



# Preliminary Patterns in Circumstances Surrounding Opioid-Related Deaths in Ontario during the COVID-19 Pandemic

A report prepared by:

The Ontario Drug Policy Research Network

The Office of the Chief Coroner for Ontario/Ontario Forensic Pathology Service

Public Health Ontario

Centre on Drug Policy Evaluation



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CENTRE ON  
DRUG POLICY  
EVALUATION

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## Background

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The rising rate of opioid-related deaths across Canada has been an ongoing and significant national public health crisis for over a decade.<sup>1</sup> In just the first three months of 2020, there were 1,018 opioid-related deaths recorded in Canada, the vast majority of which (96%) were accidental.<sup>2</sup> In the midst of this ongoing crisis, the emergence of the COVID-19 pandemic in Ontario led to the provincial declaration of a state of emergency on March 17, 2020.<sup>3</sup> Within Ontario, the first wave of the pandemic was addressed with public health restrictions to mitigate the spread of COVID-19, which included physical distancing measures that resulted in reduced capacity for pharmacies, outpatient clinics, and harm reduction sites providing care to people who use drugs. Despite the intention to reduce the impact of COVID-19, there is concern that these measures could lead to unintended harms.<sup>4</sup>

In June 2020, Ontario's Chief Coroner announced a 25% increase in suspected drug-related deaths between March and May 2020, compared to the monthly median reported in 2019.<sup>5</sup> Similar trends have been reported elsewhere in Canada.<sup>6</sup> It is expected that this increase in drug-related deaths is being driven by a combination of numerous factors, including an increasingly toxic unregulated ('street') drug supply, barriers to access to harm reduction services and treatment, and physical distancing requirements leading to more people using drugs alone.<sup>4,5</sup>

Understanding the circumstances that contribute to these deaths is urgently needed to inform interventions and policies to prevent opioid-related mortality in the midst of the COVID-19 pandemic.



## Methods Overview

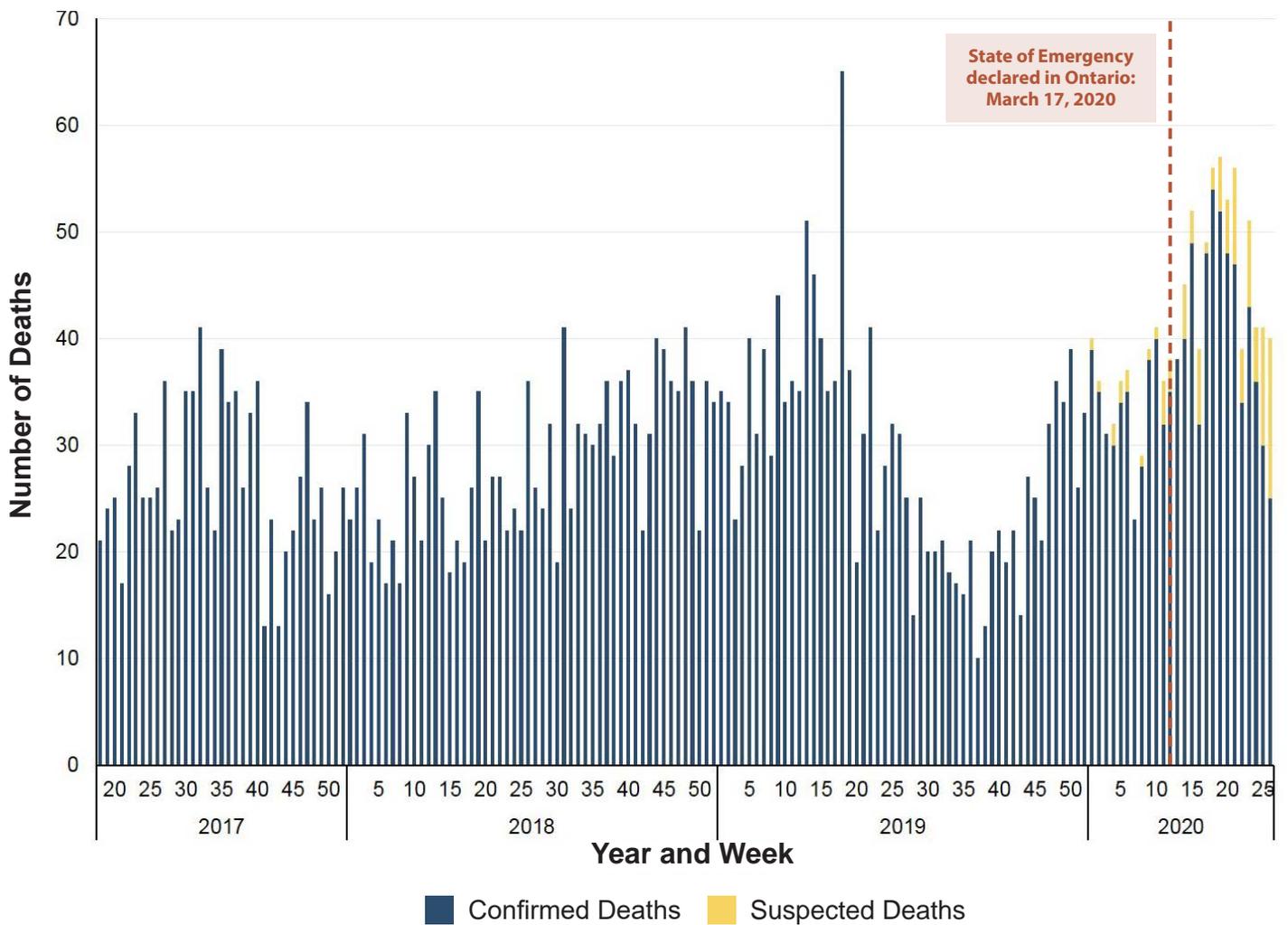
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The data contained in this report was obtained by the Office of the Chief Coroner/Ontario Forensic Pathology Service (OCC/OFPS) during investigations of confirmed and suspected opioid-related deaths in Ontario. An opioid-related death is defined as an acute intoxication/toxicity death resulting from the direct contribution of consumed substance(s), where one or more of the substances was an opioid, regardless of how the opioid was obtained.<sup>7</sup> Suspected opioid-related deaths are defined on the basis of evidence of drug use or drug paraphernalia found at the scene and/or signs of drug use and an opioid detected in post-mortem toxicology, but where a final conclusion on the cause of death is pending. On May 1, 2017, the OCC/OFPS launched the Opioid Investigative Aid (OIA) which resulted in a standardized database of information regarding the circumstances surrounding opioid-related deaths. The OIA is completed by the investigating coroner using a combination of sources (e.g., health records, family, bystanders, emergency responders), and captures demographic information as well as details related to the location of the incident, post-mortem toxicology results, and other circumstances surrounding the death. The cause and manner of death are determined by the death investigation and post-mortem examinations by pathologists and captured in the OIA. In order to rapidly report on factors related to opioid-related deaths during the pandemic, some OIA are not yet complete, and in some circumstances cause and manner of death have not been confirmed. Therefore, the denominators for variables reported throughout the report differ according to data availability. More details can be found in the [Appendix](#).

