

# Opioids

## Key Points

- Opioid-related deaths continue to climb across the country. There were at least 30,843 opioid toxicity deaths in Canada between January 2016 and March 2022, with the highest number of deaths occurring in the first third of 2021 ( $n = 5,368$ ). A large concentration (>88%) occurred in British Columbia, Ontario and Alberta.
- Most opioid-related deaths involve opioids that were nonpharmaceutical in origin and often involve other substances (e.g., nonmedical benzodiazepines or stimulants).
- The rate of deaths due to apparent opioid toxicity increased by 91% during the first two years of the COVID-19 pandemic (from April 2020 to March 2022;  $n = 15,134$  deaths).
- The unpredictability and toxicity of the illegal drug supply have increased since the start of COVID-19, and new synthetic opioids have recently been detected (e.g., nitazenes), which have the potential to increase opioid-related harms among people who use drugs.
- The rate of hospitalizations and emergency department visits due to opioid poisoning has increased since the start of COVID-19, with an average of 15 hospitalizations occurring per day in Canada so far in 2022, up from 12 and 14 in 2019 and 2017, respectively.
- In 2019, opioid pain relievers prescribed or not prescribed for medical or nonmedical purposes were used by an estimated 14.2% of people living in Canada, an increase from 12% in 2017.
- Among people living in Canada who used opioid pain relievers in 2019, about 6% reported using them for nonmedical purposes, an increase from 3% in 2017.

## Introduction

Opioids are a large class of drugs that bind to opioid receptors. They include natural, synthetic and semisynthetic substances that exist in both legal and illegal forms. These include heroin, synthetic opioids (such as fentanyl) and pain relievers primarily used for medical purposes (such as oxycodone, hydrocodone, codeine and morphine). Opioid medications are used to treat acute pain\* and sometimes chronic pain,† but can also be used to control persistent cough or diarrhea. Additionally, some opioids are prescribed for the treatment of opioid use disorder,‡ using methadone or buprenorphine-naloxone, under the supervision of a trained healthcare practitioner.

\* Pain that is experienced in response to change or changes in the body that may serve as a warning of current or future damage and typically resolves as healing occurs.

† When pain persists for more than 3 months.

‡ Opioid use disorder is defined as a “problematic pattern of opioid use leading to clinically significant impairment or distress, occurring within a 12-month period.”<sup>1</sup>



Opioids have the potential for problematic use because they can produce a feeling of well-being or euphoria – a high. Most of the harms being experienced are due to fentanyl and other synthetic opioids that are manufactured illegally and are available on the unregulated market. The presence of fentanyl in other substances on the unregulated market dramatically increases the risk of overdose as it is an extremely potent drug that can cause death even in small amounts. Understanding the health and social impacts of opioid use is critical for reducing risks and harms as well as for controlling access for therapeutic applications.

## Medical Use of Prescription Opioids in Canada

Prescription opioids are commonly referred to as pain killers or narcotics and have a variety of generic, trade and street names. Table 1 lists examples of prescription opioids marketed in Canada. However, prescription opioids that are not marketed in Canada may be diverted into the country. Prescription opioids are available in various forms in Canada, including tablets, capsules, syrups, solutions, liquid for injection, skin patches, transmucosal preparations, suppositories and nasal sprays.

When opioids are carefully prescribed and taken as intended, they can relieve pain and improve the quality of life of those living with chronic pain. However, in some cases, the use of prescription opioids can result in an opioid use disorder and death due to opioid poisoning. In decades past, prescription opioids were falsely promoted as low-risk, nonaddictive and effective treatments for moderate pain.<sup>2</sup> *The 2017 Canadian Guideline for Opioid Therapy and Chronic Non-Cancer Pain* reports that opioids were associated with a 5.5% risk of addiction and recommended optimizing nonopioid pharmacotherapy (e.g., nonsteroidal anti-inflammatory drugs) and nonpharmacological therapy over the use of opioids for patients with chronic noncancer pain.<sup>3</sup> That said, many of these evidence-based treatment avenues (e.g. physical and psychological therapies) are not accessible to those with low income or without private insurance, and they are not sufficiently covered under insurance plans, leaving those with pain with limited pain relief options.<sup>4</sup>

In this summary, “prescription opioid use” refers to the use of opioids as prescribed. “Nonmedical prescription opioid use” includes using a prescription opioid:

- Without a prescription written for the individual taking the drug,
- Provided by multiple doctors, nurses or pharmacists (“double doctoring”<sup>§</sup>),
- For purposes other than those indicated when prescribed (e.g., for euphoric effect),
- In ways other than prescribed, or
- More or less often than prescribed.

---

<sup>§</sup> Obtaining a prescription from more than one practitioner without telling the prescribing practitioner about other prescriptions received in the past 30 days.



Table 1. Common generic, trade and street names for prescription opioids

Generic name	Examples of trade names	Street names
Buprenorphine	BuTrans®	bupe, bute
Buprenorphine-naloxone	Suboxone®	subby, bupe, sobos
Codeine	Tylenol®2, 3 and 4 (codeine plus acetaminophen)	cody, captain cody, T1, T2, T3, T4
Fentanyl	Abstral®, Duragesic®, Onsolis®	patch, sticky, sticker, nerps, beans
Hydrocodone	Tussionex®, Vicoprofen®	hydro, vike
Hydromorphone	Dilaudid®	juice, dillies, dust
Meperidine	Demerol®	demmys
Methadone	Methadose®, Metadol®	meth, drink, done
Morphine	Doloral®, Statex®, M.O.S.®	M, morph, red rockets
Oxycodone	OxyNEO®, Percocet®, Oxycocet®, Percodan®	oxy, hillbilly heroin, percs
Pentazocine	Talwin®	Ts
Tapentadol	Nucynta®	—
Tramadol	Ultram® Tramacet® Tridural® Durela®	chill pills, ultras

**Note:** OxyContin® is no longer marketed in Canada and was replaced with OxyNEO®. Generic controlled-release oxycodone was approved by Health Canada. Oxymorphone (Opana®) has been approved by Health Canada but is not marketed in Canada.

—There is no known street name.

## Effects of Opioids

### Short-Term Effects

Opioids activate opioid receptors in the body's nervous system, which leads to pain relief and feelings of well-being, relaxation or euphoria (i.e., high). In addition to pain relief, at sufficiently high doses, opioids can also cause drowsiness, respiratory depression, coma and, in some cases, death. Other physical effects include constricted pupils, nausea, vomiting, constipation, loss of appetite and sweating. Prescription opioids can reduce pain and improve function and quality of life. Prescription opioids come in both short- and long-acting forms. Short-acting forms of prescription opioids typically last for three to six hours, while long-acting forms need to be taken every 12 to 24 hours to maintain their effects.

### Long-Term Effects

Long-term use can lead to the development of physical dependence, which manifests as tolerance to the effects of the drug and prompts people to increase the dose to reinstate the desired effects. The severity of symptoms depends on the type of medication used, the amount used, the duration of use and how abruptly the drug was discontinued. An increased risk of adverse events has also been reported following the medium- and long-term use of opioids for chronic noncancer pain.<sup>5</sup>

Those who have developed a physical dependence can also experience withdrawal symptoms and worsening pain when the dose is lowered. Withdrawal symptoms can include agitation, insomnia, muscle aches, abdominal cramping, diarrhea and vomiting. Those who are physically dependent might also experience cravings for the drug and difficulty stopping use, particularly if their pain persists or worsens.

The potential for the development of an opioid use disorder increases with repeated use of higher doses. Opioid use disorder includes behaviours reflecting loss of control over use and significant harms from use in addition to physical dependence, for example.<sup>1</sup>

Opioids can also increase the risk of sleep apnea, mood changes and decreased sex hormone levels, which can result in decreased interest in sex and menstrual irregularities. Regular use of large quantities of opioids during pregnancy increases the risk of premature delivery and withdrawal in the



infant. If oral opioids are crushed and injected, certain filler chemicals in the pills can permanently damage veins and organs. Sharing needles or injecting with previously used needles greatly increases the risk of getting certain infections (e.g., HIV, hepatitis C).

