



Unintended Consequences of COVID-19

Impact on Harms Caused
by Substance Use



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Introduction

The COVID-19 pandemic has caused unprecedented disruption in Canadians' lives. This report examines **harm caused by substance use** during the pandemic, analyzing emergency department (ED) visits and inpatient hospitalizations between **March and September 2020**, compared with the same period in 2019. Within the pandemic context, various factors can impact substance use, including the use of substances as a means of coping, changes in social supports and networks (such as changes to drug supply and access), and availability and accessibility of services.¹ At the same time, Canada is also experiencing an overdose crisis. As reported by the Public Health Agency of Canada, over 1,600 apparent opioid toxicity deaths occurred between April and June 2020, the highest count in any quarter since national surveillance began in 2016 and a 54% increase compared with the same time frame in 2019 (1,059 deaths).² These overlapping crises merit a closer investigation into how Canadians are using substances during the COVID-19 pandemic.

This analysis uses provisional data from the Canadian Institute for Health Information (CIHI), which refers to data received and used before CIHI's official annual submission deadline. As provisional data is not final, the results can change and should be interpreted with caution. However, CIHI estimates that the data used in this report is more than 90% complete. The analysis includes ED data that covers more than 80% of the Canadian population and hospitalization data that includes all provinces and territories except Quebec.

Key findings

Overall, more Canadians received substance-related hospital care during the COVID-19 pandemic than in the previous year. A substantial increase was observed in both ED visits and hospitalizations for each of opioids, central nervous system stimulants (this category excludes cocaine) and cannabis for the period March to September 2020 compared with the same period in 2019. The number of hospitalizations for alcohol-related harms also increased, though ED visits decreased. Deaths from substance-related harm also increased in both EDs and inpatient settings. Findings reflect the disproportionate burden of the pandemic on certain populations. Among those who use substances, men and people from lower-income neighbourhoods were most impacted.

What substances were examined?

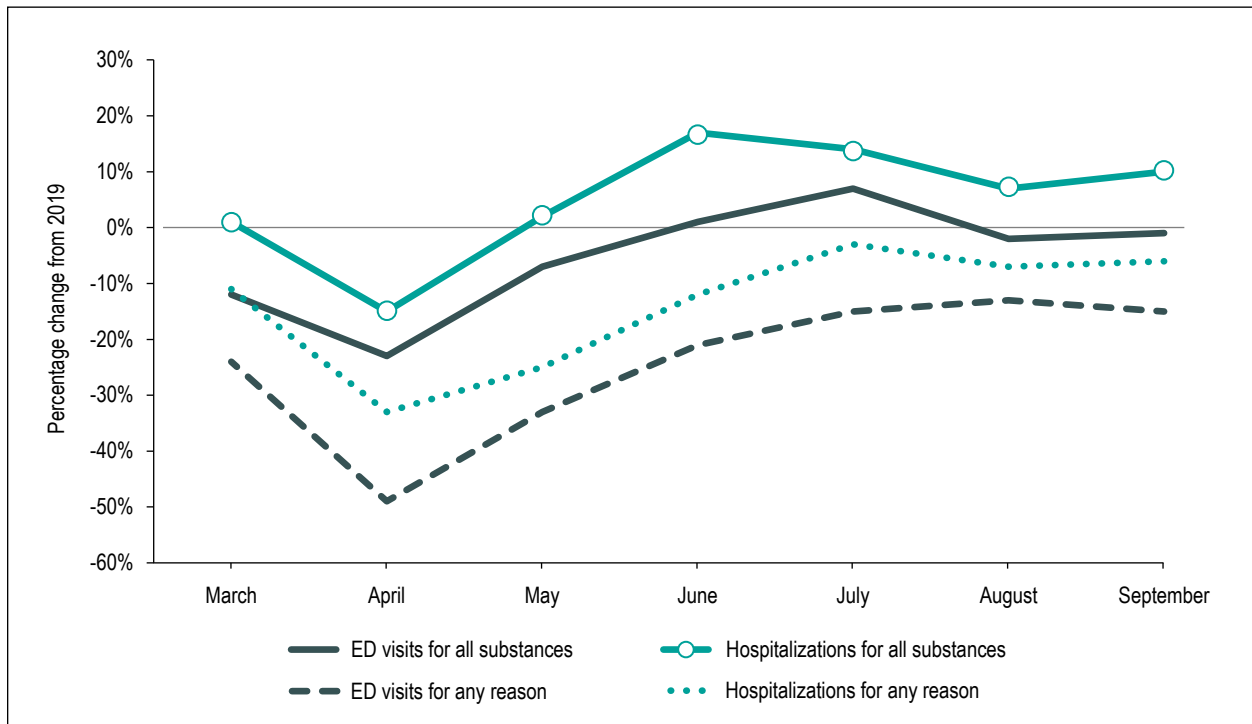
Substances examined include alcohol, opioids, cocaine, other central nervous system stimulants (e.g., amphetamines, such as crystal meth and ecstasy), cannabis, other central nervous system depressants (e.g., benzodiazepines), other substances (e.g., hallucinogens and inhaled solvents) and unknown/multiple substances.

