National Drug Driving Study

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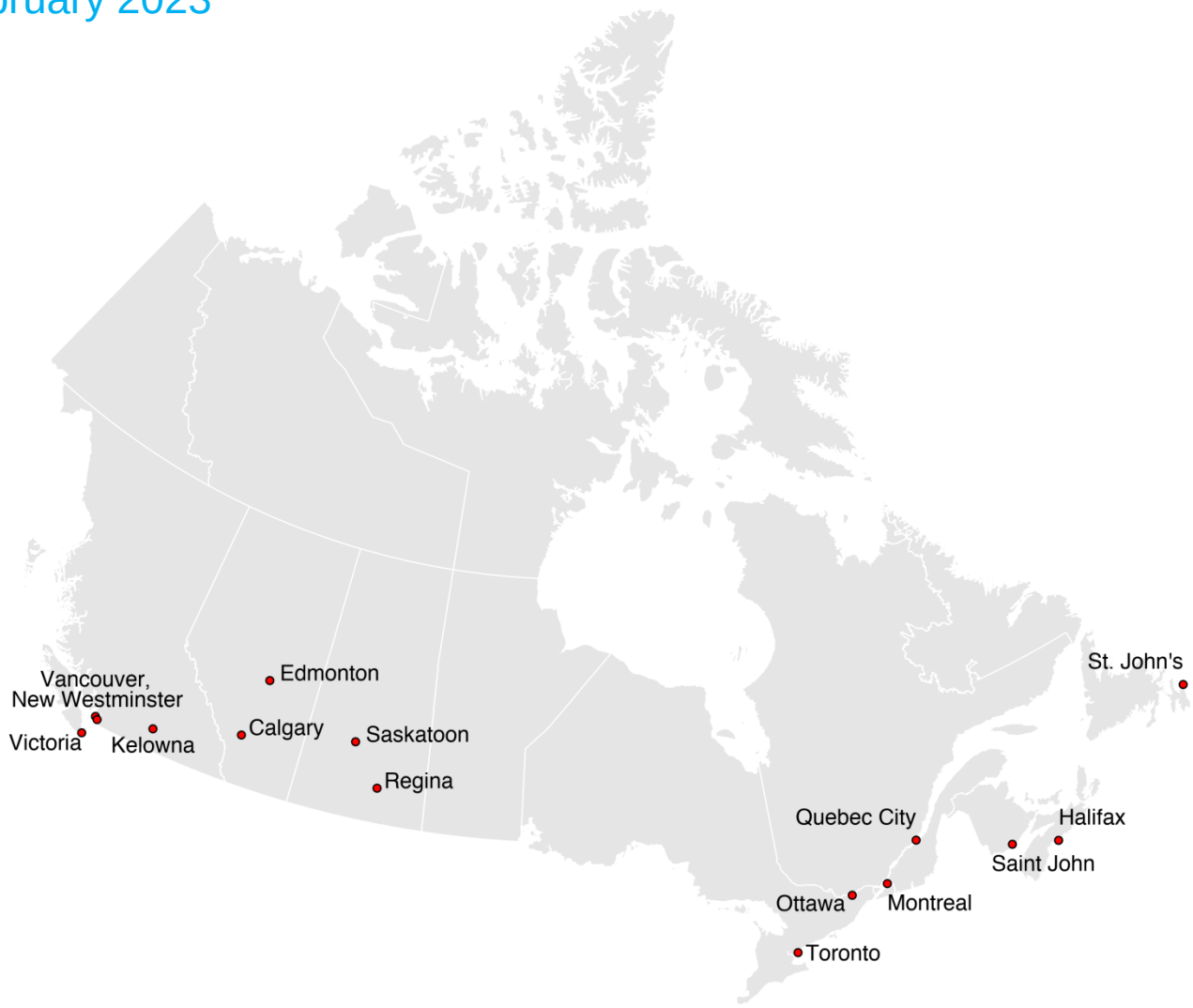

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CENTRE for Clinical Epidemiology and Evaluation

THE UNIVERSITY OF BRITISH COLUMBIA

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Healthier lives through discovery

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Terminology and Definitions

Cannabinoids

Marijuana contains over 60 active compounds known as cannabinoids. When absorbed into the blood, cannabinoids exert their effects by binding to receptors in the brain and throughout the body.

THC (delta-9-tetrahydrocannabinol)

THC is the main psycho-active compound found in marijuana and is responsible for most of marijuana's impairing effects.

THC Levels

The term "THC level" refers to the amount of THC within a person's body after smoking, vaporizing or eating a cannabis product. There are different ways to measure THC levels. The best way to understand if someone has used cannabis recently is to look at the THC level in their blood. However, interpreting the precise time that someone took cannabis – and importantly, whether or not they are still experiencing its effects – is complicated. Immediately after smoking a "joint", whole blood THC levels typically peak at >100 ng/mL within 15 minutes and then drop rapidly so that, in occasional users, THC is usually <2ng/mL (i.e., the legislated limit associated with a summary offence in Canada) within 4 hours after a single acute exposure.[1] However, in habitual marijuana users, THC accumulates in body fat and is then slowly released back into the blood. As a result, habitual users can have THC levels in the range of 1 -3 ng/mL for days or even weeks after last use.[2] In most cases, however, THC > 5 ng/mL (i.e., the legislated limit associated with a hybrid offence in Canada) indicates recent use. After smoking a marijuana joint, the psychotropic (impairing) effects typically peak at 20–30 minutes and resolve by 4 hours. Ingesting cannabis delays the onset and extends the duration of effect.

COOH-THC (11-nor-9-carboxy-delta-9-tetrahydrocannabinol)

The main metabolite (breakdown product) of THC. COOH-THC does not cause impairment and persists in blood and urine long after impairment has resolved. Thus COOH-THC provides evidence of previous cannabis exposure but does not necessarily indicate impairment or recent use.

Polysubstance Use

People who use drugs often take more than one substance at the same time. This is referred to as polysubstance use. Taking several drugs in combination can lead to worse impairment than would be seen from either substance taken alone.

Liquid chromatography/tandem mass spectrometry (LC-MS/MS)

An advanced laboratory technology that is used to detect and/or quantify a wide range of drugs using standards of known substances and concentrations.

Gas Chromatography-Flame Ionization Detection

A standard laboratory technique used for measuring blood alcohol levels.

Phlebotomists

Specially trained technicians who obtain blood samples from patients.

Drug-impaired driving vs. drug-driving

"Drug-impaired driving" means that the driver is impaired by drugs, where "impaired" means that those drugs interfere with safe driving ability. When drivers have positive tests for drugs, we often do not know if they were actually engaging in "drug-impaired driving." This is because the presence of drugs in body fluids indicates prior drug use but not necessarily impairment. When drugs are detected within a driver's body fluids, but we do not know whether that driver was actually impaired at the time of testing, we use the term "drug driving."

Central Nervous System Depressants

Many prescription medications cause sedation either as a desired therapeutic effect or as an unwanted side effect. In the Drug Evaluation and Classification System, these drugs would be classified as CNS (central nervous system) depressants. Common sedating medications include:

Benzodiazepines

These are mild sedatives most commonly prescribed as "sleeping pills" or to treat anxiety.

Anticonvulsants

Anticonvulsants, more commonly known as antiepileptic drugs, may cause sedation, dizziness, and cognitive changes.

Antihistamines

Antihistamines cause sedation as an unwanted side effect. Over the counter antihistamines are used to treat allergies (e.g. diphenhydramine - "Benadryl"), or motion sickness (e.g. dimenhydrinate - "Gravol").

Antidepressants

Antidepressants, especially the older antidepressants, have sedation as a side effect.

Antipsychotics

Sedation is a common side effect of antipsychotic drugs.

Muscle relaxants

Muscle relaxants may have sedative effects such as drowsiness. People are generally advised not to drive or operate heavy machines while under the effects of muscle relaxants.

Non-benzodiazepine hypnotics

Also known as "Z-drugs". These drugs are sedatives that act like benzodiazepines and are prescribed mostly as sleep aids. In Canada the most common non-benzodiazepine hypnotic is zopiclone.

Opioids

Opioids are narcotic analgesics (pain killers) that can cause marked sedation or even coma along with respiratory depression. Opioids include prescription medications such as codeine, hydromorphone, oxycodone, and morphine. The street drug heroin is also an opioid.

Central Nervous System Stimulants

CNS stimulants are drugs, such as cocaine or amphetamines, that cause CNS stimulation. Intoxication with these drugs is characterized by restlessness or agitation, pressured speech, anxiety, paranoia and

aggressive behaviour. Judgement may be impaired. Blood pressure and pulse are increased and pupils are dilated.

Psychomotor Skills

Safe driving involves the application of a number of psychomotor skills. These refer to the skills we use to perceive sensory information, interpret its meaning, and respond through physical actions." Examples of psychomotor skills applied to driving include reaction time, tracking ability (e.g. ability to drive a car in a straight line without weaving), coordination, and tasks that require attention.

Background

The epidemiology and risk of crashing in drinking drivers is well understood as a result of intense research conducted over the past 50 years.[3-6] This knowledge has facilitated the development of effective measures targeting alcohol-impaired driving. Alcohol-impaired driving and related fatalities are declining as a result of visibly enforced laws, administrative licensing sanctions, and social marketing campaigns.[7-11] Drug driving is also viewed as a major threat to road safety,[12] and the prevalence of drug driving may be increasing.[13] In fact, there is evidence that *drug driving has become as common as driving after drinking alcohol in Canada*.[14-18] With cannabis legalization, there is concern that the prevalence of drug driving, especially driving after using cannabis, will increase. Cannabis legalization could also result in more drivers combining cannabis with alcohol or other drugs, resulting in additive impairment.[19-21]

The effect of alcohol on driving and road safety is well-studied and understood. Experimental and epidemiological studies have made it possible to predict how driving will be affected at different breath and blood alcohol concentrations. For example, the risk of crashing approximately doubled at a BAC between 0.05% and 0.08%.[6] However, drugs tend to have more complicated pharmacokinetics and pharmacodynamics than alcohol. Unlike alcohol, it is often not possible to predict how driving will be affected at different drug blood alcohol concentrations. This issue makes it difficult to differentiate drug-driving (i.e., positive for drugs but absence of impairment) from drug-impaired driving (i.e., positive for drugs and active impairment) in epidemiological studies, and it makes it difficult to extrapolate the results of experimental studies focused on drug-impaired driving to real world safety. For example, we know that *many drugs impair the psychomotor skills and/or judgment required for safe driving*. Cannabis intoxication causes attention deficits, slows reaction time and impairs tasks such as tracking ability (*e.g.*, staying within a lane) or monitoring the speedometer.[19, 22-26] Several expert panels compared experimental studies of impairment from THC with that from alcohol, in both males and females, and concluded that a blood alcohol concentration (BAC) of 0.05% causes a similar degree of psychomotor impairment as THC levels in whole blood of 2-5ng/mL.[27-29] However, habitual cannabis users may develop tolerance to some of the impairing effects of cannabis. [30-32] Differences in tolerance between users calls into question the ability to reliably infer impairment for any given user based on a specific THC level. In particular, a conservative THC limit imposed on all drivers may be inequitable for habitual users, who may be more likely to have cannabis in their system at any given time, yet less likely to experience impairment at that THC level. Additionally, although cannabis-impaired driving is very topical, it is important to realize that many other drugs also cause psychomotor skill impairment. Stimulants, such as cocaine and amphetamines, impair judgment, impair inhibitory control (ability to “tune out” and not react to irrelevant stimuli), and alter mood.[33-40] Sedating medications, such as benzodiazepines, antihistamines, antidepressants, Z-drugs (non-benzodiazepine sedatives such as zopiclone), and opioids, cause drowsiness, slow reaction time, impair cognitive function and impair tracking ability.[41-51] For these reasons, *many drugs are suspected to increase the risk of crashing*. Several recent meta-analyses all concluded that cannabis increases the risk of crashing, albeit to a lesser extent than alcohol.[52-55] There is epidemiological evidence that other drugs (amphetamines, cocaine, benzodiazepines, antihistamines, antidepressants and opioids) also increase crash risk. In fact, the crash risk with many of these drugs, although lower than that with alcohol, appears to be as high as or even higher than the risk associated with cannabis.[55-58]

The prevalence of drug driving in Canada is poorly studied. Previous research on the prevalence of drug use in Canadian drivers is based on roadside surveys, coroner’s reports, police crash reports, or self-

reported surveys.[14, 16, 59-61] These methods have significant limitations. In *roadside surveys*, police pull over drivers and direct them to a safe parking spot. Researchers then ask the drivers about drug and alcohol use and obtain samples for drug testing. Roadside surveys are limited by high refusal rates which could result in selection bias if drivers who used drugs are more likely to refuse than other drivers. For practical reasons, roadside surveys use saliva rather than blood. However, blood THC levels are considered more informative than saliva THC levels because THC crosses freely from the blood into the brain,[62] whereas saliva THC represents deposition of THC in the mouth during smoking and is poorly correlated with blood THC concentrations.[63] For logistic reasons, roadside surveys typically sample a large number of drivers over a few days during the summer (when weather is good) making these surveys poorly suited for long term monitoring of drug driving. Another limitation is that, because of high cost and logistic challenges, roadside surveys are seldom performed. *Coroner's data* provide another estimate of the prevalence of drug use in drivers. In 2016, 82.7% of fatally injured Canadian drivers were tested for drugs and 46.7% were positive for an impairing drug other than alcohol, including 23.1% who tested positive for cannabis. Females were less likely than males to be positive for alcohol but almost as likely to test positive for drugs (41.7% in females versus 48.2% in males).[64] Coroner's data are useful but can be susceptible to selection bias if drug testing is based on suspicion of drug use and not performed routinely on all drivers. In Canada, the percentage of fatally injured drivers tested for drugs (2008) varies by province, ranging from 10% to 100%. The toxicology testing protocols used by coroners differ from province to province - with different protocols detecting different drugs. Coroner's data often fail to between distinguish between drug exposure that last occurred within the hours, days or weeks prior to the crash because some coroners measure inactive drug metabolites (which can persist in the body for long periods) rather than active drug. If fatally injured drivers survive the crash for a period of time, drug levels will decline with metabolism, making toxicology testing unreliable. Interpreting drug levels from coroner's data is further complicated by postmortem redistribution. For some drugs (such as cannabis), postmortem redistribution of drug concentrations within the body can lead to significant differences between the measurable drug level immediately prior to death (which is more representative of the actual drug level at the time of the crash) and the drug level measurable some time later after death.[65-69] As driving while impaired by drugs is illegal, *police crash reports* allow police to record their suspicion that a driver is impaired by drugs. However, these reports provide unreliable estimates of cannabis/other drug use as police only identify a small fraction of drivers who use cannabis or other drugs.[70] *Self-report surveys* ask questions about driving after using cannabis or other drugs.[71] Surveys are subject to selection, recall and reporting biases. In addition, self-report surveys typically lack precision because they ask about drug use before driving in a given time period (*e.g.*, previous month) instead of before a specific driving episode.

This is a national drug driving project that studies drug use in injured drivers who present to hospital and have bloodwork obtained within six hours of a motor vehicle collision. To address the limitations of prior research, we study a relevant population (injured drivers) and measure a wide range of impairing drugs in blood within six hours of a crash. Hence, this research has several advantages over other methods of studying drug driving. We aim to provide relevant data that policy makers and injury prevention groups can use to inform policy and programs designed to prevent people from driving after using drugs.

The study is ongoing, and this report covers national data collected up to August 2022. Additional blood samples from 2022 will be analyzed and included in future reports. Note that data collection for this study began in Vancouver, British Columbia in April 2008. Starting in January 2018 research has expanded to include trauma centres from outside British Columbia. Only data from 2018 onward are included in this report.

Methods

Inclusion and Exclusion Criteria

We include all moderately or severely injured drivers of motorized vehicles (e.g. cars, motorcycles, trucks) who visited the emergency department (ED) of a participating hospital between 2018 and 2022 and had blood samples obtained within 6 hours of the crash. As of February 2023, 17 hospital sites have obtained research ethics and operational approval and are participating in this study. Fifteen of these hospitals contributed to this report, data from the other two hospitals has not yet been analyzed. These trauma centres are located in BC, Alberta, Saskatchewan, Ontario, Quebec, New Brunswick, Nova Scotia and Newfoundland. Injury severity is defined pragmatically as the need to obtain blood for clinical purposes (moderate injury), or need for overnight hospital admission (severe injury). Potentially eligible drivers are identified by daily review of ED visit logs and eligibility is confirmed through chart review. We exclude drivers with minor injuries who do not require blood testing for clinical purposes, drivers under 16 years of age, cases in which blood was first obtained more than 6 hours after the crash, cases in which no excess blood remains after clinical use, and cases in which the quantity of excess blood was insufficient for toxicology testing of all substances.

Chart Review

ED records of eligible drivers are reviewed, and relevant data is abstracted and entered in REDCap, a secure web application for building and managing online surveys and databases. ED records include ambulance records (filled by paramedics), emergency physician notes, nursing notes, laboratory results including blood alcohol concentration (BAC), and consultant notes (if applicable). The abstracted data includes age, sex, first three digits of postal code, crash time and date, crash type (single vs multiple), vehicle type, blood draw time, prescription medications used in last 30 days, medical history, documentation of alcohol or drug use, disposition and medications given as part of clinical care prior to blood draw (we exclude “post-crash” medications when reporting toxicology results).

Blood Handling

Blood availability is determined by research assistants through review of medical records (to identify drivers who had blood samples drawn) followed by a visit to the hospital laboratory to see if excess blood remains. Excess blood is relabeled with study ID number replacing the clinical label and frozen at -40º C for future analysis. Freezing is important as significant losses of THC/other drugs will occur by two months if blood is stored at room temperature. As blood concentrations of certain drugs, such as cocaine and THC, drop rapidly after use, it is important that time from crash until blood draw is carefully recorded. The time of crash is determined through chart reviews (usually recorded on the ambulance record), and phlebotomists record the time of blood draw. Blood samples are stored in a specimen freezer at each site before shipment on dry ice by overnight courier to the central laboratory in Vancouver where samples are stored at -40º C until ready for analysis.

Toxicology Analysis

In participating hospitals, blood from injured drivers is usually tested for alcohol as part of routine trauma care. When clinical alcohol levels were not available, alcohol was measured at the Provincial Toxicology Centre using Gas Chromatography-Flame Ionization Detection with a detection limit of 0.01%. In addition, broad spectrum drug screens were performed on each patient’s blood using liquid chromatography/tandem mass spectrometry (LC-MS/MS). The extraction process recovers both acidic

and basic drugs and is able to detect illicit drugs and their metabolites (cannabinoids, cocaine, amphetamines including their major analogues, and opioids) as well as psychotropic pharmaceuticals (including antihistamines, benzodiazepines, other hypnotics, and sedating antidepressants). The method has detection limits of 0.2 ng/mL for THC and 1 ng/mL for most other substances. When samples are positive for cannabinoids, we quantify both the active ingredient (THC) and the metabolite (COOH-THC). For other drugs, the LC-MS/MS screen will provide a quantitative measure of drug concentration using ISO-certified reference calibrators. Over 95% of excess blood samples in this study consisted of whole blood. When plasma is available but whole blood was not, we adjust plasma toxicology results to equivalent whole blood results according to previously published studies.

Results

Between January 2018 and February 2023, we screened over 24,460 injured ED motorists including approximately 22,130 drivers (about 400 off road vehicle drivers) and 2,330 passengers. Of the 22,130 drivers, about 10,500 drivers met the inclusion criteria with blood samples collected. This report includes data from 8317 drivers who were injured between January 2018 and August 2022 with complete chart review and toxicology analysis in British Columbia, Alberta, Saskatchewan, Ontario, Quebec, New Brunswick, Nova Scotia and Newfoundland. Toxicology results from the remaining drivers (approximately 2,200) are not yet available. Findings from passengers and off-road vehicle drivers are not included in this report.

Overall, 17.9% of drivers in this sample tested positive for THC (including 7.8% with THC ≥ 2 ng/mL and 3.5% with THC ≥ 5 ng/mL). We also found that 16.1% of drivers tested positive for alcohol including 12.3% with BAC ≥ 0.08%. Opiates were detected in 11% of drivers, CNS stimulants (cocaine, amphetamines) in 11.8%, and CNS depressants in 26.5% of injured drivers.

These results, broken down by age, sex and by crash characteristics are shown in Tables 1 and 2 in Appendix A and in Figures 1 to 15 in Appendix B. For comparison purposes, Table 3 in Appendix A and Figure 18 in Appendix B summarize results from all participating hospitals in British Columbia, Alberta, Saskatchewan, Ontario, Quebec, and the Atlantic provinces (Nova Scotia, New Brunswick and Newfoundland). Sites in Atlantic provinces started recruitment in 2019 and had relatively lower volume, therefore their results are aggregated together until a bigger sample size is reached in those provinces. Results between provinces cannot be directly compared without adjusting for age, sex, injury severity and type of crash (singe versus multi-vehicle). Within these limitations, it appears that injured drivers from the Atlantic provinces and Saskatchewan are more likely to have consumed cannabis and are more likely to have been drinking.

Table 4 in Appendix A and Figures 16 and 17 in Appendix B show polysubstance use, the percentage of drivers who used various combinations of alcohol and cannabis (Figure 16) or other drug combinations (Figure 17). Figures 19 – 27 in Appendix B show trends over time for the prevalence of different substances in injured Canadian drivers.

There were 108 drivers of off-road vehicles (ATVs, dirt bikes, snow mobiles, etc.) that were excluded from this analysis. We report substance prevalence for these drivers in Table 5 of Appendix A.

Discussion

In this sample of 8317 injured drivers treated in 15 trauma centres across Canada since January 2018, over half of the drivers (53.7%) tested positive for at least one impairing substance. The most common single substance detected was cannabis with about one in six drivers (17.9%) testing positive for THC, the active ingredient in cannabis. Most of the THC positive drivers had low levels (< 2 ng/mL) which do not necessarily reflect recent use of cannabis, and do not appear to be associated with increased risk of crashing.[72] However, one in 13 drivers (7.8%) had THC ≥ 2 ng/mL which usually indicates recent use of cannabis, and one in 29 drivers (3.5%) had THC ≥ 5 ng/mL which indicates recent use and is often associated with impairment. Cannabis use was more common in drivers under the age of 35 and more common in males than females (6.0% vs 3.2%). It should be noted that these estimates may change as more cases are collected and analyzed. The current state of knowledge indicates that the risk of crashing after using cannabis remains poorly defined but is lower than that for alcohol.[24, 72] Several recent meta-analyses concluded that cannabis increases crash risk, with estimated Odds Ratios (ORs) ranging from 1.36 to 2.66.[52, 54] A recent Canadian study suggests that drivers with THC levels < 5 ng/mL do not have an increased risk of crashing.[72] However, it is worth monitoring the prevalence of drivers with THC ≥ 5 ng/mL over time to analyze whether cannabis impaired driving may be an emerging problem in Canada, especially in younger drivers.

Alcohol was the second most detected impairing substance in this sample. Approximately, one in six drivers (16.1%) had been drinking (BAC > 0), and one in eight (12.3%) had BAC ≥ 0.08%. In this sample, alcohol was more commonly found in drivers between the ages of 19 to 34 and more common in male than female drivers (18.8% vs 10.6%). It is well known that drivers with BAC > 0.08%, especially younger drivers, have a very high crash risk[6, 72, 73]. These data suggest that alcohol impaired driving remains a bigger problem than drug impaired driving in Canada.