## Legal Status of Opioids in Canada

Most prescription opioids are classified as Schedule I drugs under the [Controlled Drugs and Substances Act](#). Their use is legal when they are prescribed by licensed practitioners and used by the person for whom they are prescribed. Illegal nonpharmaceutical opioids (e.g., heroin), including other synthetic opioids that were never approved for human use (e.g., nitazenes, carfentanil) are also classified as Schedule I drugs. Illegal possession of opioids and double doctoring can result in seven years imprisonment. Trafficking, importing, exporting or producing opioids, including synthetic opioids (e.g., fentanyl), can result in life imprisonment.<sup>6</sup>

An amendment to the *Controlled Drugs and Substances Act* was passed in 2017, also known as the *Good Samaritan Drug Overdose Act* ([Bill C-224](#)).<sup>7</sup> The amendment exempts an individual from charges for simple possession (and some other charges) of a controlled substance if they call 911 for a suspected drug poisoning, either for themselves or another person. The bill was passed to encourage the involvement of emergency medical services to save peoples' lives in the event of an overdose, without fear of criminal charges being laid.

More recently, in May 2022, the Government of British Columbia was granted an exemption by Health Canada to decriminalize the possession of small amounts of some illegal substances among those 18 years and older, including opioids, cocaine, methamphetamine and MDMA.<sup>8</sup> Under this legislative change, which takes effect in January 2023, individuals will no longer be arrested, charged or have their drugs seized for possession of amounts of up to 2.5 grams, if it is for personal use. Trafficking and related offences remain illegal.<sup>8</sup>

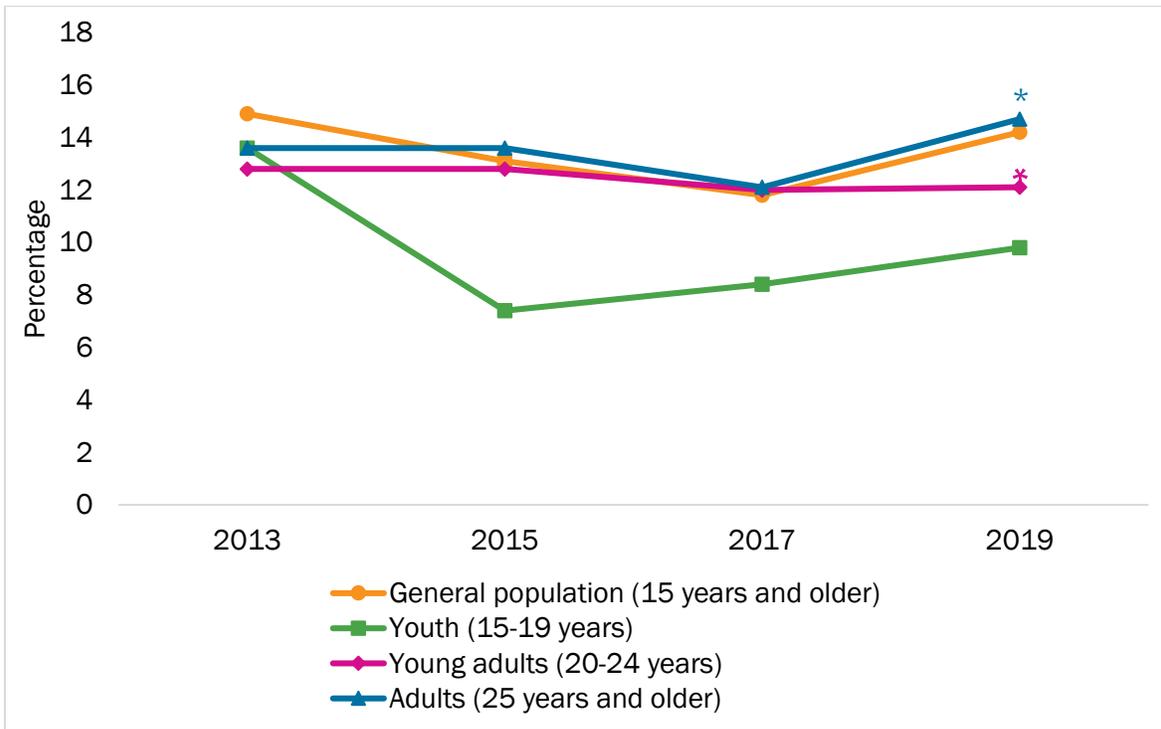
## Opioid Pain Relievers

### Self-Reported Use in the Past Year

- **General population (age 15 years and older):** According to the 2019 Canadian Alcohol and Drugs Survey (CADS),<sup>9</sup> the prevalence of past-year use of opioid pain relievers among the general population was 14.2%, a significant increase from 12% in 2017 (see Figure 1).<sup>10</sup>
- **Youth and young adults (age 15–24 years):** In 2019 among youth aged 15–19 years, the prevalence of past-year opioid pain reliever use was 9.8%. The rate was higher for young adults aged 20–24 years at 12.1% (Figure 1). The 2019 estimates for both age groups do not represent a significant change from the 2017 estimates.<sup>9,10</sup>
- **Postsecondary students (age 17–25 years):** Data from the first Canadian Postsecondary Alcohol and Drug Use Survey (2019–2020) shows that 24.3% of those surveyed reported the use of pain relievers in the previous 12 months.<sup>11</sup> Those in their first and second year of study had a significantly higher prevalence (25.6%) than those in their third or higher year (22.5%).<sup>11</sup>
- **Adults (age 25 years and older):** The prevalence of opioid pain reliever use among adults living in Canada was 14.7% in 2019, a significant increase from 12.1% in 2017.<sup>9,10</sup> The use of opioid pain reliever medications among adults did not change significantly from 13.6% in 2015 (Figure 1).<sup>10,12</sup>
- **Sex:** Data from the 2019 CADS indicate that the past-year prevalence of opioid pain reliever use was higher among females (16%) than males (12%).<sup>9</sup> While the prevalence of use by males was relatively stable between 2017 and 2019, use by females increased from 11.2% to 12% during the same period (Figure 2).<sup>9,10</sup>

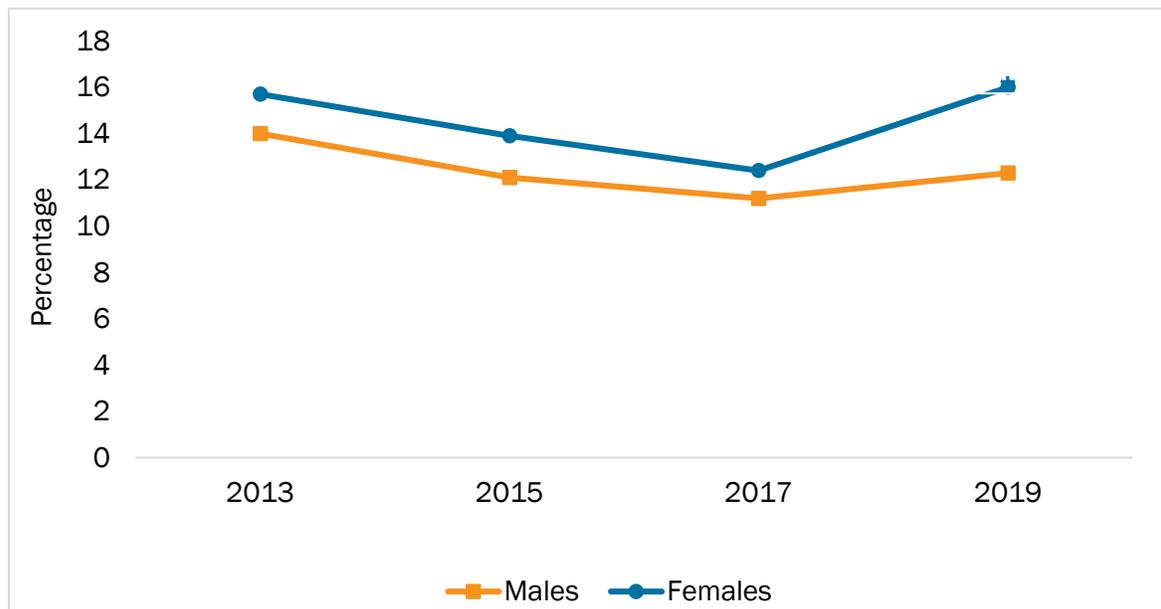


Figure 1. Prevalence of self-reported opioid pain reliever use among people living in Canada by age



Sources: Canadian Tobacco, Alcohol and Drugs Survey (CTADS) 2013,<sup>13</sup> CTADS 2015,<sup>12</sup> CTADS 2017,<sup>10</sup> Canadian Alcohol and Drugs Survey 2019,<sup>9</sup> \* =  $p < .05$ ; significant change from previous year.

