respondents agreed that drug-impaired driving was a serious road safety issue.²⁰

Are drivers aware of the impairing effects of drugs on driving abilities?

In the United States, a survey by GHSA reported that only half of the responding states had information on drugged driving included in the driver education courses. Additionally, only one



third of the responding states had employee education programs on drugged driving.²¹

Do drivers think that drug-impaired driving is a more or less serious problem than alcohol-impaired driving?



In the United States, public opinion polls indicated that alcohol-impaired driving was a more concerning issue than drug-impaired driving. A survey of US residents aged 21 and older showed that 67% of respondents agreed that driving after using illegal drugs was a major concern to traffic safety, whereas 78% of respondents believed that driving after drinking was a major concern to traffic safety.²²

²⁰ Traffic Safety Culture Index 2015; Antov et al. 2012

²¹ Hedlund et al. 2015

²² NSC Driver Safety Public Opinion Poll Summary 2017

Traffic Injury Research Foundation

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

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