These were examined together in 1 grouping (“all substances”), and the largest substance categories were examined individually. The most common substance noted in both substance-related ED visits and hospitalizations was alcohol, followed by opioids, then cannabis and stimulants. Overall, the distributions seen in 2020 were similar to those seen in the same period in 2019. Note that for the purposes of this analysis, the category of stimulants excludes cocaine.

Increase in ED visits and hospitalizations for opioid, stimulant and cannabis harms, and in alcohol-related hospitalizations during the pandemic

ED visits for harm caused by all substances declined by 5% (from 186,529 visits in 2019 to 176,902 in 2020), while hospitalizations rose by 5% (from 76,948 in 2019 to 80,954 in 2020). Monthly trends in ED visits and hospitalizations for harm from all substances generally mirrored those for any reason in 2020. However, ED visits and hospitalizations for any reason decreased more than substance-related visits and hospitalizations in 2020 compared with the same period in 2019 (Figure 1). This may indicate that Canadians began accessing health care differently as a result of the pandemic, and that it is likely some people did not seek care when they may have needed to.³

Figure 1 Percentage change in ED visits and hospitalizations for all substances, March to September 2020 compared with March to September 2019



Notes

Reflects data from March to September 2020, submitted as of January 1, 2021.

Full regional coverage is available for emergency departments (EDs) in Quebec, Ontario, Alberta and Yukon. Partial regional coverage is available for Prince Edward Island, Nova Scotia, Saskatchewan and British Columbia. Combined, these regions represent about 80% of Canadian ED visits.

Hospitalization data for Quebec was not available at the time of analysis.

Data for 2020–2021 is provisional. See the [Notes and limitations](#) section of this report.

Sources

National Ambulatory Care Reporting System, Hospital Morbidity Database and Ontario Mental Health Reporting System, 2018–2019 to 2020–2021, Canadian Institute for Health Information.

Alcohol was the most-reported substance for 59% of ED visits and for 55% of hospitalizations, and therefore had a major influence on the trends for all substances (Table).

Table ED visits and hospitalizations for top 4 substances, March to September 2020 compared with March to September 2019

Substance type	ED visits			Hospitalizations		
	2019	2020	Percentage change	2019	2020	Percentage change
Alcohol	109,784	98,060	-11%	42,334	44,506	5%
Opioids	22,895	24,622	8%	10,264	10,960	7%
Cannabis	15,201	16,470	8%	10,023	10,524	5%
Stimulants (excluding cocaine)	14,909	15,709	5%	9,530	10,280	8%

Notes

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ED visits and hospitalizations for alcohol harms

ED visits for alcohol consumption dropped by 11% in 2020 compared with 2019 (Table). Within this decline, visits for non-urgent and less-urgent cases dropped more than 20% (see [Appendix A](#) for definitions of urgency levels). At the same time, EDs saw an increase in more severe patients: the number of patients with alcohol-related harms who required an admission to a hospital bed following their emergency visit increased by 10% (from 20,276 in 2019 to 22,234 in 2020). The decreases in ED visits were most pronounced among the younger age groups. In particular, visits dropped by 33% (from 7,063 in 2019 to 4,746 in 2020) among those age 10 to 19 and by 17% (from 21,532 in 2019 to 17,949 in 2020) among those age 20 to 29. The types of alcohol harms with pronounced decreases included alcohol use disorders and poisonings (11% decrease in each during the 2020 study period compared with 2019). Decreases in ED visits for alcohol harms may be attributed to changes in behaviour related to pandemic closures of bars and restaurants, reductions in social interactions and parties, and youth being at home under parental supervision. Canadians who reported drinking less during the pandemic most frequently noted a lack of social gatherings/opportunities to socialize as the reason.⁴