Trends in opioid-related deaths over time were reported according to epi-weeks (Monday – Sunday), and stratified according to whether the death was confirmed or suspected as opioid-related. For the purposes of comparing circumstances surrounding deaths, we defined March 16, 2020 as the 'beginning' of the pandemic as this was the beginning of the epi-week during which Ontario declared an emergency order related to the COVID-19 pandemic (March 17, 2020). The pandemic cohort included deaths from March 16, 2020 to June 30, 2020 and the pre-pandemic cohort from December 1, 2019 to March 15, 2020. We used chi-squared tests and the Fisher's exact test where appropriate to compare proportions between cohorts, and the Cochran-Armitage test to identify trends in quintile distributions.

# Trends in Opioid-Related Deaths

Weekly number of opioid-related deaths in Ontario prior to, and during, the COVID-19 pandemic



The number of opioid-related deaths increased quickly in the weeks following the state of emergency declaration in Ontario on March 17, 2020. Overall, there was a 38.2% increase in opioid-related deaths in the first 15 weeks of the COVID-19 pandemic (695 deaths; average of 46 deaths weekly) compared to the 15 weeks immediately prior (503 deaths; average of 34 deaths weekly).

If the number of opioid-related deaths continues to increase at the weekly pandemic rate for the rest of 2020, it is anticipated that there will be 2,271 opioid-related deaths in the province by the end of the year. This would represent a 50% increase from the year prior (1,512 opioid-related deaths in 2019).

## NOTE

As some of the investigations are still underway, the number of opioid-related deaths that are suspected is higher in May and June 2020. After the investigation has been finalized, it is possible that the investigating coroner will determine some of these deaths are not opioid-related. Similarly, although rare, there may be other opioid-related deaths that occurred during this period that are not captured in the figure above as they have not yet been determined to be opioid-related by the investigating coroner.

The remainder of this report compares circumstances of opioid-related deaths occurring in Ontario during the following two periods:

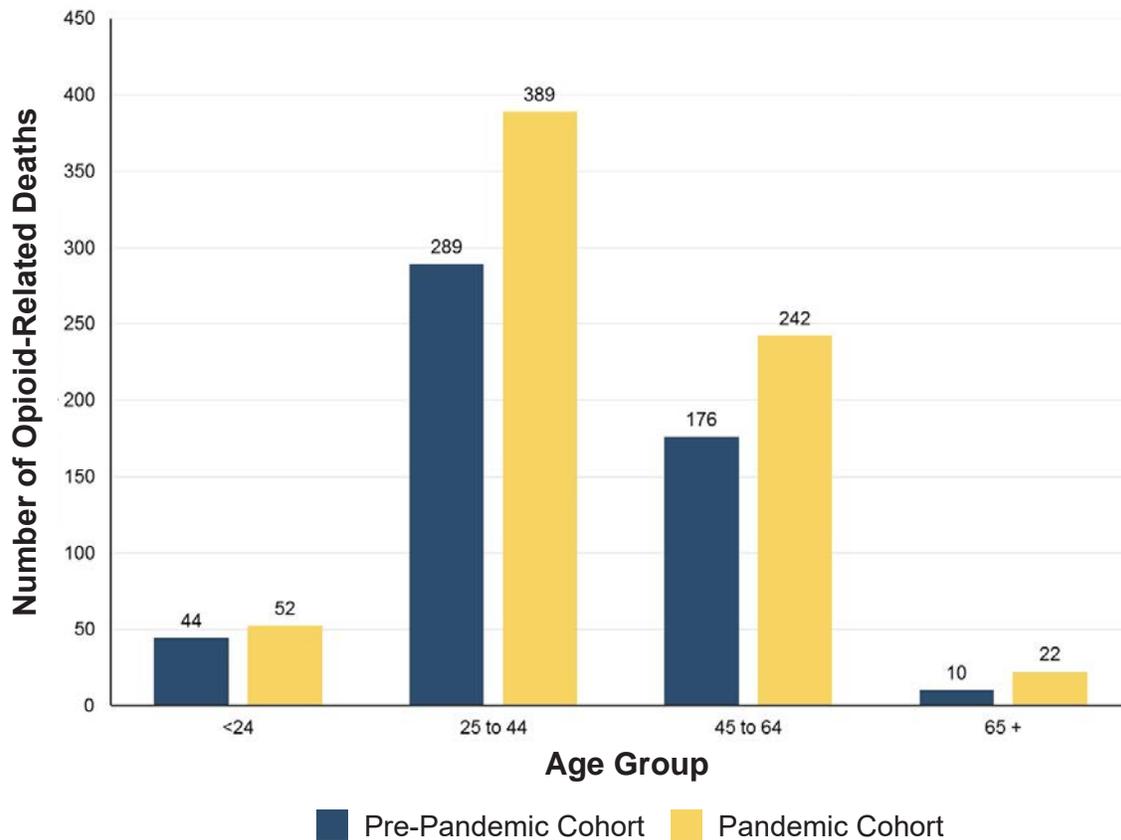


**Pre-Pandemic Cohort**  
December 1, 2019 - March 15, 2020  
(n=519)



**Pandemic Cohort**  
March 16, 2020 - June 30, 2020  
(n=705)

## Distribution of opioid-related deaths by age



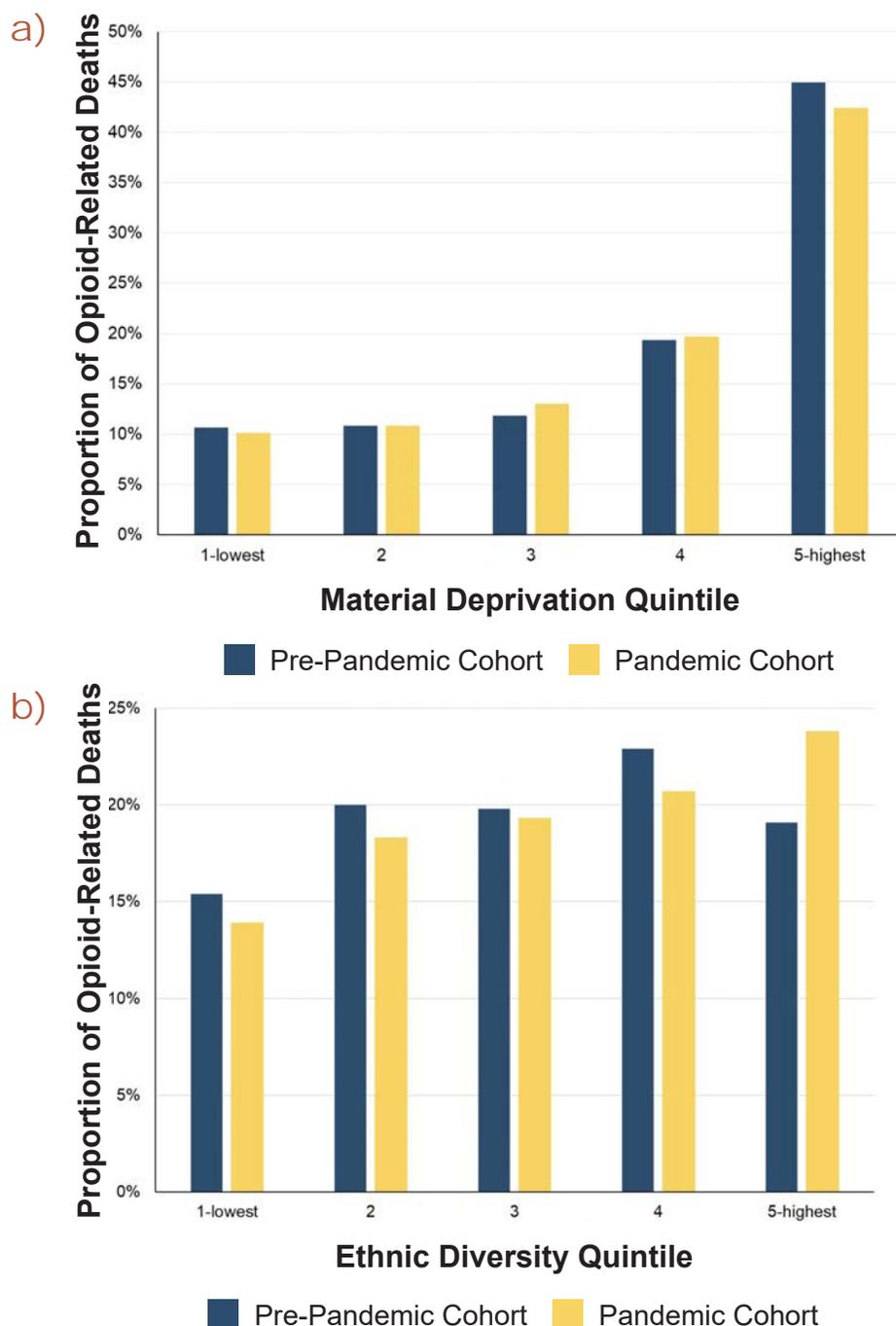
Although there has been no change in the distribution of opioid-related deaths by age during the pandemic, the largest absolute increases in deaths occurred among people aged 25 to 44 (289 vs. 389, pre-pandemic vs. during pandemic) and those aged 45 to 64 (176 vs. 242, pre-pandemic vs. during pandemic). Overall, 89.5% of all opioid-related deaths occurring during the pandemic were among these age groups. Although the absolute increase was relatively small, the number of opioid-related deaths among those aged 65+ more than doubled during the pandemic.