CNS stimulants (cocaine, amphetamines) were detected in one in eight injured drivers (11.8%). The highest prevalence of CNS stimulants was found in drivers between the ages of 25 to 44 with increased prevalence in males (13.5%) compared to females (8.2%). CNS depressants (including over-the-counter antihistamines) were found in approximately one in four drivers (26.5%) with a greater prevalence in females (32.2%) than males (23.7%). The highest prevalence of CNS depressants was found in drivers over the age of 55 (30.8%). These results are not surprising since sedating medication use is typically more common in older age groups. Opiates were detected in one in nine drivers (11.0%) and were detected more commonly in males (11.5%) than females (9.9%) in this sample. Cocaine, amphetamines, CNS depressants and opiates are also known to impair the psychomotor skills required for safe driving.[55, 74] The crash risk associated with these substances is also poorly defined but appears to be less than that associated with alcohol and in the range of that associated with cannabis.[72]

Strengths

Our methods have several advantages. We measured drugs in blood, which, for THC and most other drugs, correlates better with impairment and/or recent use than drug levels measured in saliva or urine. Our methods quantify alcohol, THC and over 80 other impairing drugs and medications. Further, we use blood obtained shortly after the crash, in most cases within 1.5 hours, so our toxicology results closely approximate drug levels at time of crash.[18] This short time interval between crash and blood draw simplifies interpretation of toxicology findings. Third, the decision to obtain blood is *not* based on suspicion of drug use: blood is obtained when clinically indicated for managing the patient's injuries, based on crash mechanism and/or physical examination. This process eliminates the selection bias that would occur if drug testing was based on suspicion of drug use. Also, because this study has ethics approval for waiver of consent due to our innovative methods of anonymizing linked data, we avoid the bias that would arise if drivers who used drugs were less likely to consent for testing, as might be the case in roadside surveys. Most important, we study recent drug use in a relevant population (drivers injured in a crash).

Limitations

There are also several limitations to this study. Because we rely on blood that was obtained for clinical purposes, we do not have control over which drivers are actually tested. As a result, our sample does not include minimally injured drivers even if they caused a crash that seriously injured another road user. It is also possible that the decision to obtain blood tests varies from hospital to hospital which may make results from different hospitals difficult to compare. Although we aim to exclude "post-crash" medications, these medications may not always be listed in ED records. In particular, we exclude ketamine from this report since it is commonly administered as part of clinical care in the prehospital setting and we suspect it is not always documented in the available medical charts. Ketamine was detected in 662 (8.0%) of injured drivers, but nearly three-quarters of these drivers (n=471; 71%) had Ketamine documented as given prior to blood draw. We are uncertain how often ketamine was actually used prior to the collision in the 191 drivers (2.3%) who tested positive for ketamine but no documentation of it being given medically. Another limitation is that our toxicology analysis is unable to measure inhalants (such as toluene). We suspect that inhalant abuse is rare but are unable to prove that this is the case. A final limitation is that we do not examine, or interview injured drivers and are unable to assess their whether drivers are actually impaired.

Summary

Driving after cannabis use appears to be an emerging problem in Canada and may now be more common than driving after drinking alcohol. However, given the very high crash risk associated with alcohol, and the fact that most "cannabis positive" drivers had low THC levels, it can be concluded that driving after drinking remains a bigger problem in Canada. Sedating medications, opiates, and other recreational drugs were also commonly detected. Another striking feature of this study was the prevalence of polysubstance use, with approximately one in five drivers (21.8%) testing positive for more than one impairing substance. Social marketing campaigns or traffic policy designed to prevent impaired driving should continue to target alcohol as well as cannabis and other drugs and should be sensitive to the fact that many drivers use combinations of multiple impairing substances. The high prevalence of sedating medications, in multiple age ranges, suggests the need for better education on prescription practices and on use of sedating medications by drivers (including over the counter antihistamines).

Appendix A: Tables

Table 1. Demographics: Count (percent) of injured drivers who test positive for impairing substances by age and sex

Data on all injured drivers available to date									
		Age group (years)						Sex	
	National	16-18	19-24	25-34	35-44	45-54	≥55	Female	Male
Total injured drivers	8317 (100%)	297 (100%)	1091 (100%)	1891 (100%)	1407 (100%)	1242 (100%)	2389 (100%)	2724 (100%)	5593 (100%)
Alcohol									
BAC > 0	1339 (16.1%)	45 (15.2%)	258 (23.6%)	431 (22.8%)	256 (18.2%)	164 (13.2%)	185 (7.7%)	290 (10.6%)	1049 (18.8%)
0 < BAC < 0.05%	217 (2.6%)	9 (3.0%)	37 (3.4%)	60 (3.2%)	41 (2.9%)	23 (1.9%)	47 (2.0%)	45 (1.7%)	172 (3.1%)
0.05% ≤ BAC < 0.08%	95 (1.1%)	7 (2.4%)	16 (1.5%)	27 (1.4%)	19 (1.4%)	13 (1.0%)	13 (0.5%)	14 (0.5%)	81 (1.4%)
BAC ≥ 0.08%	1027 (12.3%)	29 (9.8%)	205 (18.8%)	344 (18.2%)	196 (13.9%)	128 (10.3%)	125 (5.2%)	231 (8.5%)	796 (14.2%)
Cannabinoids									
COOH-THC > 0	2540 (30.5%)	121 (40.7%)	511 (46.8%)	799 (42.3%)	435 (30.9%)	278 (22.4%)	396 (16.6%)	627 (23.0%)	1913 (34.2%)
THC > 0	1491 (17.9%)	70 (23.6%)	345 (31.6%)	467 (24.7%)	241 (17.1%)	158 (12.7%)	210 (8.8%)	343 (12.6%)	1148 (20.5%)
THC ≥ 2 ng/mL	647 (7.8%)	31 (10.4%)	162 (14.8%)	204 (10.8%)	105 (7.5%)	55 (4.4%)	90 (3.8%)	149 (5.5%)	498 (8.9%)
THC ≥ 5 ng/mL	288 (3.5%)	13 (4.4%)	69 (6.3%)	99 (5.2%)	51 (3.6%)	20 (1.6%)	36 (1.5%)	64 (2.3%)	224 (4.0%)
Other substances									
CNS stimulants	978 (11.8%)	24 (8.1%)	130 (11.9%)	325 (17.2%)	245 (17.4%)	147 (11.8%)	107 (4.5%)	224 (8.2%)	754 (13.5%)
CNS depressants	2203 (26.5%)	52 (17.5%)	224 (20.5%)	446 (23.6%)	401 (28.5%)	344 (27.7%)	736 (30.8%)	878 (32.2%)	1325 (23.7%)
Opioids	914 (11.0%)	21 (7.1%)	95 (8.7%)	200 (10.6%)	186 (13.2%)	143 (11.5%)	269 (11.3%)	271 (9.9%)	643 (11.5%)
Any substance	4463 (53.7%)	152 (51.2%)	656 (60.1%)	1122 (59.3%)	829 (58.9%)	615 (49.5%)	1089 (45.6%)	1357 (49.8%)	3106 (55.5%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 1.1. Demographics: Count (percent) of injured drivers who test positive for impairing substances by age and sex in 2018

Data on drivers involved in crashes in 2018									
		Age group (years)						Sex	
	National	16-18	19-24	25-34	35-44	45-54	≥55	Female	Male
Total injured drivers	1990 (100%)	71 (100%)	297 (100%)	430 (100%)	306 (100%)	311 (100%)	575 (100%)	631 (100%)	1359 (100%)
Alcohol									
BAC > 0	308 (15.5%)	14 (19.7%)	70 (23.6%)	95 (22.1%)	56 (18.3%)	32 (10.3%)	41 (7.1%)	61 (9.7%)	247 (18.2%)
0 < BAC < 0.05%	47 (2.4%)	2 (2.8%)	9 (3.0%)	17 (4.0%)	9 (2.9%)	2 (0.6%)	8 (1.4%)	6 (1.0%)	41 (3.0%)
0.05% ≤ BAC < 0.08%	30 (1.5%)	0 (0.0%)	7 (2.4%)	6 (1.4%)	8 (2.6%)	6 (1.9%)	3 (0.5%)	3 (0.5%)	27 (2.0%)
BAC ≥ 0.08%	231 (11.6%)	12 (16.9%)	54 (18.2%)	72 (16.7%)	39 (12.7%)	24 (7.7%)	30 (5.2%)	52 (8.2%)	179 (13.2%)
Cannabinoids									
COOH-THC > 0	532 (26.7%)	29 (40.8%)	132 (44.4%)	152 (35.3%)	79 (25.8%)	59 (19.0%)	81 (14.1%)	110 (17.4%)	422 (31.1%)
THC > 0	361 (18.1%)	21 (29.6%)	92 (31.0%)	105 (24.4%)	50 (16.3%)	45 (14.5%)	48 (8.3%)	65 (10.3%)	296 (21.8%)
THC ≥ 2 ng/mL	130 (6.5%)	9 (12.7%)	39 (13.1%)	38 (8.8%)	18 (5.9%)	10 (3.2%)	16 (2.8%)	26 (4.1%)	104 (7.7%)
THC ≥ 5 ng/mL	49 (2.5%)	3 (4.2%)	12 (4.0%)	20 (4.7%)	7 (2.3%)	2 (0.6%)	5 (0.9%)	10 (1.6%)	39 (2.9%)
Other substances									
CNS stimulants	194 (9.7%)	8 (11.3%)	31 (10.4%)	64 (14.9%)	37 (12.1%)	34 (10.9%)	20 (3.5%)	46 (7.3%)	148 (10.9%)
CNS depressants	403 (20.3%)	11 (15.5%)	36 (12.1%)	86 (20.0%)	67 (21.9%)	63 (20.3%)	140 (24.3%)	147 (23.3%)	256 (18.8%)
Opioids	168 (8.4%)	5 (7.0%)	17 (5.7%)	39 (9.1%)	29 (9.5%)	24 (7.7%)	54 (9.4%)	53 (8.4%)	115 (8.5%)
Any substance	961 (48.3%)	37 (52.1%)	170 (57.2%)	237 (55.1%)	160 (52.3%)	135 (43.4%)	222 (38.6%)	264 (41.8%)	697 (51.3%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 1.2. Demographics: Count (percent) of injured drivers who test positive for impairing substances by age and sex in 2019

Data on drivers involved in crashes in 2019									
		Age group (years)						Sex	
	National	16-18	19-24	25-34	35-44	45-54	≥55	Female	Male
Total injured drivers	2224 (100%)	57 (100%)	276 (100%)	513 (100%)	357 (100%)	357 (100%)	664 (100%)	703 (100%)	1521 (100%)
Alcohol									
BAC > 0	341 (15.3%)	9 (15.8%)	61 (22.1%)	113 (22.0%)	63 (17.6%)	51 (14.3%)	44 (6.6%)	68 (9.7%)	273 (17.9%)
0 < BAC < 0.05%	43 (1.9%)	2 (3.5%)	6 (2.2%)	11 (2.1%)	9 (2.5%)	7 (2.0%)	8 (1.2%)	7 (1.0%)	36 (2.4%)
0.05% ≤ BAC < 0.08%	25 (1.1%)	3 (5.3%)	5 (1.8%)	7 (1.4%)	4 (1.1%)	2 (0.6%)	4 (0.6%)	3 (0.4%)	22 (1.4%)
BAC ≥ 0.08%	273 (12.3%)	4 (7.0%)	50 (18.1%)	95 (18.5%)	50 (14.0%)	42 (11.8%)	32 (4.8%)	58 (8.3%)	215 (14.1%)
Cannabinoids									
COOH-THC > 0	753 (33.9%)	22 (38.6%)	152 (55.1%)	239 (46.6%)	108 (30.3%)	88 (24.6%)	144 (21.7%)	176 (25.0%)	577 (37.9%)
THC > 0	433 (19.5%)	8 (14.0%)	108 (39.1%)	138 (26.9%)	67 (18.8%)	48 (13.4%)	64 (9.6%)	80 (11.4%)	353 (23.2%)
THC ≥ 2 ng/mL	182 (8.2%)	5 (8.8%)	45 (16.3%)	57 (11.1%)	24 (6.7%)	17 (4.8%)	34 (5.1%)	38 (5.4%)	144 (9.5%)
THC ≥ 5 ng/mL	85 (3.8%)	2 (3.5%)	19 (6.9%)	31 (6.0%)	12 (3.4%)	5 (1.4%)	16 (2.4%)	18 (2.6%)	67 (4.4%)
Other substances									
CNS stimulants	238 (10.7%)	2 (3.5%)	35 (12.7%)	74 (14.4%)	57 (16.0%)	34 (9.5%)	36 (5.4%)	52 (7.4%)	186 (12.2%)
CNS depressants	642 (28.9%)	10 (17.5%)	80 (29.0%)	120 (23.4%)	105 (29.4%)	115 (32.2%)	212 (31.9%)	229 (32.6%)	413 (27.2%)
Opioids	257 (11.6%)	8 (14.0%)	28 (10.1%)	58 (11.3%)	40 (11.2%)	36 (10.1%)	87 (13.1%)	66 (9.4%)	191 (12.6%)
Any substance	1259 (56.6%)	30 (52.6%)	185 (67.0%)	308 (60.0%)	220 (61.6%)	191 (53.5%)	325 (48.9%)	353 (50.2%)	906 (59.6%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 1.3. Demographics: Count (percent) of injured drivers who test positive for impairing substances by age and sex in 2020

Data on drivers involved in crashes in 2020		Age group (years)						Sex	
	National	16-18	19-24	25-34	35-44	45-54	≥55	Female	Male
Total injured drivers	1159 (100%)	40 (100%)	135 (100%)	274 (100%)	210 (100%)	172 (100%)	328 (100%)	409 (100%)	750 (100%)
Alcohol									
BAC > 0	189 (16.3%)	7 (17.5%)	34 (25.2%)	60 (21.9%)	38 (18.1%)	27 (15.7%)	23 (7.0%)	48 (11.7%)	141 (18.8%)
0 < BAC < 0.05%	41 (3.5%)	2 (5.0%)	7 (5.2%)	9 (3.3%)	7 (3.3%)	5 (2.9%)	11 (3.4%)	13 (3.2%)	28 (3.7%)
0.05% ≤ BAC < 0.08%	10 (0.9%)	0 (0.0%)	2 (1.5%)	4 (1.5%)	1 (0.5%)	2 (1.2%)	1 (0.3%)	6 (1.5%)	4 (0.5%)
BAC ≥ 0.08%	138 (11.9%)	5 (12.5%)	25 (18.5%)	47 (17.2%)	30 (14.3%)	20 (11.6%)	11 (3.4%)	29 (7.1%)	109 (14.5%)
Cannabinoids									
COOH-THC > 0	363 (31.3%)	17 (42.5%)	63 (46.7%)	123 (44.9%)	68 (32.4%)	41 (23.8%)	51 (15.5%)	102 (24.9%)	261 (34.8%)
THC > 0	192 (16.6%)	7 (17.5%)	43 (31.9%)	66 (24.1%)	34 (16.2%)	17 (9.9%)	25 (7.6%)	61 (14.9%)	131 (17.5%)
THC ≥ 2 ng/mL	107 (9.2%)	4 (10.0%)	25 (18.5%)	37 (13.5%)	16 (7.6%)	9 (5.2%)	16 (4.9%)	30 (7.3%)	77 (10.3%)
THC ≥ 5 ng/mL	54 (4.7%)	2 (5.0%)	11 (8.1%)	18 (6.6%)	9 (4.3%)	6 (3.5%)	8 (2.4%)	13 (3.2%)	41 (5.5%)
Other substances									
CNS stimulants	178 (15.4%)	5 (12.5%)	19 (14.1%)	58 (21.2%)	46 (21.9%)	29 (16.9%)	21 (6.4%)	38 (9.3%)	140 (18.7%)
CNS depressants	322 (27.8%)	9 (22.5%)	30 (22.2%)	68 (24.8%)	64 (30.5%)	48 (27.9%)	103 (31.4%)	143 (35.0%)	179 (23.9%)
Opioids	178 (15.4%)	1 (2.5%)	15 (11.1%)	42 (15.3%)	45 (21.4%)	35 (20.3%)	40 (12.2%)	63 (15.4%)	115 (15.3%)
Any substance	642 (55.4%)	19 (47.5%)	84 (62.2%)	170 (62.0%)	128 (61.0%)	90 (52.3%)	151 (46.0%)	215 (52.6%)	427 (56.9%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 1.4. Demographics: Count (percent) of injured drivers who test positive for impairing substances by age and sex in 2021

Data on drivers involved in crashes in 2021									
		Age group (years)						Sex	
	National	16-18	19-24	25-34	35-44	45-54	≥55	Female	Male
Total injured drivers	2376 (100%)	103 (100%)	319 (100%)	548 (100%)	426 (100%)	311 (100%)	669 (100%)	767 (100%)	1609 (100%)
Alcohol									
BAC > 0	438 (18.4%)	12 (11.7%)	80 (25.1%)	142 (25.9%)	87 (20.4%)	46 (14.8%)	71 (10.6%)	98 (12.8%)	340 (21.1%)
0 < BAC < 0.05%	79 (3.3%)	3 (2.9%)	12 (3.8%)	21 (3.8%)	15 (3.5%)	8 (2.6%)	20 (3.0%)	19 (2.5%)	60 (3.7%)
0.05% ≤ BAC < 0.08%	27 (1.1%)	4 (3.9%)	2 (0.6%)	8 (1.5%)	5 (1.2%)	3 (1.0%)	5 (0.7%)	1 (0.1%)	26 (1.6%)
BAC ≥ 0.08%	332 (14.0%)	5 (4.9%)	66 (20.7%)	113 (20.6%)	67 (15.7%)	35 (11.3%)	46 (6.9%)	78 (10.2%)	254 (15.8%)
Cannabinoids									
COOH-THC > 0	733 (30.9%)	42 (40.8%)	142 (44.5%)	222 (40.5%)	153 (35.9%)	72 (23.2%)	102 (15.2%)	196 (25.6%)	537 (33.4%)
THC > 0	417 (17.6%)	24 (23.3%)	93 (29.2%)	121 (22.1%)	78 (18.3%)	39 (12.5%)	62 (9.3%)	114 (14.9%)	303 (18.8%)
THC ≥ 2 ng/mL	191 (8.0%)	10 (9.7%)	47 (14.7%)	58 (10.6%)	39 (9.2%)	15 (4.8%)	22 (3.3%)	43 (5.6%)	148 (9.2%)
THC ≥ 5 ng/mL	81 (3.4%)	5 (4.9%)	24 (7.5%)	19 (3.5%)	21 (4.9%)	5 (1.6%)	7 (1.0%)	15 (2.0%)	66 (4.1%)
Other substances									
CNS stimulants	319 (13.4%)	7 (6.8%)	41 (12.9%)	107 (19.5%)	96 (22.5%)	43 (13.8%)	25 (3.7%)	78 (10.2%)	241 (15.0%)
CNS depressants	684 (28.8%)	18 (17.5%)	62 (19.4%)	134 (24.5%)	140 (32.9%)	97 (31.2%)	233 (34.8%)	287 (37.4%)	397 (24.7%)
Opioids	282 (11.9%)	7 (6.8%)	32 (10.0%)	53 (9.7%)	65 (15.3%)	42 (13.5%)	83 (12.4%)	79 (10.3%)	203 (12.6%)
Any substance	1326 (55.8%)	51 (49.5%)	182 (57.1%)	330 (60.2%)	273 (64.1%)	162 (52.1%)	328 (49.0%)	425 (55.4%)	901 (56.0%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 1.5. Demographics: Count (percent) of injured drivers who test positive for impairing substances by age and sex in 2022 (additional data from 2022 is pending)

Data on drivers involved in crashes in 2022		Age group (years)						Sex	
	National	16-18	19-24	25-34	35-44	45-54	≥55	Female	Male
Total injured drivers	568 (100%)	26 (100%)	64 (100%)	126 (100%)	108 (100%)	91 (100%)	153 (100%)	214 (100%)	354 (100%)
Alcohol									
BAC > 0	63 (11.1%)	3 (11.5%)	13 (20.3%)	21 (16.7%)	12 (11.1%)	8 (8.8%)	6 (3.9%)	15 (7.0%)	48 (13.6%)
0 < BAC < 0.05%	7 (1.2%)	0 (0.0%)	3 (4.7%)	2 (1.6%)	1 (0.9%)	1 (1.1%)	0 (0.0%)	0 (0.0%)	7 (2.0%)
0.05% ≤ BAC < 0.08%	3 (0.5%)	0 (0.0%)	0 (0.0%)	2 (1.6%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	1 (0.5%)	2 (0.6%)
BAC ≥ 0.08%	53 (9.3%)	3 (11.5%)	10 (15.6%)	17 (13.5%)	10 (9.3%)	7 (7.7%)	6 (3.9%)	14 (6.5%)	39 (11.0%)
Cannabinoids									
COOH-THC > 0	159 (28.0%)	11 (42.3%)	22 (34.4%)	63 (50.0%)	27 (25.0%)	18 (19.8%)	18 (11.8%)	43 (20.1%)	116 (32.8%)
THC > 0	88 (15.5%)	10 (38.5%)	9 (14.1%)	37 (29.4%)	12 (11.1%)	9 (9.9%)	11 (7.2%)	23 (10.7%)	65 (18.4%)
THC ≥ 2 ng/mL	37 (6.5%)	3 (11.5%)	6 (9.4%)	14 (11.1%)	8 (7.4%)	4 (4.4%)	2 (1.3%)	12 (5.6%)	25 (7.1%)
THC ≥ 5 ng/mL	19 (3.3%)	1 (3.8%)	3 (4.7%)	11 (8.7%)	2 (1.9%)	2 (2.2%)	0 (0.0%)	8 (3.7%)	11 (3.1%)
Other substances									
CNS stimulants	49 (8.6%)	2 (7.7%)	4 (6.2%)	22 (17.5%)	9 (8.3%)	7 (7.7%)	5 (3.3%)	10 (4.7%)	39 (11.0%)
CNS depressants	152 (26.8%)	4 (15.4%)	16 (25.0%)	38 (30.2%)	25 (23.1%)	21 (23.1%)	48 (31.4%)	72 (33.6%)	80 (22.6%)
Opioids	29 (5.1%)	0 (0.0%)	3 (4.7%)	8 (6.3%)	7 (6.5%)	6 (6.6%)	5 (3.3%)	10 (4.7%)	19 (5.4%)
Any substance	275 (48.4%)	15 (57.7%)	35 (54.7%)	77 (61.1%)	48 (44.4%)	37 (40.7%)	63 (41.2%)	100 (46.7%)	175 (49.4%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 2. Crash characteristics: Count (percent) of injured drivers who test positive for impairing substances by crash characteristics

Data on all injured drivers available to date		Injury severity		Crash time		Crash type	
	National	Treated and released	Admitted	Nighttime	Daytime	Multi-vehicle	Single-vehicle
Total injured drivers	8317 (100%)	5227 (100%)	2963 (100%)	3098 (100%)	5065 (100%)	4935 (100%)	3379 (100%)
Alcohol							
BAC > 0	1339 (16.1%)	703 (13.4%)	616 (20.8%)	900 (29.1%)	409 (8.1%)	382 (7.7%)	956 (28.3%)
0 < BAC < 0.05%	217 (2.6%)	104 (2.0%)	111 (3.7%)	109 (3.5%)	106 (2.1%)	94 (1.9%)	123 (3.6%)
0.05% ≤ BAC < 0.08%	95 (1.1%)	40 (0.8%)	54 (1.8%)	64 (2.1%)	27 (0.5%)	28 (0.6%)	67 (2.0%)
BAC ≥ 0.08%	1027 (12.3%)	559 (10.7%)	451 (15.2%)	727 (23.5%)	276 (5.4%)	260 (5.3%)	766 (22.7%)
Cannabinoids							
COOH-THC > 0	2540 (30.5%)	1489 (28.5%)	1008 (34.0%)	1099 (35.5%)	1394 (27.5%)	1283 (26.0%)	1256 (37.2%)
THC > 0	1491 (17.9%)	874 (16.7%)	600 (20.2%)	664 (21.4%)	802 (15.8%)	750 (15.2%)	741 (21.9%)
THC ≥ 2 ng/mL	647 (7.8%)	369 (7.1%)	271 (9.1%)	290 (9.4%)	346 (6.8%)	320 (6.5%)	327 (9.7%)
THC ≥ 5 ng/mL	288 (3.5%)	177 (3.4%)	111 (3.7%)	130 (4.2%)	157 (3.1%)	140 (2.8%)	148 (4.4%)
Other substances							
CNS stimulants	978 (11.8%)	567 (10.8%)	392 (13.2%)	448 (14.5%)	510 (10.1%)	410 (8.3%)	567 (16.8%)
CNS depressants	2203 (26.5%)	1311 (25.1%)	857 (28.9%)	792 (25.6%)	1371 (27.1%)	1195 (24.2%)	1007 (29.8%)
Opioids	914 (11.0%)	438 (8.4%)	425 (14.3%)	351 (11.3%)	513 (10.1%)	460 (9.3%)	454 (13.4%)
Any substance	4463 (53.7%)	2584 (49.4%)	1803 (60.9%)	1909 (61.6%)	2458 (48.5%)	2250 (45.6%)	2211 (65.4%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 2.1. Crash characteristics: Count (percent) of injured drivers who test positive for impairing substances by crash characteristics in 2018