Figure 2. Prevalence of self-reported opioid pain reliever use among people living in Canada by sex



Source: Canadian Tobacco, Alcohol and Drugs Survey (CTADS) 2013,<sup>13</sup> CTADS 2015,<sup>12</sup> CTADS 2017,<sup>10</sup> Canadian Alcohol and Drugs Survey 2019,<sup>9</sup> \* =  $p < .05$ ; significant change from previous year.



## Prescribing Trends

A 2017 report found that in the fiscal year 2015–2016, about 1 in 7 people in Ontario (almost 2 million individuals) filled an opioid prescription.<sup>14</sup> Data from 2018 prescriptions being filled at community pharmacies in Ontario, Manitoba, Saskatchewan and British Columbia showed that almost 1 in 8 people were prescribed opioids.<sup>15</sup> A recent analysis revealed that, across Canada, opioid dispensing peaked between 2011 and 2016, followed by significant declines, with substantial interprovincial differences.<sup>16,17</sup> These changes were largely attributable to changes in regulations and clinical guidelines about the use of prescription opioids for chronic pain. As a result of such policy and associated decreases in prescribing, many individuals living with chronic pain have suffered unintended consequences.<sup>4,18</sup>

Recent data provided by IQVIA<sup>19</sup> show that the proportion of people living in Canada who have received at least one prescription in a community pharmacy decreased by 1.6% between 2015 and 2020, with all provinces showing a decreasing trend. British Columbia continued to have the highest prevalence of opioid prescriptions at 13.3% in 2020, whereas Quebec continued to have the lowest prevalence at 10.0%.<sup>19</sup> In contrast, the number of opioid prescriptions dispensed increased by 15.4% during the same period. This increase was driven mainly by increased prescribing of opioids to treat opioid use disorder, which includes opioid agonist treatments, such as methadone and buprenorphine-naloxone, and suggests increased access to the standard of care for opioid use disorder in Canada.<sup>19</sup> The number of people given such opioids for the treatment of opioid use disorder increased by 44% between 2015 and 2020 in Canada, with the largest increase occurring in Manitoba and Saskatchewan (287% combined) and the smallest increase occurring in Ontario (14%).<sup>19</sup>

Injectable hydromorphone and prescription diacetylmorphine (pharmaceutical-grade heroin) have also been evaluated for the treatment of opioid use disorder in some populations, such as patients who have not had success with methadone treatment, and have shown some promise.<sup>20</sup> Regardless of treatment approach, evidence-based harm reduction approaches should be offered to all individuals with an opioid use disorder and integrated throughout the continuum of care.<sup>21,22</sup> As defined by the Canadian Research Initiative in Substance Misuse guidelines, harm reduction includes education about the safer use of sterile syringes and needles; access to sterile syringes, needles and other supplies; take-home naloxone kits; and supervised consumption services.<sup>21</sup> Naloxone, a fast-acting nasal spray (Narcan®), can be used to temporarily reverse known or suspected opioid overdoses and was approved by Health Canada for use in 2016. National data on the availability and frequency with which naloxone is used are not available.

## Nonmedical Use of Prescription Opioids

### Self-Reported Use in the Past Year

- **General population (aged 15 years and older)<sup>¶</sup>:** Data from the 2019 CADS revealed that 1% of people living in Canada used opioid pain relievers for nonmedical purposes in the past year, with no differences between males (1%) and females (1%).<sup>9</sup> Among those who used opioid pain relievers in the past year, 6% (or about 269,000 people living in Canada) reported using them for nonmedical purposes, a significant increase from 3% (or about 100,000 people) in 2017.<sup>9,10</sup>
- **Students (grades 7 to 9<sup>†</sup> and 10 to 12<sup>#</sup>):** The 2018–2019 Canadian Student Tobacco, Alcohol and Drug Survey (CSTADS) found that 1.8% of students in grades 7 to 9 in Canada (up from 1.2% in 2016–2017) and 4.7% of students in grades 10 to 12 (unchanged from 2016–2017) reported past-year use of pain relievers to get high, and not for medical purposes (Figure 3).<sup>23,24</sup> A greater proportion of males (4.0%) than females (2.5%) in grades 7 to 12 reported past-year

<sup>¶</sup> Data on nonmedical opioid use was not reportable for those aged 15 to 19 years in the overall population due to the small sample size.

<sup>†</sup> Secondary I-III in Quebec.

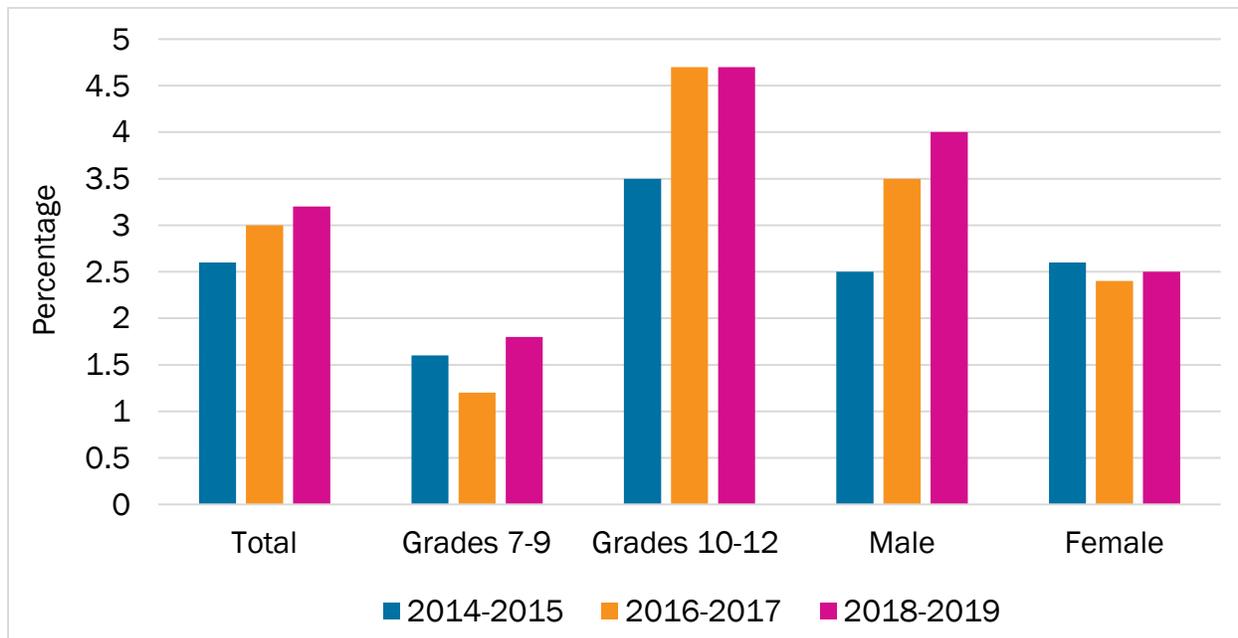
<sup>#</sup> Secondary IV-V in Quebec.



use of pain relievers to get high.<sup>23</sup> The proportion of males reporting nonmedical use of pain relievers has remained stable since 2017 (3.5%), as has the proportion of females reporting such use (2.4%), as shown in Figure 3.<sup>23,24</sup>

- **Postsecondary students (age 17 to 25 years):** Data from the 2019-2020 Canadian Postsecondary Alcohol and Drug Use Survey shows that 22.5% of students surveyed reported using pain relievers nonmedically.<sup>11</sup> No significant differences were found between males (20.4%) and females (24.1%), nor between those in their first or second year (23.3%) compared with those in their third year or higher (20.9%).<sup>11</sup>

**Figure 3. Prevalence of self-reported past year opioid pain reliever use among students in Canada by grade and sex**



Source: CSTADS 2014-2015,<sup>26</sup> CSTADS 2016-2017,<sup>21</sup> CSTADS 2018- 2019<sup>20</sup>

### Past-Year Nonmedical Use Internationally

- **United States:** In 2020\*\*, the past-year prevalence of nonmedical use of prescription pain relievers was 3.3% among those aged 12 years and older, with the highest prevalence (4.1%) reported among those aged 18 to 25 years.<sup>25</sup>
- **Australia:** Data from 2019 show that 2.7% of those aged 14 years and older reported nonmedical use of any type of opioid in the previous 12 months, a decrease from 3.6% observed in 2016.<sup>26</sup> This decrease appeared to be driven by a decline in the use of codeine for nonmedical purposes, which was down from 3.0% in 2016 to 1.5% in 2019. This decline aligned with codeine becoming available only by prescription in 2018.<sup>††26</sup>

