Sedatives

Key Points

- The use of prescription sedatives among the Canadian adult general population (~12%) has remained relatively stable since 2013.
- In Canada, the prevalence of prescription sedative use is highest among older adults (~16.5%) and is higher among females (14%) compared to males (9%).
- Non-medical use of sedatives approximately doubled among students in grades 10 to 12 in 2016–2017 (~3%) from 2014–2015 (~1.5%).
- There is little Canadian data available on the harms associated with sedative use, although sedative use might be contributing to opioid-related poisonings and overdose fatalities.
- There is also little Canadian data to indicate whether the availability of illicit sedatives is increasing.

Introduction

Sedatives are central nervous system (CNS) depressants,* meaning that they depress or slow down brain activity. Sedatives are most commonly used as medications to treat anxiety, insomnia or other sleep-related disorders. Other medical uses include inducing sedation for surgical and medical procedures, treatment of alcohol withdrawal, seizures and migraines, and as muscle relaxants. There are three main classes of sedatives:† benzodiazepines, non-benzodiazepine sleep medications and barbiturates. Examples of drugs in each of these three classes are listed in Table 1 with their corresponding generic, trade and street names. Sedatives are often referred to interchangeably as tranquillizers‡ or hypnotics.

Table 1. Common generic, trade and street names for sedatives

Drug Class	Generic Name	Trade Name	Street Names§
Benzodiazepines	Alprazolam	Xanax®	Z-bars, bars
	Clonazepam	Rivotril®	K-pins, super valium
	Diazepam	Valium®	Vs, benzos, tranks, downers
	Estazolam	ProSom®	bars, benzos, chill pills
	Flurazepam	Dalmane®	tranks, downers, nerve pills
	Lorazepam	Ativan®	nerve pills, tranks, downers
	Nitrazepam	Mogadon®	jellies, eggs, vallies
	Oxazepam	Seresta®	benzos, downers, nerve pills

* Alcohol is the most prominent CNS depressant. Other CNS depressants with sedative properties include anti-depressants, anti-psychotic tranquilizers and antihistamines.

† Examples of sedatives that do not fall into these main drug classes include GHB (Xyrem®), gabapentin (Neurontin®), buspirone (Buspar®), ethchlorvynol (Placidyl®), and ramelteon (Rozerem®).

‡ Tranquillizers include types of muscle relaxants.

§ Common street names for all benzodiazepines include benzos, dippers, blues, heavenly blues, downers, tranks and nerve pills.

Drug Class	Generic Name	Trade Name	Street Names§
	Temazepam	Restoril®	rugby balls, tems, jellies
	Triazolam	Halcion®	Up Johns, tranks, downers
Non-benzodiazepine sleep medication	Zolpidem	Ambien®	Z-drug, forget-me pills, rophies
	Zopiclone	Imovane®	Z-drug
Barbiturates	Amobarbital	Amytal®	angels, blue heavens
	Pentobarbital	Nembutal®	barbs, M&Ms, nembies
	Phenobarbital	Luminal®	barbs, nembies, downers

Prescription sedatives are usually taken in pill form. However, some are available as suppositories or prepared as a solution for injection. Some people tamper with the medication for non-medical use** for the drug's euphoric effects. Tampering involves changing the form of the medication or the route by which it is taken or both.

Effects of Sedatives

Short-term: The majority of sedatives increase the activity of the inhibitory neurotransmitter gamma-aminobutyric acid (GABA), which causes a decrease in brain activity. Some sedatives as well as other CNS depressants (e.g., antidepressants and antipsychotics with sedative properties) slow brain activity through different mechanisms. Low to moderate doses of sedatives can relieve mild to moderate anxiety and have a calming and relaxing effect. Higher doses of these medications can relieve insomnia and severe states of emotional distress, and result in drowsiness and impaired coordination. Other short-term effects of sedatives include dilated pupils, slurred speech, irregular breathing, decreased heart rate and blood pressure, loss of inhibition, impaired judgment, learning and memory. These medications can also cause side effects such as confusion, disorientation, amnesia, depression and dizziness, and, more rarely, agitation and hallucinations. These medications can affect the ability to drive a motor vehicle, and increase the risk of collision, especially if they are taken in combination with alcohol or other drugs.

