



Community Urinalysis and Self-Report Project: Cross-Canada Trends in Opioid Use, 2021–2023

Key Findings

- Fentanyl was the opioid most frequently reported used (past three days) and detected in British Columbia, Edmonton, Regina, Peel and Ottawa. In these regions, unexpected use of fentanyl (i.e., detected but not reported used) ranged between 9.1 per cent and 31.3 per cent of participants. In Quebec and Nova Scotia, few participants had fentanyl detected (10 per cent and 1.2 per cent, respectively), and use was unexpected in over half the participants (56.8 per cent and 66.7 per cent, respectively).
- More participants reported smoking fentanyl and heroin than by injecting them in most regions with available data.
- Co-use of fentanyl and other substances was assessed in British Columbia, Edmonton, Regina, Peel and Ottawa, where fentanyl use was common. Fentanyl was often co-used with a stimulant, such as methamphetamine or crack, as well as with other types of opioids, such as methadone and hydromorphone.
- Benzodiazepines were co-detected among 36.1 per cent to 96.2 per cent of participants whose urine contained fentanyl. While alarming, these findings are likely conservative due to limitations in the detection of non-medical benzodiazepines.

Acknowledgements

We sincerely thank the organizations and individuals involved in collecting, interpreting and sharing the data that informed this work. We extend our deepest appreciation to the harm reduction organizations and participants who devoted their time and efforts to this project amid the devastating drug poisoning crisis.

Background and Methods

The Community Urinalysis and Self-Report Project (CUSP) is a low-barrier sentinel surveillance system developed to better understand use of drugs from the toxic unregulated supply. This knowledge informs local and cross-Canada initiatives to reduce harms to people



who use these drugs. CUSP is implemented through a standardized project toolkit, including at provincial levels in British Columbia and Quebec, as well as locally by partner sites. The Canadian Centre on Substance Use and Addiction (CCSA) co-ordinates the project.

Between January 2021 and April 2023, 2,634 participants were recruited from partner sites that are harm reduction service organizations located in seven regions across Canada. Expected drug use (self-report survey on past three-day use) was compared with drug exposure (urine sample analyzed with urine toxicology). More details on the methods are available in *Community Urinalysis and Self-Report Project: Methods Report for 2021–2023 Data* (CCSA, 2024a).

This report focuses on trends in the use of opioids and is one in a series of three that summarizes the substance specific findings. Other reports focus on stimulants (CCSA, 2024c) and benzodiazepines (CCSA, 2024d), with more general findings and implications outlined in the overall trends report (CCSA, 2024b). These reports are intended for those involved in harm reduction, surveillance, service delivery, research and policy making.