During the pandemic, there has been a statistically significant shift towards opioid-related deaths occurring more commonly among men. Specifically, 69.7% of deaths (362 of 519) in the pre-pandemic cohort were among men, rising to 78.0% of deaths (550 of 705) in the pandemic cohort ( $p < 0.01$ ).

The proportion of men among opioid-related deaths increased from:



## Distribution of opioid-related deaths by neighbourhood quintile of a) material deprivation and b) ethnic diversity\*

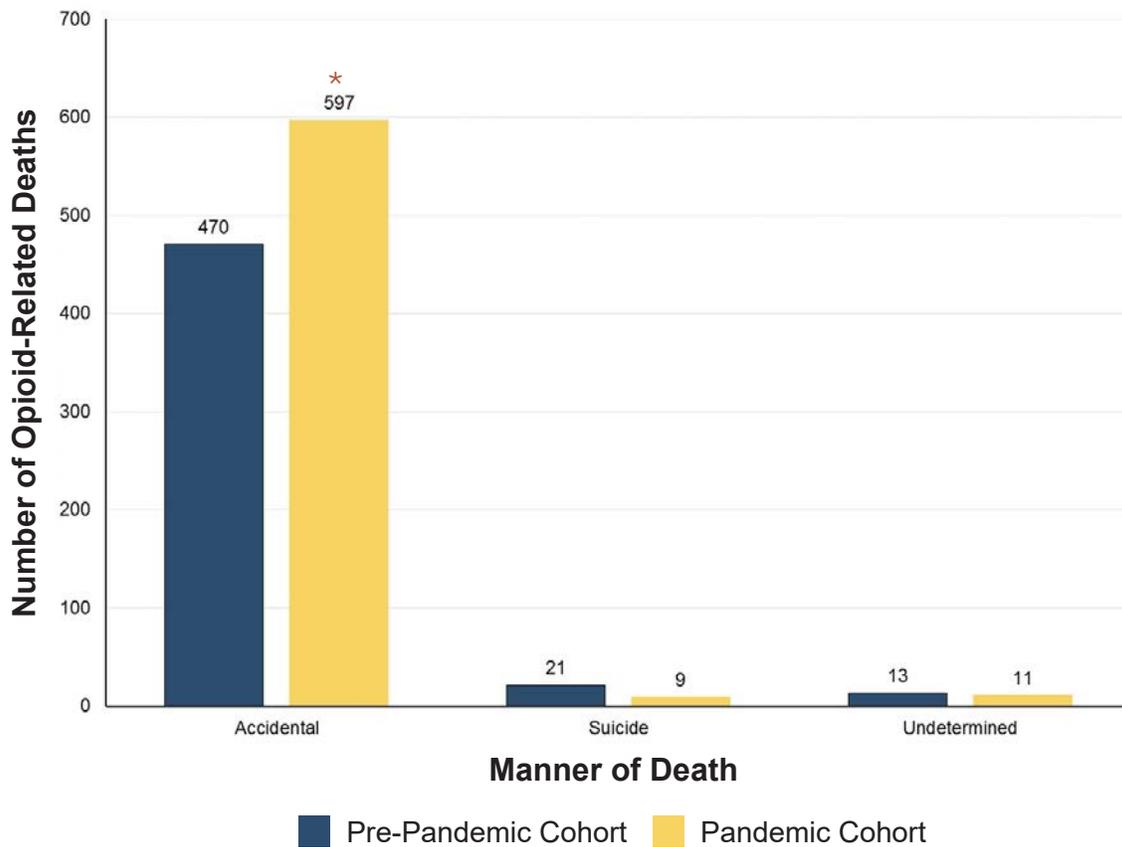


### NOTE

- 1) \* Using the [Ontario Marginalization Index](#).
- 2) 42 individuals had missing information and are not captured in this figure.

There was a strong clustering of opioid-related deaths in neighbourhoods with the highest material deprivation, both before and during the pandemic. In contrast, during the pandemic, there was a significant trend towards more opioid-related deaths occurring in neighbourhoods with a higher ethno-cultural diversity. This trend was not observed in the pre-pandemic period, and is concerning as data emerges demonstrating that ethnically diverse neighbourhoods, particularly those in large urban centres, are also experiencing higher rates of COVID-19 infection and related death.<sup>8</sup>