Long-term: The long-term effects of sedatives can include chronic fatigue, vision problems, mood swings, aggressive behaviour, slowed reflexes, breathing problems, liver damage, sleep problems and sexual dysfunction. Long-term use can lead to the development of tolerance, which serves to reduce the effects of the drug and prompts those who use prescription sedatives to increase the dose to reinstate the desired effects. The potential for dependence and addiction increases with repeated use of higher doses.

Long-term regular use of these drugs should be reduced gradually, with medical supervision. People who are physically dependent on a sedative will experience withdrawal symptoms if they stop using the drug abruptly. The severity of withdrawal symptoms depends on the type of medication used, the amount used, the duration of use and whether the drug was stopped abruptly. Withdrawal symptoms can include headache, insomnia, tension, sweating, difficulty concentrating, tremors, sensory disturbances, fear, fatigue, stomach upset and loss of appetite. Severe withdrawal symptoms from regular use of sedatives in high doses can include agitation, paranoia, delirium and seizures.

** Note: For the purposes of this document, "prescription sedative use" refers to use of sedatives as prescribed. "Non-medical prescription sedative use" includes using a prescription sedative without a prescription written for the individual taking the drug, using prescription sedatives provided by multiple doctors, nurses or pharmacists ("double-doctoring"), using a prescription sedative for purposes other than those indicated when prescribed (e.g., for euphoric effect), using a prescription sedative in ways other than prescribed (different form or route) or using a prescription sedative more or less often than prescribed.

Sedatives should generally not be combined with any other medication or substance that causes reduced activity of the central nervous system, including alcohol, opioids and some over the counter cold and allergy medications. Possible overdose symptoms include slurred speech, confusion, severe drowsiness, weakness and staggering, slow heartbeat, breathing problems and unconsciousness.

Legal Status of Sedatives in Canada

Most prescription sedatives are classified as a Schedule IV drug under the *Controlled Drugs and Substances Act* (CDSA).†† Their use is legal only when they are prescribed by specific licenced practitioners and are used by the person for whom they are prescribed. Possession of sedatives is not, in and of itself, illegal. However, "double doctoring" (i.e., obtaining a prescription from more than one practitioner without telling the prescribing practitioner about other prescriptions received in the past 30 days) can result in 18 months imprisonment. Trafficking, importing, exporting or the production of sedatives can result in three years imprisonment.[1]