### Wastewater-based Estimates for Opioids

Measuring opioid levels in wastewater samples is challenging as many degrade quickly, and different opioids transform into the same end product (e.g., morphine), making it difficult to identify which opioid the measured morphine was derived from. Despite these challenges, a study by Statistics

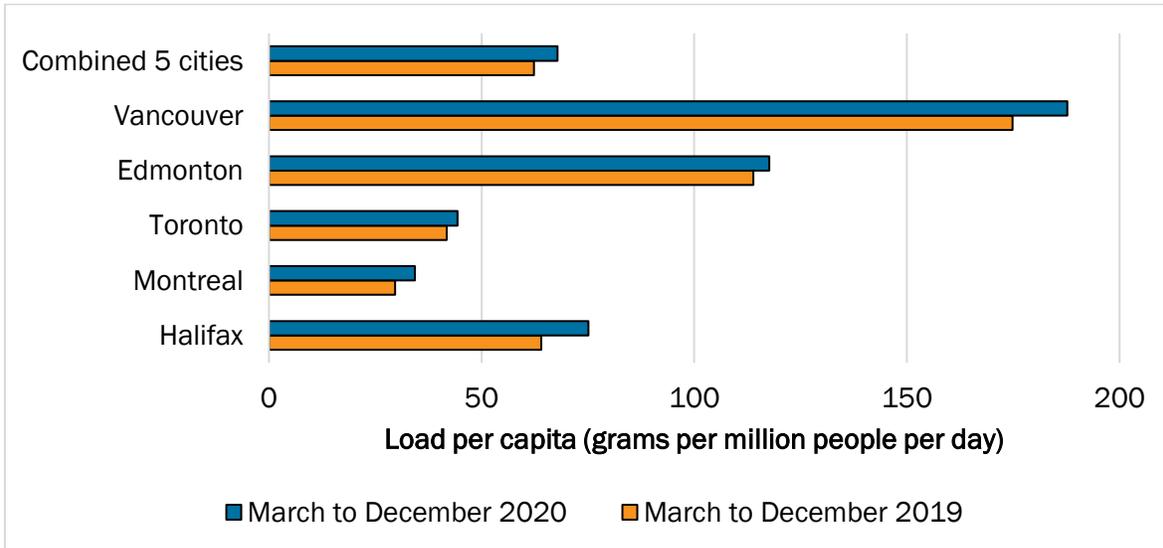
\*\* The National Survey on Drug Use and Health (NSDUH) Report (2021), from which these statistics are taken, cautions against comparing estimates from the 2020 findings to previous survey cycles due to methodological changes implemented in 2020. Therefore, no comparison of the estimate to previous years was made.

†† In February 2018, medications containing codeine were reclassified to schedule 4 drugs, meaning they could no longer be purchased from a pharmacy without a prescription.<sup>26</sup>



Canada collected wastewater in five major Canadian cities from March to December 2019 and March to December 2020 (Figure 4).<sup>27</sup> Per-capita loads of morphine in Montreal and Toronto were the lowest (with average levels of 34 and 44 grams per million people per day, respectively, in 2020). Vancouver and Edmonton were the highest (at 188 and 118 g per million people per day, respectively, in 2020).<sup>27</sup>

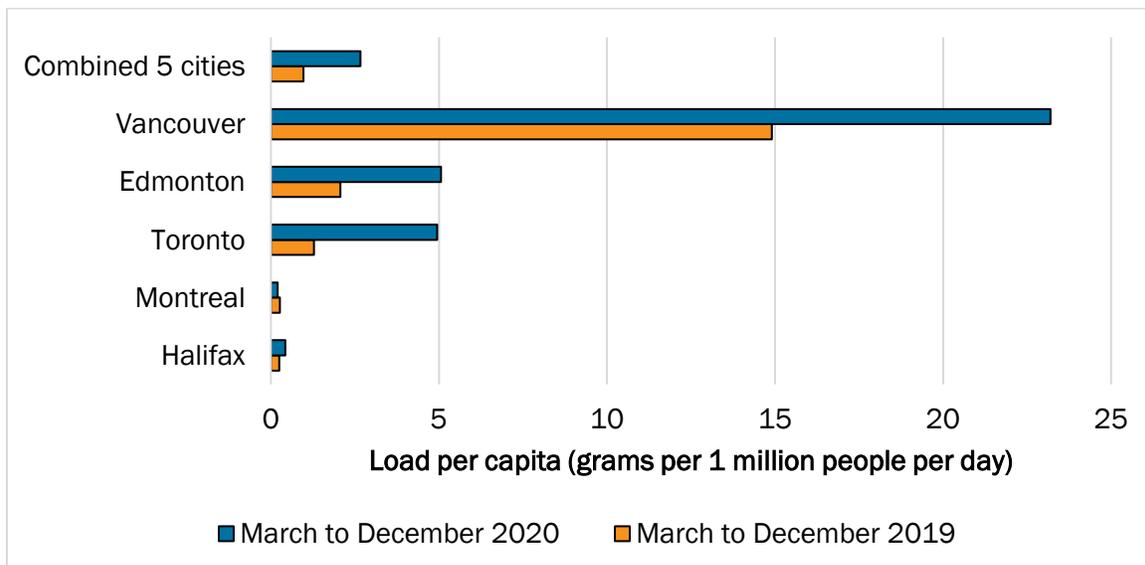
Figure 4. Wastewater-based estimates of morphine use in Canada (2019 and 2020)



Source: Statistics Canada, 2021<sup>27</sup>

Per-capita loads of fentanyl in Montreal and Halifax wastewater were estimated to be zero in 2019 and 2020.<sup>27</sup> Vancouver had the highest estimates of fentanyl from March to December of 2019 at 15 g per million people per day and increased by 34.8% (to 23 g per million people per day) from March to December 2020. Toronto observed the highest increase from 2019 to 2020, with an 80% increase in estimates followed by Edmonton, which saw a 60% increase in the same period (see Figure 5).<sup>27</sup>

Figure 5. Wastewater-based estimates of fentanyl use in Canada (2019 and 2020)



Source: Statistics Canada, 2021<sup>27</sup>



## Prevalence Among Individuals Accessing Treatment and Harm Reduction Services

While all federal, provincial and territorial agencies collect data on their treatment systems, there are no national-level data available for prescription drug-related treatment in Canada. According to the 2018 National Treatment Indicators report,<sup>††</sup> opioids were the second-most reported substance for which treatment was sought in Nova Scotia.<sup>28</sup> The Atlantic provinces have a higher proportion of people reporting opioids as problem substances than in other jurisdictions.<sup>28</sup> Across Canada, the number of individuals reporting opioids as a problem substance remained relatively constant between 2016 and 2018.<sup>28</sup> This report underestimates the number of individuals accessing specialized, publicly funded treatment for opioids as estimates largely exclude opioid agonist treatment.

The Community Urinalysis and Self-Report Project (CUSP)<sup>29</sup> was developed to provide standardized information about the use of drugs from the unregulated supply. CUSP surveys people accessing harm reduction services about their recent drug use (reported) and compares that data with urine toxicology results (detected) in seven jurisdictions across Canada<sup>§§</sup>. Standardized data from spring 2019 to spring 2021 at 49 harm reduction sites showed that half of the participants reported using at least one opioid and at least one stimulant in the previous three days, suggesting that the use of both types of substances close in time is common.<sup>29</sup> The extent to which individuals were using opioids (e.g., fentanyl) expectedly (that is, reported and detected) or unexpectedly (that is, not reported but detected) varied across Canada. The use of opioids was more expected in western regions and unexpected use was more commonly seen in eastern regions.<sup>29</sup>

## Opioids in the Unregulated Drug Supply

Many of the national surveys that provide estimates on the prevalence of opioid use gather data mainly on prescription and over-the-counter medications containing opioids and differentiate between their use for medical or nonmedical purposes. While valuable, these data are generally unable to generate prevalence estimates on the use of other opioids obtained from the unregulated market. In recent years, the Public Health Agency of Canada has begun to differentiate between opioids with pharmaceutical and nonpharmaceutical origin in all apparent opioid-related apparent deaths in Canada, though details on where the substances were obtained are not always available. Such data are sometimes available in periodically released jurisdictional reports or regular updates from health authorities or public health units in which rates of drug toxicity deaths are high (e.g., British Columbia, Ontario and Alberta). Most opioid-related harms, including deaths, do not involve individuals who are taking a prescription opioid as prescribed for pain or other medical reasons. Where available, these data are described in the section on harms below.