Types of harm examined

This analysis looked at 2 types of harm caused by all substances:

1. **Substance use disorders** were the most commonly noted type of harm related to all substance use for ED visits and hospitalizations. These disorders include a wide variety of mental health and behavioural disorders that differ in severity and clinical form (e.g., withdrawal state, dependence syndrome, intoxication) but that are all attributable to substance use. The substance may or may not have been medically prescribed.
2. **Poisoning** is defined as the incorrect use of a substance. Incorrect use occurs when a wrong drug or dosage is taken, a self-prescribed drug is taken in combination with a prescribed drug or is not taken as recommended, or any drug is taken in combination with alcohol.

A third type of harm, **chronic medical conditions**, is included only for harms associated with alcohol use.

The following are examples of patients included in the analysis:

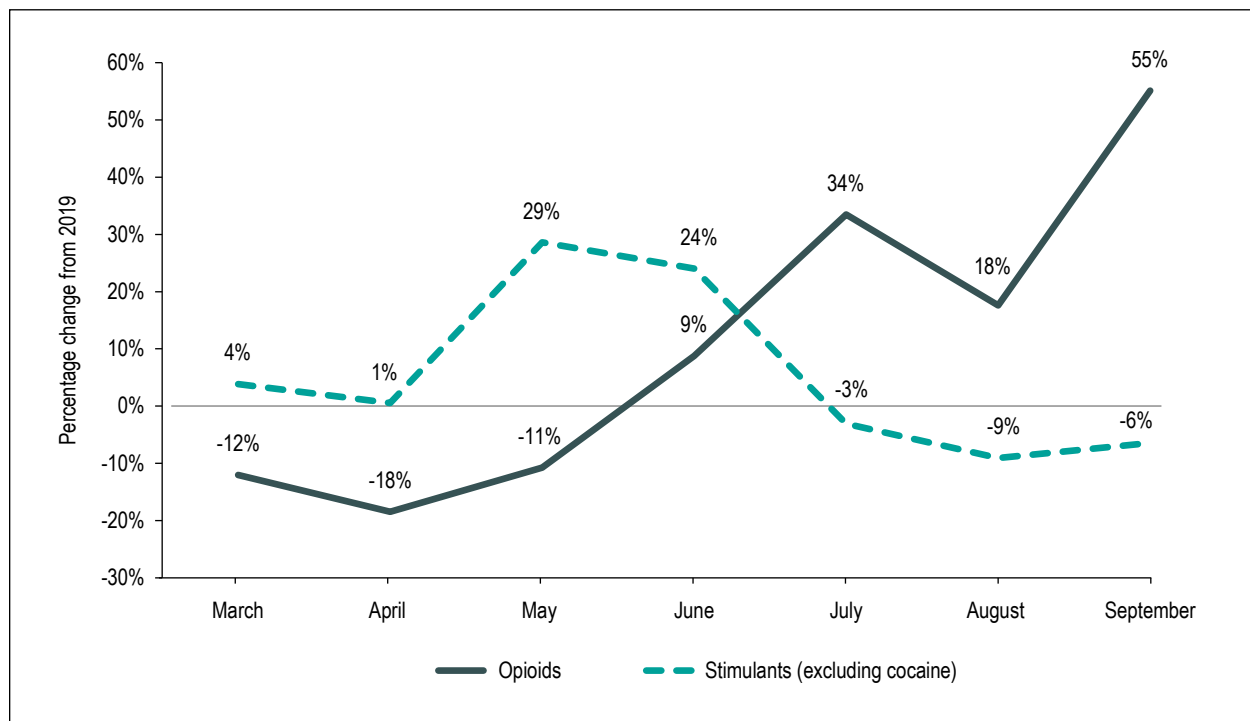
- A person with liver cirrhosis due to alcohol who is at the end of their life;
- A person in the intensive care unit due to an opioid overdose;
- A person with psychosis after using cannabis; and
- A person experiencing seizures due to substance withdrawal.