## Manner of death among **confirmed** cases

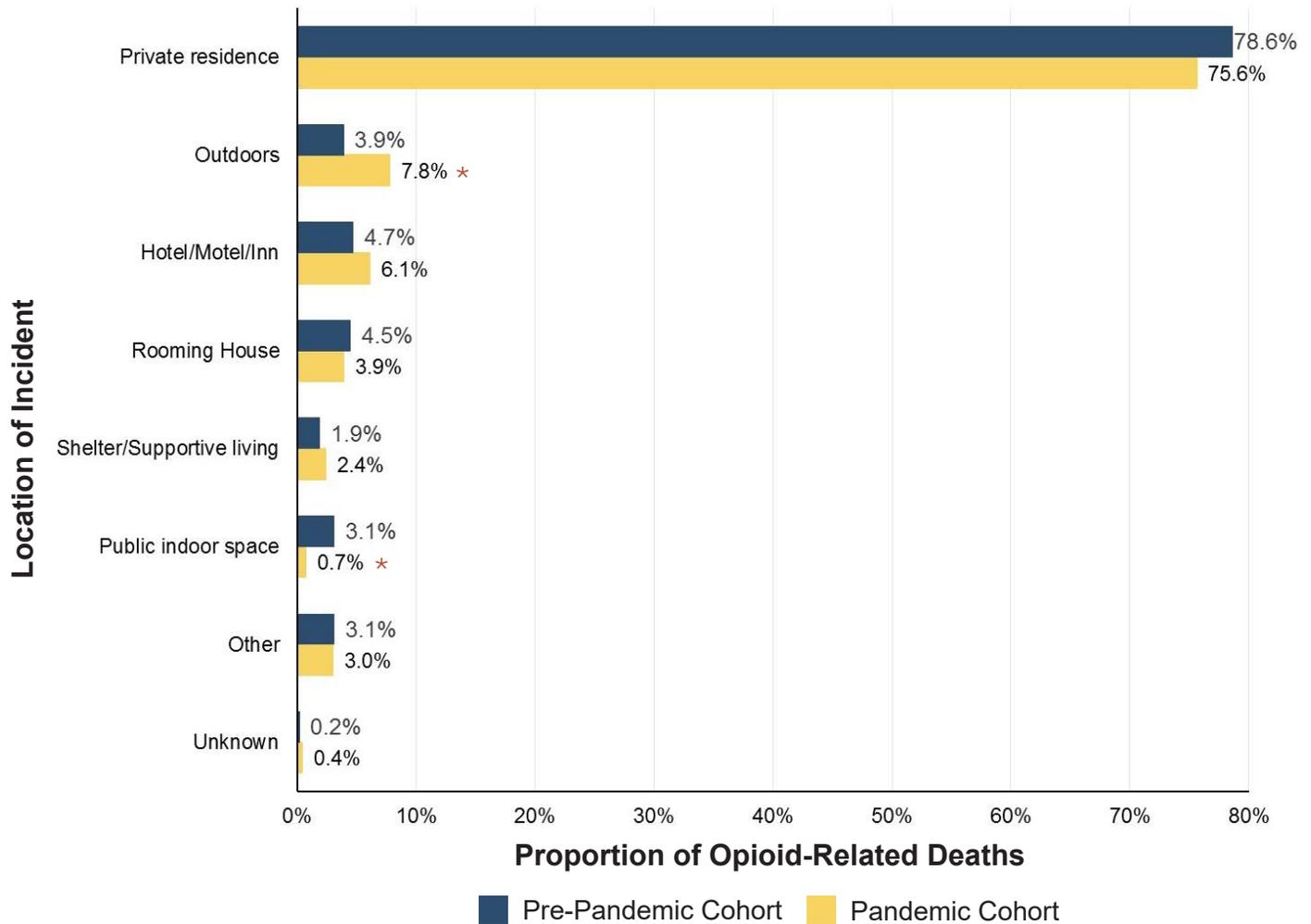


### NOTE

\* Indicates statistically significant difference in proportions between cohorts

The vast majority of confirmed opioid-related deaths in Ontario continue to be accidental in nature. Since the pandemic emerged, growth in confirmed deaths has been concentrated among accidental deaths, with an absolute increase of 127 accidental deaths in the pandemic cohort compared to the pre-pandemic cohort ( $p < 0.01$ ). There were 88 suspected opioid-related deaths in the pandemic cohort where manner of death has not yet been determined, and therefore the observed decrease in deaths determined to be intentional (suicide) may not be reliable as investigations for potentially intentional deaths may take longer to complete.

## Location of incident among opioid-related deaths prior to, and during, the pandemic



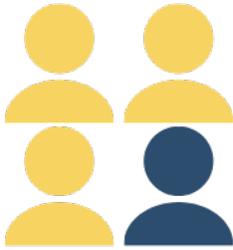
### NOTE

- 1) \* indicates statistically significant difference in proportions between cohorts.
- 2) "Public indoor spaces" includes commercial/retail buildings or public buildings, such as train/bus stations. "Other" includes correctional institutes, parking garages, and churches.

During the pandemic, there have been changes in the location of incidents leading to opioid-related deaths, with a significantly lower percentage of opioid-related deaths occurring in public indoor spaces (3.1% vs. 0.7%), and a higher percentage of deaths occurring outdoors (3.9% vs. 7.8%). However, the findings related to outdoor location should be interpreted with caution as this may be influenced by the pandemic period occurring during the spring months, compared to the pre-pandemic cohort occurring during the winter months. When comparing the pandemic cohort to the same period one year prior (March 16 – June 30 2019), to account for seasonality, there was no significant difference in the percentage of deaths occurring outdoors (8.6% vs. 7.8%).

There was also a trend towards more deaths occurring in hotels, motels, or inns (24 [4.7%] vs. 41 [6.1%], pre-pandemic vs. during the pandemic). Although this was not statistically significant, this should be monitored due to the movement of people in some cities into hotels as supportive housing or isolation centres (if infected with COVID-19 or a close contact of an infected individual) during the pandemic.<sup>9,10</sup>

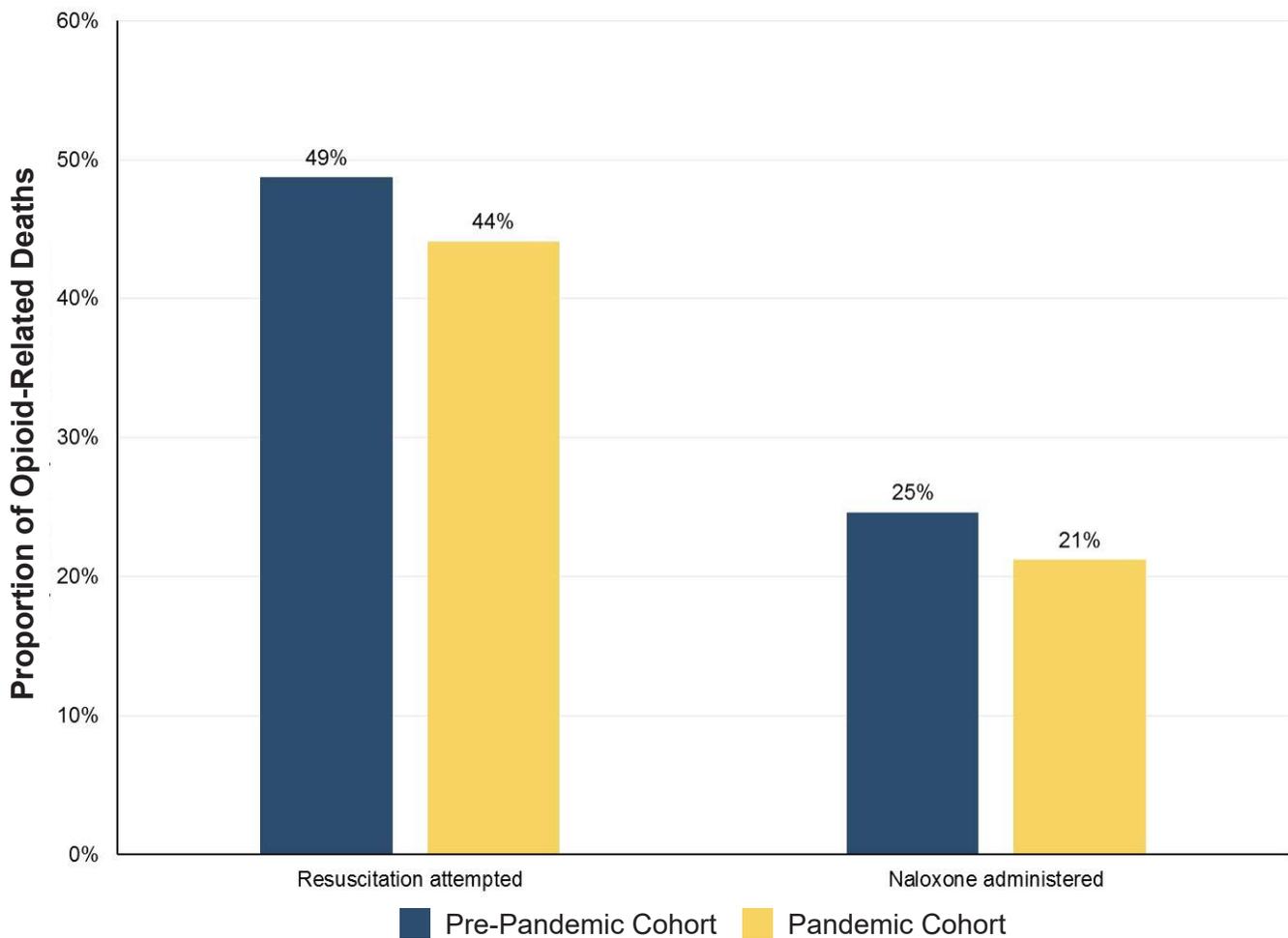
## Individual present who could intervene