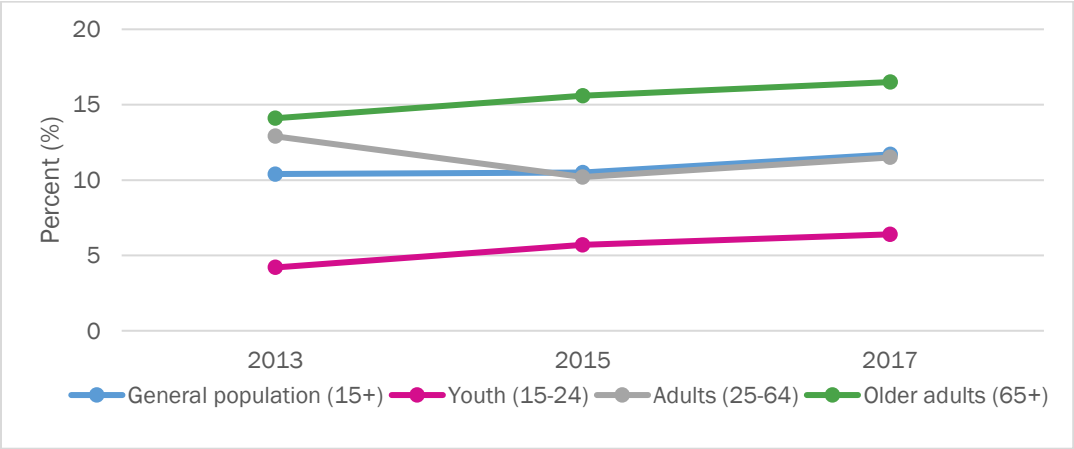
Self-Reported Use

Past-Year Use of Sedatives in Canada

- **General population (age 15+):** According to the Canadian Tobacco, Alcohol and Drugs Survey (CTADS), the prevalence of use for prescription sedatives among the general population was 12% in 2017, unchanged from 11% in 2015.[2,3]
- **Youth (age 15–24)**: Youth have the lowest prevalence of prescription sedative use among all Canadians (6.4% in 2017).[2] Among youth aged 15–19, the rate of past-year prescription sedative use in 2017 was 5.1%; the corresponding use of prescription sedatives was higher among young adults aged 20–24 (7.5%).[2]
- **Adults (age 25+)**: The prevalence of past-year use of prescription sedatives among Canadian adults in 2017 (12.6%) was approximately two times higher than among youth aged 15–24 (6.4%).[2] The rate of past-year use of prescription sedatives among Canadian adults was similar in 2015 and 2017.[2,3]
- **Older adults (age 65+):** Older adults have the highest rate of prescription sedative use among all Canadians at 16.5% in 2017, compared to 15.6% in 2015.[2,3]
- **Gender:** Data from the 2017 CTADS indicates that past-year prevalence of prescription sedative use is significantly higher among females (14.3%) compared to males (9.1%).[2] This difference is consistent with the figures reported from the 2015 CTADS.[3]
- **First Nations adults:** Among First Nations, individuals aged 18 and older living on reserve or in northern First Nations communities across Canada, 6.1% reported past-year use of prescription sedatives in 2015–2016.[4]
- **First Nations youth:** Among First Nations youth aged 12–17 years, 1.3% reported use of prescription sedatives in 2015–2016.[4]

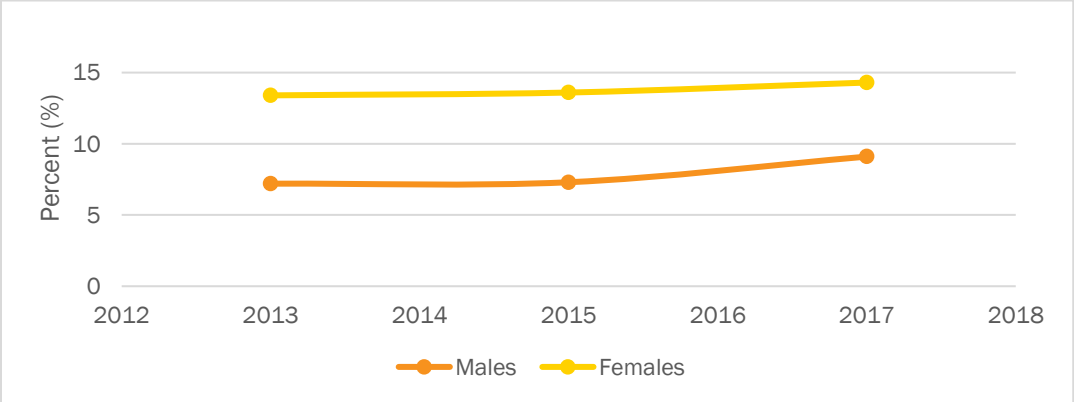
†† Some non-benzodiazepine sleep medications (e.g., zopiclone) are not included in the CDSA.