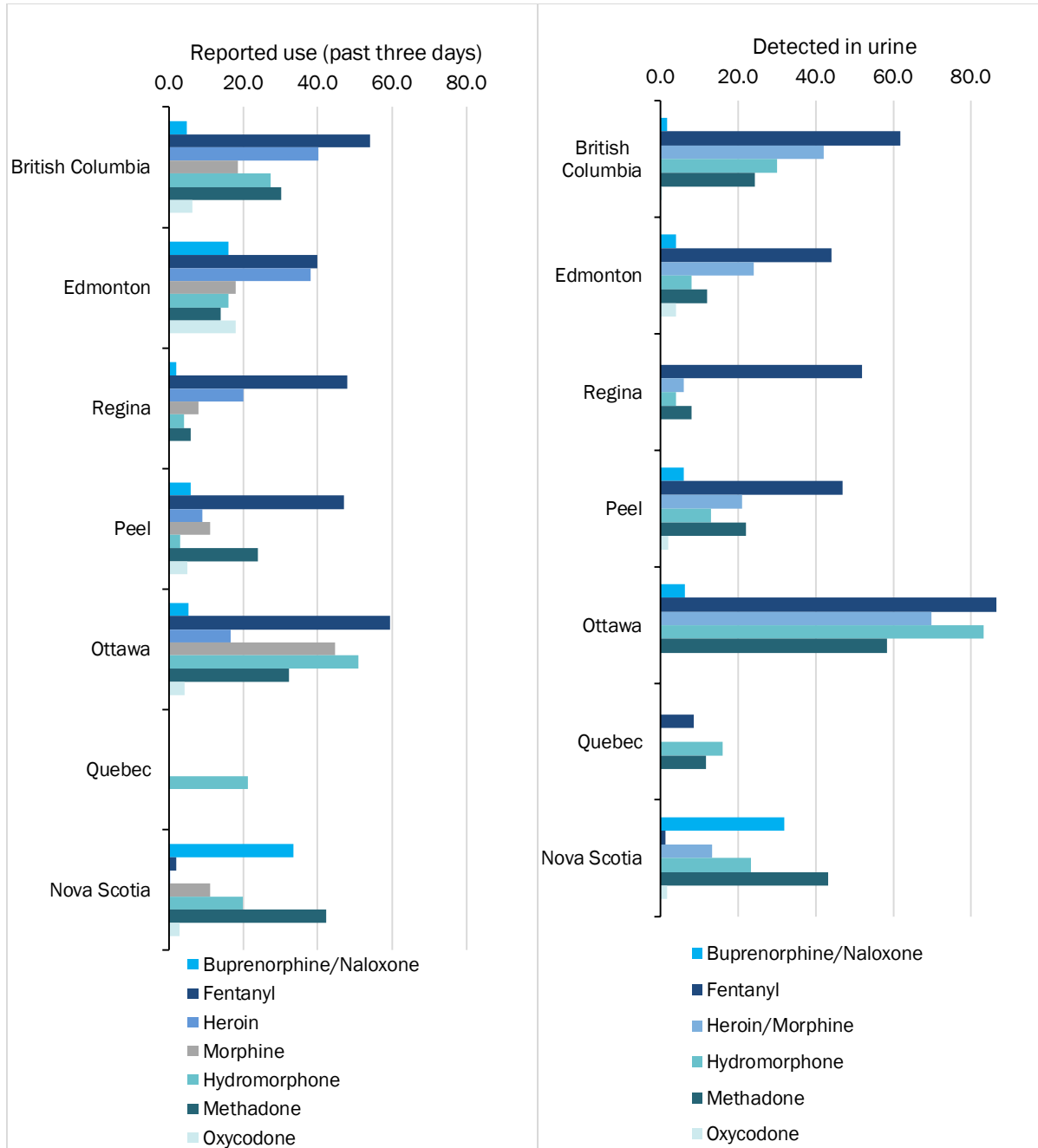
Findings

Reported Use and Detection of Opioids

In British Columbia, Edmonton, Regina, Peel and Ottawa, fentanyl was the opioid most frequently reported used (range of 40 per cent to 59.4 per cent) and detected (44 per cent to 86.5 per cent) (refer to Figure 1). Hydromorphone, heroin, morphine (or heroin/morphine), and methadone were also commonly used, though patterns varied by region.



Figure 1. Percentage of participants who reported the use of opioids (past three days) or had opioids detected in their urine



Note. Detection of heroin and morphine use were combined because the direct metabolite of heroin (6-monoacetylmorphine) clears rapidly from urine, after which it is difficult to discern heroin from morphine use. Reported use of heroin and morphine were combined to facilitate comparison. Hydromorphone detection may result from codeine, morphine or hydromorphone use. Detection of fentanyl includes fentanyl analogues



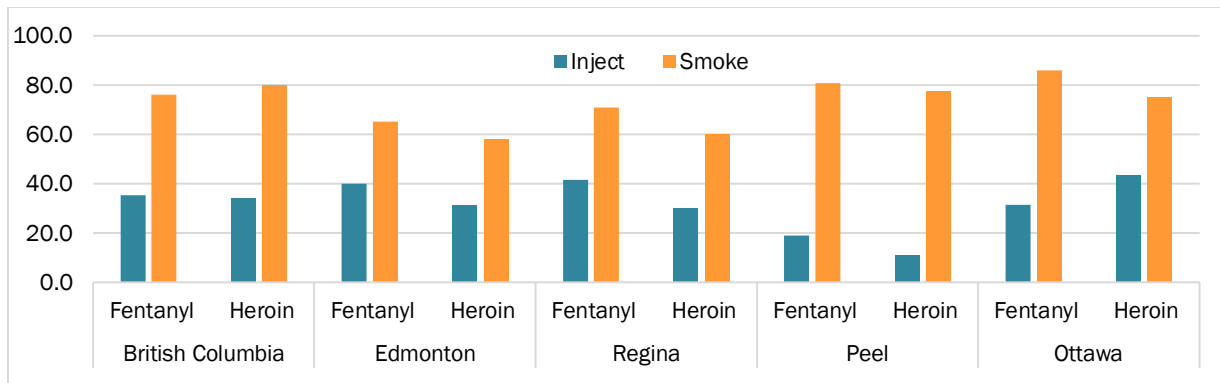
(e.g., carfentanil). Results for Quebec reflect the most frequently used opioids; data on use of other opioids were not available.