Data on drivers involved in crashes in 2018		Injury severity		Crash time		Crash type	
	National	Treated and released	Admitted	Nighttime	Daytime	Multi-vehicle	Single-vehicle
Total injured drivers	1990 (100%)	1188 (100%)	798 (100%)	747 (100%)	1218 (100%)	1186 (100%)	804 (100%)
Alcohol							
BAC > 0	308 (15.5%)	167 (14.1%)	141 (17.7%)	214 (28.6%)	90 (7.4%)	81 (6.8%)	227 (28.2%)
0 < BAC < 0.05%	47 (2.4%)	22 (1.9%)	25 (3.1%)	24 (3.2%)	23 (1.9%)	22 (1.9%)	25 (3.1%)
0.05% ≤ BAC < 0.08%	30 (1.5%)	13 (1.1%)	17 (2.1%)	19 (2.5%)	10 (0.8%)	10 (0.8%)	20 (2.5%)
BAC ≥ 0.08%	231 (11.6%)	132 (11.1%)	99 (12.4%)	171 (22.9%)	57 (4.7%)	49 (4.1%)	182 (22.6%)
Cannabinoids							
COOH-THC > 0	532 (26.7%)	291 (24.5%)	238 (29.8%)	234 (31.3%)	291 (23.9%)	270 (22.8%)	262 (32.6%)
THC > 0	361 (18.1%)	199 (16.8%)	159 (19.9%)	172 (23.0%)	184 (15.1%)	179 (15.1%)	182 (22.6%)
THC ≥ 2 ng/mL	130 (6.5%)	66 (5.6%)	63 (7.9%)	64 (8.6%)	64 (5.3%)	67 (5.6%)	63 (7.8%)
THC ≥ 5 ng/mL	49 (2.5%)	24 (2.0%)	25 (3.1%)	25 (3.3%)	24 (2.0%)	27 (2.3%)	22 (2.7%)
Other substances							
CNS stimulants	194 (9.7%)	122 (10.3%)	70 (8.8%)	79 (10.6%)	113 (9.3%)	95 (8.0%)	99 (12.3%)
CNS depressants	403 (20.3%)	222 (18.7%)	180 (22.6%)	145 (19.4%)	253 (20.8%)	223 (18.8%)	180 (22.4%)
Opioids	168 (8.4%)	84 (7.1%)	83 (10.4%)	65 (8.7%)	103 (8.5%)	93 (7.8%)	75 (9.3%)
Any substance	961 (48.3%)	536 (45.1%)	421 (52.8%)	434 (58.1%)	515 (42.3%)	482 (40.6%)	479 (59.6%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 2.2. Crash characteristics: Count (percent) of injured drivers who test positive for impairing substances by crash characteristics in 2019

Data on drivers involved in crashes in 2019		Injury severity		Crash time		Crash type	
	National	Treated and released	Admitted	Nighttime	Daytime	Multi-vehicle	Single-vehicle
Total injured drivers	2224 (100%)	1336 (100%)	886 (100%)	837 (100%)	1362 (100%)	1324 (100%)	898 (100%)
Alcohol							
BAC > 0	341 (15.3%)	154 (11.5%)	186 (21.0%)	236 (28.2%)	97 (7.1%)	97 (7.3%)	243 (27.1%)
0 < BAC < 0.05%	43 (1.9%)	15 (1.1%)	28 (3.2%)	20 (2.4%)	23 (1.7%)	22 (1.7%)	21 (2.3%)
0.05% ≤ BAC < 0.08%	25 (1.1%)	9 (0.7%)	16 (1.8%)	17 (2.0%)	7 (0.5%)	9 (0.7%)	16 (1.8%)
BAC ≥ 0.08%	273 (12.3%)	130 (9.7%)	142 (16.0%)	199 (23.8%)	67 (4.9%)	66 (5.0%)	206 (22.9%)
Cannabinoids							
COOH-THC > 0	753 (33.9%)	426 (31.9%)	326 (36.8%)	311 (37.2%)	433 (31.8%)	393 (29.7%)	359 (40.0%)
THC > 0	433 (19.5%)	234 (17.5%)	198 (22.3%)	176 (21.0%)	253 (18.6%)	229 (17.3%)	204 (22.7%)
THC ≥ 2 ng/mL	182 (8.2%)	106 (7.9%)	76 (8.6%)	72 (8.6%)	108 (7.9%)	94 (7.1%)	88 (9.8%)
THC ≥ 5 ng/mL	85 (3.8%)	54 (4.0%)	31 (3.5%)	38 (4.5%)	47 (3.5%)	43 (3.2%)	42 (4.7%)
Other substances							
CNS stimulants	238 (10.7%)	123 (9.2%)	114 (12.9%)	102 (12.2%)	136 (10.0%)	113 (8.5%)	124 (13.8%)
CNS depressants	642 (28.9%)	347 (26.0%)	294 (33.2%)	236 (28.2%)	399 (29.3%)	363 (27.4%)	278 (31.0%)
Opioids	257 (11.6%)	122 (9.1%)	135 (15.2%)	100 (11.9%)	156 (11.5%)	127 (9.6%)	130 (14.5%)
Any substance	1259 (56.6%)	687 (51.4%)	570 (64.3%)	514 (61.4%)	729 (53.5%)	662 (50.0%)	595 (66.3%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 2.3. Crash characteristics: Count (percent) of injured drivers who test positive for impairing substances by crash characteristics in 2020

Data on drivers involved in crashes in 2020		Injury severity		Crash time		Crash type	
	National	Treated and released	Admitted	Nighttime	Daytime	Multi-vehicle	Single-vehicle
Total injured drivers	1159 (100%)	758 (100%)	332 (100%)	423 (100%)	684 (100%)	688 (100%)	470 (100%)
Alcohol							
BAC > 0	189 (16.3%)	101 (13.3%)	77 (23.2%)	119 (28.1%)	60 (8.8%)	67 (9.7%)	122 (26.0%)
0 < BAC < 0.05%	41 (3.5%)	17 (2.2%)	23 (6.9%)	23 (5.4%)	16 (2.3%)	18 (2.6%)	23 (4.9%)
0.05% ≤ BAC < 0.08%	10 (0.9%)	5 (0.7%)	4 (1.2%)	6 (1.4%)	3 (0.4%)	2 (0.3%)	8 (1.7%)
BAC ≥ 0.08%	138 (11.9%)	79 (10.4%)	50 (15.1%)	90 (21.3%)	41 (6.0%)	47 (6.8%)	91 (19.4%)
Cannabinoids							
COOH-THC > 0	363 (31.3%)	213 (28.1%)	126 (38.0%)	166 (39.2%)	181 (26.5%)	177 (25.7%)	186 (39.6%)
THC > 0	192 (16.6%)	118 (15.6%)	66 (19.9%)	91 (21.5%)	92 (13.5%)	86 (12.5%)	106 (22.6%)
THC ≥ 2 ng/mL	107 (9.2%)	65 (8.6%)	38 (11.4%)	48 (11.3%)	55 (8.0%)	43 (6.2%)	64 (13.6%)
THC ≥ 5 ng/mL	54 (4.7%)	34 (4.5%)	20 (6.0%)	27 (6.4%)	26 (3.8%)	22 (3.2%)	32 (6.8%)
Other substances							
CNS stimulants	178 (15.4%)	106 (14.0%)	61 (18.4%)	92 (21.7%)	76 (11.1%)	65 (9.4%)	113 (24.0%)
CNS depressants	322 (27.8%)	215 (28.4%)	87 (26.2%)	116 (27.4%)	192 (28.1%)	165 (24.0%)	157 (33.4%)
Opioids	178 (15.4%)	83 (10.9%)	69 (20.8%)	78 (18.4%)	76 (11.1%)	91 (13.2%)	87 (18.5%)
Any substance	642 (55.4%)	394 (52.0%)	208 (62.7%)	277 (65.5%)	331 (48.4%)	315 (45.8%)	327 (69.6%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 2.4. Crash characteristics: Count (percent) of injured drivers who test positive for impairing substances by crash characteristics in 2021

Data on drivers involved in crashes in 2021		Injury severity		Crash time		Crash type	
	National	Treated and released	Admitted	Nighttime	Daytime	Multi-vehicle	Single-vehicle
Total injured drivers	2376 (100%)	1509 (100%)	815 (100%)	889 (100%)	1435 (100%)	1363 (100%)	1013 (100%)
Alcohol							
BAC > 0	438 (18.4%)	236 (15.6%)	194 (23.8%)	284 (31.9%)	146 (10.2%)	124 (9.1%)	314 (31.0%)
0 < BAC < 0.05%	79 (3.3%)	45 (3.0%)	33 (4.0%)	36 (4.0%)	43 (3.0%)	30 (2.2%)	49 (4.8%)
0.05% ≤ BAC < 0.08%	27 (1.1%)	12 (0.8%)	15 (1.8%)	20 (2.2%)	6 (0.4%)	6 (0.4%)	21 (2.1%)
BAC ≥ 0.08%	332 (14.0%)	179 (11.9%)	146 (17.9%)	228 (25.6%)	97 (6.8%)	88 (6.5%)	244 (24.1%)
Cannabinoids							
COOH-THC > 0	733 (30.9%)	439 (29.1%)	279 (34.2%)	323 (36.3%)	395 (27.5%)	343 (25.2%)	390 (38.5%)
THC > 0	417 (17.6%)	258 (17.1%)	154 (18.9%)	187 (21.0%)	223 (15.5%)	195 (14.3%)	222 (21.9%)
THC ≥ 2 ng/mL	191 (8.0%)	104 (6.9%)	85 (10.4%)	91 (10.2%)	97 (6.8%)	89 (6.5%)	102 (10.1%)
THC ≥ 5 ng/mL	81 (3.4%)	48 (3.2%)	33 (4.0%)	33 (3.7%)	48 (3.3%)	35 (2.6%)	46 (4.5%)
Other substances							
CNS stimulants	319 (13.4%)	186 (12.3%)	128 (15.7%)	152 (17.1%)	159 (11.1%)	116 (8.5%)	203 (20.0%)
CNS depressants	684 (28.8%)	415 (27.5%)	256 (31.4%)	239 (26.9%)	431 (30.0%)	350 (25.7%)	334 (33.0%)
Opioids	282 (11.9%)	132 (8.7%)	126 (15.5%)	100 (11.2%)	157 (10.9%)	133 (9.8%)	149 (14.7%)
Any substance	1326 (55.8%)	769 (51.0%)	527 (64.7%)	568 (63.9%)	724 (50.5%)	634 (46.5%)	692 (68.3%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 2.5. Crash characteristics: Count (percent) of injured drivers who test positive for impairing substances by crash characteristics in 2022 (additional data from 2022 is pending)

Data on drivers involved in crashes in 2022		Injury severity		Crash time		Crash type	
	National	Treated and released	Admitted	Nighttime	Daytime	Multi-vehicle	Single-vehicle
Total injured drivers	568 (100%)	436 (100%)	132 (100%)	202 (100%)	366 (100%)	374 (100%)	194 (100%)
Alcohol							
BAC > 0	63 (11.1%)	45 (10.3%)	18 (13.6%)	47 (23.3%)	16 (4.4%)	13 (3.5%)	50 (25.8%)
0 < BAC < 0.05%	7 (1.2%)	5 (1.1%)	2 (1.5%)	6 (3.0%)	1 (0.3%)	2 (0.5%)	5 (2.6%)
0.05% ≤ BAC < 0.08%	3 (0.5%)	1 (0.2%)	2 (1.5%)	2 (1.0%)	1 (0.3%)	1 (0.3%)	2 (1.0%)
BAC ≥ 0.08%	53 (9.3%)	39 (8.9%)	14 (10.6%)	39 (19.3%)	14 (3.8%)	10 (2.7%)	43 (22.2%)
Cannabinoids							
COOH-THC > 0	159 (28.0%)	120 (27.5%)	39 (29.5%)	65 (32.2%)	94 (25.7%)	100 (26.7%)	59 (30.4%)
THC > 0	88 (15.5%)	65 (14.9%)	23 (17.4%)	38 (18.8%)	50 (13.7%)	61 (16.3%)	27 (13.9%)
THC ≥ 2 ng/mL	37 (6.5%)	28 (6.4%)	9 (6.8%)	15 (7.4%)	22 (6.0%)	27 (7.2%)	10 (5.2%)
THC ≥ 5 ng/mL	19 (3.3%)	17 (3.9%)	2 (1.5%)	7 (3.5%)	12 (3.3%)	13 (3.5%)	6 (3.1%)
Other substances							
CNS stimulants	49 (8.6%)	30 (6.9%)	19 (14.4%)	23 (11.4%)	26 (7.1%)	21 (5.6%)	28 (14.4%)
CNS depressants	152 (26.8%)	112 (25.7%)	40 (30.3%)	56 (27.7%)	96 (26.2%)	94 (25.1%)	58 (29.9%)
Opioids	29 (5.1%)	17 (3.9%)	12 (9.1%)	8 (4.0%)	21 (5.7%)	16 (4.3%)	13 (6.7%)
Any substance	275 (48.4%)	198 (45.4%)	77 (58.3%)	116 (57.4%)	159 (43.4%)	157 (42.0%)	118 (60.8%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

depressants, and opioids

Table 3. Regional variation: Count (percent) of injured drivers who test positive for impairing substances by region

Data on all injured drivers available to date	National	British Columbia	Alberta	Saskatchewan	Ontario	Quebec	Atlantic Provinces
Total injured drivers	8317 (100%)	2775 (100%)	1895 (100%)	575 (100%)	1613 (100%)	914 (100%)	545 (100%)
Alcohol							
BAC > 0	1339 (16.1%)	325 (11.7%)	297 (15.7%)	119 (20.7%)	293 (18.2%)	176 (19.3%)	129 (23.7%)
0 < BAC < 0.05%	217 (2.6%)	61 (2.2%)	30 (1.6%)	18 (3.1%)	34 (2.1%)	42 (4.6%)	32 (5.9%)
0.05% ≤ BAC < 0.08%	95 (1.1%)	25 (0.9%)	19 (1.0%)	8 (1.4%)	28 (1.7%)	13 (1.4%)	2 (0.4%)
BAC ≥ 0.08%	1027 (12.3%)	239 (8.6%)	248 (13.1%)	93 (16.2%)	231 (14.3%)	121 (13.2%)	95 (17.4%)
Cannabinoids							
COOH-THC > 0	2540 (30.5%)	741 (26.7%)	550 (29.0%)	195 (33.9%)	561 (34.8%)	240 (26.3%)	253 (46.4%)
THC > 0	1491 (17.9%)	453 (16.3%)	279 (14.7%)	123 (21.4%)	289 (17.9%)	201 (22.0%)	146 (26.8%)
THC ≥ 2 ng/mL	647 (7.8%)	175 (6.3%)	118 (6.2%)	64 (11.1%)	124 (7.7%)	79 (8.6%)	87 (16.0%)
THC ≥ 5 ng/mL	288 (3.5%)	66 (2.4%)	59 (3.1%)	34 (5.9%)	50 (3.1%)	38 (4.2%)	41 (7.5%)
Other substances							
CNS stimulants	978 (11.8%)	280 (10.1%)	239 (12.6%)	66 (11.5%)	171 (10.6%)	118 (12.9%)	104 (19.1%)
CNS depressants	2203 (26.5%)	608 (21.9%)	542 (28.6%)	177 (30.8%)	394 (24.4%)	253 (27.7%)	229 (42.0%)
Opioids	914 (11.0%)	222 (8.0%)	259 (13.7%)	77 (13.4%)	204 (12.6%)	75 (8.2%)	77 (14.1%)
Any substance	4463 (53.7%)	1262 (45.5%)	1075 (56.7%)	352 (61.2%)	868 (53.8%)	523 (57.2%)	383 (70.3%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 3.1. Regional variation: Count (percent) of injured drivers who test positive for impairing substances by region in 2018

Data on drivers involved in crashes in 2018	National	British Columbia	Alberta	Saskatchewan	Ontario	Quebec	Atlantic Provinces
Total injured drivers	1990 (100%)	868 (100%)	507 (100%)	101 (100%)	514 (100%)		
Alcohol							
BAC > 0	308 (15.5%)	106 (12.2%)	99 (19.5%)	24 (23.8%)	79 (15.4%)		
0 < BAC < 0.05%	47 (2.4%)	20 (2.3%)	9 (1.8%)	6 (5.9%)	12 (2.3%)		
0.05% ≤ BAC < 0.08%	30 (1.5%)	12 (1.4%)	7 (1.4%)	3 (3.0%)	8 (1.6%)		
BAC ≥ 0.08%	231 (11.6%)	74 (8.5%)	83 (16.4%)	15 (14.9%)	59 (11.5%)		
Cannabinoids							
COOH-THC > 0	532 (26.7%)	205 (23.6%)	132 (26.0%)	25 (24.8%)	170 (33.1%)		
THC > 0	361 (18.1%)	142 (16.4%)	88 (17.4%)	20 (19.8%)	111 (21.6%)		
THC ≥ 2 ng/mL	130 (6.5%)	42 (4.8%)	30 (5.9%)	10 (9.9%)	48 (9.3%)		
THC ≥ 5 ng/mL	49 (2.5%)	15 (1.7%)	12 (2.4%)	3 (3.0%)	19 (3.7%)		
Other substances							
CNS stimulants	194 (9.7%)	79 (9.1%)	58 (11.4%)	8 (7.9%)	49 (9.5%)		
CNS depressants	403 (20.3%)	146 (16.8%)	122 (24.1%)	23 (22.8%)	112 (21.8%)		
Opioids	168 (8.4%)	63 (7.3%)	49 (9.7%)	6 (5.9%)	50 (9.7%)		
Any substance	961 (48.3%)	360 (41.5%)	275 (54.2%)	53 (52.5%)	273 (53.1%)		

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 3.2. Regional variation: Count (percent) of injured drivers who test positive for impairing substances by region in 2019

Data on drivers involved in crashes in 2019	National	British Columbia	Alberta	Saskatchewan	Ontario	Quebec	Atlantic Provinces
Total injured drivers	2224 (100%)	754 (100%)	678 (100%)	157 (100%)	512 (100%)	60 (100%)	63 (100%)
Alcohol							
BAC > 0	341 (15.3%)	80 (10.6%)	116 (17.1%)	25 (15.9%)	101 (19.7%)	10 (16.7%)	9 (14.3%)
0 < BAC < 0.05%	43 (1.9%)	13 (1.7%)	15 (2.2%)	1 (0.6%)	13 (2.5%)	1 (1.7%)	0 (0.0%)
0.05% ≤ BAC < 0.08%	25 (1.1%)	5 (0.7%)	6 (0.9%)	3 (1.9%)	10 (2.0%)	0 (0.0%)	1 (1.6%)
BAC ≥ 0.08%	273 (12.3%)	62 (8.2%)	95 (14.0%)	21 (13.4%)	78 (15.2%)	9 (15.0%)	8 (12.7%)
Cannabinoids							
COOH-THC > 0	753 (33.9%)	233 (30.9%)	225 (33.2%)	71 (45.2%)	181 (35.4%)	13 (21.7%)	30 (47.6%)
THC > 0	433 (19.5%)	143 (19.0%)	120 (17.7%)	46 (29.3%)	91 (17.8%)	10 (16.7%)	23 (36.5%)
THC ≥ 2 ng/mL	182 (8.2%)	58 (7.7%)	55 (8.1%)	19 (12.1%)	31 (6.1%)	5 (8.3%)	14 (22.2%)
THC ≥ 5 ng/mL	85 (3.8%)	20 (2.7%)	29 (4.3%)	13 (8.3%)	13 (2.5%)	2 (3.3%)	8 (12.7%)
Other substances							
CNS stimulants	238 (10.7%)	75 (9.9%)	85 (12.5%)	18 (11.5%)	46 (9.0%)	7 (11.7%)	7 (11.1%)
CNS depressants	642 (28.9%)	206 (27.3%)	203 (29.9%)	52 (33.1%)	143 (27.9%)	20 (33.3%)	18 (28.6%)
Opioids	257 (11.6%)	68 (9.0%)	94 (13.9%)	25 (15.9%)	58 (11.3%)	8 (13.3%)	4 (6.3%)
Any substance	1259 (56.6%)	389 (51.6%)	413 (60.9%)	97 (61.8%)	288 (56.2%)	35 (58.3%)	37 (58.7%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 3.3. Regional variation: Count (percent) of injured drivers who test positive for impairing substances by region in 2020

Data on drivers involved in crashes in 2020	National	British Columbia	Alberta	Saskatchewan	Ontario	Quebec	Atlantic Provinces
Total injured drivers	1159 (100%)	312 (100%)	222 (100%)	110 (100%)	132 (100%)	246 (100%)	137 (100%)
Alcohol							
BAC > 0	189 (16.3%)	45 (14.4%)	26 (11.7%)	18 (16.4%)	21 (15.9%)	42 (17.1%)	37 (27.0%)
0 < BAC < 0.05%	41 (3.5%)	9 (2.9%)	3 (1.4%)	2 (1.8%)	1 (0.8%)	20 (8.1%)	6 (4.4%)
0.05% ≤ BAC < 0.08%	10 (0.9%)	2 (0.6%)	2 (0.9%)	1 (0.9%)	1 (0.8%)	3 (1.2%)	1 (0.7%)
BAC ≥ 0.08%	138 (11.9%)	34 (10.9%)	21 (9.5%)	15 (13.6%)	19 (14.4%)	19 (7.7%)	30 (21.9%)
Cannabinoids							
COOH-THC > 0	363 (31.3%)	88 (28.2%)	54 (24.3%)	43 (39.1%)	45 (34.1%)	60 (24.4%)	73 (53.3%)
THC > 0	192 (16.6%)	36 (11.5%)	29 (13.1%)	24 (21.8%)	16 (12.1%)	41 (16.7%)	46 (33.6%)
THC ≥ 2 ng/mL	107 (9.2%)	20 (6.4%)	16 (7.2%)	15 (13.6%)	6 (4.5%)	27 (11.0%)	23 (16.8%)
THC ≥ 5 ng/mL	54 (4.7%)	10 (3.2%)	10 (4.5%)	8 (7.3%)	0 (0.0%)	16 (6.5%)	10 (7.3%)
Other substances							
CNS stimulants	178 (15.4%)	44 (14.1%)	31 (14.0%)	18 (16.4%)	20 (15.2%)	31 (12.6%)	34 (24.8%)
CNS depressants	322 (27.8%)	68 (21.8%)	77 (34.7%)	31 (28.2%)	32 (24.2%)	61 (24.8%)	53 (38.7%)
Opioids	178 (15.4%)	34 (10.9%)	40 (18.0%)	21 (19.1%)	37 (28.0%)	26 (10.6%)	20 (14.6%)
Any substance	642 (55.4%)	146 (46.8%)	134 (60.4%)	70 (63.6%)	70 (53.0%)	129 (52.4%)	93 (67.9%)

Notes:

1. “CNS Stimulants” include cocaine, methamphetamine, and other amphetamines.
2. “CNS Depressants” include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. “Any substance” refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 3.4. Regional variation: Count (percent) of injured drivers who test positive for impairing substances by region in 2021