Figure 1. Prevalence of self-reported, prescription sedative use among Canadians by age category



Source: CTADS 2013,[5] CTADS 2015,[6] CTADS 2017[7]

Figure 2. Prevalence of self-reported prescription sedative use among Canadians by sex



Source: CTADS 2013,[8] CTADS 2015,[3] CTADS 2017[2]

Past-Year Prevalence of Non-Medical Sedative Use in Canada

Sedatives have the potential for non-medical use because of their psychoactive properties. The risk for psychological and physical dependence (addiction) is increased through accessibility, multiple opportunities for diversion along the supply chain (i.e., the means through which prescription medicines make their way to patients, which can include manufacturers, wholesale distributors and pharmacies), and perceptions of relative safety compared with illicit drugs, among other factors. Those who use prescription sedatives for non-medical purposes might take the drug in ways other than prescribed (e.g., using more than prescribed or mixing the medication with alcohol) or tamper with the medication to achieve a more rapid and intense effect.

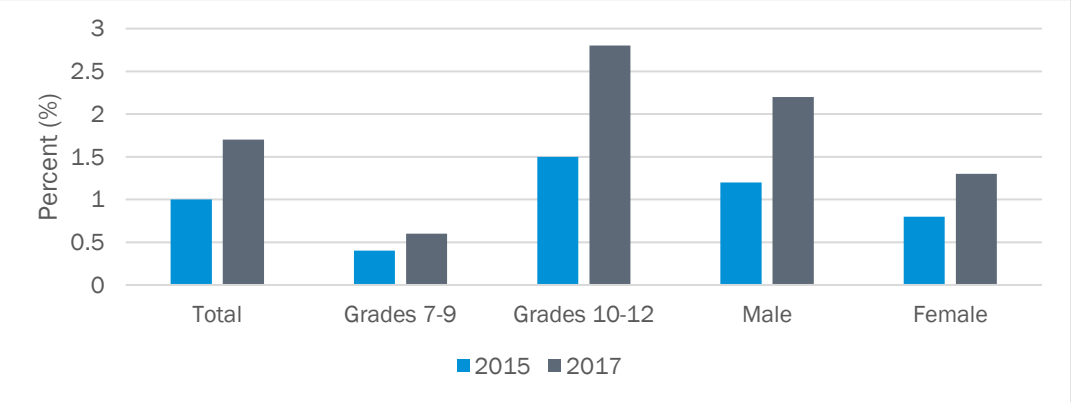
- **General population (aged 15+):** Data from the 2017 CTADS revealed that among individuals who reported using sedatives in the past year, 1.4%‡‡ reported using sedatives only for the feeling/experience or to get high (0.2%§§ of the total population).[2]

‡‡ Moderate sampling variability, interpret with caution.

§§ Moderate sampling variability, interpret with caution.

- **Students:** According to the Canadian Student Tobacco, Alcohol and Drugs Survey, in 2016–2017, 0.6% of Canadian students in grades 7 to 9 reported past-year use of sedatives or tranquillizers to get high and not for medical purposes, unchanged from 2014–2015 (0.4%). Past-year use increased among students in grades 10 to 12 in 2016–2017 to 2.8% from 1.5% in 2014–2015. Among students in grades 7–12, males reported higher past-year use (2.2%), compared to females (1.3%). With respect to the use of sleeping medicine to get high, 2.1% of students in grades 7 to 9 and 4.9% of students in Grades 10 to 12 reported such use in 2016–2017 (3.6% of males and 3.4% of females in grades 7–12).[9] This is a significant increase in reported use compared to 2014–2015 (0.7% in grades 7 to 9 and 1.6% in grades 10 to 12).[10]
- **Ontario students:** In 2017, 2.7% of Ontario students in grades 9–12 reported using tranquillizers/sedatives for non-medical purposes (2.7% of males, 2.6% of females).[11]
- **Post-secondary students:** Data from the spring 2016 National College Health Assessment Survey, which is drawn from a convenience sample of 41 post-secondary institutions in Canada, and therefore not representative of all post-secondary students in Canada, indicate that 2.2% of post-secondary students (2.1% of males, 2.1% of females) had used sedatives that were not prescribed to them in the past 12 months.[12]