For an accessible version of this figure, refer to [Appendix Table 1](#).

Route of Administration

Fentanyl and heroin were more often smoked than injected in all regions (refer to Figure 2). Both morphine and hydromorphone were most often swallowed or injected (data not shown). Methadone and buprenorphine/naloxone were predominantly swallowed (data not shown).

Figure 2. Percentage of participants who reported the use of opioids (past three days), by route of administration



Note. Data were unavailable for Quebec. Percentages add to more than 100 as participants could indicate more than one route of administration. Data are not shown for Nova Scotia due to small sample sizes (less than three per cent of participants reported using these opioids).

For an accessible version of this table, refer to [Appendix Table 2](#).

Trends in Fentanyl Use

Accordance Between Reported and Detected Use

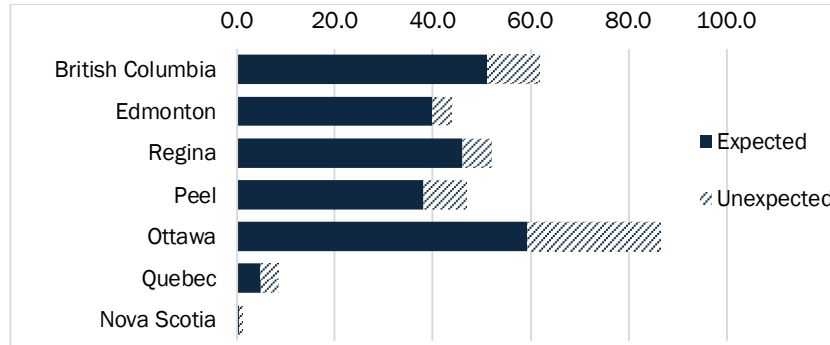
We assessed the accordance between reported and detected substance use for two measures:

- Among those who had the substance detected in their urine, was it expected (i.e., reported use) or unexpected (i.e., not reported)?
- Among those who reported using the substance, was it detected in their urine (i.e., correctly identified or a “bunk” substance)?

Unexpected fentanyl use was highest in Nova Scotia (66.7 per cent of participants) and Quebec (43.2 per cent), where fentanyl was detected less frequently overall (1.2 per cent and 8.5 per cent, respectively) (refer to Figure 3). Unexpected use tended to be lower in regions where it was detected more frequently, but not always. Fentanyl detection was highest in Ottawa (86.5 per cent) with 33.1 per cent of use being unexpected.



Figure 3. Percentage of participants who had fentanyl detected in their urine, by expectation

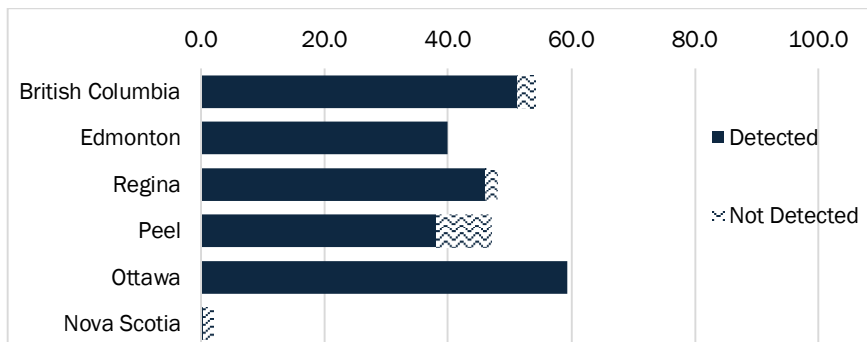


Note. Expectation was determined based on the reported use matching what was detected. Unexpected was a mismatch. Unexpected use of methamphetamine/amphetamine may be overestimated due to the use of certain synthetic stimulants. Data from Quebec were unavailable.

For an accessible version of this figure, refer to [Appendix Table 3](#).