The risks associated with substance use are significantly increased for drugs obtained from the illegal market as there are no quality control measures and no information is provided about their contents. This unpredictability places people who use drugs at increased risk of poisoning (overdose) and death. Since the onset of the COVID-19 pandemic, substances from the unregulated supply have become even more unpredictable in terms of contents, strength and quality.<sup>31,30</sup> For example, psychoactive substances that people are unaccustomed to using or that have never been approved for human use are being detected at drug checking sites or in seizure data. Some of these include:

---

<sup>††</sup> The latest National Treatment Indicators report provides 2016-2018 fiscal years' data on public, specialized substance use treatment from Newfoundland and Labrador, Prince Edward Island, Nova Scotia, Ontario, Manitoba, Saskatchewan, Alberta and Northwest Territories.

<sup>§§</sup> Jurisdictions included British Columbia (multiple sites), Edmonton (Alberta), Manitoba (multiple sites), Thunder Bay (Ontario), Montreal and Laval (Quebec), and Halifax (Nova Scotia).



- **Nitazenes** are synthetic opioids that can be several times more potent than fentanyl. Nitazenes can appear unexpectedly in drugs expected to contain other, more common opioids (e.g., fentanyl or “down”) and can increase the risk of accidental poisoning deaths.<sup>30</sup>
- **Nonmedical benzodiazepines** are sedatives that can have a calming effect or act as a sleep aid but have never been approved as medicines in the pharmaceutical industry because of safety concerns. Nonmedical benzodiazepines have been found more frequently in the unregulated supply of opioids and are a concern as they may complicate the overdose response efficacy because benzodiazepines do not respond to naloxone.<sup>31</sup>
- **Xylazine** is a tranquilizer used in veterinary medicine that has analgesic and muscle relaxant effects. It has recently emerged as a common cutting agent<sup>III</sup> and is sometimes added to opioids, particularly fentanyl, which can exacerbate lowered blood pressure, heart rate and breathing, increasing the risk of an accidental drug poisoning death.<sup>32</sup>

## Seizures in Canada

Drug seizure data provide a supply-related indicator of the availability of drugs in the illegal market.

**National:** The United Nations Office on Drugs and Crime reported that in 2019, about 98 kilograms of heroin, 571 kg of opium and 295 kg of pharmaceutical opioids were seized in Canada. That was an increase of about 12% for heroin, 49.6% for opium and 75.6% for pharmaceutical opioids from 2018.<sup>33</sup>

**Drug Analysis Service:** The service analyses suspected illegal drugs seized by Canadian law enforcement agencies. The drugs analyzed do not represent all of the substances seized and should not be used to estimate the number or types of drugs available on the market. A single sample can contain more than one substance. Results indicate that the number of samples containing opioids increased by 15% from 2020 to 2021 (from 20,549 samples to 24,173).<sup>34</sup> The proportion of samples containing fentanyl during the same period increased by three percentage points from 69% in 2020 to 72% in 2021.<sup>34</sup> Fentanyl is the most detected opioid across samples. Nitazenes and bupropion were first seized and analyzed in Canada in 2019. Since then, several substances belonging to this group have been analyzed.<sup>35</sup> Several opioids continue to emerge, and the group may become an important part of the illegal market in the coming years.<sup>36</sup> Further, on a national level, the number of heroin samples analyzed over the last decade has steadily decreased. The number of heroin samples that contain fentanyl has also steadily declined since 2020 when 62% of heroin samples also contained fentanyl.<sup>34</sup> From January to March 2022, 25% of heroin-containing samples also contained fentanyl. From April to June 2022, 20% of heroin samples contained fentanyl.<sup>34</sup>

**Provincial and territorial differences:** The detection of opioids in seized samples was not consistent across the country. Results from the Drug Analysis Service indicated that more opioid samples were identified in 2021<sup>¶¶</sup> from Ontario (12,305 samples), British Columbia (6,007 samples) and Alberta (3,512 samples), whereas fewer samples were found in the territories (20 samples).<sup>34</sup> Further, the percentage of opioid samples containing fentanyl or fentanyl analogues was highest in the territories (95%), followed by British Columbia (85%) and Alberta (84%). The percentage generally declined moving from west to east.<sup>34</sup> Fentanyl was the most-commonly detected opioid in many regions; however, hydromorphone was the most-commonly detected opioid in Quebec, New Brunswick, Nova Scotia and Prince Edward Island, and oxycodone was most-commonly detected in Newfoundland and Labrador.<sup>34</sup>

<sup>III</sup> The term cutting agent refers to adulterants or cooccurring substances that are not psychoactive and unlikely to contribute to substance-related poisoning deaths, although some can be associated with other health risks.

<sup>¶¶</sup> While DAS data for January to June 2022 exist, we report on the most recent full year of data available, which is 2021.



## Harms Associated with Use

### Hospitalization and Emergency Department Visits

There are numerous harms from opioids<sup>##</sup> that can result in hospitalization, including opioid poisoning, opioid use disorder and neonatal withdrawal.<sup>37</sup> Between January 2016 and March 2022, there were 32,319 opioid-related poisoning hospitalizations in Canada (not including Quebec).<sup>38</sup> In the first two years of the COVID-19 pandemic, there was a 24% increase in hospitalizations compared with the previous two years (11,760 from April 2020 to March 2022, compared with 9,470 from April 2018 to March 2020).<sup>38</sup> Between January and March 2022, 1,350 opioid-related poisoning hospitalizations occurred, about 15 hospitalizations per day. That was up from about 12 per day in 2019 and 14 per day in 2017.<sup>38</sup>

Across Canada, the age-adjusted rate of hospitalizations<sup>\*\*\*</sup> in 2021 ranged from 3.3 (Nova Scotia) to 26.0 (British Columbia) per 100,000.<sup>38</sup> In 2021, most hospitalizations for opioid poisoning occurred in British Columbia, Alberta and Ontario (88%), and among individuals aged 20 to 49 years of age (58%).<sup>38</sup>

In the first three months of 2022, 68% of those being hospitalized for opioid-related poisoning were male and 32% were female.<sup>38</sup> Hospitalizations were highest among those aged 20 to 49 years (54%) between January and March 2022.<sup>38</sup>

In 2021, the Canadian Institute for Health Information (CIHI) released a report examining the impact on harms caused by substance use<sup>†††</sup> during the early stages of the pandemic (March to September 2020). The report found that both hospitalizations and emergency department (ED) visits involving opioids increased, compared with the same period in 2019.<sup>39</sup> Hospitalizations involving opioid harms during those seven months rose by 7%, whereas ED visits rose by 8%.<sup>39</sup> CIHI's follow-up report revealed that from October 2020 to June 2021 (nine months), ED visits for opioid-related harms rose by 36% and hospitalizations by 30%.<sup>40</sup> Further, men experienced a greater increase in harms due to opioids, experiencing 33% more hospitalizations compared with 5% more among women.<sup>40</sup>

Between 2010 and 2020, 16,920 hospitalizations related to neonatal withdrawal occurred, an increase of 73% from 2010 to 2020 and a 5% increase from 2019 to 2020.<sup>41</sup>

### Mortality

There are no national-level data on opioid-related deaths before 2016. Between January 2016 and March 2022, 30,843 apparent opioid-related deaths occurred in Canada.<sup>38</sup> There was a 91% increase in apparent opioid toxicity deaths in the first two years of the pandemic compared with the two years prior. As in 2021, in the first three months of 2022 there have been about 21 deaths per day, compared with 8 and 11 deaths per day in 2016 and 2018, respectively.<sup>38</sup>

Most deaths were accidental (94%) and involved opioids that were nonpharmaceutical in origin (81%).<sup>†††.38</sup> Eighty-five per cent of deaths in January to March 2022 involved fentanyl.<sup>38</sup> From January to March 2022, just less than half of the apparent opioid-related deaths also involved a stimulant (e.g., cocaine [61%], methamphetamines [52%]).<sup>38</sup> In addition, about two-thirds of deaths caused by opioids involved at least one other substance in 2017, compared with only half in 2014.<sup>42</sup>

---

<sup>##</sup> Opioid-related harms can be caused by prescription or illicit opioids, or a combination of both.