Figure 3. Prevalence of self-reported past-year non-medical use of sedatives/tranquillizers among Canadian students by year, grade and sex



Source: CSTADS 2015[10], CSTADS 2017[9]

International Comparison

- **United States:** In 2017, the prevalence of non-medical use of tranquillizers was 0.6% and the prevalence of non-medical use of sedatives was 0.1% among those aged 12 and older.[13]
- **Australia:** In 2016, the past-year prevalence of the non-medical use of prescription tranquillizers and sleeping pills was 1.6% among those aged 14 and older.[14]

Associated Harms

The per-person healthcare costs associated with CNS depressants*** (not including alcohol or opioids) remained relatively unchanged between 2007 and 2014.[15] However, $217 million of

*** Refers to "sedating or tranquilizing products that can be but are not necessarily obtained from a doctor, including Valium, Ativan, and Xanax."

healthcare costs in 2014 were attributable to CNS depressants (approximately 20% of all healthcare costs associated with substances other than alcohol and tobacco).[15]

Morbidity

Hospital data provide an important measure of the impact of substance use on the healthcare system. In 2014, 5,500 hospital stays in Canada (not including Quebec) were for conditions wholly or partially attributable to CNS depressants.[15] This number represented 25% of all hospital stays attributable to substance use in Canada in 2014 (excluding hospital stays for alcohol and tobacco).[15]

Alcohol and opioids act synergistically with other CNS depressants and combining alcohol or opioids or both with sedatives increases the risk of poisoning and overdosing. According to data from the Canadian Institute of Health Information in 2014–2015, benzodiazepines were the most common co-occurring substance identified in opioid poisoning hospitalizations at 19%.[16] Individuals with intentional opioid poisonings had a higher prevalence of concurrent benzodiazepines use at 29%.[16]

Lost productivity is another attributable harm of sedative use. Premature mortality, long-term disability, absenteeism and impaired performance (presenteeism) are all ways that productivity can be lost due to substance use. Overall lost productivity costs due to CNS depressant use increased approximately 16% from $17 per person in 2007 to $19 per person in 2014 and overall lost productivity costs in 2014 were estimated to be approximately $520 million.[15]

Mortality

There are no national Canadian estimates for the prevalence of overdose deaths due to sedatives or benzodiazepines or in combination with other substances. CNS depressants were, however, estimated to be a factor in 796 premature deaths in Canada in 2014, a 13% increase from 2007.[15]

Data from the U.S. indicate that the number of national drug overdose deaths involving benzodiazepines (without any opioid) increased 1.5 fold between 2012 and 2017.[17] The number of overdose deaths involving benzodiazepines and any opioid increased 1.8 fold, while the number of deaths involving benzodiazepines and other synthetic narcotics††† increased 7.4 fold. [17] In 2017 in the U.S., approximately 20% of all opioid deaths and 35% of all overdose deaths from synthetic narcotics (fentanyl) involved benzodiazepines.

Data from British Columbia and Ontario indicate that benzodiazepines are frequently involved in opioid-related overdoses:

- **British Columbia:** A prospective cohort study conducted between 1996 to 2013 among people who inject drugs in Vancouver reported that those using benzodiazepines and opioids were more than twice as likely as those using only opioids to fatally overdose.[18]
- **Ontario:** Benzodiazepines were involved in approximately half of fatal opioid overdoses‡‡‡ in Ontario in 2015.[19]

Driving

Sedatives are associated with driving impairment, such as delayed reaction times and inability to concentrate. There are no national Canadian estimates for the prevalence of sedatives while driving (detection in oral fluid or blood), and the ability of roadside surveys to measure sedative use among

††† Synthetic narcotics include synthetic opioids such as fentanyl.
‡‡‡ Metabolites identified in post-mortem toxicology.