In three out of four deaths during the pandemic, **no one was present to intervene.**

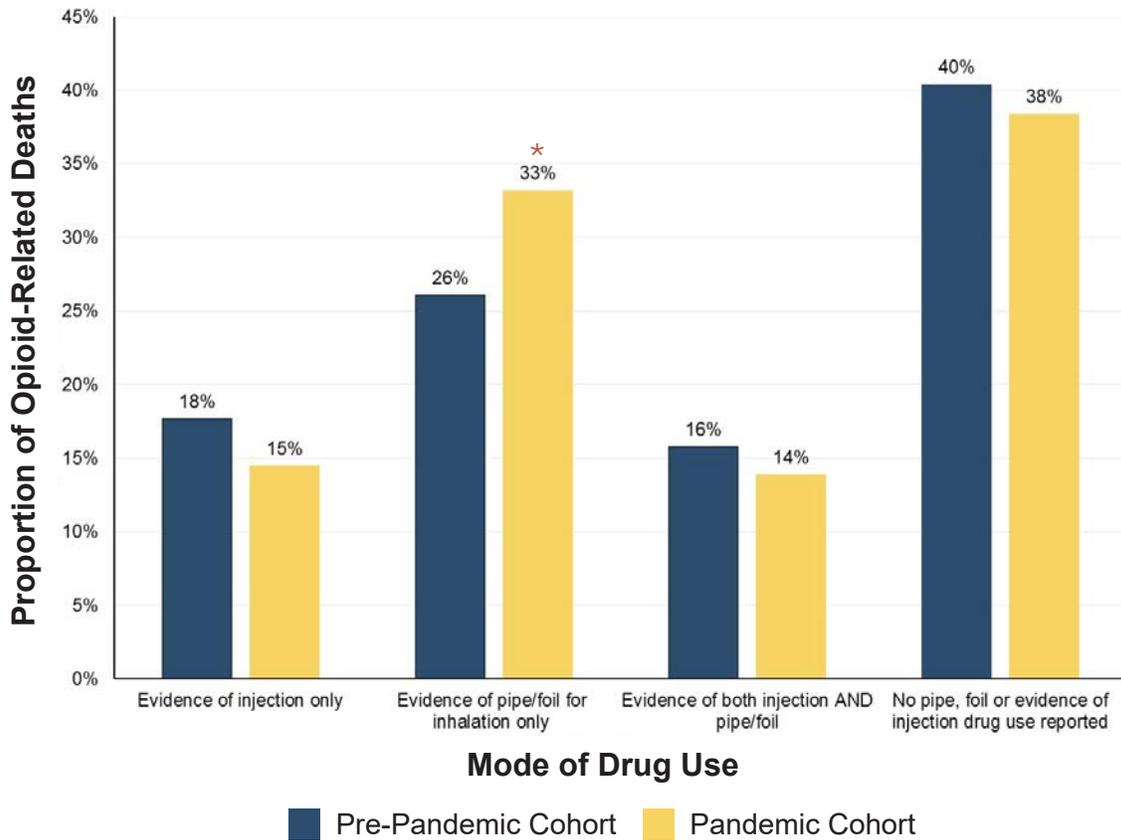
During the pandemic, among opioid-related deaths where this information was available, nearly three-quarters of deaths occurred when no one was present to intervene (N=363 of 492; 73.8%). This increased slightly compared to the period prior to the pandemic, although the increase was not statistically significant (N=261 of 366, 71.3% pre-pandemic). Information on whether an individual was present was not available for approximately one-quarter of opioid-related deaths both prior to (28.7%) and during (26.5%) the pandemic.

## Patterns of resuscitation attempts



There was a non-statistically significant observation of fewer resuscitation attempts and less naloxone administration among people who died of an opioid-related cause during the pandemic. When naloxone was administered, it was more commonly administered by a bystander (60% vs. 48%), and less commonly administered by a first responder (51% vs. 54%) or in a hospital setting (25% vs. 35%) during the pandemic compared to the pre-pandemic period. This may reflect patterns of people being more likely to be alone at time of opioid toxicity described previously in this report, reduced access to harm reduction (e.g., overdose prevention and supervised consumption and treatment services), and lower rates of naloxone dispensing through pharmacies observed early in the pandemic.<sup>14</sup>