Unlike ED visits, hospitalizations due to alcohol harms rose by 5% during the 2020 study period compared with 2019 (Table). The increases were observed for both substance use disorders (2,388 hospitalizations, or a 7% increase) and chronic medical conditions related to alcohol, such as liver diseases (933 hospitalizations, or an 8% increase). Hospitalizations increased for all age groups from 20 to 79. Complex factors likely contributed to the increase in hospitalizations. About 30% of Canadians reported that their alcohol consumption increased during the pandemic, and this was higher among those with mental health and substance use concerns.⁵ Boredom and stress were the most-cited reasons for increased drinking.⁴ Survey data shows that consumption also seems to be increasing as the pandemic continues.^{4, 6, 7} Additional factors such as increased alcohol availability (through takeout and home delivery, and reduced minimum pricing)⁸ alongside increased alcohol sales⁹ also support that it will remain important to monitor alcohol-related harms over time.

ED visits and hospitalizations related to opioids and other substances

Similar to ED visits and hospitalizations related to alcohol harms, substantial increases were observed in those related to opioid, stimulant (excluding cocaine) and cannabis harms, with increases ranging between 5% and 8% in both settings during 2020 (Table). Notably, stimulants showed an increase early in the pandemic, with ED visits peaking at a 29% increase in May 2020 compared with May 2019, while visits for opioids decreased during this period (Figure 2). As opioid-related visits increased over the summer and fall, reaching a 55% increase in September 2020, visits for stimulants decreased. Measures such as business and border closures, and physical distancing directives all affect the supply of and access to substances.^{10, 11} In response, people who use substances may replace or modify their substance use, which poses a range of additional health risks.¹¹

Figure 2 Percentage change in ED visits for opioids and stimulants (excluding cocaine), March to September 2020 compared with March to September 2019



Notes

Reflects data from March to September 2020, submitted as of January 1, 2021.

Full regional coverage is available for emergency departments (EDs) in Quebec, Ontario, Alberta and Yukon.

Partial regional coverage is available for Prince Edward Island, Nova Scotia, Saskatchewan and British Columbia.

Combined, these regions represent about 80% of Canadian ED visits.

Data for 2020–2021 is provisional. See the [Notes and limitations](#) section of this report.

Source

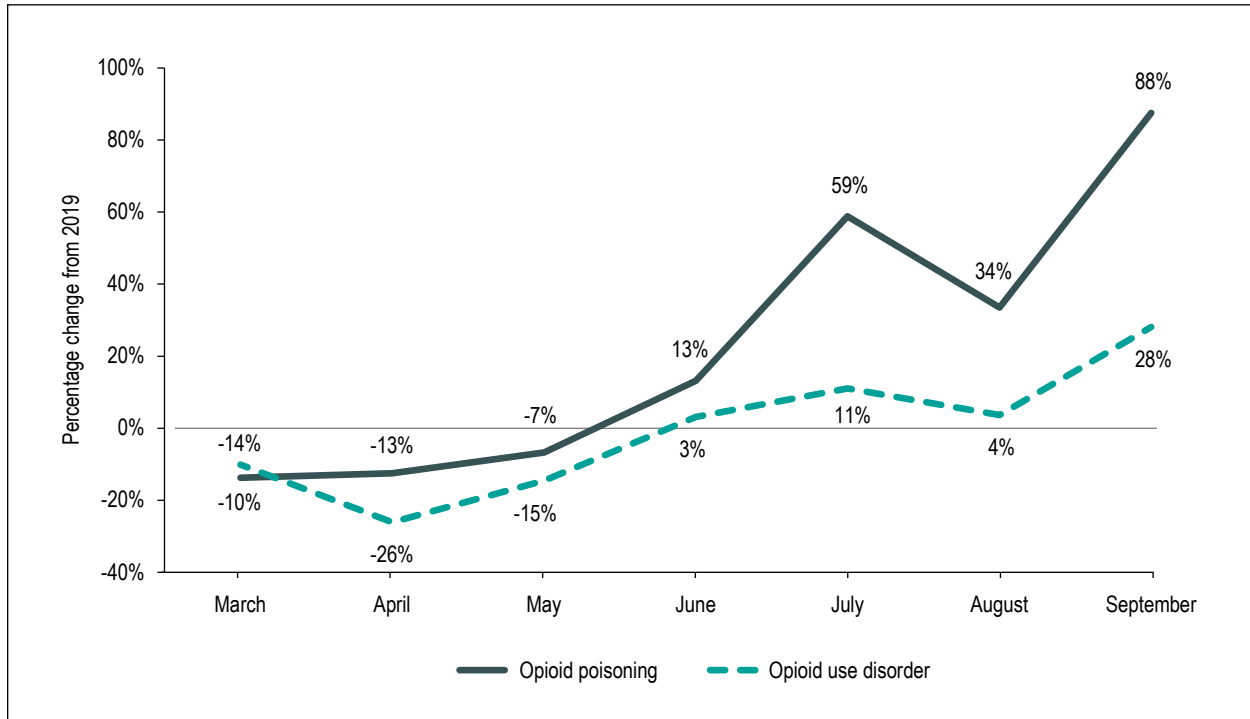
National Ambulatory Care Reporting System, 2018–2019 to 2020–2021, Canadian Institute for Health Information.