<sup>\*\*\*</sup> The age-adjusted rate accounts for variation in age distribution in the different regions. The age-adjusted rate was calculated using the direct standardization process, with the 2016 population representing the standard population.<sup>38</sup>

<sup>†††</sup> Harms examined in this report, as they relate to opioids, included substance use disorders and poisonings.

<sup>†††</sup> Opioids with a pharmaceutical origin refer to opioids that were manufactured by a pharmaceutical company and approved for medical purposes in humans. Pharmaceutical origin does not indicate how the opioids were obtained (e.g., through personal prescription or by other means).<sup>26</sup> This estimate was based on data from 2021 on the origin of opioids from deaths with completed investigations and reflects data from eight provinces.



Seventy-six per cent of accidental deaths between January and March 2022 occurred among males. The highest proportion of deaths for both males and females were among those aged 20 to 59 years.<sup>38</sup> Estimated province-specific crude rates of opioid or illicit drug-related deaths ranged from 6.6 (Northwest Territories) to 53.5 per 100,000 (Yukon) in 2021.<sup>§§§,38</sup> Continuing the trend from 2021, during the first three months of 2022, 90% of all accidental apparent opioid toxicity deaths occurred in British Columbia, Alberta and Ontario, and increasing rates were observed in both Yukon and Saskatchewan.<sup>38</sup>

- **Ontario:** An average of 34 deaths per week occurred in the 15 weeks before the pandemic, most of which continued to be accidental. During the first 15 weeks of the pandemic, this number increased by 38% to an average of 46 deaths per week.<sup>43</sup> Between March and December 2020, there were 1,808 opioid-related deaths in Ontario. An increasing proportion of these deaths involved only nonpharmaceutical opioids from the unregulated drug supply (from 65% pre-pandemic to 79% during the pandemic), of which 99% involved fentanyl or its analogues.<sup>44</sup>
- **Alberta:** In 2019, 626 opioid-related deaths occurred, climbing to 1,180 in 2020, 1,623 in 2021 and 562 in the first four months of 2022.<sup>45</sup> In 2021, an average of four individuals died each day in Alberta due to an accidental opioid poisoning.<sup>45</sup>
- **British Columbia:** Deaths related to drug toxicity in British Columbia includes all unintentional illicit drug toxicity deaths, including confirmed and suspected drug toxicity deaths.<sup>||||</sup> The most recent estimate for 2021 shows that the number of illicit drug toxicity deaths averages about 6 deaths per day (2,236), compared with 2.7 deaths per day (981) in 2019.<sup>46,47</sup> As has been the case since the declaration of the overdose crisis in 2016, males have accounted for most deaths in 2022 (76%). Similar to recent years, 72% of the deaths in 2022 (January to April) were among those aged 30 to 59 years.<sup>47</sup> Fentanyl and its analogues were detected in 85% of illicit drug toxicity deaths between August 2017 and July 2021. With the emergence of COVID-19 restrictions, an increase in the concentration of fentanyl was also observed, with 13% of deaths having extreme fentanyl concentrations (> 50 ug/l) in March 2020, compared with 8% in January 2019.
- **Nova Scotia:** In 2021, there were 229 opioid-related deaths, compared with 298 in 2020 and 334 in 2019.<sup>48</sup> From January to May 2022, there were 34 opioid-related deaths.<sup>48</sup> The rate of opioid-related deaths involving pharmaceutical opioids has decreased steadily between 2019 and 2021, from 68.9 per 100,000 to 36 per 100,000, respectively.<sup>48</sup> For nonpharmaceutical opioid-related deaths, the rate was 4.6 per 100,000 in 2019, 11.5 per 100,000 in 2020 and 9.9 per 100,000 in 2021.<sup>48</sup> To date, there are no estimates about pharmaceutical and nonpharmaceutical opioid-related deaths in 2022.

## Impaired Driving

There is evidence that opioid use can increase the risk of driving impairment when used in combination with other drugs or alcohol, when used nonmedically or when used therapeutically by individuals who are unaccustomed to using opioids.<sup>49,50</sup> Opioids are one of the most common classes of prescription drugs found among drivers during roadside impaired driving surveys, along with benzodiazepines.<sup>49,51</sup> Recent findings from the *National Drug Driving Study* (which collected data from 2018 to 2021 from 4,976 injured drivers treated in one of 15 trauma centres across Canada) show that opiates were detected in 1 in 9 injured drivers (11.1%), and were detected more frequently in males than in females.<sup>52</sup>

---

§§§ An opioid-related death is a death caused by poisoning because of drug use, where at least one of the drugs is an opioid. A fentanyl-related death is a death caused by poisoning because of drug use, where one of the drugs is fentanyl.<sup>31</sup>

|||| These may include deaths due to street drugs (controlled and illegal), medications not prescribed to the deceased but obtained on the street with unknown origin, or combinations of the above with prescribed medications.



## Costs Associated with Use

Healthcare costs include inpatient hospitalizations, day surgeries, ED visits, substance use treatment, visits to family physicians and the use of prescription drugs. Between 2015 and 2017, the per-person overall healthcare costs associated with opioids<sup>¶¶¶</sup> increased by 20.9%, the second largest increase after central nervous system stimulants (excluding cocaine), which increased by 22.1%.<sup>65</sup> In 2017, opioids were responsible for the third largest proportion of costs attributable to substance use across Canada.<sup>###</sup> In the same year, \$438.6 million in healthcare costs were attributable to opioids, representing about 3.4% of all healthcare costs associated with substances.<sup>65</sup>

## Additional Resources

- [CCENDU Drug Alert: Nitazenes](#)
- [CCENDU Alert: Changes Related to COVID-19 in the Illegal Drug Supply and Access to Services, and Resulting Health Harms](#)
- [Community Urinalysis and Self-Report Project: Cross-Canada Report on the Use of Drugs from the Unregulated Supply, 2019–2021 Data](#)
- [Impacts of the COVID-19 Pandemic on People Who Use Substances: What We Heard](#)
- [Polysubstance Use and Poisoning Deaths in Canada](#)
- [Exploring Response Options to Opioid Harms: Case Studies from Four Canadian Clinics](#)
- [Canadian Substance Use Costs and Harms: 2015 to 2017](#)
- [National Treatment Indicators Report: 2016-2018 Data](#)
- [First Do No Harm: Responding to Canada's Prescription Drug Crisis](#)

---

<sup>¶¶¶</sup> Estimates from the Canadian Substance Use Costs and Harms (CSUCH) report include data on all opioids, including prescription opioids.

<sup>###</sup> At the time of this report, some healthcare-related data were not available for the province of Quebec, so no meaningful estimates of overall healthcare costs could be generated for Quebec.