## Likely mode of drug use based on coroner's investigation

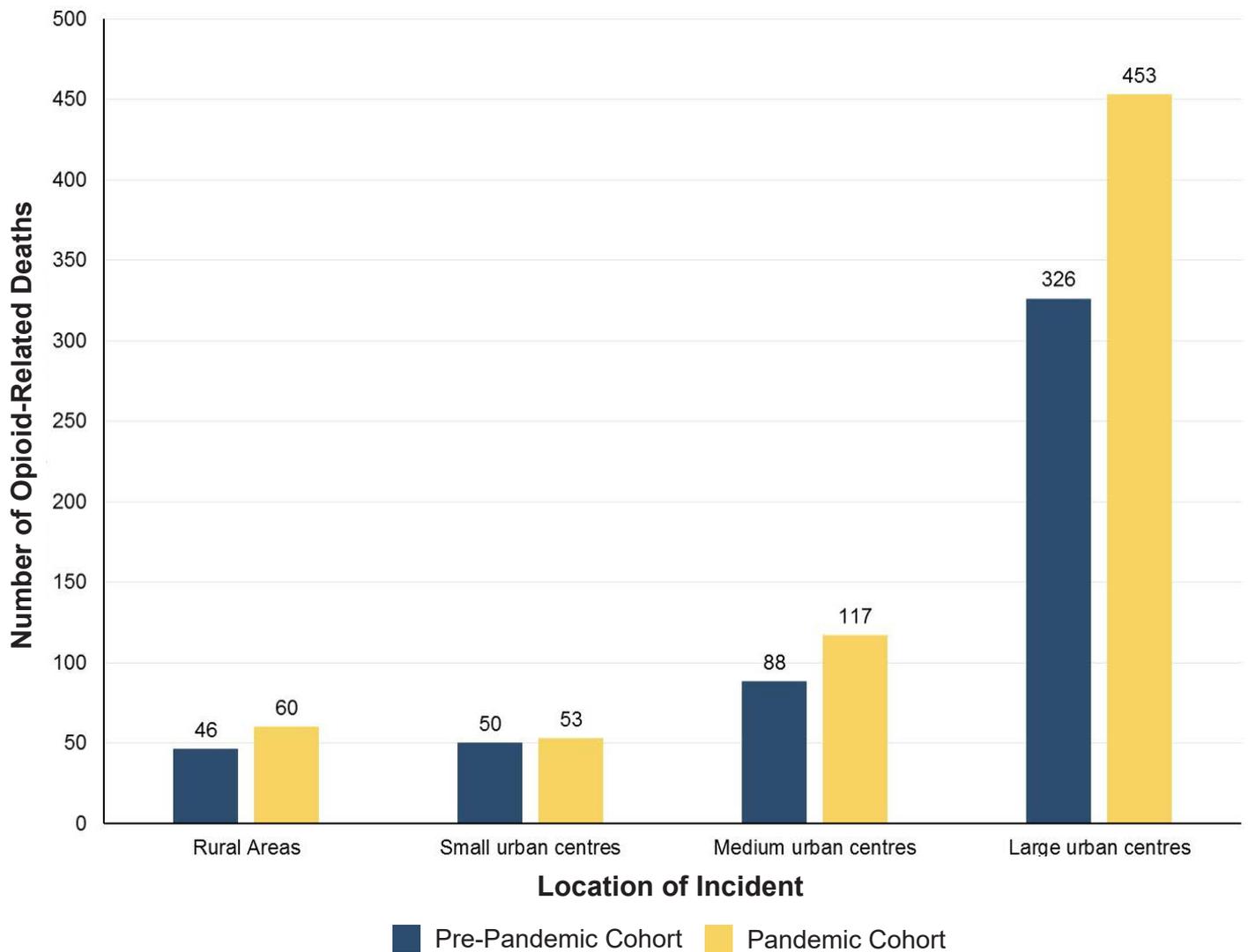


### NOTE

Drug paraphernalia found at the scene may provide proxy information for potential mode of drug use, but may also reflect previous modes of use or paraphernalia that was used by someone else. Drug paraphernalia other than syringe, pipe, and foil may have been found at scene (e.g. grinder, spoon). When no pipe, foil or evidence of injection drug use is present, mode may include oral, nasal, transdermal, other or unknown modes of drug use.

During the pandemic, there has been a significant shift towards opioid-related deaths with evidence of a pipe/foil for inhalation at the scene, with approximately one-third of deaths having indication of supplies for inhalation (N=222, 33.2%;  $p=0.01$ ). However, this trend follows a pattern of increasing evidence of inhalation as a potential mode of drug use that has been observed among deaths in Ontario [data not shown] and British Columbia over the past few years.<sup>11</sup> Therefore, it is not clear if this trend is due to circumstances related to the pandemic or a continuation of pre-existing trends towards more inhalation of drugs.<sup>12,13</sup>

## Geographic location of incident among opioid-related deaths

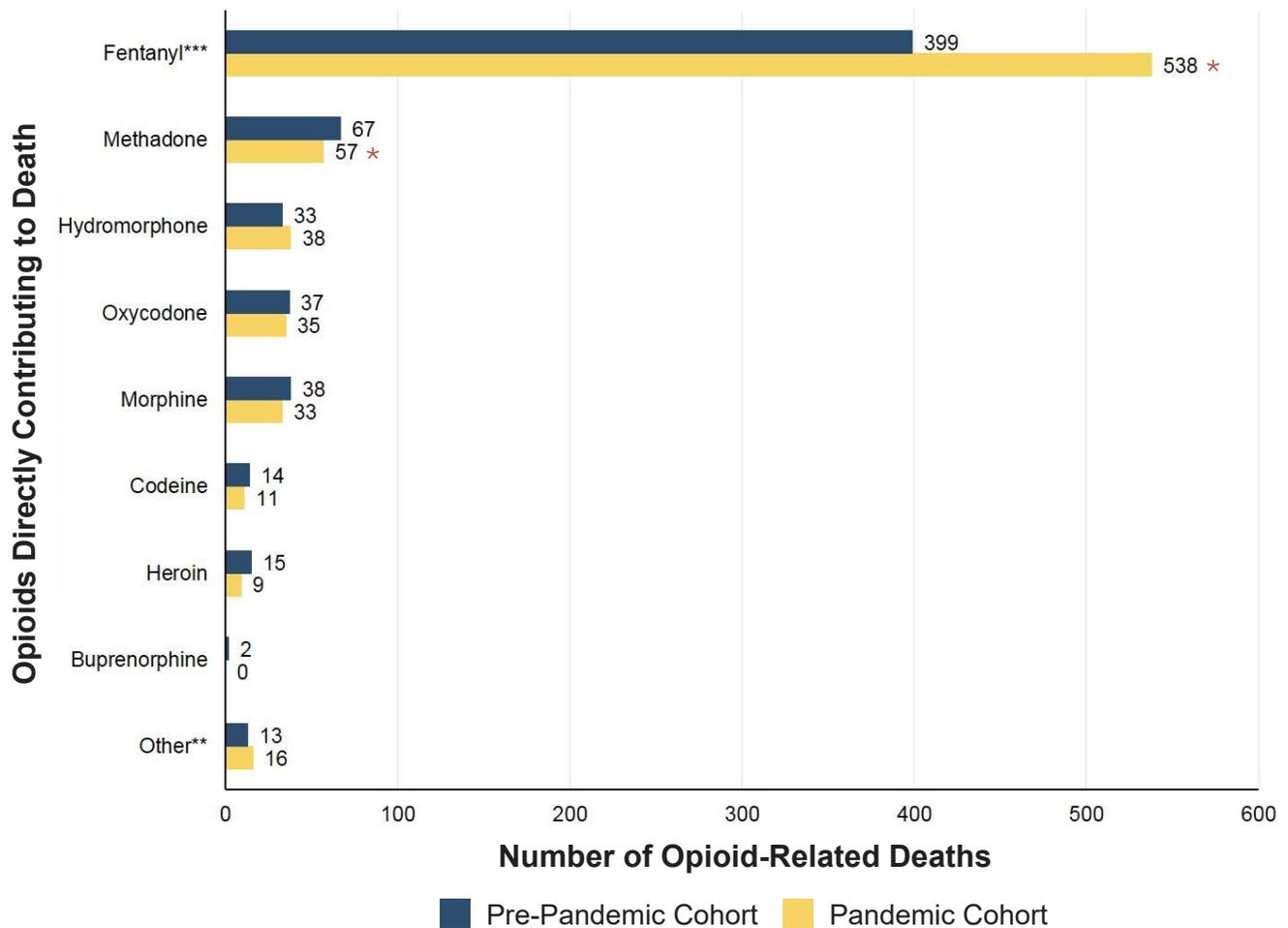


### NOTE

There were 9 deaths in the pre-pandemic cohort and 22 deaths in the pandemic cohort where the geographic location of the death was unknown.

There was no change in the distribution of deaths by geographic location during the pandemic, with approximately two-thirds of all opioid-related deaths occurring in large urban centres. However, the largest absolute increases in opioid-related deaths were observed in medium (N=29) and large (N=127) urban centres in Ontario.