While opioid-related ED visits increased by 8% in 2020 (from 22,895 in 2019 to 24,622 in 2020), cases with resuscitation dropped by 11% (from 2,284 in 2019 to 2,028 in 2020). This may indicate that severe cases of opioid consumption may not have made it to the ED. CIHI's hospital data captures only 15% of opioid-related deaths reported overall;² many more people die in the community. Meanwhile, the number of people with emergent and urgent conditions related to opioids (see [Appendix A](#) for definitions of urgency levels) admitted from the ED increased by 11% and 13%, respectively, indicating that patients who did visit the ED were more ill than those who visited the ED in 2019. Similar to what was seen for alcohol-related harms, those who visited the ED with milder, non-urgent conditions of opioid harm dropped by 27% (from 660 in 2019 to 479 in 2020).

In focus: Opioid poisonings

Compared with March to September 2019, ED visits for opioid poisonings increased by 16% (from 12,192 in 2019 to 14,112 in 2020) and hospitalizations increased 13% (from 2,815 in 2019 to 3,177 in 2020) in 2020. Poisonings peaked with an 88% increase in September, from 1,160 in 2019 to 2,175 in 2020 (Figure 3). ED visits and hospitalizations related to poisonings for fentanyl and derivatives, which are more potent opioids, increased by 28% and 49%, respectively. Public health interventions such as closures and physical distancing during the COVID-19 pandemic may have affected the availability of mental health and addictions services, such as harm reduction, treatment, outreach and substance-related therapies.¹¹⁻¹³ These factors, together with changes to the drug supply and the presence of more toxic opioids,¹² could have contributed to the increases reported.

Figure 3 Percentage change in ED visits for opioid poisoning and opioid use disorder, March to September 2020 compared with March to September 2019



Notes

Reflects data from March to September 2020, submitted as of January 1, 2021. Full regional coverage is available for emergency departments (EDs) in Quebec, Ontario, Alberta and Yukon. Partial regional coverage is available for Prince Edward Island, Nova Scotia, Saskatchewan and British Columbia. Combined, these regions represent about 80% of Canadian ED visits. Data for 2020–2021 is provisional. See the [Notes and limitations](#) section of this report.

Source

National Ambulatory Care Reporting System, 2018–2019 to 2020–2021, Canadian Institute for Health Information.

Males and those in the lowest-income areas saw the highest increases in substance-related harm

Men are hospitalized more often than women for substance use (64%). In 2019, males accounted for almost two-thirds of hospitalizations related to alcohol and over half of hospitalizations for opioid harms. Males also saw greater increases in hospitalizations for substance harms during the pandemic compared with 2019, by 8% overall, compared with a 1% increase for females. The largest differences were seen in people who use opioids, where hospitalizations increased by 17% among males in 2020 and decreased by 5% among females.

Over one-third of hospitalizations for substance-related harm were from the lowest-income neighbourhoods in 2019. During the COVID-19 study period, alcohol-related hospitalizations increased most in the lowest-income areas (14%), while there was almost no change in the highest-income communities. Chronic medical conditions related to alcohol increased (by 8%) across all income levels, with the greatest increase (28%) among those with the lowest incomes. The results were similar for opioids: people from the lowest-income neighbourhoods made up almost 40% of hospitalizations for opioids in 2019, and it was this group that also saw the highest increase in hospitalizations during the pandemic, at 11% (from 3,780 in 2019 to 4,178 in 2020).