Data on drivers involved in crashes in 2021	National	British Columbia	Alberta	Saskatchewan	Ontario	Quebec	Atlantic Provinces
Total injured drivers	2376 (100%)	633 (100%)	383 (100%)	144 (100%)	455 (100%)	459 (100%)	302 (100%)
Alcohol							
BAC > 0	438 (18.4%)	83 (13.1%)	47 (12.3%)	36 (25.0%)	92 (20.2%)	102 (22.2%)	78 (25.8%)
0 < BAC < 0.05%	79 (3.3%)	18 (2.8%)	3 (0.8%)	5 (3.5%)	8 (1.8%)	20 (4.4%)	25 (8.3%)
0.05% ≤ BAC < 0.08%	27 (1.1%)	6 (0.9%)	3 (0.8%)	1 (0.7%)	9 (2.0%)	8 (1.7%)	0 (0.0%)
BAC ≥ 0.08%	332 (14.0%)	59 (9.3%)	41 (10.7%)	30 (20.8%)	75 (16.5%)	74 (16.1%)	53 (17.5%)
Cannabinoids							
COOH-THC > 0	733 (30.9%)	160 (25.3%)	102 (26.6%)	40 (27.8%)	165 (36.3%)	132 (28.8%)	134 (44.4%)
THC > 0	417 (17.6%)	86 (13.6%)	40 (10.4%)	22 (15.3%)	71 (15.6%)	128 (27.9%)	70 (23.2%)
THC ≥ 2 ng/mL	191 (8.0%)	38 (6.0%)	17 (4.4%)	13 (9.0%)	39 (8.6%)	39 (8.5%)	45 (14.9%)
THC ≥ 5 ng/mL	81 (3.4%)	14 (2.2%)	8 (2.1%)	6 (4.2%)	18 (4.0%)	17 (3.7%)	18 (6.0%)
Other substances							
CNS stimulants	319 (13.4%)	69 (10.9%)	49 (12.8%)	19 (13.2%)	56 (12.3%)	65 (14.2%)	61 (20.2%)
CNS depressants	684 (28.8%)	147 (23.2%)	110 (28.7%)	54 (37.5%)	107 (23.5%)	129 (28.1%)	137 (45.4%)
Opioids	282 (11.9%)	50 (7.9%)	67 (17.5%)	23 (16.0%)	59 (13.0%)	35 (7.6%)	48 (15.9%)
Any substance	1326 (55.8%)	280 (44.2%)	204 (53.3%)	97 (67.4%)	237 (52.1%)	283 (61.7%)	225 (74.5%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 3.5. Regional variation: Count (percent) of injured drivers who test positive for impairing substances by region in 2022 (additional data from 2022 is pending)

Data on drivers involved in crashes in 2022	National	British Columbia	Alberta	Saskatchewan	Ontario	Quebec	Atlantic Provinces
Total injured drivers	568 (100%)	208 (100%)	105 (100%)	63 (100%)		149 (100%)	43 (100%)
Alcohol							
BAC > 0	63 (11.1%)	11 (5.3%)	9 (8.6%)	16 (25.4%)		22 (14.8%)	5 (11.6%)
0 < BAC < 0.05%	7 (1.2%)	1 (0.5%)	0 (0.0%)	4 (6.3%)		1 (0.7%)	1 (2.3%)
0.05% ≤ BAC < 0.08%	3 (0.5%)	0 (0.0%)	1 (1.0%)	0 (0.0%)		2 (1.3%)	0 (0.0%)
BAC ≥ 0.08%	53 (9.3%)	10 (4.8%)	8 (7.6%)	12 (19.0%)		19 (12.8%)	4 (9.3%)
Cannabinoids							
COOH-THC > 0	159 (28.0%)	55 (26.4%)	37 (35.2%)	16 (25.4%)		35 (23.5%)	16 (37.2%)
THC > 0	88 (15.5%)	46 (22.1%)	2 (1.9%)	11 (17.5%)		22 (14.8%)	7 (16.3%)
THC ≥ 2 ng/mL	37 (6.5%)	17 (8.2%)	0 (0.0%)	7 (11.1%)		8 (5.4%)	5 (11.6%)
THC ≥ 5 ng/mL	19 (3.3%)	7 (3.4%)	0 (0.0%)	4 (6.3%)		3 (2.0%)	5 (11.6%)
Other substances							
CNS stimulants	49 (8.6%)	13 (6.2%)	16 (15.2%)	3 (4.8%)		15 (10.1%)	2 (4.7%)
CNS depressants	152 (26.8%)	41 (19.7%)	30 (28.6%)	17 (27.0%)		43 (28.9%)	21 (48.8%)
Opioids	29 (5.1%)	7 (3.4%)	9 (8.6%)	2 (3.2%)		6 (4.0%)	5 (11.6%)
Any substance	275 (48.4%)	87 (41.8%)	49 (46.7%)	35 (55.6%)		76 (51.0%)	28 (65.1%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 4. Polysubstance use: Count (percent) of injured drivers who test positive for one or more types of impairing substance in Canada

Data on all injured drivers available to date	National	British Columbia	Alberta	Saskatchewan	Ontario	Quebec	Atlantic Provinces
Total injured drivers	8317 (100%)	2775 (100%)	1895 (100%)	575 (100%)	1613 (100%)	914 (100%)	545 (100%)
Number of substances							
1	2651 (31.9%)	783 (28.2%)	660 (34.8%)	200 (34.8%)	515 (31.9%)	308 (33.7%)	185 (33.9%)
2	1266 (15.2%)	349 (12.6%)	304 (16.0%)	104 (18.1%)	241 (14.9%)	154 (16.8%)	114 (20.9%)
3 or more	546 (6.6%)	130 (4.7%)	111 (5.9%)	48 (8.3%)	112 (6.9%)	61 (6.7%)	84 (15.4%)
Alcohol and THC							
BAC > 0 & THC > 0	407 (4.9%)	94 (3.4%)	86 (4.5%)	44 (7.7%)	80 (5.0%)	59 (6.5%)	44 (8.1%)
BAC ≥ 0.05% & THC ≥ 2 ng/mL	135 (1.6%)	32 (1.2%)	24 (1.3%)	19 (3.3%)	29 (1.8%)	18 (2.0%)	13 (2.4%)
Alcohol and other substances							
BAC > 0 & CNS stimulants	306 (3.7%)	69 (2.5%)	62 (3.3%)	24 (4.2%)	62 (3.8%)	46 (5.0%)	43 (7.9%)
BAC > 0 & CNS depressants	407 (4.9%)	87 (3.1%)	91 (4.8%)	33 (5.7%)	80 (5.0%)	55 (6.0%)	61 (11.2%)
BAC > 0 & Opioids	148 (1.8%)	27 (1.0%)	34 (1.8%)	15 (2.6%)	38 (2.4%)	18 (2.0%)	16 (2.9%)
THC and other substances							
THC > 0 & CNS stimulants	289 (3.5%)	77 (2.8%)	51 (2.7%)	31 (5.4%)	50 (3.1%)	47 (5.1%)	33 (6.1%)
THC > 0 & CNS depressants	424 (5.1%)	111 (4.0%)	73 (3.9%)	41 (7.1%)	78 (4.8%)	58 (6.3%)	63 (11.6%)
THC > 0 & Opioids	186 (2.2%)	41 (1.5%)	41 (2.2%)	17 (3.0%)	42 (2.6%)	20 (2.2%)	25 (4.6%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. The following are considered distinct substances: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 4.1. Polysubstance use: Count (percent) of injured drivers who test positive for one or more types of impairing substance in 2018

Data on drivers involved in crashes in 2018	National	British Columbia	Alberta	Saskatchewan	Ontario	Quebec	Atlantic Provinces
Total injured drivers	1990 (100%)	868 (100%)	507 (100%)	101 (100%)	514 (100%)		
Number of substances							
1	596 (29.9%)	224 (25.8%)	167 (32.9%)	28 (27.7%)	177 (34.4%)		
2	274 (13.8%)	102 (11.8%)	80 (15.8%)	22 (21.8%)	70 (13.6%)		
3 or more	91 (4.6%)	34 (3.9%)	28 (5.5%)	3 (3.0%)	26 (5.1%)		
Alcohol and THC							
BAC > 0 & THC > 0	103 (5.2%)	36 (4.1%)	34 (6.7%)	10 (9.9%)	23 (4.5%)		
BAC ≥ 0.05% & THC ≥ 2 ng/mL	31 (1.6%)	9 (1.0%)	9 (1.8%)	4 (4.0%)	9 (1.8%)		
Alcohol and other substances							
BAC > 0 & CNS stimulants	48 (2.4%)	13 (1.5%)	17 (3.4%)	3 (3.0%)	15 (2.9%)		
BAC > 0 & CNS depressants	75 (3.8%)	27 (3.1%)	27 (5.3%)	4 (4.0%)	17 (3.3%)		
BAC > 0 & Opioids	27 (1.4%)	9 (1.0%)	9 (1.8%)	1 (1.0%)	8 (1.6%)		
THC and other substances							
THC > 0 & CNS stimulants	63 (3.2%)	29 (3.3%)	11 (2.2%)	5 (5.0%)	18 (3.5%)		
THC > 0 & CNS depressants	82 (4.1%)	31 (3.6%)	25 (4.9%)	1 (1.0%)	25 (4.9%)		
THC > 0 & Opioids	42 (2.1%)	14 (1.6%)	12 (2.4%)	0 (0.0%)	16 (3.1%)		

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. The following are considered distinct substances: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 4.2. Polysubstance use: Count (percent) of injured drivers who test positive for one or more types of impairing substance in 2019

Data on drivers involved in crashes in 2019	National	British Columbia	Alberta	Saskatchewan	Ontario	Quebec	Atlantic Provinces
Total injured drivers	2224 (100%)	754 (100%)	678 (100%)	157 (100%)	512 (100%)	60 (100%)	63 (100%)
Number of substances							
1	776 (34.9%)	250 (33.2%)	256 (37.8%)	49 (31.2%)	179 (35.0%)	22 (36.7%)	20 (31.7%)
2	343 (15.4%)	103 (13.7%)	115 (17.0%)	30 (19.1%)	74 (14.5%)	9 (15.0%)	12 (19.0%)
3 or more	140 (6.3%)	36 (4.8%)	42 (6.2%)	18 (11.5%)	35 (6.8%)	4 (6.7%)	5 (7.9%)
Alcohol and THC							
BAC > 0 & THC > 0	113 (5.1%)	25 (3.3%)	38 (5.6%)	15 (9.6%)	25 (4.9%)	3 (5.0%)	7 (11.1%)
BAC ≥ 0.05% & THC ≥ 2 ng/mL	26 (1.2%)	6 (0.8%)	8 (1.2%)	4 (2.5%)	4 (0.8%)	1 (1.7%)	3 (4.8%)
Alcohol and other substances							
BAC > 0 & CNS stimulants	77 (3.5%)	22 (2.9%)	26 (3.8%)	4 (2.5%)	19 (3.7%)	3 (5.0%)	3 (4.8%)
BAC > 0 & CNS depressants	114 (5.1%)	24 (3.2%)	41 (6.0%)	9 (5.7%)	32 (6.2%)	5 (8.3%)	3 (4.8%)
BAC > 0 & Opioids	44 (2.0%)	9 (1.2%)	15 (2.2%)	3 (1.9%)	15 (2.9%)	1 (1.7%)	1 (1.6%)
THC and other substances							
THC > 0 & CNS stimulants	75 (3.4%)	18 (2.4%)	24 (3.5%)	11 (7.0%)	15 (2.9%)	2 (3.3%)	5 (7.9%)
THC > 0 & CNS depressants	132 (5.9%)	40 (5.3%)	29 (4.3%)	21 (13.4%)	28 (5.5%)	4 (6.7%)	10 (15.9%)
THC > 0 & Opioids	47 (2.1%)	14 (1.9%)	11 (1.6%)	9 (5.7%)	11 (2.1%)	1 (1.7%)	1 (1.6%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. The following are considered distinct substances: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 4.3. Polysubstance use: Count (percent) of injured drivers who test positive for one or more types of impairing substance in 2020

Data on drivers involved in crashes in 2020	National	British Columbia	Alberta	Saskatchewan	Ontario	Quebec	Atlantic Provinces
Total injured drivers	1159 (100%)	312 (100%)	222 (100%)	110 (100%)	132 (100%)	246 (100%)	137 (100%)
Number of substances							
1	358 (30.9%)	86 (27.6%)	87 (39.2%)	41 (37.3%)	33 (25.0%)	78 (31.7%)	33 (24.1%)
2	174 (15.0%)	40 (12.8%)	27 (12.2%)	19 (17.3%)	22 (16.7%)	37 (15.0%)	29 (21.2%)
3 or more	110 (9.5%)	20 (6.4%)	20 (9.0%)	10 (9.1%)	15 (11.4%)	14 (5.7%)	31 (22.6%)
Alcohol and THC							
BAC > 0 & THC > 0	48 (4.1%)	7 (2.2%)	6 (2.7%)	5 (4.5%)	4 (3.0%)	11 (4.5%)	15 (10.9%)
BAC ≥ 0.05% & THC ≥ 2 ng/mL	21 (1.8%)	5 (1.6%)	3 (1.4%)	2 (1.8%)	3 (2.3%)	4 (1.6%)	4 (2.9%)
Alcohol and other substances							
BAC > 0 & CNS stimulants	60 (5.2%)	12 (3.8%)	7 (3.2%)	7 (6.4%)	9 (6.8%)	11 (4.5%)	14 (10.2%)
BAC > 0 & CNS depressants	59 (5.1%)	14 (4.5%)	8 (3.6%)	1 (0.9%)	5 (3.8%)	12 (4.9%)	19 (13.9%)
BAC > 0 & Opioids	29 (2.5%)	4 (1.3%)	2 (0.9%)	4 (3.6%)	6 (4.5%)	8 (3.3%)	5 (3.6%)
THC and other substances							
THC > 0 & CNS stimulants	53 (4.6%)	7 (2.2%)	7 (3.2%)	9 (8.2%)	5 (3.8%)	9 (3.7%)	16 (11.7%)
THC > 0 & CNS depressants	67 (5.8%)	7 (2.2%)	10 (4.5%)	10 (9.1%)	7 (5.3%)	13 (5.3%)	20 (14.6%)
THC > 0 & Opioids	43 (3.7%)	6 (1.9%)	11 (5.0%)	4 (3.6%)	6 (4.5%)	7 (2.8%)	9 (6.6%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. The following are considered distinct substances: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 4.4. Polysubstance use: Count (percent) of injured drivers who test positive for one or more types of impairing substance in 2021

Data on drivers involved in crashes in 2021	National	British Columbia	Alberta	Saskatchewan	Ontario	Quebec	Atlantic Provinces
Total injured drivers	2376 (100%)	633 (100%)	383 (100%)	144 (100%)	455 (100%)	459 (100%)	302 (100%)
Number of substances							
1	730 (30.7%)	162 (25.6%)	115 (30.0%)	58 (40.3%)	126 (27.7%)	158 (34.4%)	111 (36.8%)
2	410 (17.3%)	83 (13.1%)	71 (18.5%)	25 (17.4%)	75 (16.5%)	86 (18.7%)	70 (23.2%)
3 or more	186 (7.8%)	35 (5.5%)	18 (4.7%)	14 (9.7%)	36 (7.9%)	39 (8.5%)	44 (14.6%)
Alcohol and THC							
BAC > 0 & THC > 0	128 (5.4%)	19 (3.0%)	8 (2.1%)	11 (7.6%)	28 (6.2%)	41 (8.9%)	21 (7.0%)
BAC ≥ 0.05% & THC ≥ 2 ng/mL	50 (2.1%)	8 (1.3%)	4 (1.0%)	7 (4.9%)	13 (2.9%)	12 (2.6%)	6 (2.0%)
Alcohol and other substances							
BAC > 0 & CNS stimulants	108 (4.5%)	21 (3.3%)	10 (2.6%)	7 (4.9%)	19 (4.2%)	25 (5.4%)	26 (8.6%)
BAC > 0 & CNS depressants	140 (5.9%)	21 (3.3%)	13 (3.4%)	13 (9.0%)	26 (5.7%)	31 (6.8%)	36 (11.9%)
BAC > 0 & Opioids	48 (2.0%)	5 (0.8%)	8 (2.1%)	7 (4.9%)	9 (2.0%)	9 (2.0%)	10 (3.3%)
THC and other substances							
THC > 0 & CNS stimulants	81 (3.4%)	15 (2.4%)	8 (2.1%)	5 (3.5%)	12 (2.6%)	30 (6.5%)	11 (3.6%)
THC > 0 & CNS depressants	123 (5.2%)	25 (3.9%)	9 (2.3%)	7 (4.9%)	18 (4.0%)	35 (7.6%)	29 (9.6%)
THC > 0 & Opioids	52 (2.2%)	7 (1.1%)	7 (1.8%)	4 (2.8%)	9 (2.0%)	12 (2.6%)	13 (4.3%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. The following are considered distinct substances: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 4.5. Polysubstance use: Count (percent) of injured drivers who test positive for one or more types of impairing substance in 2022 (additional data from 2022 is pending)

Data on drivers involved in crashes in 2022	National	British Columbia	Alberta	Saskatchewan	Ontario	Quebec	Atlantic Provinces
Total injured drivers	568 (100%)	208 (100%)	105 (100%)	63 (100%)		149 (100%)	43 (100%)
Number of substances							
1	191 (33.6%)	61 (29.3%)	35 (33.3%)	24 (38.1%)		50 (33.6%)	21 (48.8%)
2	65 (11.4%)	21 (10.1%)	11 (10.5%)	8 (12.7%)		22 (14.8%)	3 (7.0%)
3 or more	19 (3.3%)	5 (2.4%)	3 (2.9%)	3 (4.8%)		4 (2.7%)	4 (9.3%)
Alcohol and THC							
BAC > 0 & THC > 0	15 (2.6%)	7 (3.4%)	0 (0.0%)	3 (4.8%)		4 (2.7%)	1 (2.3%)
BAC ≥ 0.05% & THC ≥ 2 ng/mL	7 (1.2%)	4 (1.9%)	0 (0.0%)	2 (3.2%)		1 (0.7%)	0 (0.0%)
Alcohol and other substances							
BAC > 0 & CNS stimulants	13 (2.3%)	1 (0.5%)	2 (1.9%)	3 (4.8%)		7 (4.7%)	0 (0.0%)
BAC > 0 & CNS depressants	19 (3.3%)	1 (0.5%)	2 (1.9%)	6 (9.5%)		7 (4.7%)	3 (7.0%)
BAC > 0 & Opioids	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)		0 (0.0%)	0 (0.0%)
THC and other substances							
THC > 0 & CNS stimulants	17 (3.0%)	8 (3.8%)	1 (1.0%)	1 (1.6%)		6 (4.0%)	1 (2.3%)
THC > 0 & CNS depressants	20 (3.5%)	8 (3.8%)	0 (0.0%)	2 (3.2%)		6 (4.0%)	4 (9.3%)
THC > 0 & Opioids	2 (0.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)		0 (0.0%)	2 (4.7%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. The following are considered distinct substances: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Refer to Table 6 for the count of injured drivers who contributed data to this table by hospital site.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 5. Off-road vehicles: Count (percent) of injured drivers involved in off-road vehicle crashes who test positive for impairing substances by age and sex

Data on all injured drivers available to date		Age group (years)		Sex	
	National	<30	≥30	Female	Male
Total injured drivers	108 (100%)	33 (100%)	75 (100%)	20 (100%)	88 (100%)
Alcohol					
BAC > 0	47 (43.5%)	14 (42.4%)	33 (44.0%)	8 (40.0%)	39 (44.3%)
0 < BAC < 0.05%	5 (4.6%)	3 (9.1%)	2 (2.7%)	1 (5.0%)	4 (4.5%)
0.05% ≤ BAC < 0.08%	7 (6.5%)	3 (9.1%)	4 (5.3%)	1 (5.0%)	6 (6.8%)
BAC ≥ 0.08%	35 (32.4%)	8 (24.2%)	27 (36.0%)	6 (30.0%)	29 (33.0%)
Cannabinoids					
COOH-THC > 0	42 (38.9%)	15 (45.5%)	27 (36.0%)	4 (20.0%)	38 (43.2%)
THC > 0	21 (19.4%)	7 (21.2%)	14 (18.7%)	2 (10.0%)	19 (21.6%)
THC ≥ 2 ng/mL	14 (13.0%)	6 (18.2%)	8 (10.7%)	2 (10.0%)	12 (13.6%)
THC ≥ 5 ng/mL	8 (7.4%)	6 (18.2%)	2 (2.7%)	2 (10.0%)	6 (6.8%)
Other substances					
CNS stimulants	12 (11.1%)	2 (6.1%)	10 (13.3%)	2 (10.0%)	10 (11.4%)
CNS depressants	37 (34.3%)	10 (30.3%)	27 (36.0%)	8 (40.0%)	29 (33.0%)
Opioids	17 (15.7%)	7 (21.2%)	10 (13.3%)	3 (15.0%)	14 (15.9%)
Any substance	79 (73.1%)	25 (75.8%)	54 (72.0%)	14 (70.0%)	65 (73.9%)

Notes:

1. "CNS Stimulants" include cocaine, methamphetamine, and other amphetamines.
2. "CNS Depressants" include antihistamines, antidepressants, anticonvulsants, antipsychotics, benzodiazepines, muscle relaxants, tricyclic antidepressants, and Z-drugs
3. "Any substance" refers to detection of any one (or more) of the following: Alcohol, THC (excludes COOH-THC), CNS stimulants, CNS depressants, and opioids.
4. Drivers of off-road vehicles are excluded from all other tables and figures in this report.
5. Refer to Table 7 for the complete list of drugs included in each substance category.

Table 6. Injured drivers by trauma centre: Count of injured drivers who met inclusion criteria by trauma centre of emergency visit

	Date range	Total injured drivers	Count of injured drivers by year				
			2018	2019	2020	2021	2022
All sites in Canada	Jan 2018 to Aug 2022	8317	1990	2224	1159	2376	568
British Columbia							
Kelowna	Jan 2018 to Jan 2022	307	78	88	49	91	<5
New Westminster	Jan 2018 to May 2022	683	206	190	83	168	36
Vancouver	Jan 2018 to Aug 2022	1503	467	397	159	310	170
Victoria	Jan 2018 to Jan 2022	282	117	79	21	64	<5
Alberta							
Calgary	May 2018 to Jan 2022	1194	334	484	104	261	11
Edmonton	Jun 2018 to Aug 2022	701	173	194	118	122	94
Saskatchewan							
Regina	Oct 2020 to May 2022	96	-	-	10	71	15
Saskatoon	Apr 2018 to Jun 2022	479	101	157	100	73	48
Ontario							
Ottawa	Mar 2018 to Dec 2021	708	207	205	45	251	-
Toronto	Feb 2018 to Sep 2021	905	307	307	87	204	-
Quebec							
Montreal	Nov 2019 to May 2022	529	-	42	139	271	77
Quebec City	Nov 2019 to Jul 2022	385	-	18	107	188	72
Atlantic provinces							
Halifax	Jun 2019 to May 2022	300	-	63	65	135	37
Saint John	May 2020 to Dec 2021	177	-	-	69	108	-
St. John's	Dec 2020 to Jan 2022	68	-	-	<5	59	6

Notes:

1. “Date range” refers to the period of time that the specified site collected data on drivers who met inclusion criteria.
2. Due to delays in toxicology testing, this table does not include all drivers who visited a participating hospital to date. Toxicology data is pending on approximately 2000 drivers from 2022.