## Opioids directly contributing to opioid-related deaths in Ontario

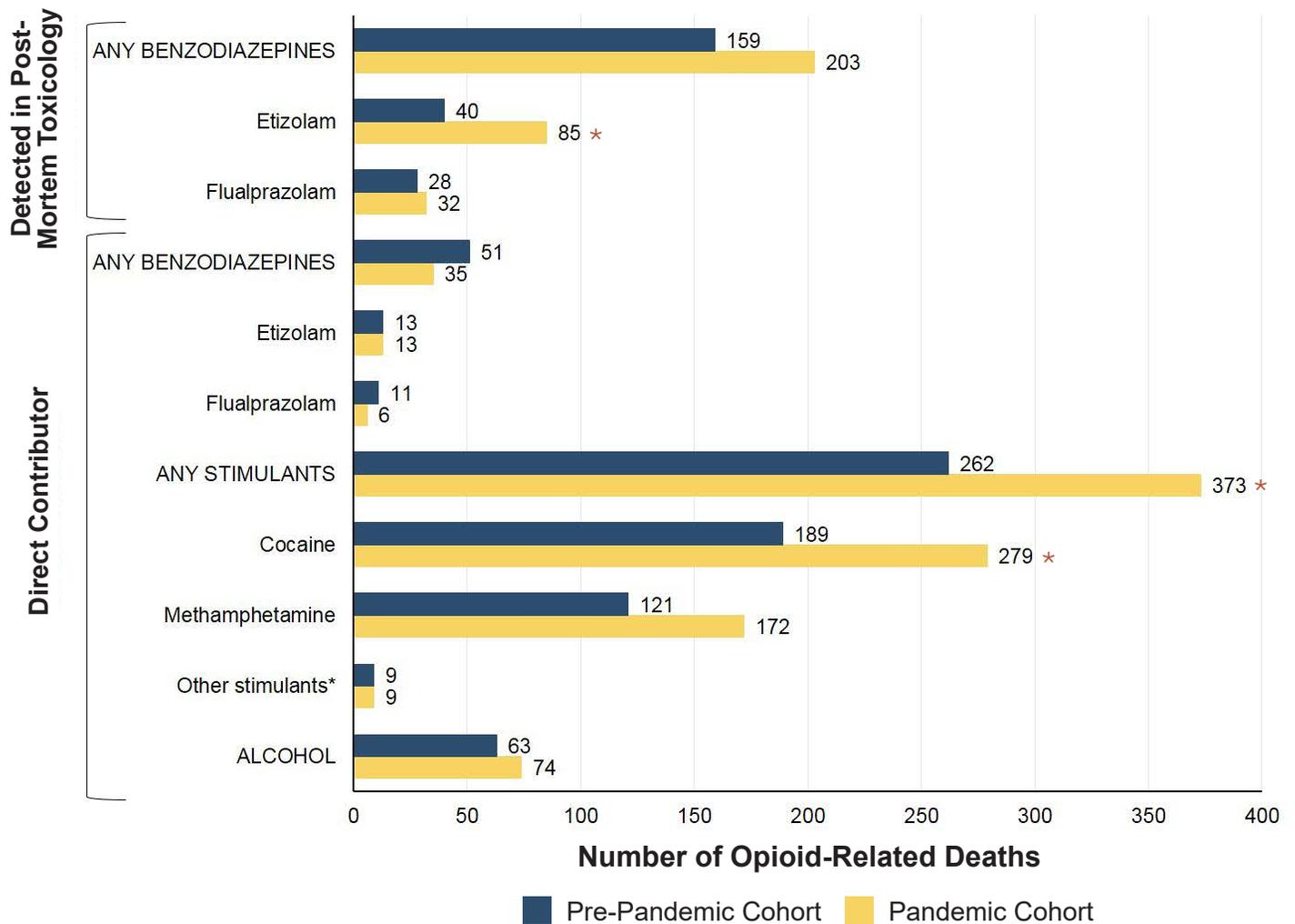


### NOTE

- 1) \* indicates statistically significant difference in proportions between cohorts.
- 2) \*\* Other includes tramadol, oxymorphone, and hydrocodone.
- 3) \*\*\* Fentanyl estimates include fentanyl analogues. However, there were only 4 and 10 deaths attributed to fentanyl analogues in the pre-pandemic and pandemic cohorts, respectively.
- 4) Some deaths may be attributed to multi-drug toxicity where more than one substance can contribute to an individual death. There were 88 suspected opioid-related deaths in the pandemic cohort and 15 in the pre-pandemic cohort not included in this figure.

During the pandemic, fentanyl was more commonly a direct contributor to opioid related deaths (87.2% [N=538 of 617]) compared to the pre-pandemic cohort; (79.2% [N=399 of 504];  $p < 0.01$ ). There was also a decline in methadone involvement (from 13.3% [N=67] to 9.2% [N=57];  $p = 0.03$ ) during the pandemic. These findings may be reflective of changes in the unregulated drug supply and changing access to prescription opioids observed early in the pandemic, which may have led to an increased reliance on unregulated drug supplies, and the increasing toxicity of the unregulated ('street') drug supply available.<sup>14</sup> Importantly, there was no indication of increased involvement of fentanyl analogues (e.g., carfentanil) during the pandemic.