drivers is limited as they are best detected in blood and not in oral fluid. Subsequently, roadside surveys collecting only oral fluid in British Columbia[20] and Ontario[21] indicate that very few drivers surveyed test positive for benzodiazepines (two drivers out of 1,672 in British Columbia and one driver out of 1,735 in Ontario). In addition, roadside surveys in Canada are generally conducted on Friday and Saturday evenings, which might not fully capture the timeframes during which sedatives are used. A U.S. roadside survey (n=1,991) in 2013–2014 reported an estimate of 1.2% for sedative use while driving (detection in oral fluid and blood)§§§ among both daytime and night-time drivers.[22]

The 2014 Canadian Council of Motor Transport Administrators report on alcohol and drug crashes indicates that among 324 fatally injured drivers who tested positive for drugs, approximately 40% were positive for CNS depressants, which includes sedatives as well as antidepressants and antipsychotic tranquillizers.[23]

Prescribing Trends

Data from the Canadian Institute of Health Information indicate that the overall quantity of benzodiazepines and benzodiazepine-related drugs dispensed in Canada has declined since 2012, and has decreased 5.9% between 2016 and 2017.[24]

Law Enforcement

National: The United Nations Office on Drugs and Crime (UNODC) reported that in 2016, approximately 690 kg of benzodiazepines were seized in Canada, over a 76-fold increase from 2015 when only 9 kg were seized and a 13-fold increase from 2012 when 52 kg were seized.[25] The UNODC also reported that in 2016, approximately 566 kg of GHB was seized in Canada, a four-fold increase from 2015.[25]

Results from the Drug Analysis Service**** indicate that from April 2018 to March 2019 there was no significant change in the proportion of analysed drug samples containing a sedative. On average, there were approximately 230 samples containing sedatives identified each month that made up about 2.4% of all total seized drug samples that were analysed.[26] However, these numbers might not reflect changes in the availability of specific sedatives. As an example, the proportion of samples containing the benzodiazepine etizolam increased nearly 2.5 fold from April 2018 to March 2019. The proportion of samples containing GHB approximately doubled from April 2018 to March 2019.

Additional Resources

- Canadian Substance Use Costs and Harms 2007-2014 (Report)
- The Effects of Psychoactive Prescription Drugs on Driving (Report)
- Improving Quality of Life: Substance Use and Aging (Report)

§§§ A positive result for a drug does not necessarily mean the driver was impaired at the time of testing, only that the drug was present in the body.

**** The Drug Analysis Service analyzes suspected illegal drugs seized by Canadian law enforcement agencies. The drugs analyzed do not represent the total number of substances seized by law enforcement and should not be used to estimate the number or types of drugs available on the street. Note that a single sample can contain more than one substance.

[1] *Controlled Drugs and Substances Act*, S.C. 1996, c. 19.

[2] Health Canada. (2018). *Canadian Tobacco Alcohol and Drugs Survey (CTADS): 2017 supplementary tables*. Ottawa: Author.

[3] Health Canada. (2016). *Canadian Tobacco Alcohol and Drugs Survey (CTADS): 2015 supplementary tables*. Ottawa: Author.

[4] First Nations Information Governance Centre. (2018). *National Report of the First Nations Regional Health Survey. Phase 3: Volume 1*. Ottawa: Author.

[5] Statistics Canada. (2014). *2013 Canadian Tobacco, Alcohol and Drugs Survey* (PUMF dataset). Ottawa: Health Canada.

[6] Statistics Canada. (2016). *2015 Canadian Tobacco, Alcohol and Drugs Survey* (PUMFdataset). Ottawa: Health Canada.

[7] Statistics Canada. (2018). *2017 Canadian Tobacco, Alcohol and Drugs Survey* (PUMFdataset). Ottawa: Health Canada.