## References

- 1 American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, D. C.: Author. <https://doi.org/10.1176/appi.books.9780890425596>
- 2 Canadian Pain Task Force. (2020). *Working together to better understand, prevent and manage chronic pain: What we heard*. Ottawa, Ont.: Health Canada. <https://www.canada.ca/en/health-canada/corporate/about-health-canada/public-engagement/external-advisory-bodies/canadian-pain-task-force/report-2020.html>
- 3 Busse, J. W., Craigie, S., Juurlink, D. N., Buckley, D. N., Wang, L., Couban, R. J., ... Guyatt, G. H. (2017). Guideline for opioid therapy and chronic noncancer pain. *CMAJ*, 189(18), E659–E666. <https://doi.org/10.1503/cmaj.170363>
- 4 Dassieu, L., Heino, A., Develay, É., Kaboré, J.-L., Pagé, M. G., Moor, G., Hudspith, M., & Choinière, M. (2021). “They think you’re trying to get the drug”: Qualitative investigation of chronic pain patients’ health care experiences during the opioid overdose epidemic in Canada. *Canadian Journal of Pain*, 5(1), 66–80. <https://doi.org/10.1080/24740527.2021.18818865>
- 5 Els, C., Jackson, T. D., Kunyk, D., Lappi, V. G., Sonnenberg, B., Hagtvedt, R., ... Straube, S. (2017). Adverse events associated with medium- and long-term use of opioids for chronic non-cancer pain: An overview of Cochrane Reviews. *The Cochrane Database of Systematic Reviews*, 10, Article CD012509. <https://doi.org/10.1002/14651858.CD012509.pub2>
- 6 *Controlled Drugs and Substances Act*, S.C. 1996, c. 19. <https://laws-lois.justice.gc.ca/eng/acts/c-38.8/FullText.html>
- 7 *Bill C-224, An Act to amend the Controlled Drugs and Substances Act* (assistance – drug overdose), 42nd Parliament, 1st Session. (2017). <https://www.parl.ca/DocumentViewer/en/42-1/bill/C-224/royal-assent>
- 8 Health Canada (2022). Exemption from *Controlled Drugs and Substances Act*: Personal possession of small amounts of certain illegal drugs in British Columbia (January 31, 2023 to January 31, 2026). <https://www.canada.ca/en/health-canada/services/health-concerns/controlled-substances-precursor-chemicals/policy-regulations/policy-documents/exemption-personal-possession-small-amounts-certain-illegal-drugs-british-columbia.html>
- 9 Statistics Canada. (2021). *Canadian Alcohol and Drugs Survey (CADS): Summary of results for 2019*. Ottawa, Ont.: Health Canada. <https://www.canada.ca/en/health-canada/services/canadian-alcohol-drugs-survey/2019-summary.html>
- 10 Statistics Canada. (2019). *Canadian Tobacco, Alcohol and Drugs Survey: Summary of results for 2017*. Ottawa, Ont.: Health Canada. <https://www.canada.ca/en/health-canada/services/canadian-alcohol-drugs-survey/2017-summary.html>
- 11 Health Canada. (2021). *Canadian Postsecondary Education Alcohol and Drug Use Survey, 019/2020*. Ottawa, Ont.: Author. <https://health-infobase.canada.ca/alcohol/cpads/>
- 12 Statistics Canada. (2017). *Canadian Tobacco, Alcohol and Drugs Survey: 2015 summary*. Ottawa, Ont.: Health Canada. <https://www.canada.ca/en/health-canada/services/canadian-alcohol-drugs-survey/2015-summary.html>
- 13 Statistics Canada. (2015). *Canadian Tobacco, Alcohol and Drugs Survey: 2013 summary*. Ottawa, Ont.: Health Canada. <https://www.canada.ca/en/health-canada/services/canadian-alcohol-drugs-survey/2013-summary.html>



- 14 Health Quality Ontario. (2017). *9 million prescriptions: What we know about the growing use of prescription opioids in Ontario*. Toronto, Ont.: Queen's Printer for Ontario.  
<https://www.hqontario.ca/portals/0/Documents/system-performance/9-million-prescriptions-en.pdf>
- 15 Canadian Institute for Health Information. (2019). *Opioid prescribing in Canada: How are practices changing?* Ottawa, Ont.: Author.  
<https://www.cihi.ca/sites/default/files/document/opioid-prescribing-canada-trends-en-web.pdf>
- 16 Jones, W., Kaoser, R. & Fischer, B. (2021). Patterns, trends and determinants of medical opioid utilization in Canada 2005-2020: Characterizing an era of intensive rise and fall. *Substance Abuse Treatment, Prevention and Policy*, 16, Article 65. <https://doi.org/10.1186/s13011-021-00396-5>
- 17 Canadian Institute for Health Information. (2018). *Pan-Canadian trends in the prescribing of opioids and benzodiazepines, 2012 to 2017*. Ottawa, Ont.: Author.  
<https://www.cihi.ca/sites/default/files/document/opioid-prescribing-june2018-en-web.pdf>
- 18 Antoniou, T., Ala-Leppilampi, K, Shearer, D., Parsons, J. A., Tadrus, M., & Gomes, T. (2019). "Like being put on an ice floe and shoved away": A qualitative study of the impacts of opioid-related policy changes on people who take opioids. *International Journal of Drug Policy*, 66, 15-22. <https://doi.org/10.1016/j.drugpo.2019.01.015>
- 19 IQVIA. (2022). Prescription opioid trends in Canada: An independent IQVIA report on measuring and understanding the use of prescription opioids dispensed in 2015 and 2020.  
[https://www.iqvia.com/-/media/iqvia/pdfs/canada/white-paper/prescriptionopioidtrendsincanada\\_report\\_en.pdf?\\_ =1660670833220](https://www.iqvia.com/-/media/iqvia/pdfs/canada/white-paper/prescriptionopioidtrendsincanada_report_en.pdf?_=1660670833220)
- 20 Canadian Agency for Drugs and Technologies in Health. (2017). *Sustained release oral morphine, injectable hydromorphone, and prescription diacetylmorphine for opioid use disorder: Clinical and cost-effectiveness, and guidelines*. Ottawa, Ont.: Author.  
<https://www.cadth.ca/sustained-release-oral-morphine-injectable-hydromorphone-and-prescription-diacetylmorphine-opioid>
- 21 Bruneau, J., Ahamad, K., Goyer, M.-È, Poulin, G., Selby, P., Fischer, B., Wood, T. C., & Wood, E. (2018). Management of opioid use disorders: A national clinical practice guideline. *CMAJ*, 190(9), E247–E257. <https://doi.org/10.1503/cmaj.170958>
- 22 Taha, S. (2018). *Best practices across the continuum of care for the treatment of opioid use disorder*. Ottawa, Ont.: Canadian Centre on Substance Use and Addiction.  
<https://www.ccsa.ca/sites/default/files/2019-04/CCSA-Best-Practices-Treatment-Opioid-Use-Disorder-2018-en.pdf>
- 23 Propel Centre for Population Health Impact. (2020). *Summary of results of the Canadian Student Tobacco, Alcohol and Drugs Survey 2018–19*. Ottawa, Ont.: Health Canada.  
<https://www.canada.ca/en/health-canada/services/canadian-student-tobacco-alcohol-drugs-survey/2018-2019-summary.html>
- 24 Propel Centre for Population Health Impact. (2018). *Summary of results for the Canadian Student Tobacco, Alcohol and Drugs Survey 2016–17*. Ottawa, Ont.: Health Canada.
- 25 Substance Abuse and Mental Health Services Administration. (2021). *Key substance use and mental health indicators in the United States: Results from the 2020 National Survey on Drug Use and Health* (HHS Publication No. PEP21-07-01-003, NSDUH Series H-56). Rockville, Maryland.: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration.