These findings may reflect the disparate burden of the pandemic on certain populations, particularly among those who use substances. Evidence has shown that people with lower incomes were more impacted by the pandemic.¹² The higher prevalence of multiple chronic conditions among less-affluent Canadians¹⁴ may be one of many contributing factors.

Deaths increased in both ED and inpatient settings

Deaths from substance-related harm increased overall during the 2020 pandemic: by 12% in the ED (from 117 deaths in 2019 to 131 in 2020), and by 13% in inpatient settings (from 1,604 in 2019 to 1,819 in 2020). Looking at opioids alone, the number of deaths increased by 23% in the ED (from 61 in 2019 to 75 in 2020) and by 18% in inpatient settings (from 256 in 2019 to 302 in 2020). Over two-thirds of these deaths were attributed to opioid poisoning. These increases in substance-related deaths may be due to drug supply changes and reduced access to mental health and addictions services.

CIHI's hospital-based data reveals only part of a larger picture. The Public Health Agency of Canada reported that 1,628 apparent opioid toxicity deaths occurred between April and June 2020.² This analysis found only 266 deaths for opioids in EDs and inpatient settings from March to June 2020, indicating that almost 85% of deaths happened in the community. British Columbia, Alberta and Ontario saw large increases in substance-related deaths, particularly from opioids, in 2020.¹⁵⁻¹⁷ The settings for these deaths has also changed as a result of the pandemic. In Ontario, significantly fewer opioid-related deaths occurred in public indoor spaces, and a higher percentage of deaths occurred outdoors.¹⁵ Nationally in 2020, there were more deaths than would be expected among Canadian males younger than 45, which cannot be explained by the pandemic alone.¹⁸ These unexpected deaths may be partly due to increases in substance-related harms, an unintended consequence of the pandemic.

Overlaps exist between those who use substances and those who self-harm

There is a well-established relationship between mental health and substance use. Surveys have shown that the pandemic is augmenting this effect: Canadians with past and current mental health concerns reported greater increases in substance use during the pandemic, and those with past and current substance use concerns reported more mental health symptoms.⁵ Those who reported poorer mental health were more likely to have increased their use of substances such as cannabis and alcohol.¹⁹

CIHI has explored some of the consequences of the pandemic on Canadians' mental health in a separate analysis of individuals who intentionally harm themselves. Among those who visited EDs for treatment for self-harm, about 47% also had visits for substance-related harm between March and September 2020, similar to 2019. About 40% of hospitalizations for self-harm also had a hospitalization related to substance harm in the same time frame in 2020. Conversely, of those who visited the ED or were hospitalized for substance-related reasons, a much smaller proportion also had a self-harm attempt during the study period (7% and 6%, respectively). For more information, see the related report [Unintended Consequences of COVID-19: Impact on Self-Harm Behaviour](#).

Conclusion

This analysis reveals the negative effect the COVID-19 pandemic is having on substance-related harms in Canada. March to September 2020 saw substantial increases in both ED visits and hospitalizations for harms related to substance use when compared with the same period in 2019. Among Canadians who use substances, this impact was felt disproportionately by men and by people from lower-income neighbourhoods. As the dual public health crises of COVID-19 and substance-related overdoses continue to progress in Canada, it will remain critical to continually monitor and report on the developing situation.

Notes and limitations

- This study applied the same methodology used for the CIHI indicator Hospital Stays for Harm Caused by Substance Use. The study population was Canadian residents age 10 and older. Patients were assigned to their province or territory based on their place of residence. For full details on the methodology, please see CIHI's [Indicator Library](#).
- This analysis reveals only the tip of the iceberg of substance-related harms. Many people who use substances may not visit hospitals during the pandemic due to the fear of contracting COVID-19. Some may have died in the community because of acute toxicities of substances; these individuals would not be captured in this analysis.
- This analysis is based on provisional data. Provisional data refers to any preliminary data received and used before the official annual submission deadline, or closing date, for a data holding. Prior to this closing date, data collection, submission and data quality activities are ongoing. Provisional data is therefore not final and results should be interpreted with caution.
- This study had full ED coverage in Quebec, Ontario, Alberta and Yukon, and partial coverage in Prince Edward Island, Nova Scotia, Saskatchewan and B.C. In most provinces and territories, ED visits were identified based on problems reported as ICD-10-CA codes to the National Ambulatory Care Reporting System (NACRS). Quebec and B.C. collect their ED diagnoses through discharge diagnoses; these are based on the Canadian Emergency Department Diagnosis Shortlist (CED-DxS), which includes over 800 diagnoses in common terms. ED volumes are comparable between Quebec and B.C.; however, Quebec and B.C. volumes are not comparable with those of other provinces and territories.
- The hospitalization volume change might not be comparable in some jurisdictions (e.g., the Northwest Territories, Nunavut) due to delayed data submissions, as provisional data was used. Quebec was excluded from hospitalization analyses because CIHI does not have provisional data for Quebec.