Table 7. List of drugs included in each substance category

Alcohol

Cannabinoids

THC
COOH-THC

CNS Stimulants

Amphetamine
- Amphetamine
- MDA
- MDMA

Cocaine
- Benzoylecgonine
- Cocaethylene
- Cocaine

Methamphetamine

Opioids

Acetylmorphine
Buprenorphine
Codeine
EDDP
Fentanyl
Hydrocodone
Hydromorphone
Meperidine
Methadone
Mitragynine
Morphine
Norfentanyl
Oxycodone
Tramadol

CNS Depressants

Anticonvulsant
- Carbamazepine
- Cyclobenzaprine
- Gabapentin
- Lamotrigine
- Phenytoin
- Topiramate
- Valproic acid
- Phenobarbital

Antidepressant
- Bupropion
- Citalopram
- Fluoxetine
- Hydroxybupropion
- Mirtazapine
- Norcitalopram
- Norsertraline
- ODesmethylvenlafaxine
- Paroxetine
- Sertraline
- Trazodone
- Venlafaxine

Antipsychotic
- Chlorpromazine
- Clozapine
- Haloperidol
- Hydroxyrisperidone
- Loxapine
- Olanzapine
- Quetiapine
- Risperidone
- Ziprasidone
- Zuclopenthixol

Z-Drug
- Zolpidem
- Zopiclone

Antihistamine
- Cetirizine
- Chlorpheniramine
- Diphenhydramine
- Doxylamine
- Tripelennamine

Benzodiazepine
- Alprazolam
- Aminoclonazepam
- Aminoflunitrazepam
- Aminonitrazepam
- Chlordiazepoxide
- Clonazepam
- Diazepam
- Etizolam
- Flunitrazepam
- Lorazepam
- Midazolam
- Nitrazepam
- Nordiazepam
- Oxazepam
- Temazepam

Muscle Relaxant
- Baclofen
- Methocarbamol

Tricyclic Antidepressant
- Amitriptyline
- Clomipramine
- Desipramine
- Doxepin
- Imipramine
- Nortriptyline
- Trimipramine

Dextromethorphan

Appendix B: Figures

Prevalence of Alcohol

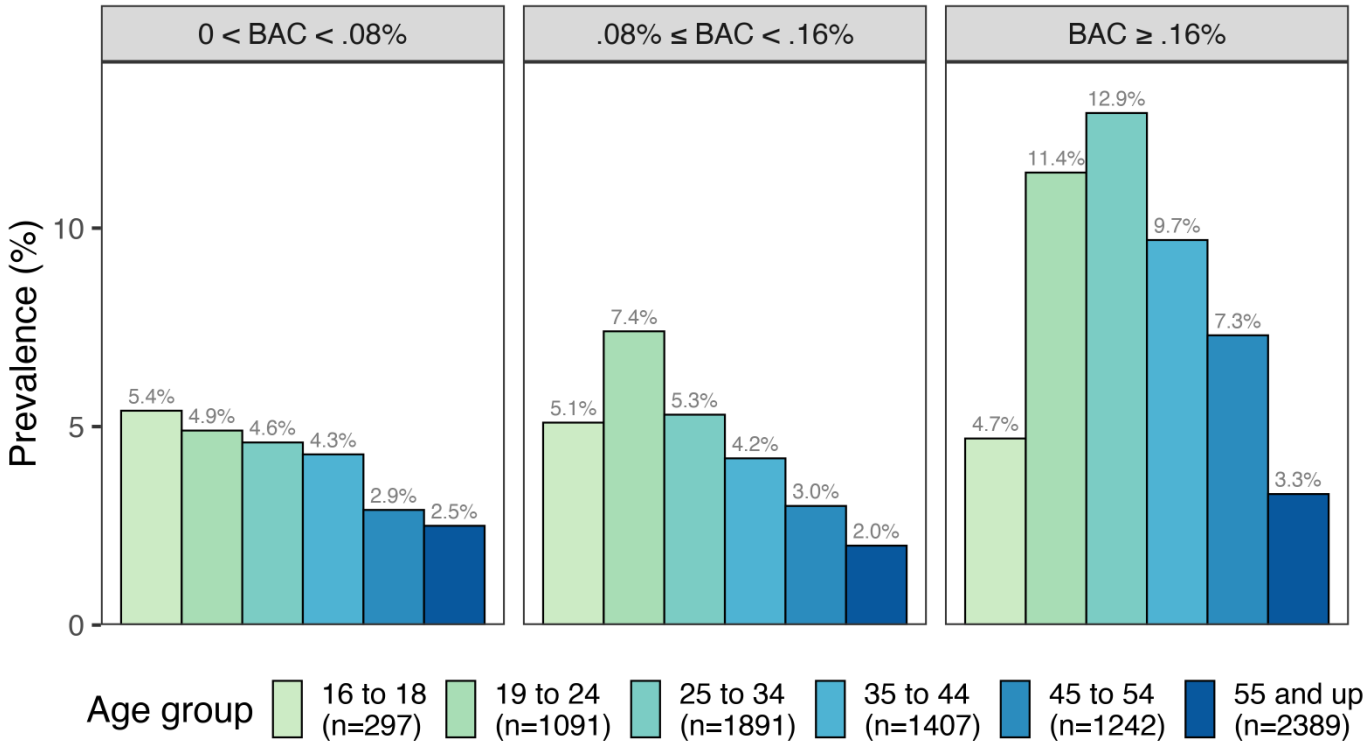

Figure 1. Prevalence of alcohol use among injured drivers in Canada, by age group

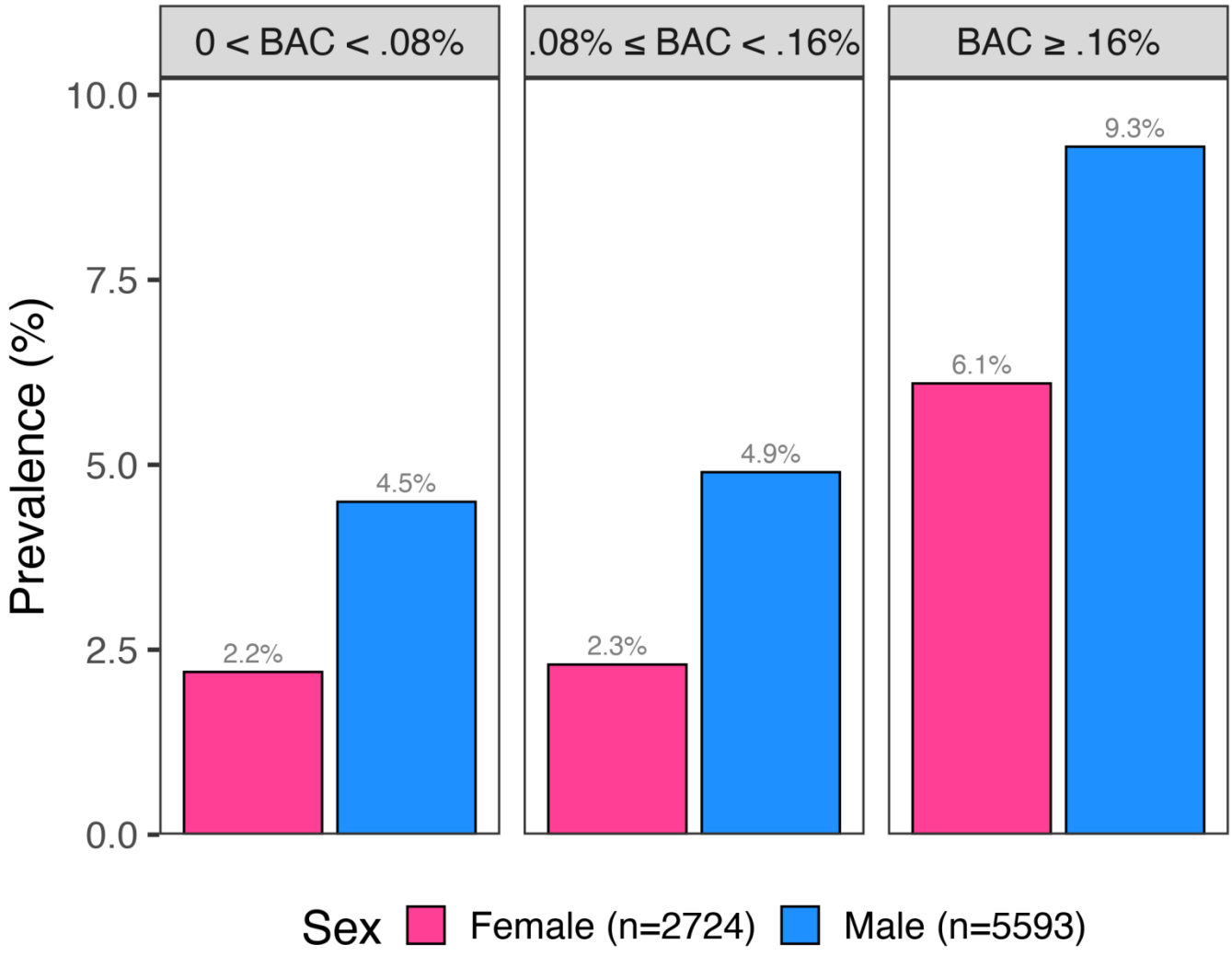

Figure 2. Prevalence of alcohol use among injured drivers in Canada, by sex

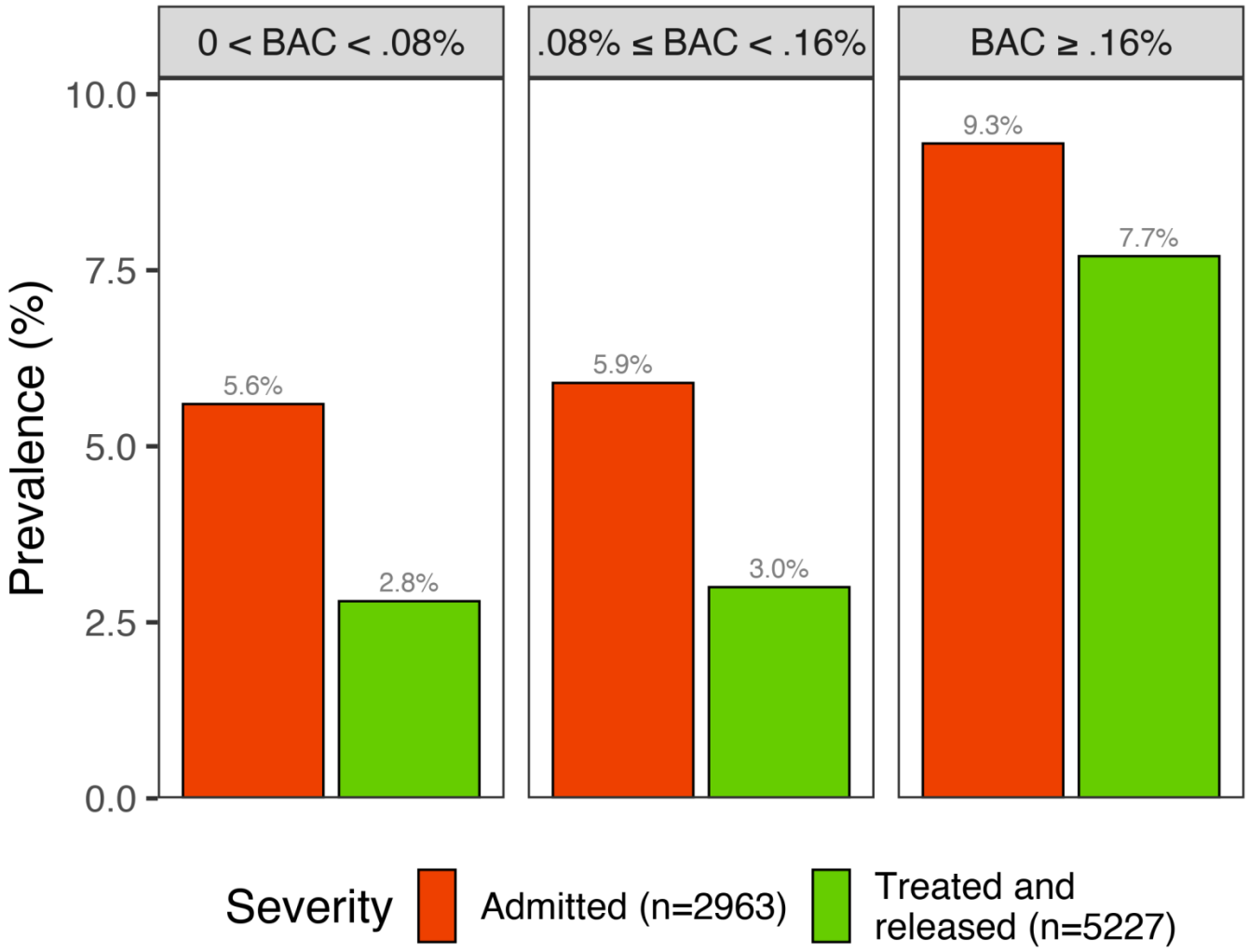

Figure 3. Prevalence of alcohol use among injured drivers in Canada, by injury severity

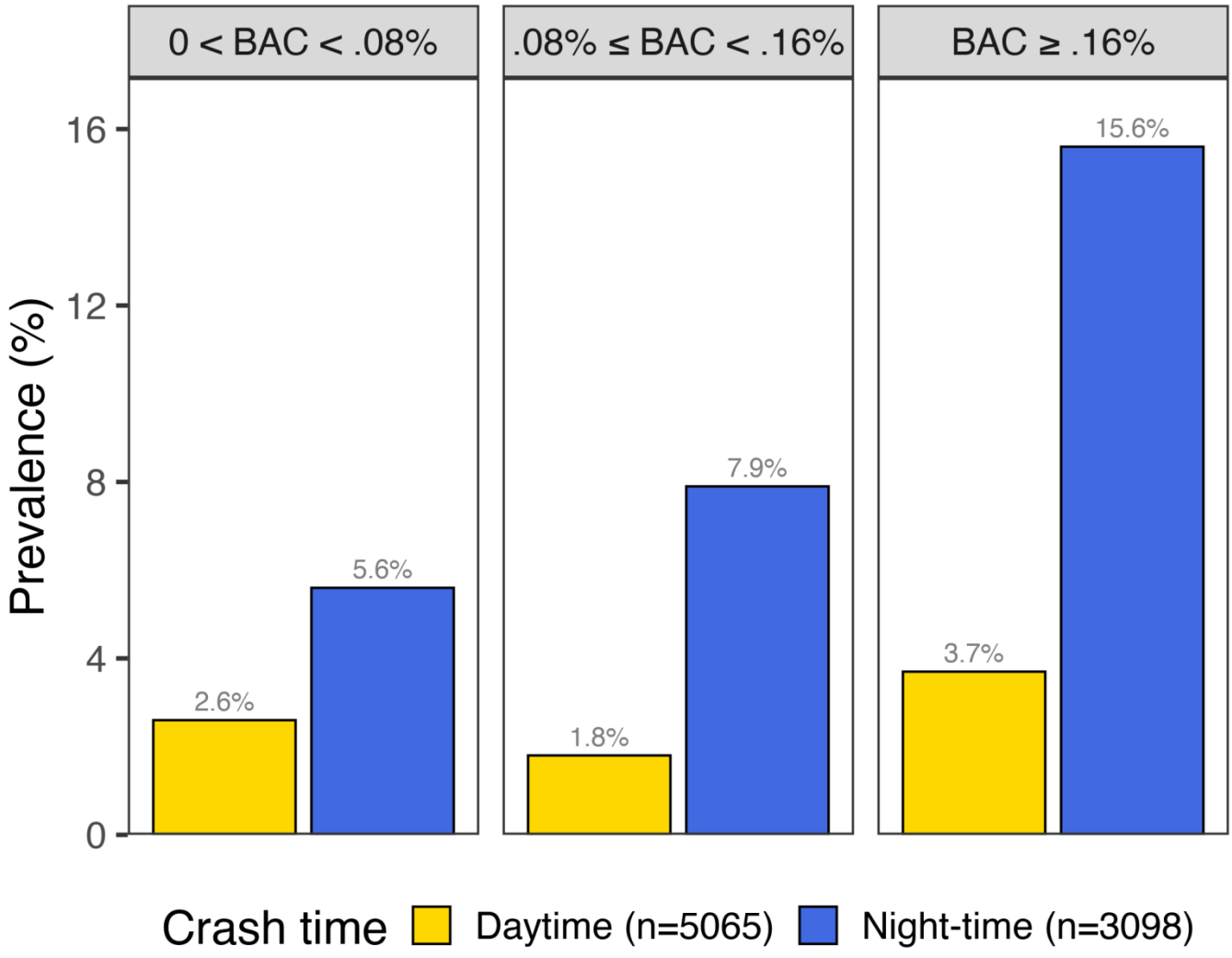

Figure 4. Prevalence of alcohol use among injured drivers in Canada, by time of crash

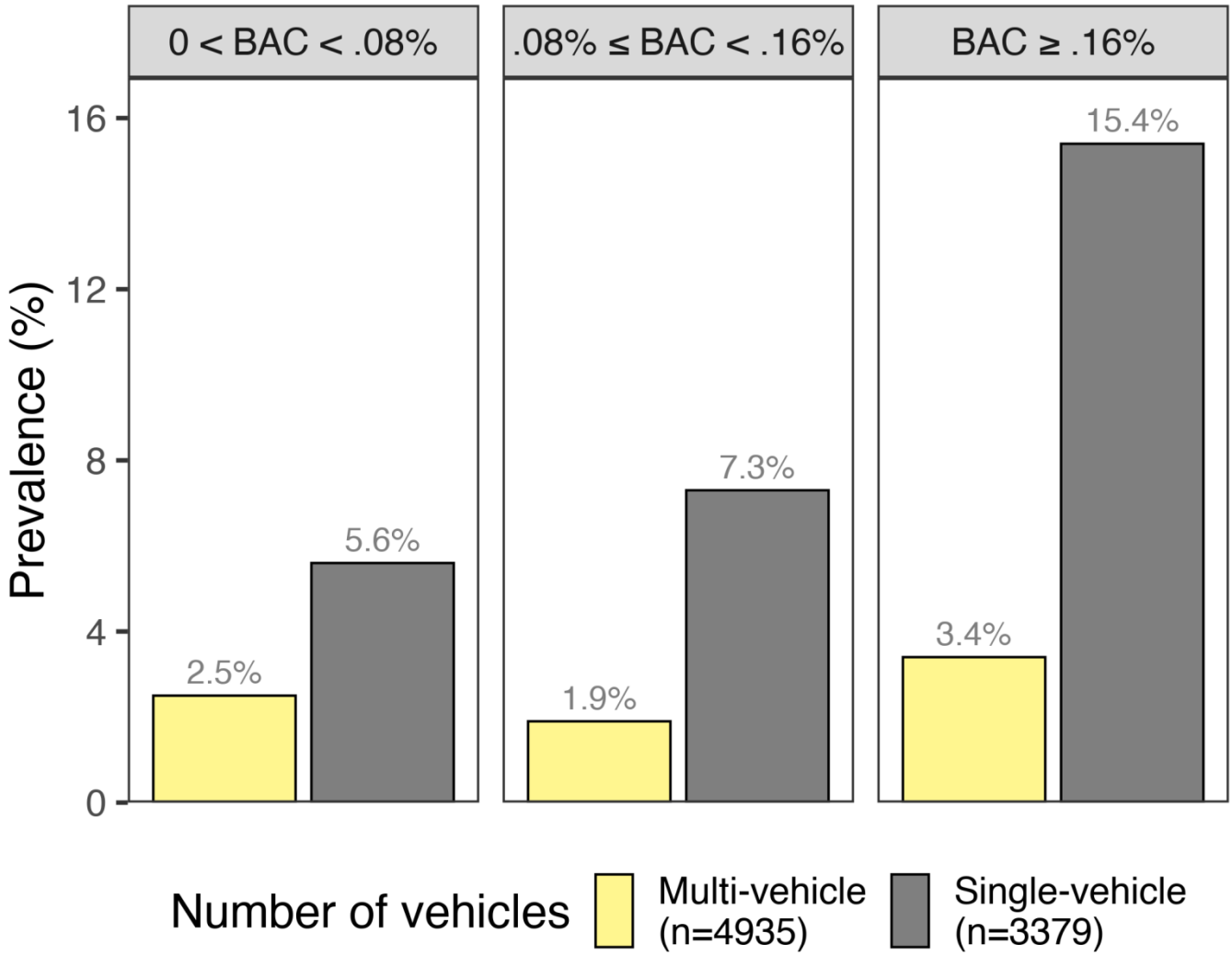

Figure 5. Prevalence of alcohol use among injured drivers in Canada, by number of vehicles involved in the crash

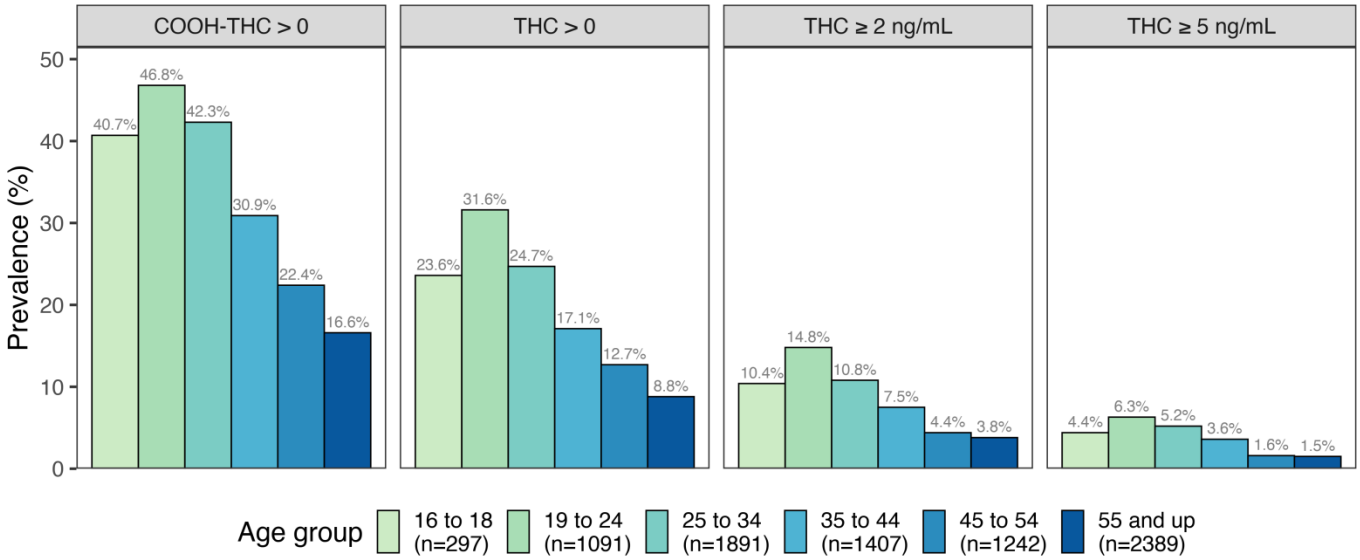

Figure 6. Prevalence of cannabinoids among injured drivers in Canada, by age group