In British Columbia, Edmonton, Regina, Peel and Ottawa, most participants who reported using fentanyl also had it detected in their urine (80.9 per cent to 100 per cent) (refer to Figure 4). The opposite was true in Nova Scotia, where less than three per cent of participants reported its use. It should be noted that it was not possible to assess whether participants expected the presence of any fentanyl analogues (e.g., carfentanil) or if they expected to consume the quantity of fentanyl that was detected.

Figure 4. Percentage of participants who reported the use of fentanyl (past three days), by detection of substance



Note. Data were unavailable for Quebec.

For an accessible version of this figure, refer to [Appendix Table 4](#).

Polysubstance Use

For this study, polysubstance use refers to two substances that were both reported as being used in the past three days or detected in the urine samples. This likely includes different



types of polysubstance use, including simultaneous (i.e., present in the same substance consumed at one time), sequential (i.e., used one after the other in the same episode) and co-use over the three-day period.

Figure 5 shows the percentage of participants with co-use with other substances among those who used fentanyl. Key trends include the following:

- In western regions, at least 80 per cent of those who reported fentanyl use also reported using crystal meth/methamphetamine. At least 90 per cent who had fentanyl detected in their urine also had methamphetamine/amphetamine¹ detected.
- In Ontario, a similar pattern was observed for crack and cocaine/crack.²

Benzodiazepines were co-detected among 36.1 per cent to 96.2 per cent of participants whose urine contained fentanyl. This was likely an underestimation because the urine toxicology method could not detect certain non-medical benzodiazepines (NMB). This includes bromazolam, the NMB most often found in drugs seized by police in recent years (Health Canada, 2023).

Reported co-use of fentanyl with opioids that may be prescribed in the context of opioid agonist therapy (OAT), or safer supply was also common, though patterns varied by region. For instance, among participants who reported fentanyl use:

- Between 4.2 per cent and 43.8 per cent also reported methadone use, and
- Between 6.4 per cent and 56.1 per cent also reported hydromorphone use.

1 Methamphetamine use may lead to the presence of both methamphetamine and amphetamine in urine.

2 Crack and cocaine are not distinguishable with urine toxicology screening.



Figure 5. Among participants who reported the use of fentanyl (past three days) or had fentanyl detected in their urine, percentage with co-use with other substances (top three most common co-use combinations)



Note. Detection of cocaine and crack are combined because they are not distinguishable by urine toxicology. Methamphetamine use may lead to the presence of both methamphetamine and amphetamine in urine. Detection of heroin and morphine use were combined because the direct metabolite of heroin (6-monoacetylmorphine) clears rapidly from urine, after which it is difficult to discern heroin from morphine use. Hydromorphone detection may result from codeine, morphine or hydromorphone use. Data were unavailable for Quebec and are not presented for Nova Scotia due to small sample sizes (less than three per cent of participants reported using or had fentanyl detected in their urine).

For an accessible version of this figure, refer to [Appendix Table 5](#).



Summary

This report presented the key trends in the use of opioids among participants recruited from harm reduction organizations in British Columbia, Edmonton, Regina, Peel, Ottawa, Quebec and Nova Scotia between 2021 to 2023. Fentanyl use was higher in British Columbia, Edmonton, Regina, Peel and Ottawa than in Quebec and Nova Scotia. However, unexpected use occurred in every region, as did frequent co-use with other opioids (including those typically prescribed as OAT), stimulants and benzodiazepines. While route of administration varied by opioid, most participants used fentanyl and heroin via smoking in the regions where use was common.

For implications and recommendations associated with these findings, please refer to the overall findings report for CUSP results from 2021 to 2023 (CCSA, 2024b).

References

- Canadian Centre on Substance Use and Addiction. (2024a). *Community urinalysis and self-report project: Methods report for 2021–2023 data*. Ottawa, Ont.: Author.
- Canadian Centre on Substance Use and Addiction. (2024b). *Community urinalysis and self-report project: Overall cross-Canada trends in substance use, 2021–2023*. Ottawa, Ont.: Author.
- Canadian Centre on Substance Use and Addiction. (2024c). *Community urinalysis and self-report project: Cross-Canada trends in stimulant use, 2021–2023*. Ottawa, Ont.: Author.
- Canadian Centre on Substance Use and Addiction. (2024d). *Community urinalysis and self-report project: Cross-Canada Trends in benzodiazepine use from 2021–2023*. Ottawa, Ont.: Author.
- Health Canada. (2023, July 21). Drug analysis service and cannabis laboratories: Drug report. Ottawa, Ont.: Author. <https://health-infobase.canada.ca/drug-analysis-service/analyzed-drug-report.html?p=CA&y=2023&q=Q1&r=DASreport>