[8] Health Canada. (2014). *Canadian Tobacco Alcohol and Drugs Survey (CTADS): 2013 supplementary tables*. Ottawa: Author.

[9] Health Canada. (2018). *Detailed tables for the 2016-17 Canadian Student Tobacco, Alcohol and Drugs Survey*. Ottawa: Author.

[10] Health Canada. (2016). *Canadian Student Tobacco, Alcohol and Drugs Survey: detailed tables for 2014-15*. Ottawa: Author.

[11] Boak, A., Hamilton, H.A., Adlaf, E.M., & Mann, R.E. (2017). *Drug use among Ontario students, 1977-2017: Detailed Findings from the Ontario Student Drug Use and Health Survey (OSDUHS)* (CAMH Research Document Series No. 46). Toronto, Ont.: Centre for Addiction and Mental Health.

[12] American College Health Association. (2016). *National College Health Assessment II: Canadian Reference Group Data Report Spring 2016*. Hanover, Md.: Author.

[13] Center for Behavioral Health Statistics and Quality. (2018). *Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health*. Rockville, Md.: Substance Abuse and Mental Health Services Administration.

[14] Australian Institute of Health and Welfare. (2014). *National Drug Strategy Household Survey Detailed Report 2013* (Drug statistics series no. 28. Cat. no. PHE 183). Canberra: Author.

[15] Canadian Substance Use Costs and Harms Scientific Working Group. (2018). *Canadian Substance Use Costs and Harms (2007–2014)*. Ottawa: Canadian Centre on Substance Use and Addiction.

[16] Canadian Institute for Health Information & Canadian Centre on Substance Use and Addiction (2016). *Hospitalizations and Emergency Department Visits due to Opioid Poisoning in Canada*. Ottawa: Canadian Institute for Health Information.

[17] Centers for Disease Control and Prevention. (2019). *National Drug Overdose Deaths, 1999–2017* (database). North Bethseda, Md.: National Institute on Drug Abuse.

[18] Walton, G.R., Hayashi, K., Bach, P., Dong, H., Kerr, T., Ahamad, K., . . . Wood, E. (2016). The impact of benzodiazepine use on mortality among polysubstance users in Vancouver, Canada. *Public Health Reports*, *131*(3), 491–499.

[19] Ontario Drug Policy Research Network. (2017). *Latest Trends in Opioid-Related Deaths in Ontario: 1991 to 2015*. Toronto: Author.

[20] Beirness, D.J., & Canadian Drug and Alcohol Research Team. (2018). *Alcohol and Drug Use by Drivers in British Columbia: Findings from the 2018 Roadside Survey*. Ottawa: Beirness & Associates.

[21] Beirnes, D.J., & Beasley, E.E. (2018). *Alcohol and Drug Use by Drivers in Ontario: Findings from the 2017 Roadside Survey*. Ottawa: Beirness & Associates.

[22] Kelley-Baker, T., Berning, A., Ramirez, A., Lacey, J. H., Carr, K., Waehrer, G., & Compton, R. (2017). *2013–2014 National Roadside Study of Alcohol and Drug Use by Drivers: Drug Results*. Washington, D.C.: National Highway Traffic Safety Administration.

[23] Brown, S.W., Vanlaar, W.G.M., & Robertson, R.D. (2017). *The Alcohol and Drug-Crash Problem in Canada 2014 Report*. Ottawa, Ont.: Canadian Council of Motor Transport Administrators.

[24] Canadian Institute for Health Information. (2018). *Pan-Canadian Trends in the Prescribing of Opioids and Benzodiazepines, 2012 to 2017*. Ottawa: Author.

[25] United Nations Office on Drugs and Crime. (2018). *Annual Drug Seizures, Kg Equivalents* (dataset). Vienna, Austria: Author. Retreived from https://dataunodc.un.org/drugs/seizures

[26] Drug Analysis Service. (2019). *Substances Identified April 2018 – March 2019* (dataset). Ottawa: Health Canada.

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