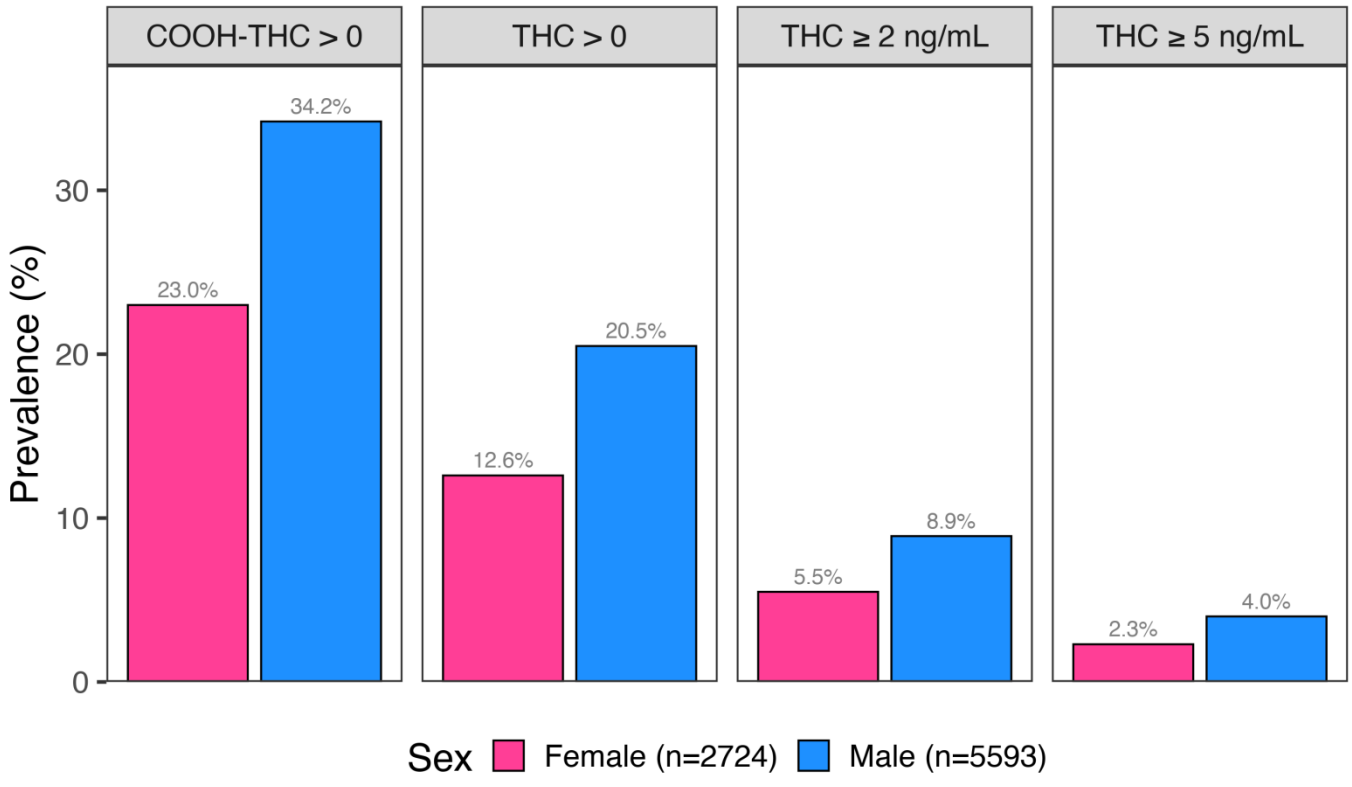

Figure 7. Prevalence of cannabinoids among injured drivers in Canada, by sex

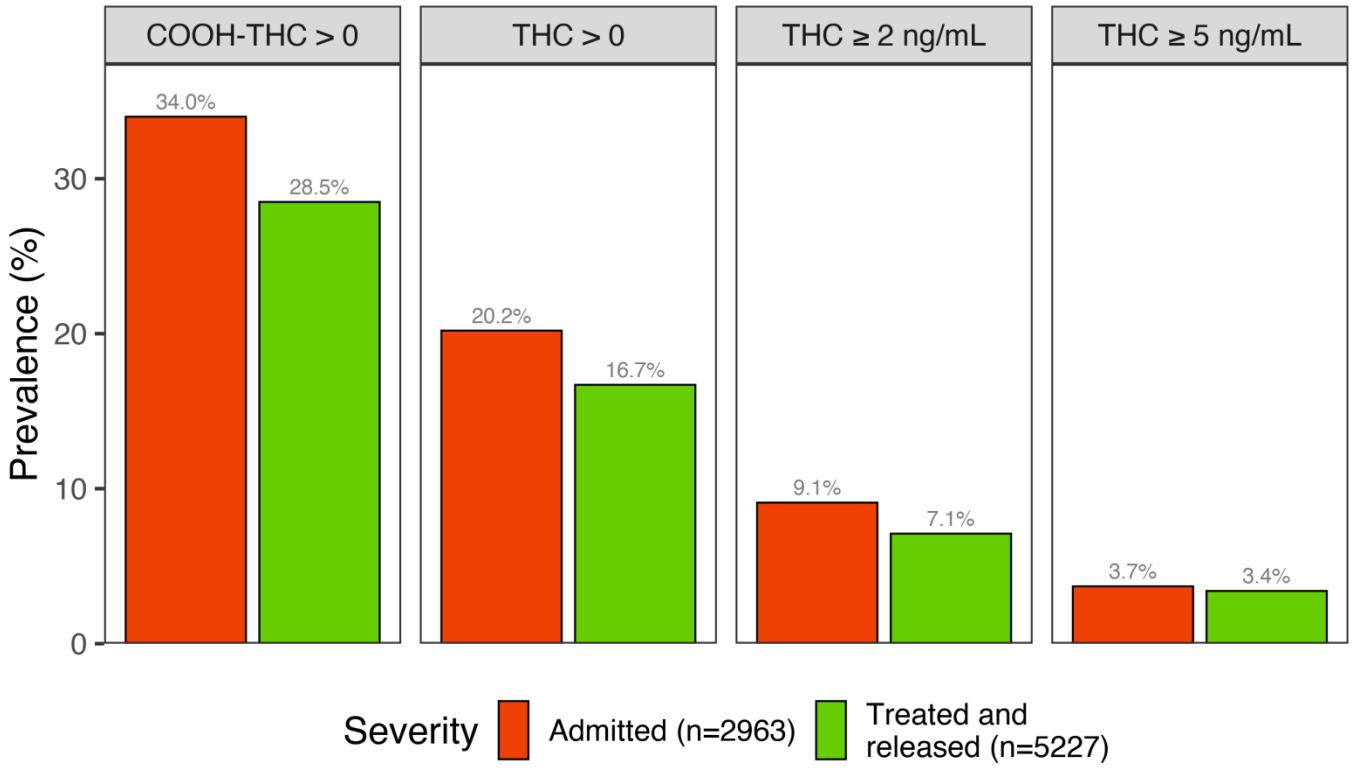

Figure 8. Prevalence of cannabinoids among injured drivers in Canada, by injury severity

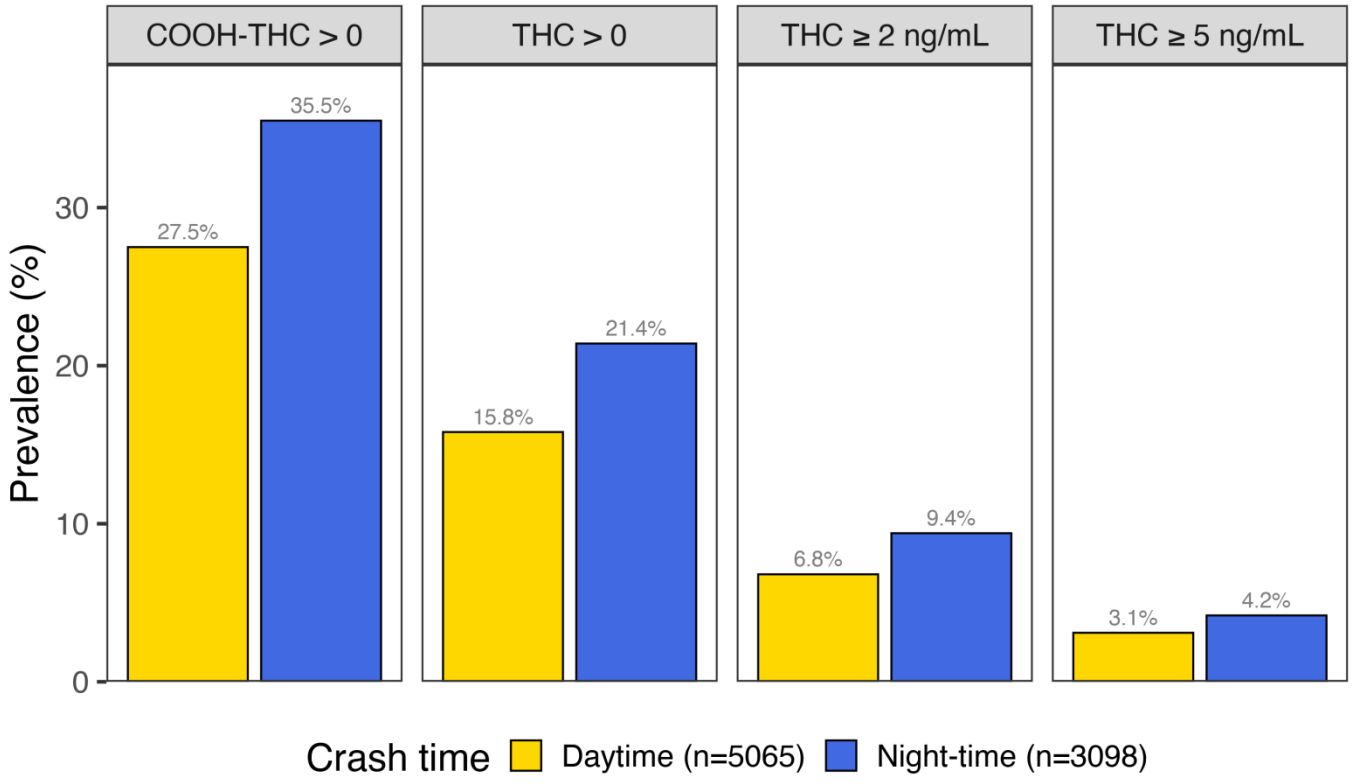

Figure 9. Prevalence of cannabinoids among injured drivers in Canada, by time of crash

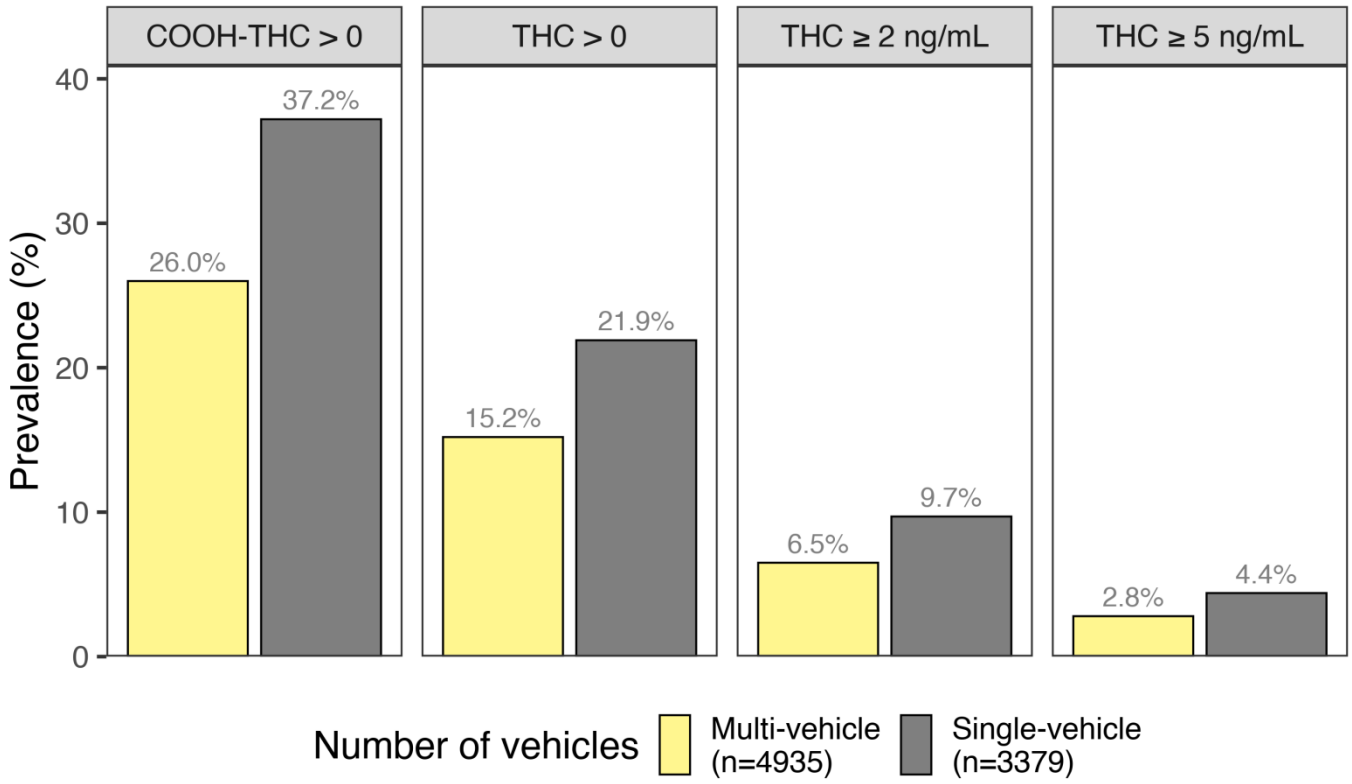

Figure 10. Prevalence of cannabinoids among injured drivers in Canada, by number of vehicles involved in the crash

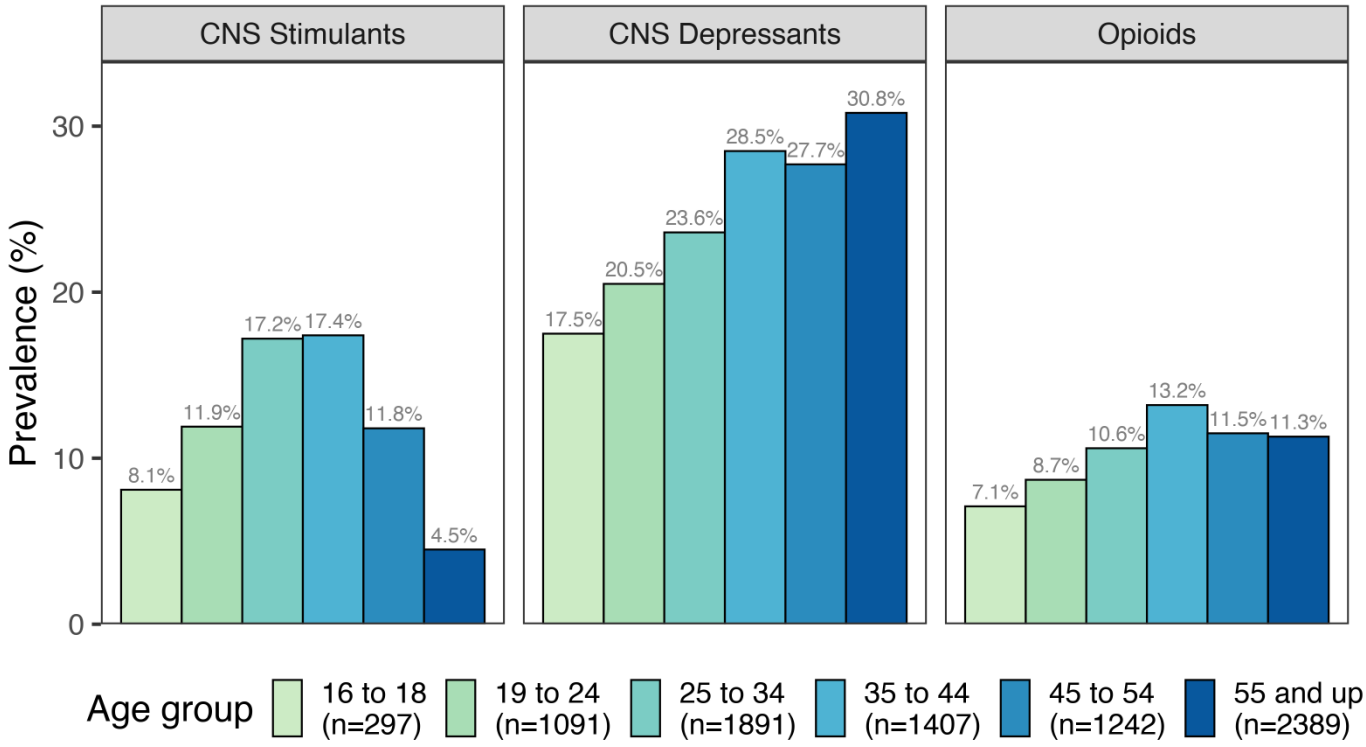

Figure 11. Prevalence of CNS stimulants, CNS depressants, and opioids among injured drivers in Canada, by age group

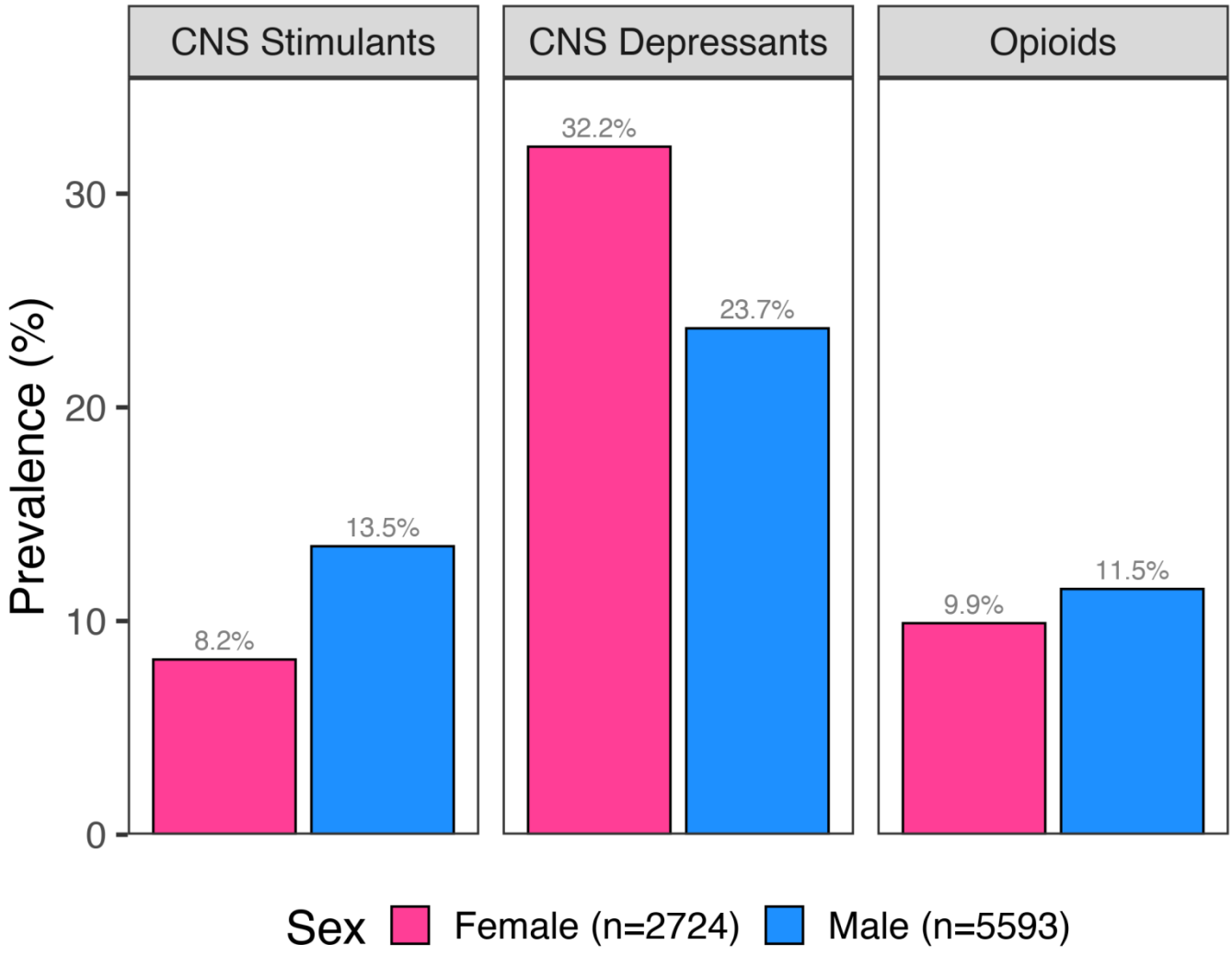

Figure 12. Prevalence of CNS stimulants, CNS depressants, and opioids among injured drivers in Canada, by sex

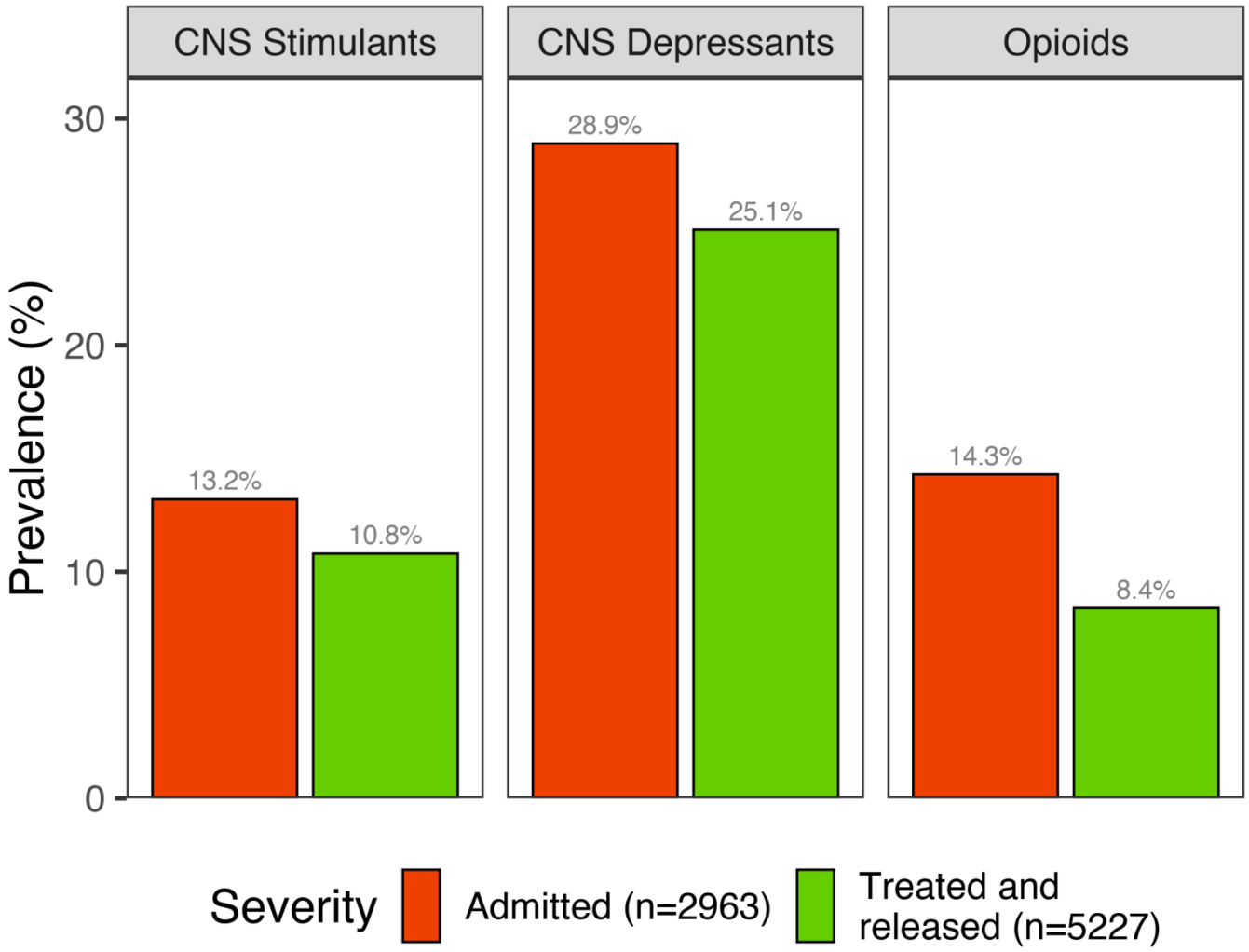

Figure 13. Prevalence of CNS stimulants, CNS depressants, and opioids among injured drivers in Canada, by injury severity