Appendix

Table 1. Percentage of participants who reported the use of substance (past three days) or had substance detected in their urine

Substance	B.C. reported	B.C. detected	Edmonton reported	Edmonton detected	Regina reported	Regina detected	Peel reported	Peel detected	Ottawa reported	Ottawa detected	Quebec reported	Quebec detected	N.S. reported	N.S. detected
Buprenorphine/ Naloxone	4.8	1.7	16.0	4.0	2.0	0.0	6.0	6.0	5.2	6.3	n/a	n/a	33.6	32.0
Fentanyl*	54.0	61.7	40.0	44.0	48.0	52.0	47.0	47.0	59.4	86.5	n/a	8.5	2.1	1.2
Heroin/ morphine†	46.4	42.1	36.0	24.0	20.0	6.0	15.0	21.0	49.0	69.8	n/a	n/a	11.6	13.3
Heroin	40.2	—	38.0	—	20.0	—	9.0	—	16.7	—	n/a	—	0.4	—
Morphine	18.6	—	18.0	—	8.0	—	11.0	—	44.8	—	n/a	—	11.2	—
Hydromorphone‡	27.4	30.0	16.0	8.0	4.0	4.0	3.0	13.0	51.0	83.3	21.2	16.1	19.9	23.2
Methadone	30.2	24.3	14.0	12.0	6.0	8.0	24.0	22.0	32.3	58.3	n/a	11.7	42.3	43.2
Oxycodone	6.4	0.5	18.0	4.0	0.0	0.0	5.0	2.0	4.2	0.0	n/a	n/a	2.9	1.7

Notes. n/a = not available;— = not included in the survey or cannot be distinguished by urine toxicology.

* Detection of fentanyl includes fentanyl analogues (e.g., carfentanil).

† Detection of heroin and morphine use were combined because the direct metabolite of heroin (6-monoacetylmorphine) clears rapidly from urine, after which it is difficult to discern heroin from morphine use. Reported use of heroin and morphine were combined to facilitate comparison.

‡ Hydromorphone detection may result from codeine, morphine or hydromorphone use.

Return to [Figure 1](#).



Table 2. Percentage of participants who reported the use of substance (past three days), by route of administration

Substance	B.C. Inject	B.C. Smoke	B.C. Snort	Edmonton Inject	Edmonton Smoke	Edmonton Snort	Regina Inject	Regina Smoke	Regina Snort	Peel Inject	Peel Smoke	Peel Snort	Ottawa Inject	Ottawa Smoke	Ottawa Snort	N.S. Inject	N.S. Smoke	N.S. Snort
Fentanyl	35.2	76.2	6.6	40.0	65.0	15.0	41.7	70.8	n/a	19.1	80.9	6.4	31.6	86.0	1.8	n/s	n/s	n/s
Heroin	34.3	79.9	5.9	31.6	57.9	15.8	30.0	60.0	n/a	11.1	77.8	11.1	43.8	75.0	6.3	n/s	n/s	n/s

Notes. n/a = not available; n/s = not shown

Percentages add to more than 100 as participants could indicate more than one route of administration. In Regina, the option of “Snort” was combined with “Other” and is not shown. Data are not shown for Nova Scotia due to small sample sizes (less than three per cent of participants reported using these opioids). Data were unavailable for Quebec.

Return to [Figure 2](#).

Table 3. Percentage of participants who had fentanyl detected in their urine, by expectation

Substance	B.C. Expected	B.C. Unexpected	Edmonton Expected	Edmonton Unexpected	Regina Expected	Regina Unexpected	Peel Expected	Peel Unexpected	Ottawa Expected	Ottawa Unexpected	Quebec Expected	Quebec Unexpected	N.S. Expected	N.S. Unexpected
Fentanyl	83.0	17.0	90.9	9.1	88.5	11.5	80.9	19.1	68.7	31.3	56.8	43.2	33.3	66.7

Note. Expectation was determined based on the reported use matching what was detected. Unexpected was a mismatch. Unexpected use of methamphetamine/amphetamine may be overestimated due to the use of certain synthetic stimulants. Data from Quebec were unavailable.