Acknowledgements

The Canadian Institute for Health Information (CIHI) would like to acknowledge and express our gratitude to the experts from the Centre for Surveillance and Applied Research, Public Health Agency of Canada; the Controlled Substance and Cannabis Branch, Health Canada; the Canadian Centre on Substance Use and Addiction; provincial ministries of health; Ontario Health; and Shared Health Manitoba for their insights and experience that contributed to the development of this report.

Please note that the analyses and conclusions in the present document do not necessarily reflect those of the organizations mentioned above.

Appendices

Appendix A: ED urgency levels

EDs in Canada prioritize patients according to the Canadian Triage and Acuity Scale (CTAS), which has 5 levels:

- Resuscitation (triage level 1): Conditions that are threats to life or limb (or imminent risk of deterioration) requiring immediate aggressive interventions.
- Emergent (triage level 2): Conditions that are a potential threat to life, limb or function, requiring rapid medical intervention.
- Urgent (triage level 3): Conditions that could potentially progress to a serious problem requiring emergency intervention. May be associated with significant discomfort or affect ability to function at work or activities of daily living.
- Less urgent (triage level 4): Conditions that are related to a patient's age, distress or potential for deterioration, or complications that would benefit from intervention or reassurance within 1 to 2 hours.
- Non-urgent (triage level 5): Conditions that may be acute but non-urgent, as well as conditions that may be part of a chronic problem, with or without evidence of deterioration.

Source

Definitions adapted from Canadian Association of Emergency Physicians. [Canadian Triage and Acuity Scale](#). Accessed March 16, 2021.

Appendix B: Text alternative for figures

Text alternative for Figure 1

Table: Percentage change in ED visits and hospitalizations for all substances, March to September 2020 compared with March to September 2019

Month	Percentage change in ED visits for all substances	Percentage change in ED visits for any reason	Percentage change in hospitalizations for all substances	Percentage change in hospitalizations for any reason
March	-12%	-24%	1%	-11%
April	-23%	-49%	-15%	-33%
May	-7%	-33%	2%	-25%
June	1%	-21%	17%	-12%
July	7%	-15%	14%	-3%
August	-2%	-13%	7%	-7%
September	-1%	-15%	10%	-6%

Notes

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Sources

National Ambulatory Care Reporting System, Hospital Morbidity Database and Ontario Mental Health Reporting System, 2018–2019 to 2020–2021, Canadian Institute for Health Information.

Text alternative for Figure 2**Table: Percentage change in ED visits for opioids and stimulants (excluding cocaine), March to September 2020 compared with March to September 2019**

Month	Percentage change in ED visits for opioids	Percentage change in ED visits for stimulants (excluding cocaine)
March	-12%	4%
April	-18%	1%
May	-11%	29%
June	9%	24%
July	34%	-3%
August	18%	-9%
September	55%	-6%

Notes

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Source

National Ambulatory Care Reporting System, 2018–2019 to 2020–2021, Canadian Institute for Health Information.

Text alternative for Figure 3**Table: Percentage change in ED visits for opioid poisoning and opioid use disorder, March to September 2020 compared with March to September 2019**

Month	Percentage change in ED visits for opioid poisoning	Percentage change in ED visits for opioid use disorder
March	-14%	-10%
April	-13%	-26%
May	-7%	-15%
June	13%	3%
July	59%	11%
August	34%	4%
September	88%	28%

Notes

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Source

National Ambulatory Care Reporting System, 2018–2019 to 2020–2021, Canadian Institute for Health Information.

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