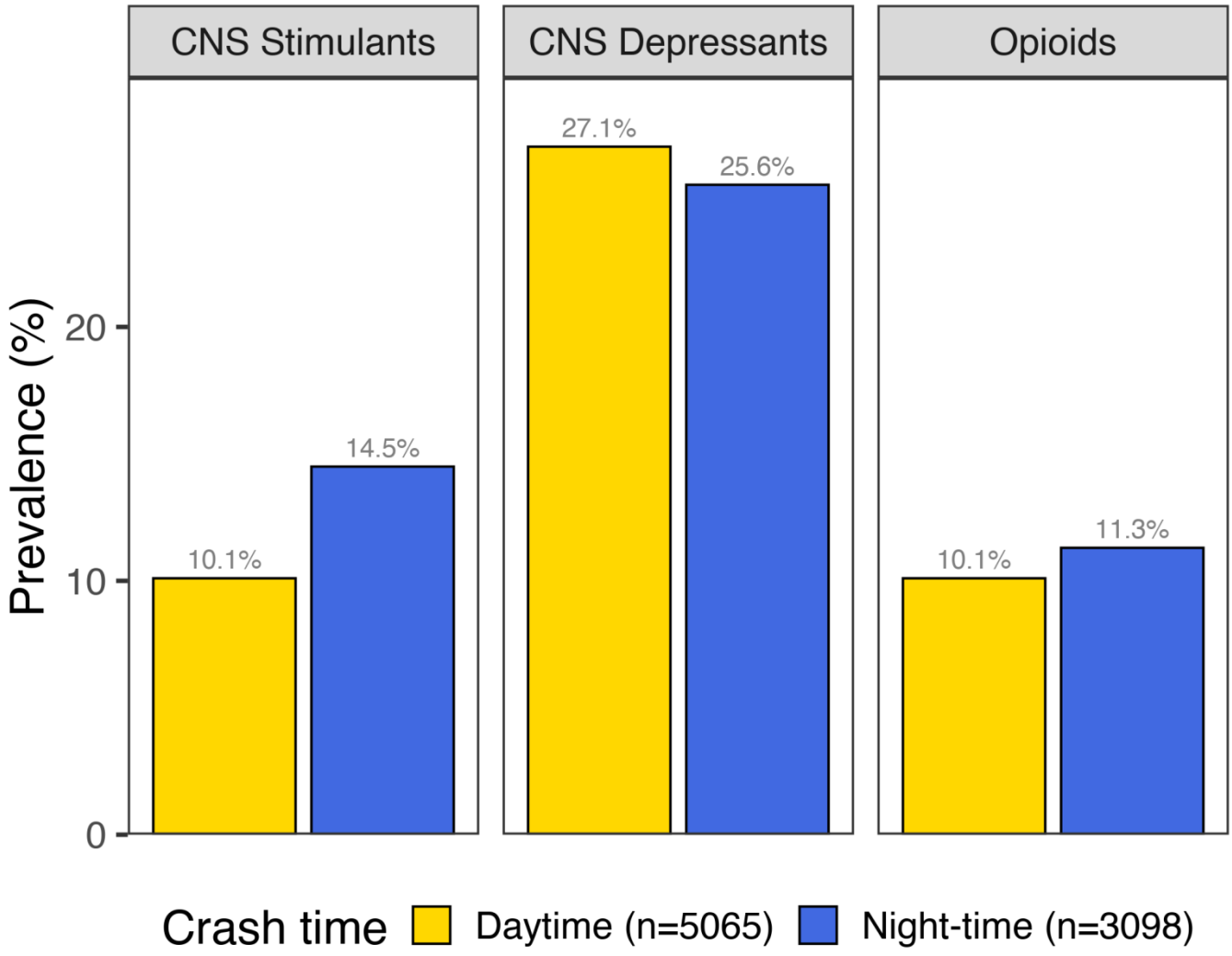

Figure 14. Prevalence of CNS stimulants, CNS depressants, and opioids among injured drivers in Canada, by time of crash

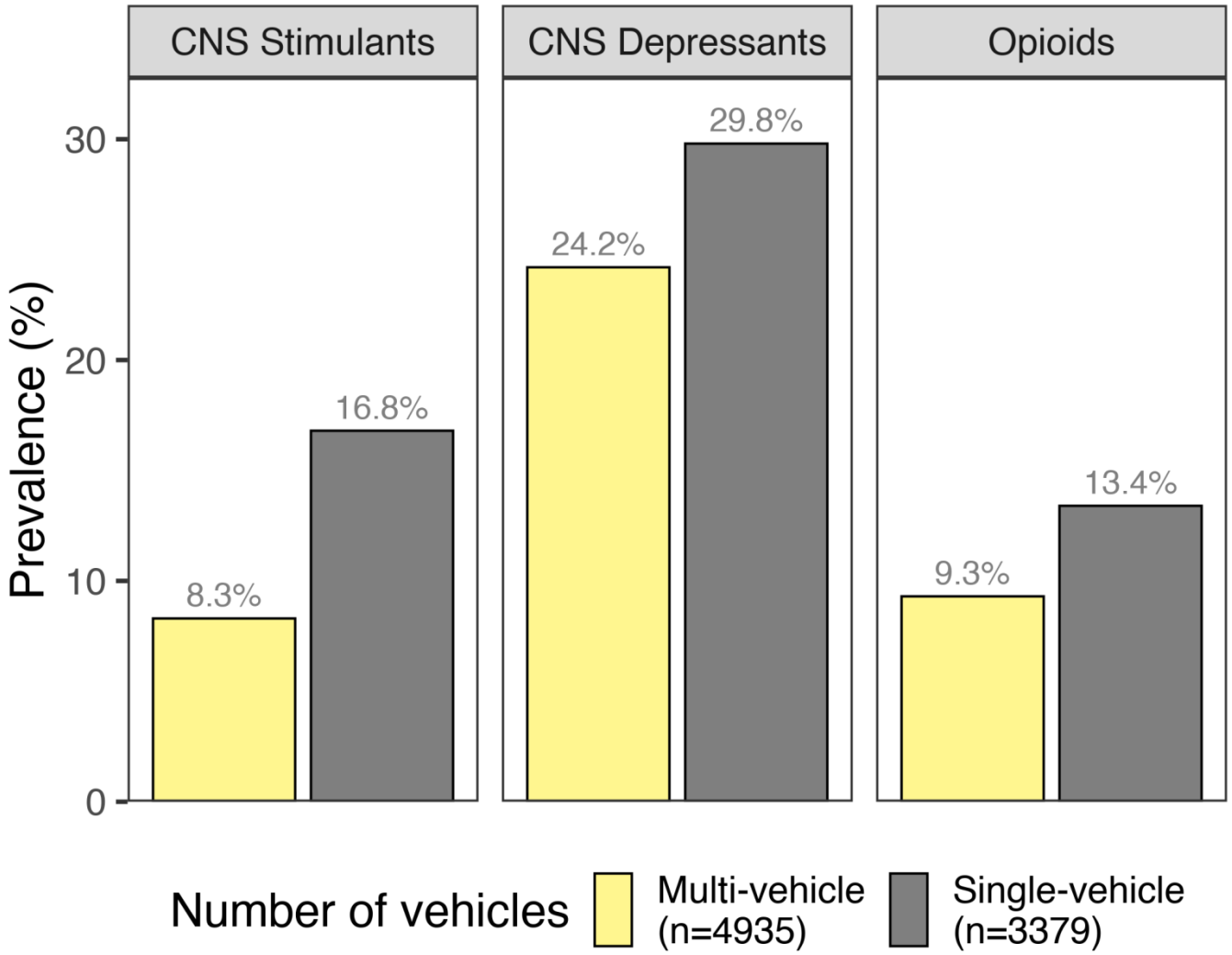

Figure 15. Prevalence of CNS stimulants, CNS depressants, and opioids among injured drivers in Canada, by number of vehicles involved in the crash

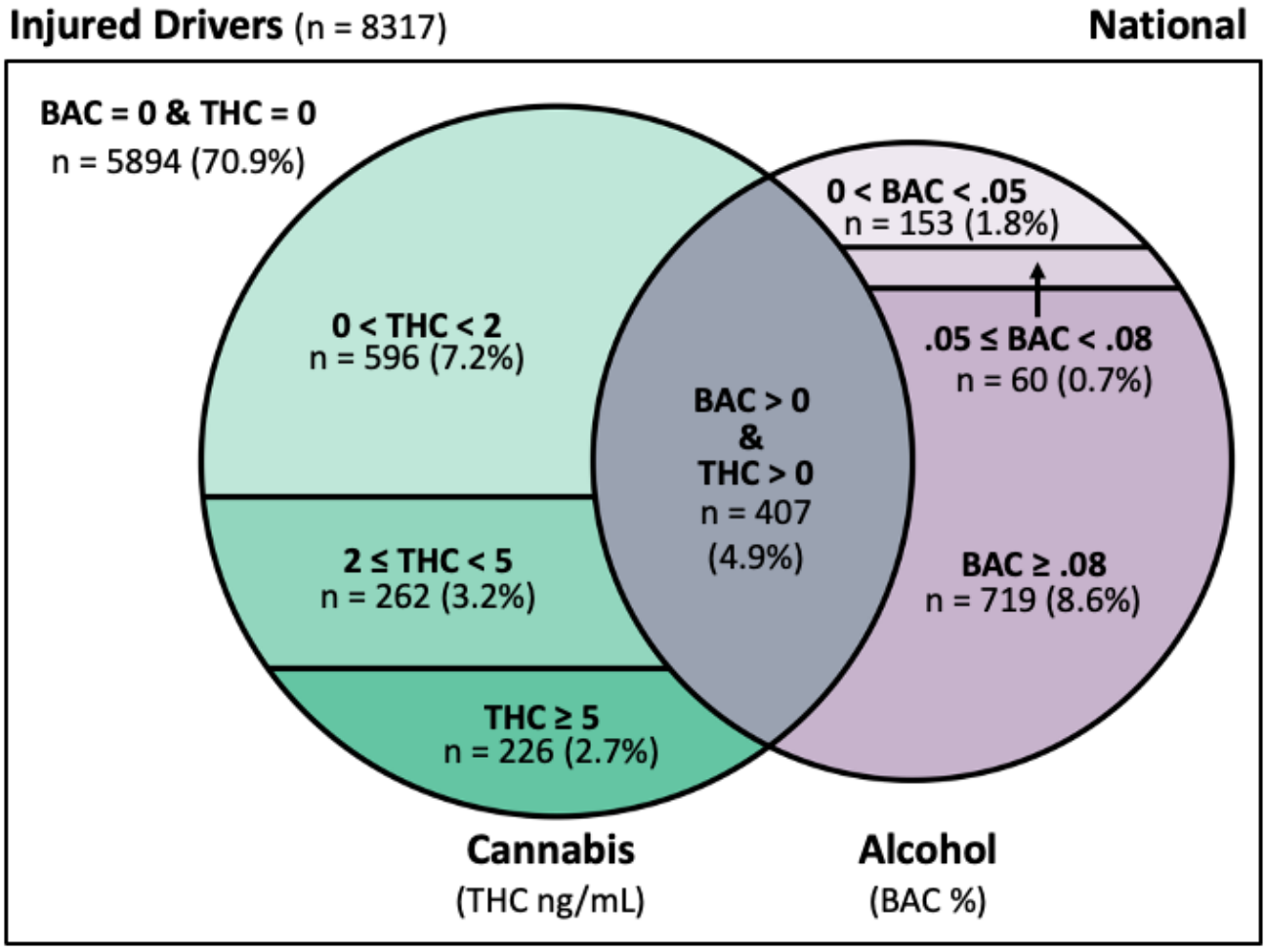

Figure 16. Use of alcohol, cannabis or both among injured drivers in Canada. The area of overlap between both circles represents drivers who tested positive for both alcohol and THC. The majority of THC positive drivers (in green) had relatively low levels compared to most of the alcohol positive drivers (in purple) who had BAC above the 0.08% legal limit.

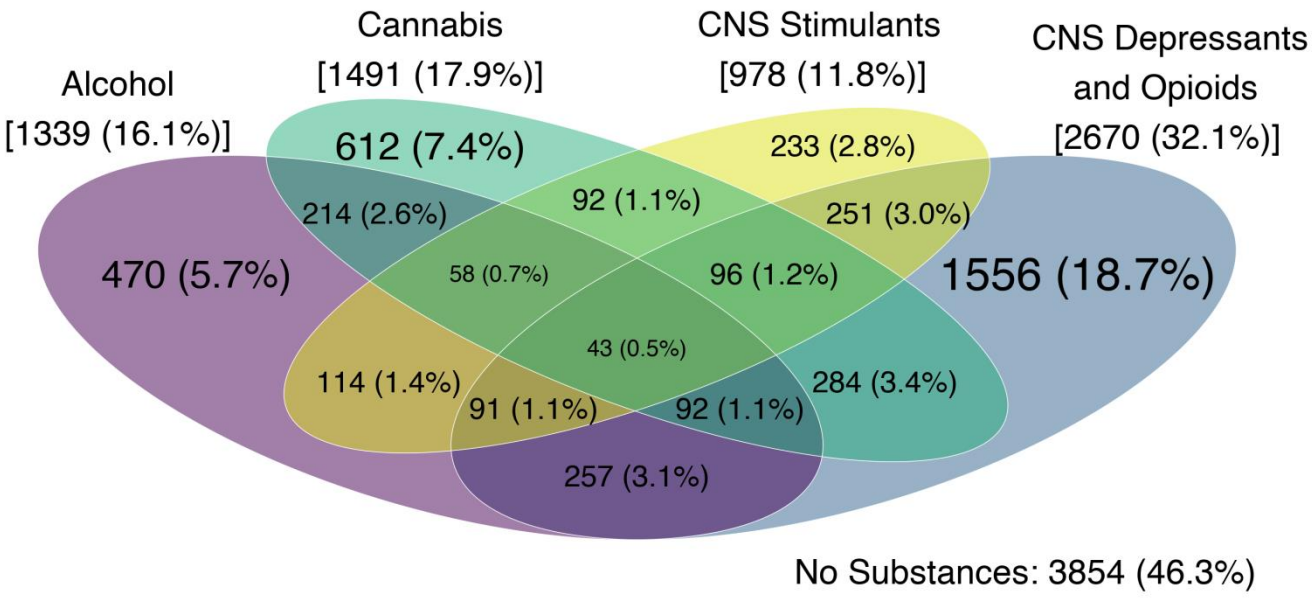

Figure 17. Polysubstance use among injured drivers in Canada. The overlapping ellipses represent drivers testing positive for various combinations of impairing substances. The cannabis ellipse counts drivers who tested positive for THC. For example, 214 (2.6%) drivers tested positive for alcohol and cannabis only.

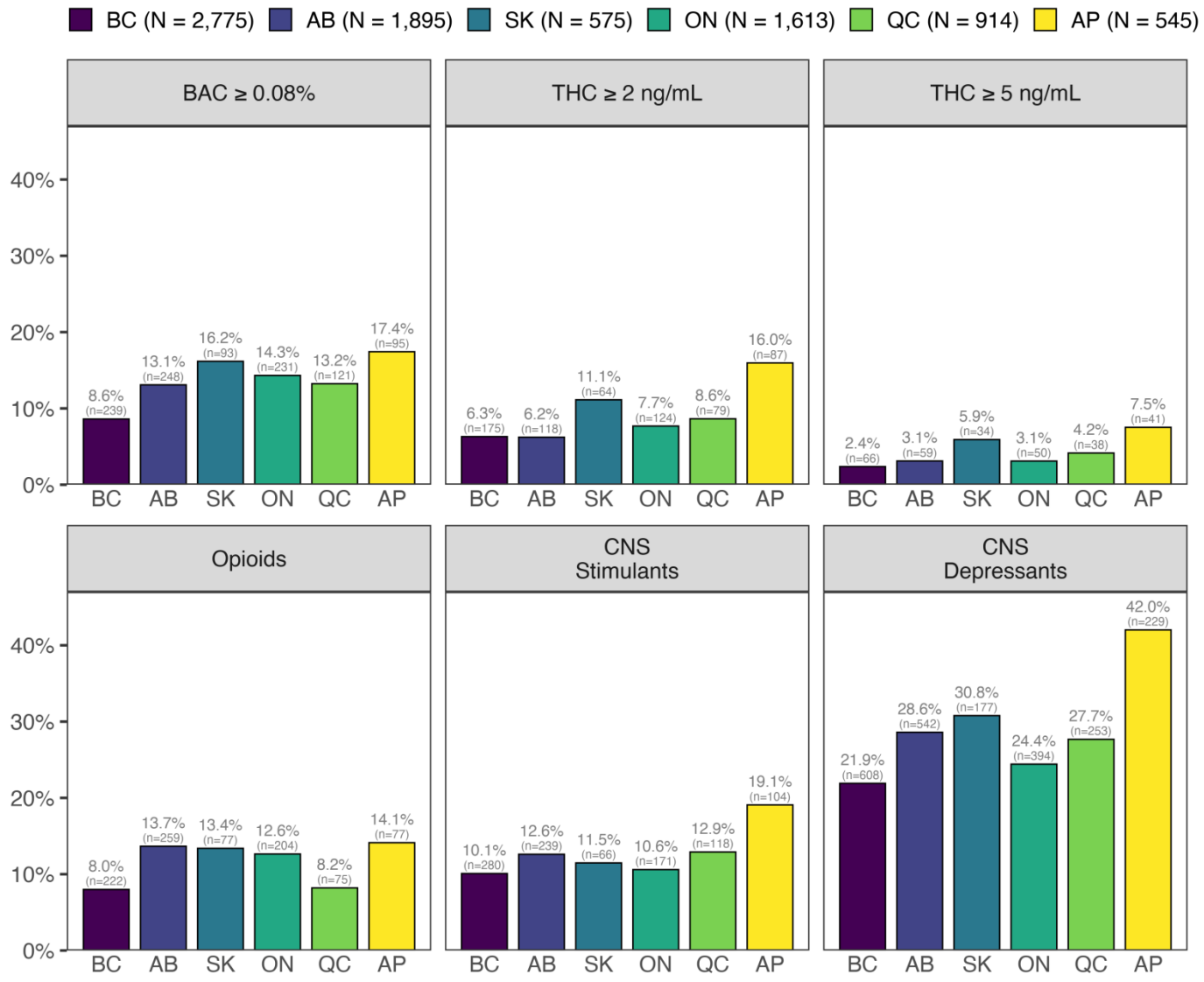

Figure 18. Regional variation in substance use among injured drivers in Canada

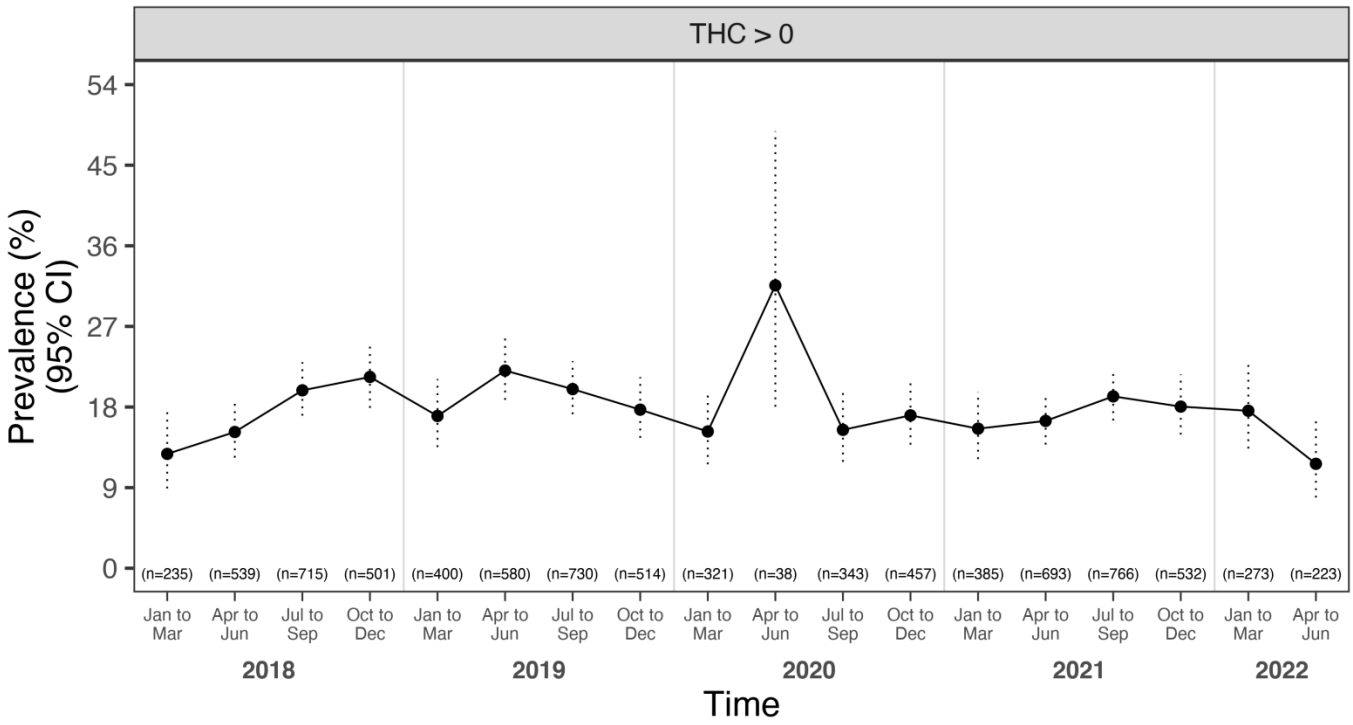

Figure 19. Quarterly prevalence of THC > 0 ng/mL among injured drivers in Canada. The sample size (n) above each quarter indicates the number of injured drivers included in the denominator of the prevalnce calculation. The dashed vertical lines represent the 95% confidence interval (CI) for the prevalence estimate in each quarter. The number of hospital sites contributing data to each quarter may differ over time (refer to Table 6 for more detail).

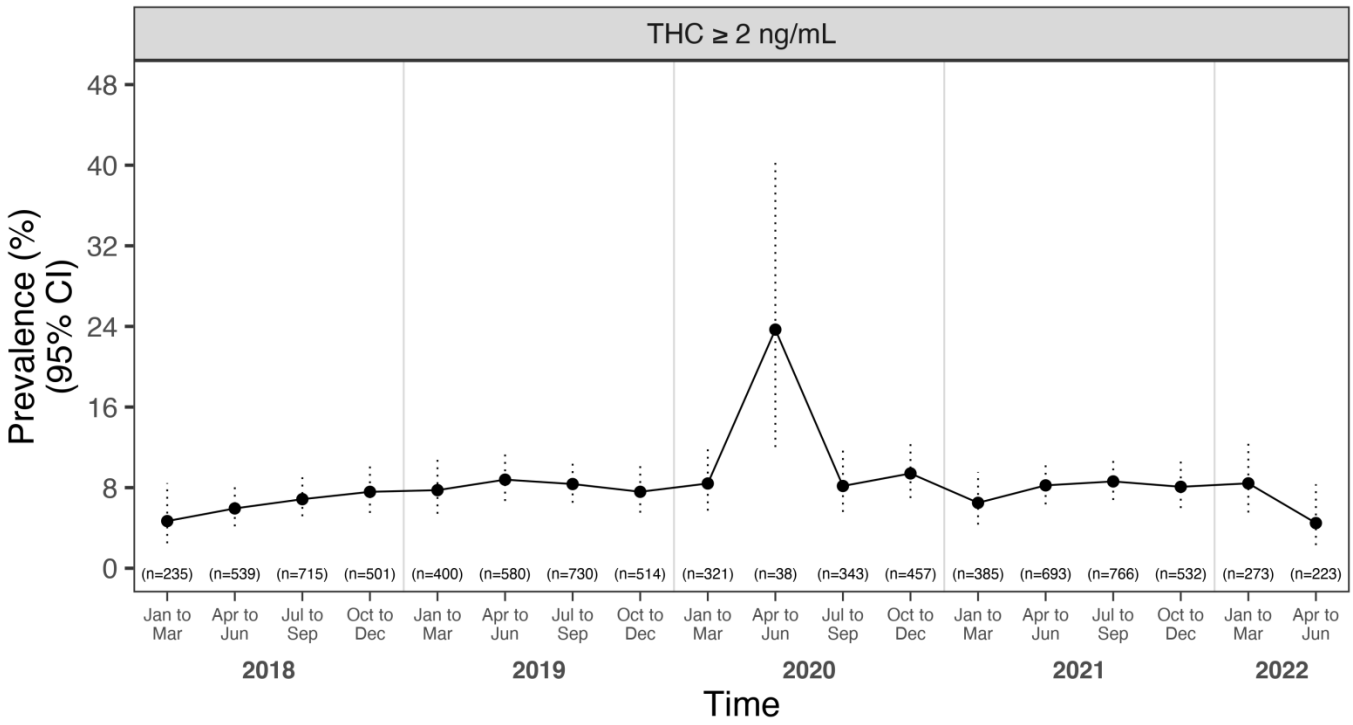

Figure 20. Quarterly prevalence of THC ≥ 2 ng/mL among injured drivers in Canada. The sample size (n) above each quarter indicates the number of injured drivers included in the denominator of the prevalnce calculation. The dashed vertical lines represent the 95% confidence interval (CI) for the prevalence estimate in each quarter. The number of hospital sites contributing data to each quarter may differ over time (refer to Table 6 for more detail).