Return to [Figure 3](#).

Table 4. Percentage of participants who reported the use of fentanyl (past three days), by detection of substance

Substance	B.C. detected	B. C. not detected	Edmonton detected	Edmonton not detected	Regina detected	Regina not detected	Peel detected	Peel not detected	Ottawa detected	Ottawa not detected	N.S. detected	N.S. not detected
Fentanyl	94.7	5.3	100.0	0.0	95.8	4.2	80.9	19.1	100.0	0.0	20.0	80.0

Note. Data were unavailable for Quebec.

Return to [Figure 4](#).



Table 5. Among participants who reported the use of fentanyl (past three days) or had fentanyl detected in their urine, percentage with co-use with other substances (top three most common co-use combinations)

Table 5a. Stimulants

Substance	B.C. reported	B.C. detected	Edmonton reported	Edmonton detected	Regina reported	Regina detected	Peel reported	Peel detected	Ottawa reported	Ottawa detected
Cocaine/crack†	—	57.1	—	22.7	—	15.4*	—	87.2*	—	74.7*
Cocaine	20.7	—	40.0	—	12.5	—	36.2	—	26.3	—
Crack	29.1	—	50.0	—	16.7	—	57.4*	—	59.6*	—
Crystal meth/methamphetamine (Methamphetamine/amphetamine)‡	85.5*	94.6*	85.0*	90.9*	83.3*	96.2*	53.2*	61.7*	54.4*	60.2
MDMA (ecstasy)	7.0	1.2	20.0	0.0	0.0	0.0	6.4	2.1	3.5	1.2
Other synthetic stimulants	9.3	15.8	35.0	0.0	0.0	3.8	10.6	0.0	43.9	41.0

Table 5b. Opioids

Substance	B.C. reported	B. C. detected	Edmonton reported	Edmonton detected	Regina reported	Regina detected	Peel reported	Peel detected	Ottawa reported	Ottawa detected
Buprenorphine/naloxone	7.5	6.6	30.0	9.1	4.2	0.0	8.5	6.4	3.5	4.8
Heroin/morphine§	—	60.6*	—	40.9*	—	7.7	—	40.4	—	74.7*
Heroin	61.2*	—	85.0*	—	41.7*	—	17.0	—	26.3	—
Morphine	25.6	—	40.0	—	8.3	—	21.3	—	50.9	—
Hydromorphone	40.1	39.8	35.0	13.6	4.2	0.0	6.4	25.5	56.1*	85.5*
Methadone	43.6*	33.6	30.0	22.7	4.2	7.7	38.3	38.3	42.1	63.9
Oxycodone	10.1	0.4	40.0	4.5	0.0	0.0	6.4	2.1	3.5	0.0



Table 5c. Other depressants

Substance	B.C. reported	B. C. detected	Edmonton reported	Edmonton detected	Regina reported	Regina detected	Peel reported	Peel detected	Ottawa reported	Ottawa detected
Benzodiazepines	33.9	93.1*	60.0*	59.1*	33.3*	96.2*	42.6*	70.2*	17.5	36.1

Notes. Data were unavailable for Quebec and are not presented for Nova Scotia due to small sample sizes (less than three per cent of participants reported fentanyl use or had fentanyl detected in their urine). n/a= not available;— = not included in the survey or cannot be distinguished by urine toxicology.

* The combinations reported used by the highest percentage of participants (top three)

† Detection of cocaine and crack are combined because they are not distinguishable by urine toxicology.

‡ Methamphetamine use may lead to the presence of both methamphetamine and amphetamine in urine.

§ Detection of heroin and morphine use were combined because the direct metabolite of heroin (6-monoacetylmorphine) clears rapidly from urine, after which it is difficult to discern heroin from morphine use. Reported use of heroin and morphine were combined to facilitate comparison.

|| Hydromorphone detection may result from codeine, morphine or hydromorphone use.

Return to [Figure 5](#).

About CCSA

CCSA was created by Parliament to provide national leadership to address substance use in Canada. A trusted counsel, we provide national guidance to decision makers by harnessing the power of research, curating knowledge and bringing together diverse perspectives.

CCSA activities and products are made possible through a financial contribution from Health Canada. The views of CCSA do not necessarily represent the views of Health Canada.

ISBN 978-1-77871-182-4

© Canadian Centre on Substance Use and Addiction 2024