- [https://www.samhsa.gov/data/sites/default/files/reports/rpt35325/NSDUHFFR1PDFWHTMLFile\\_s2020/2020NSDUHFFR1PDFW102121.pdf](https://www.samhsa.gov/data/sites/default/files/reports/rpt35325/NSDUHFFR1PDFWHTMLFile_s2020/2020NSDUHFFR1PDFW102121.pdf)
- 26 Australian Institute of Health and Welfare. (2020). *National Drug Strategy Household Survey 2019*. Drug Statistics series no. 32. PHE 270. Canberra AIHW. <https://www.aihw.gov.au/getmedia/77ddea6e-f071-495c-b71e-3a632237269d/aihw-phe-270.pdf.aspx?inline=true>
- 27 Statistics Canada. (2021, July 26). Wastewater analysis suggests that consumption of fentanyl, cannabis and methamphetamine increased in the early pandemic period. *The Daily*. <https://www150.statcan.gc.ca/n1/daily-quotidien/210726/dq210726a-eng.htm>
- 28 Konefal, S., Maloney-Hall, B., Urbanoski, K., & the National Treatment Indicators Working Group (2020). *National treatment indicators report: 2016-2018 Data*. Ottawa, Ont.: Canadian Centre on Substance Use and Addiction. <https://www.ccsa.ca/sites/default/files/2021-01/CCSA-National-Treatment-Indicators-2016-2018-Data-Report-2021-en.pdf>
- 29 Canadian Centre on Substance Use and Addiction. (2022). *Community Urinalysis and Self-Report Project: Cross-Canada report on the use of drugs from the unregulated supply, 2019-2021 data*. Ottawa, Ont.: Author. <https://www.ccsa.ca/sites/default/files/2022-04/CCSA-CUSP-Use-of-Drugs-from-the-Unregulated-Supply-2019-2021-Data-Report-2022-en.pdf>
- 30 Canadian Community Epidemiology Network on Drug Use. (2022a). *CCENDU drug alert: Nitazenes*. Ottawa, Ont.: Canadian Centre on Substance Use and Addiction. [https://www.ccsa.ca/sites/default/files/2022-03/CCSA-CCENDU-Drug-Alert-Nitazenes-2022-en\\_0.pdf](https://www.ccsa.ca/sites/default/files/2022-03/CCSA-CCENDU-Drug-Alert-Nitazenes-2022-en_0.pdf)
- 31 Canadian Community Epidemiology Network on Drug Use. (2020, April). *CCENDU Bulletin: Adulterants, contaminants and co-occurring substances in drugs on the illegal market in Canada*. Ottawa, Ont.: Canadian Centre on Substance Use and Addiction. [https://www.ccsa.ca/sites/default/files/2020-05/CCSA-CCENDU-Adulterants-Contaminants-Co-occurring-Substances-in-Drugs-Canada-Bulletin-2020-en\\_0.pdf](https://www.ccsa.ca/sites/default/files/2020-05/CCSA-CCENDU-Adulterants-Contaminants-Co-occurring-Substances-in-Drugs-Canada-Bulletin-2020-en_0.pdf)
- 32 Canadian Community Epidemiology Network on Drug Use. (2022, July). *CCENDU drug alert: Xylazine*. Ottawa, Ont.: Canadian Centre on Substance Use and Addiction. <https://www.ccsa.ca/sites/default/files/2022-07/CCSA-CCENDU-Drug-Alert-Xylazine-2022-en.pdf>
- 33 United Nations Office on Drugs and Crime. (2021). *World drug report*. Vienna: Author. <https://www.unodc.org/unodc/en/data-and-analysis/wdr2021.html>
- 34 Drug Analysis Service. (2022). *Analyzed Drug Report January 2020–December 2021 (dataset)*. Ottawa, Ont.: Health Canada. <https://health-infobase.canada.ca/drug-analysis-service/analyzed-drug-report.html>
- 35 Health Canada Drug Analysis Service, Royal Canadian Mounted Police, Canada Border Services Agency. (2022). *At-a-glance: The emergence of nitazenes and bupropion in Canada since 2019*. Longueuil, Que.: Government of Canada. <https://www.canada.ca/en/health-canada/services/publications/healthy-living/emergence-nitazenes-bupropion-canada-2019.html>
- 36 United Nations Office on Drugs and Crime. (2020). The growing complexity of the opioid crisis. *Global SMART Update*, 24. [https://www.unodc.org/documents/scientific/Global\\_SMART-2020-Vol\\_24\\_web.pdf](https://www.unodc.org/documents/scientific/Global_SMART-2020-Vol_24_web.pdf)
- 37 Canadian Institute for Health Information. (2018). *Opioid-related harms in Canada*. Ottawa, Ont.: Author. <https://www.cihi.ca/sites/default/files/document/opioid-related-harms-report-2018-en-web.pdf>



- 38 Special Advisory Committee on the Epidemic of Opioid Overdoses. (2022). Opioid- and stimulant-related harms in Canada. Ottawa, Ont.: Public Health Agency of Canada. <https://health-infobase.canada.ca/substance-related-harms/opioids-stimulants>
- 39 Canadian Institute for Health Information. (2021). *Unintended consequences of COVID-19: Impact on harms caused by substance use*. Ottawa, Ont.: Author. [https://secure.cihi.ca/free\\_products/unintended-consequences-covid-19-substance-use-report-en.pdf](https://secure.cihi.ca/free_products/unintended-consequences-covid-19-substance-use-report-en.pdf)
- 40 Canadian Institute for Health Information. (2021). *Unintended consequences of COVID-19: Impact on harms caused by substance use, self-harm and accidental falls*. Ottawa, Ont.: Author. <https://www.cihi.ca/en/covid-19-resources/impact-of-covid-19-on-canadas-health-care-systems/unintended-consequences>
- 41 Public Health Agency of Canada. (2021). *Neonatal abstinence syndrome in Canada: A descriptive analysis of hospitalization data*. Ottawa, Ont.: Author. <https://www.canada.ca/en/health-canada/services/opioids/data-surveillance-research/neonatal-abstinence-syndrome-descriptive-analysis-hospitalization.html>
- 42 Canadian Centre on Substance Use and Addiction. (2022). *Polysubstance use and poisoning deaths in Canada* [Report-at-a-Glance]. Ottawa, Ont.: Author. <https://www.ccsa.ca/sites/default/files/2022-06/CCSA-Polysubstance-Use-Poisoning-Deaths-Canada-Report-at-a-Glance-2022-en.pdf>
- 43 Ontario Drug Policy Research Network, Office of the Chief Coroner for Ontario/Ontario Forensic Pathology Service, Public Health Ontario, Centre on Drug Policy Evaluation. (2020). *Preliminary patterns in circumstances surrounding opioid-related deaths in Ontario during the COVID-19 pandemic*. Toronto, Ont.: Public Health Ontario. <https://www.publichealthontario.ca/-/media/documents/o/2020/opioid-mortality-covid-surveillance-report.pdf>
- 44 Gomes, T., Murray, R., Kolla, G., Leece, P., Bansal, S., Besharah, J., ... Walford, J. (2021). *Changing circumstances surrounding opioid-related deaths in Ontario during the COVID-19 pandemic*. Toronto, Ont.: Public Health Ontario. <https://www.publichealthontario.ca/-/media/documents/c/2021/changing-circumstances-surrounding-opioid-related-deaths.pdf>
- 45 Government of Alberta. (2022). Alberta substance use surveillance system. [https://healthanalytics.alberta.ca/SASVisualAnalytics/?reportUri=%2Freports%2Freports%2F1bb695d-14b1-4346-b66e-d401a40f53e6&sectionIndex=0&sso\\_guest=true&reportViewOnly=true&reportContextBar=false&sas-welcome=false](https://healthanalytics.alberta.ca/SASVisualAnalytics/?reportUri=%2Freports%2Freports%2F1bb695d-14b1-4346-b66e-d401a40f53e6&sectionIndex=0&sso_guest=true&reportViewOnly=true&reportContextBar=false&sas-welcome=false)
- 46 British Columbia Coroners Service. (2020). *Illicit drug toxicity deaths in BC: January 1, 2010 – January 31, 2020*. Burnaby, B.C.: Ministry of Public Safety and Solicitor General.
- 47 British Columbia Coroners Service (2022). *Illicit drug toxicity deaths in BC: January 1, 2012 - April 20, 2022*. Burnaby, B.C.: Ministry of Public Safety and Solicitor general.
- 48 Government of Nova Scotia. (2022). Numbers and rates of substance-related fatalities in Nova Scotia [visualization]. <https://data.novascotia.ca/d/iu6y-z4n3/visualization>
- 49 Canadian Centre on Substance Use and Addiction. (2017). *The effects of psychoactive prescription drugs on driving* [Report-at-a-Glance]. Ottawa, Ont.: Author. <https://www.ccsa.ca/sites/default/files/2019-04/CCSA-Psychoactive-Prescription-Drugs-and-Driving-Report-at-a-Glance-2017-en.pdf>
- 50 Beasley, E. E., & Beirness, D. J. (2012). *Alcohol and drug use among drivers following the introduction of immediate roadside prohibitions in British Columbia: Findings from the 2012 Roadside Survey*. Victoria, B.C.: British Columbia Ministry of Justice.



- 51 Canadian Centre on Substance Use and Addictions. (2015). *Opioids, driving and implications for youth* [Topic Summary]. Ottawa, Ont.: Author. <https://www.ccsa.ca/sites/default/files/2019-04/CCSA-Opioids-Driving-Implications-for-Youth-Summary-2015-en.pdf>
- 52 Brubacher, J. R., Chan, H., Masud, M., Yuan, Y., Erdelyi, S., Likhodi, S., & National Drug Driving Research Group. (2021). *The 2021 National Drug Driving Study*. Vancouver, BC: Department of Emergency Medicine, University of British Columbia. <https://med-fom-rsph.sites.olt.ubc.ca/files/2021/06/National-Drug-Driving-Study-June-2021-Final.pdf>
- 53 Canadian Substance Use Costs and Harms Scientific Working Group (2020). *Canadian substance use costs and harms 2015–2017*. (Prepared by the Canadian Institute for Substance Use Research and the Canadian Centre on Substance Use and Addiction.) Ottawa, Ont.: Canadian Centre on Substance Use and Addiction. <https://csuch.ca/publications/CSUCH-Canadian-Substance-Use-Costs-Harms-Report-2020-en.pdf>