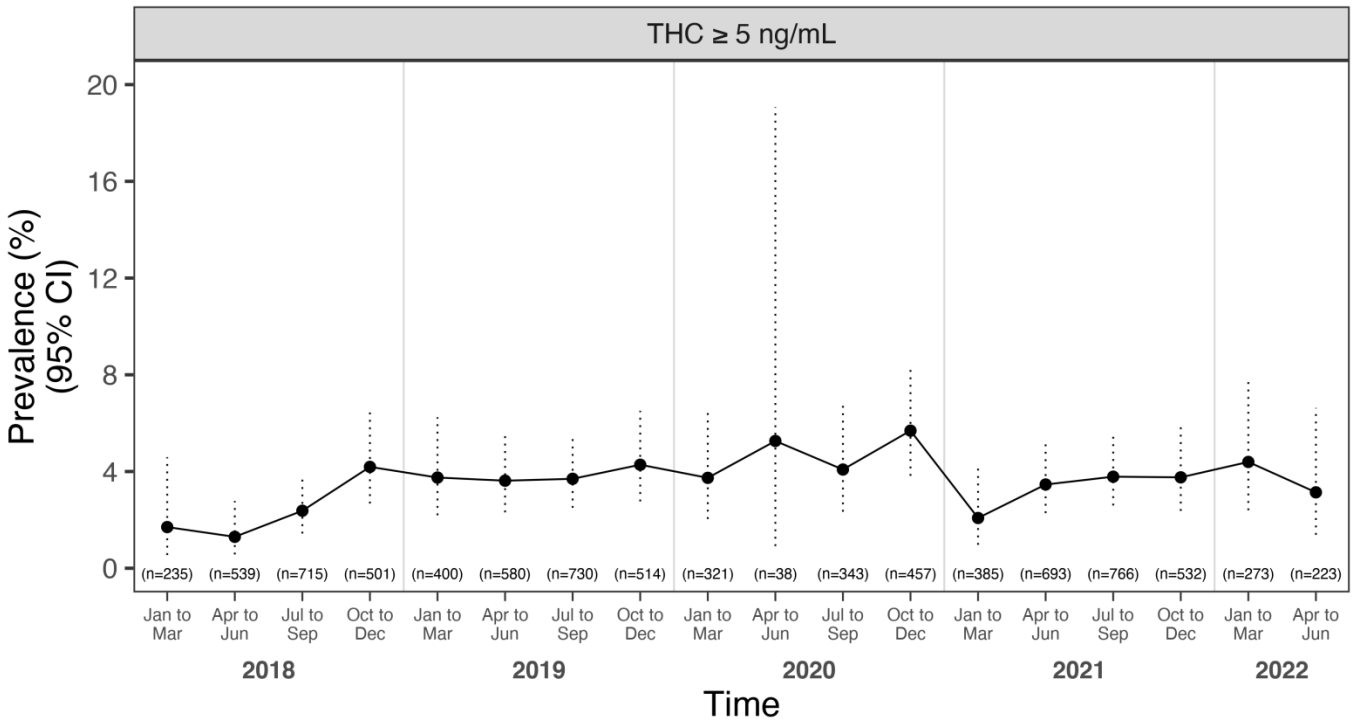

Figure 21. Quarterly prevalence of THC ≥ 5 ng/mL among injured drivers in Canada. The sample size (n) above each quarter indicates the number of injured drivers included in the denominator of the prevalnce calculation. The dashed vertical lines represent the 95% confidence interval (CI) for the prevalence estimate in each quarter. The number of hospital sites contributing data to each quarter may differ over time (refer to Table 6 for more detail).

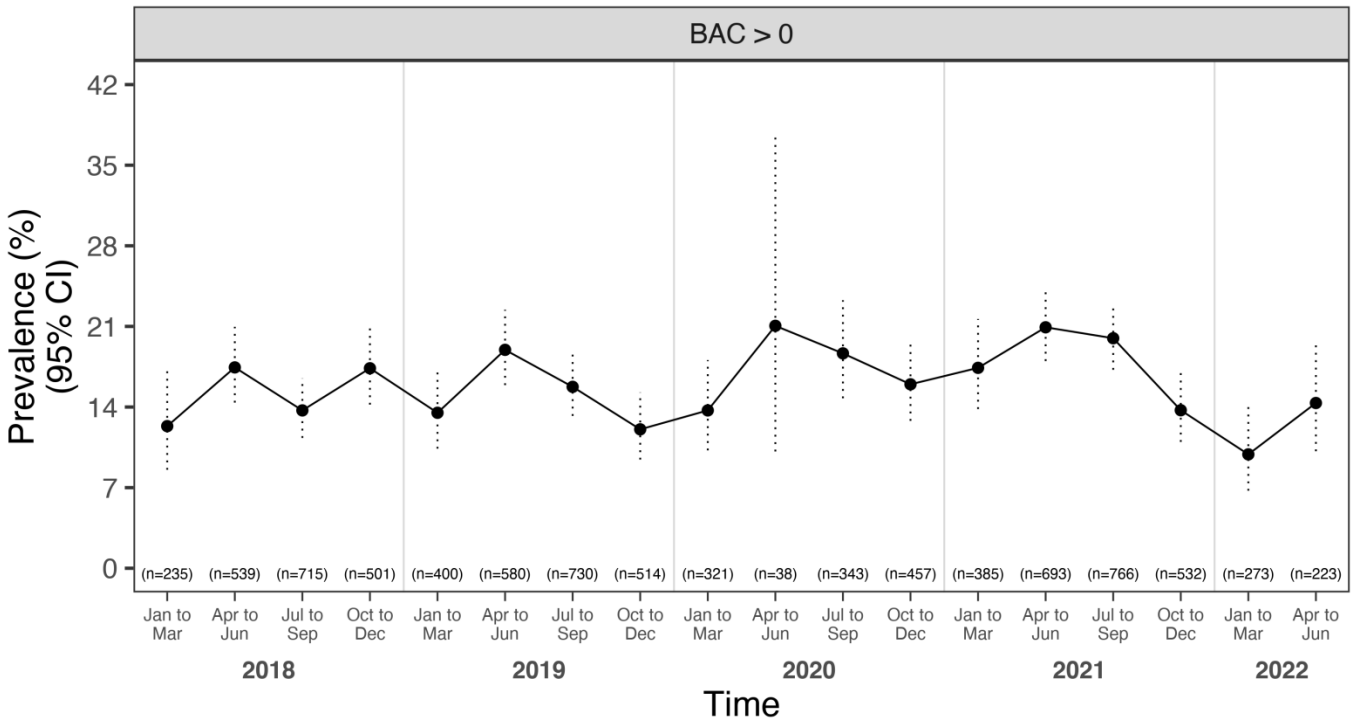

Figure 22. Quarterly prevalence of BAC > 0 among injured drivers in Canada. The sample size (n) above each quarter indicates the number of injured drivers included in the denominator of the prevalnce calculation. The dashed vertical lines represent the 95% confidence interval (CI) for the prevalence estimate in each quarter. The number of hospital sites contributing data to each quarter may differ over time (refer to Table 6 for more detail).

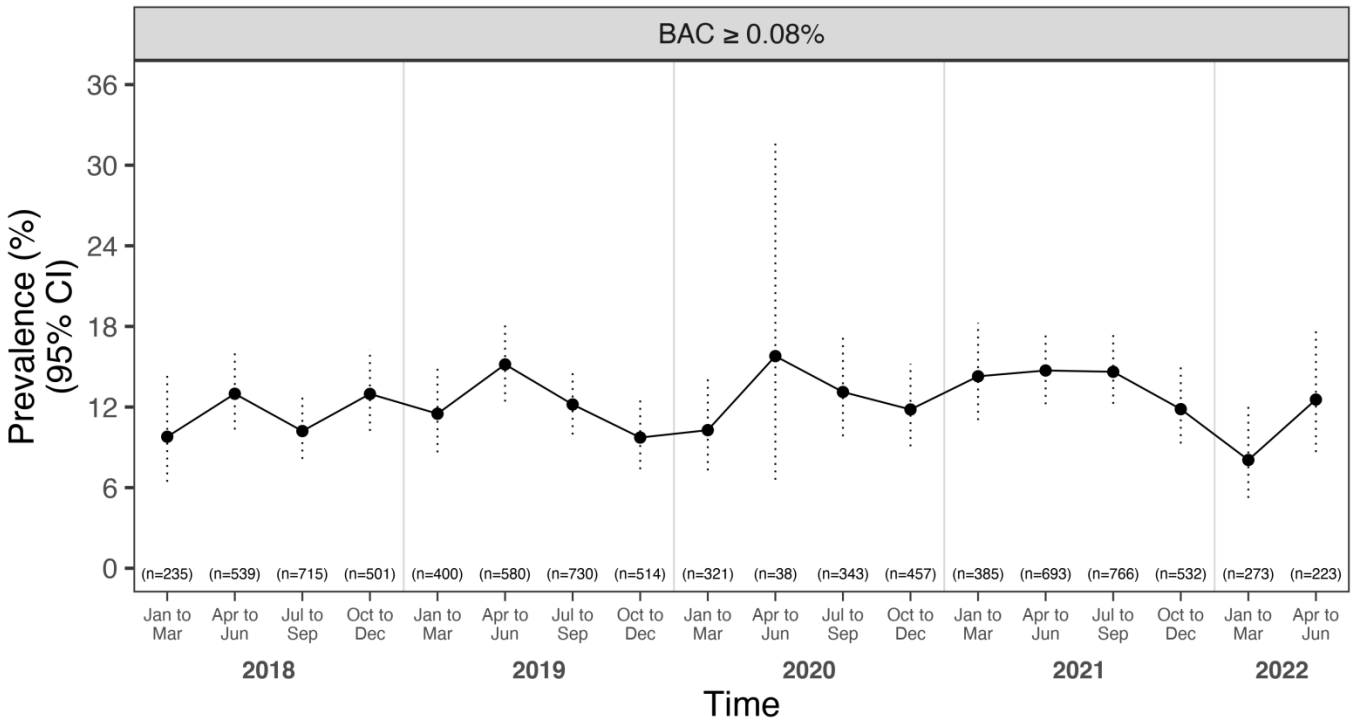

Figure 23. Quarterly prevalence of BAC ≥ 0.08% ng/mL among injured drivers in Canada. The sample size (n) above each quarter indicates the number of injured drivers included in the denominator of the prevalnce calculation. The dashed vertical lines represent the 95% confidence interval (CI) for the prevalence estimate in each quarter. The number of hospital sites contributing data to each quarter may differ over time (refer to Table 6 for more detail).

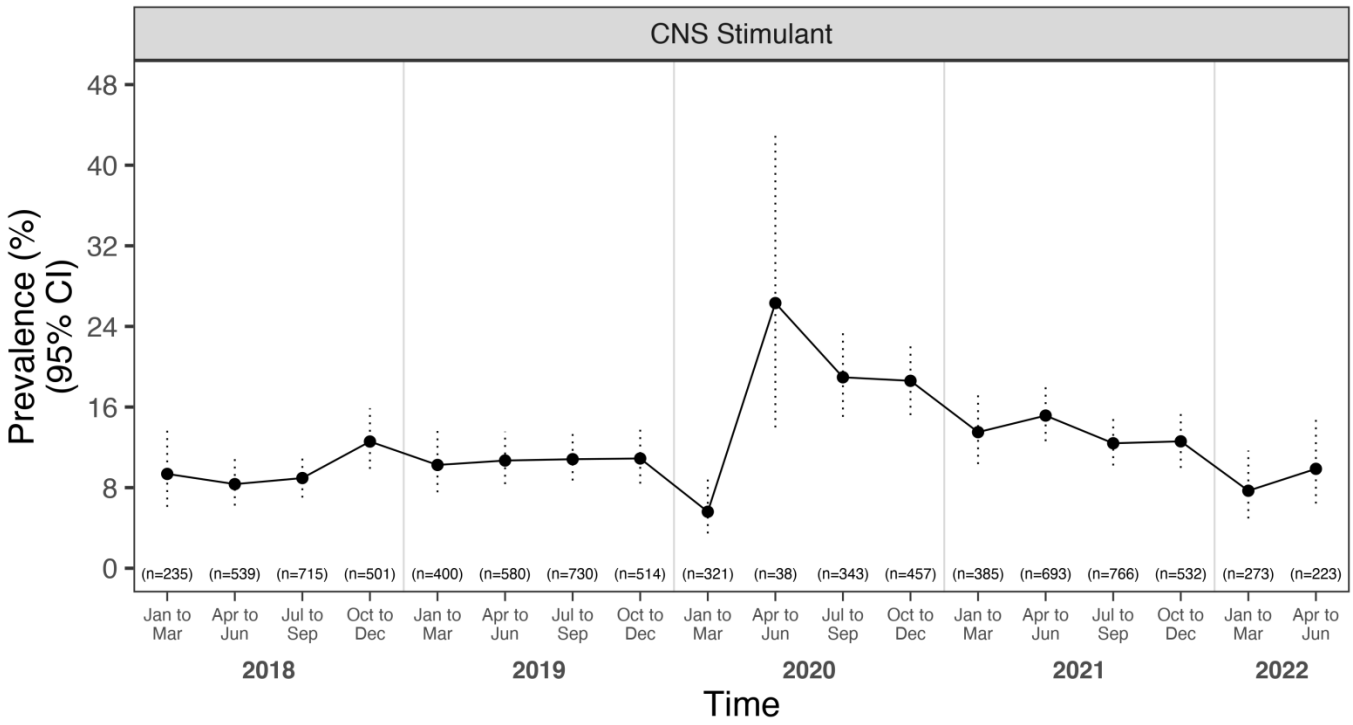

Figure 24. Quarterly prevalence of CNS stimulants among injured drivers in Canada. The sample size (n) above each quarter indicates the number of injured drivers included in the denominator of the prevalnce calculation. The dashed vertical lines represent the 95% confidence interval (CI) for the prevalence estimate in each quarter. The number of hospital sites contributing data to each quarter may differ over time (refer to Table 6 for more detail).

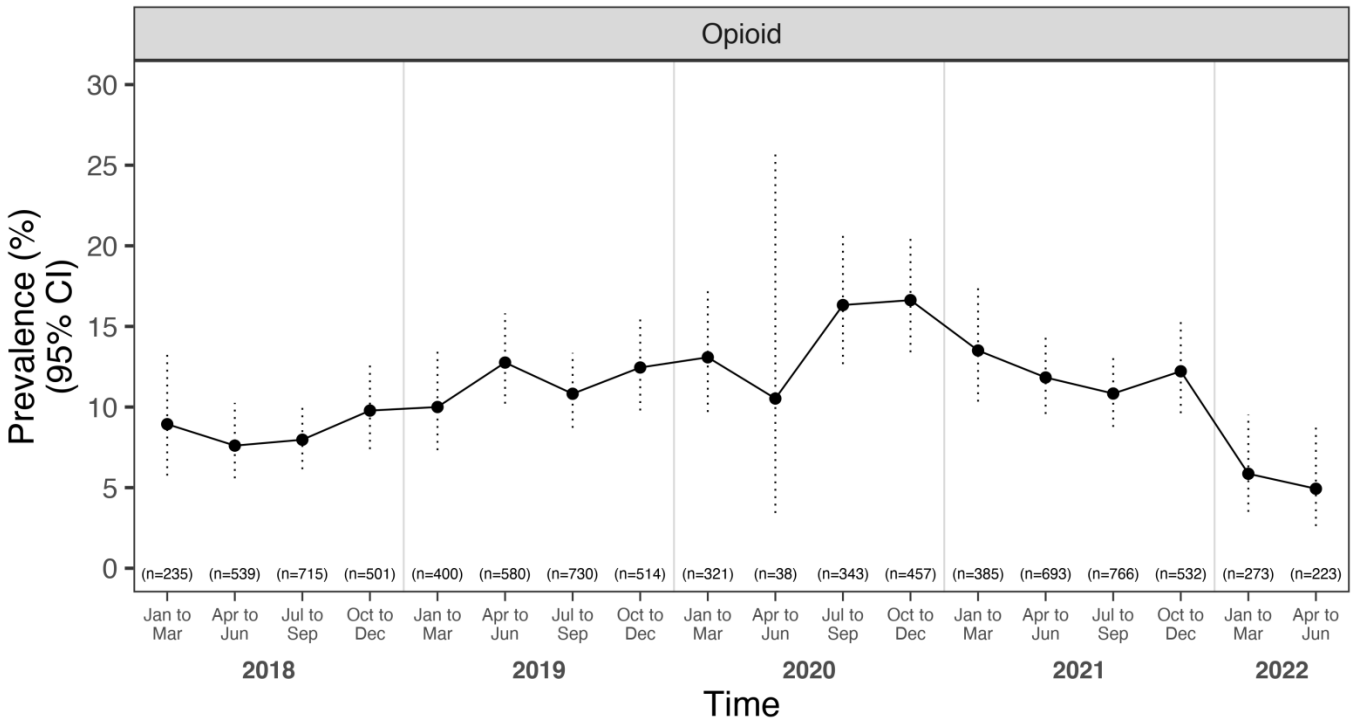

Figure 25. Quarterly prevalence of opioids among injured drivers in Canada. The sample size (n) above each quarter indicates the number of injured drivers included in the denominator of the prevalnce calculation. The dashed vertical lines represent the 95% confidence interval (CI) for the prevalence estimate in each quarter. The number of hospital sites contributing data to each quarter may differ over time (refer to Table 6 for more detail).

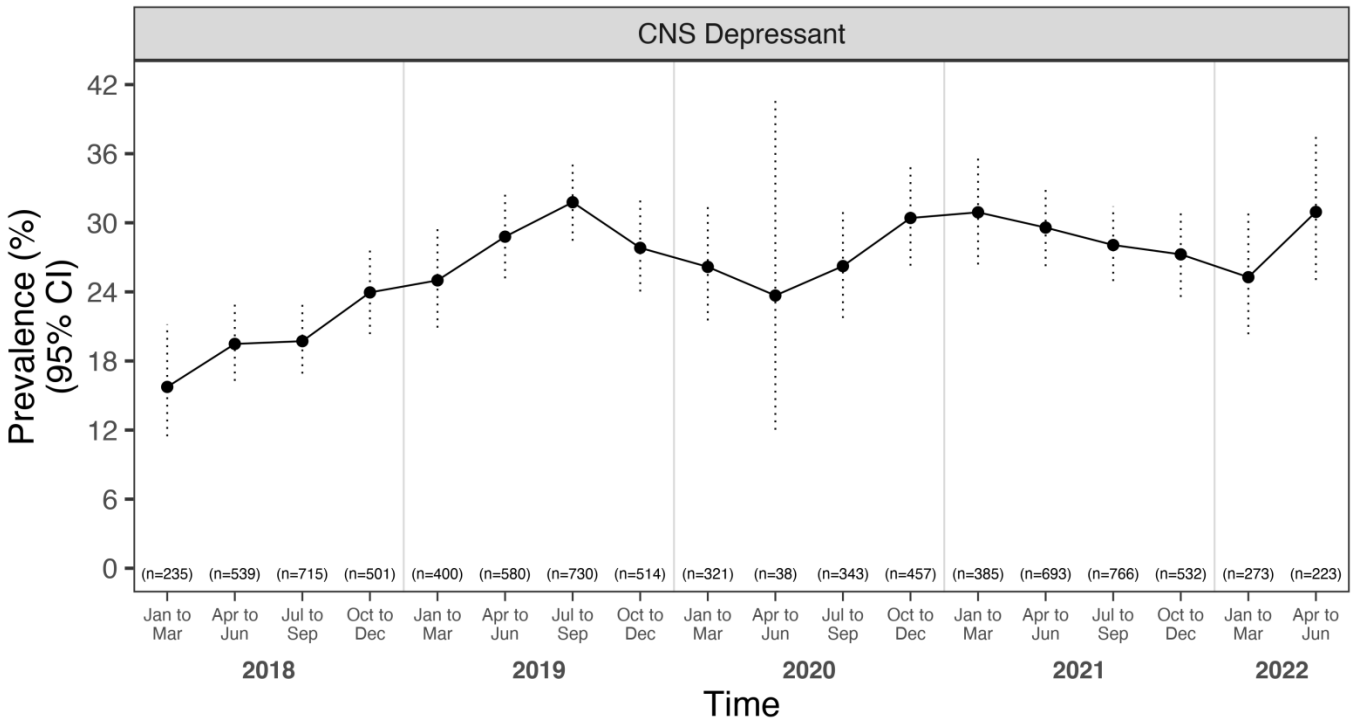

Figure 26. Quarterly prevalence of CNS depressants among injured drivers in Canada. The sample size (n) above each quarter indicates the number of injured drivers included in the denominator of the prevalnce calculation. The dashed vertical lines represent the 95% confidence interval (CI) for the prevalence estimate in each quarter. The number of hospital sites contributing data to each quarter may differ over time (refer to Table 6 for more detail).

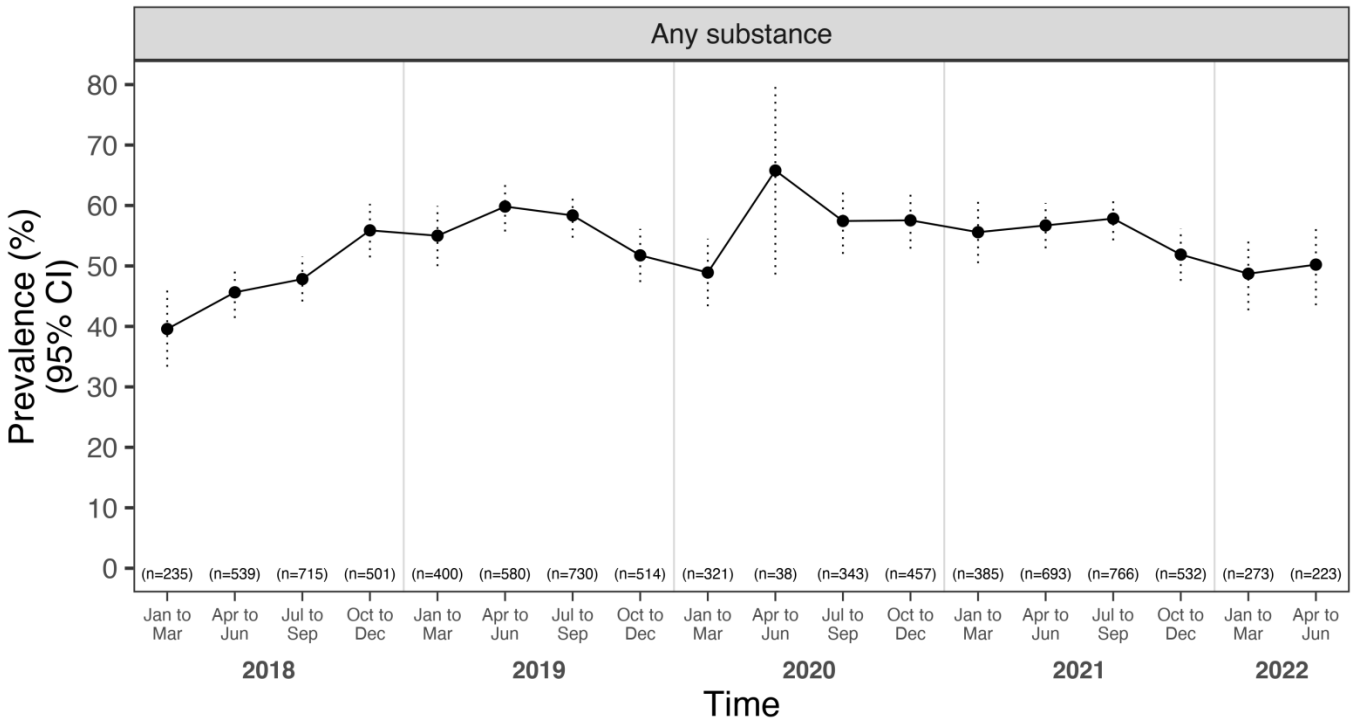

Figure 27. Quarterly prevalence of any impairing substance among injured drivers in Canada. Any impairing substance includes alcohol, THC, CNS stimulants, CNS depressants, and opioids. The sample size (n) above each quarter indicates the number of injured drivers included in the denominator of the prevalnce calculation. The dashed vertical lines represent the 95% confidence interval (CI) for the prevalence estimate in each quarter. The number of hospital sites contributing data to each quarter may differ over time (refer to Table 6 for more detail).

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