## Other drug involvement in opioid-related deaths

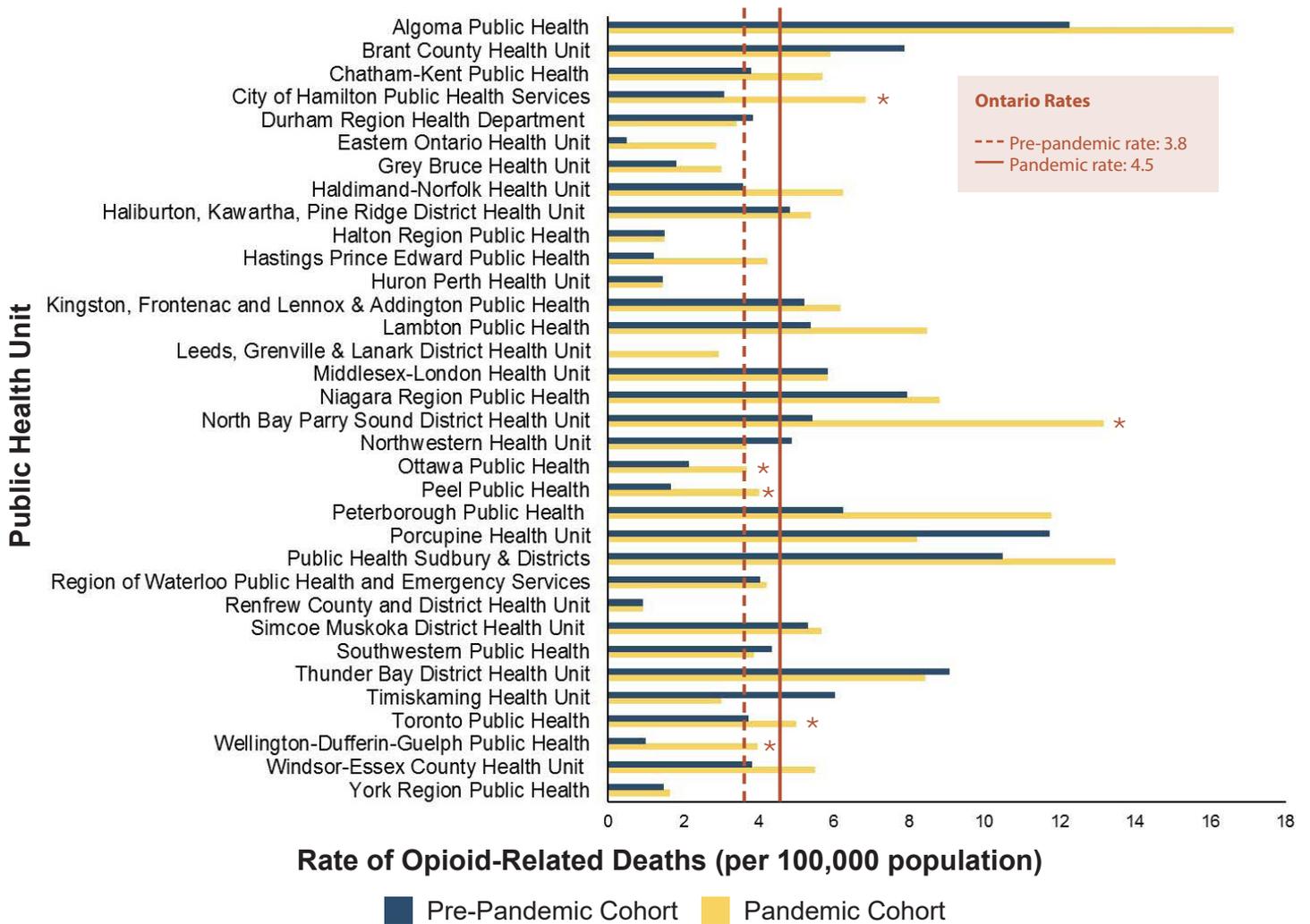


### NOTE

- 1) \* indicates statistically significant difference in proportions between cohorts.
- 2) \* Other stimulants include 3,4-Methylenedioxyamphetamine (MDA), Methylenedioxyamphetamine (MDA), Amphetamine (in the absence of methamphetamine), Methylphenidate, and Pseudoephedrine.
- 3) There were 88 suspected opioid-related deaths in the pandemic cohort and 15 in the pre-pandemic cohort not included in this figure.

During the pandemic, there was a significant increase in the percentage of opioid-related deaths with stimulants as a contributing factor, rising from 52.0% (N=262) to 60.5% (N=373;  $p=0.01$ ). This appears to be driven by cocaine involvement in deaths, which directly contributed to nearly half (45.2%) of opioid-related deaths during the pandemic, compared to 37.5% in the pre-pandemic cohort. Although there appeared to be a decrease in benzodiazepines directly contributing to deaths during the pandemic (10.1% to 5.7%;  $p=0.01$ ), approximately one-third of deaths had a benzodiazepine detected both prior to (31.5%) and during (32.9%) the pandemic. Furthermore, detection of etizolam increased significantly during the pandemic, rising from 7.9% to 13.8% of opioid-related deaths ( $p<0.01$ ). This suggests that benzodiazepines continue to be frequently involved in opioid-related deaths; although they may not be determined to be a major contributor to death by the investigating coroners.

## Change in opioid-related deaths by public health unit\*\*



### NOTE

- 1) \* indicates statistically significant difference in proportions between cohorts.
- 2) \*\* These data include confirmed and suspected- opioid related deaths and distribution of investigations still under investigation (i.e., suspected opioid-related deaths) may vary by region.

Generally, the increased rate of opioid-related deaths during the pandemic has occurred throughout the province (see [Appendix](#)). Statistically significant higher rates were observed during the pandemic in six local public health units: City of Hamilton Public Health Services, North Bay Parry Sound District Health Unit, Ottawa Public Health, Peel Public Health, Toronto Public Health, and Wellington-Dufferin-Guelph Public Health. The Hamilton, Ottawa, Peel, and Toronto regions had the largest absolute increase in opioid deaths, reporting 22, 16, 37 and 39 additional deaths during the pandemic period compared to the pre-pandemic cohort, respectively. The highest rates of opioid-related deaths in the pandemic period were observed in Algoma Public Health, North Bay Parry Sound, Public Health Sudbury District, Peterborough Public Health, Niagara Region Public Health and Lambton Public Health. However, rates in regions with small populations should be interpreted with caution as they can be easily influenced by a small number of deaths.

# Limitations

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There are several limitations that require mention. First, the OCC/OFPS has not concluded all investigations for opioid-related deaths that occurred during the study period. Therefore, some of the data included in this report are preliminary and subject to change. Specifically, 12% of cases during the pandemic cohort, and 3% of those in the pre-pandemic cohort were suspected opioid-related deaths and the substances reported as direct contributors to death only reflect those identified in confirmed opioid-related deaths. Second, the circumstances surrounding opioid-related deaths have shifted in Ontario over the past decade, even in the absence of the COVID-19 pandemic. Therefore, the observed differences between the pre-pandemic cohort and the pandemic cohort could be attributed to the COVID-19 pandemic or may be due to pre-existing temporal changes. An example of this is seasonality in the location of drug use in Ontario, with fewer deaths anticipated to be outdoors during winter months. Information on broader comparisons have been provided where possible to help determine whether observed changes could be attributed to the pandemic. Third, statistics on material deprivation and ethnic diversity relied on the [Ontario Marginalization Index](#) which is a neighbourhood-level variable and may not reflect individual-level characteristics. Finally, due to relatively small population sizes and fewer case counts, the rates of opioid-related deaths observed in some public health units should be interpreted with caution as they can be influenced by small absolute changes in the number of deaths. Full data on the regional analysis of changes in opioid-related deaths can be found in the [Appendix](#) of this report.

## Summary of Findings

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In the first 15 weeks of the COVID-19 pandemic in Ontario, 695 people died of a confirmed or suspected opioid-related death, representing a 38% increase compared to the 15 weeks immediately preceding the pandemic. During the pandemic, fentanyl and stimulants (particularly cocaine) were more commonly direct contributors to these deaths. These findings could represent unexpected exposures to stimulants (excluding caffeine) or fentanyl in the drug supply (although data from drug checking services in Toronto suggests that this may not be the case during the pandemic)<sup>15</sup>, patterns of poly-substance use (e.g. stimulants being used to manage opioid withdrawal symptoms), or availability and affordability of the unregulated drug supply.<sup>16</sup> In contrast, the significant increase in etizolam detection during the pandemic aligns with data from drug checking services in Toronto, suggesting that this synthetic benzodiazepine has increasingly been identified in fentanyl samples.<sup>15</sup> This was not commonly labeled as a direct contributor to death by the investigating coroner, as there is a paucity of data regarding the effects of the combination of these unregulated drugs. Further understanding is needed on the contributions of etizolam and other synthetic benzodiazepines to opioid-related deaths.

This report also identifies trends toward more opioid-related deaths among people who are using drugs alone, outdoors, and in hotel/motel settings during the pandemic. These factors are all likely influenced by pandemic-related changes aimed to promote physical distancing measures in the province, which may have inadvertently reduced access to safer spaces to use drugs (e.g. supervised consumption and treatment services) and support networks, suggesting opportunities to prevent accidental deaths. For example, given evidence of the increasingly toxic unregulated drug supply during the pandemic,<sup>4</sup> expanded access to a range of low-barrier opioid agonist treatments or safer supply of regulated opioids could be considered. Furthermore, harm reduction services that can ensure someone is present to intervene in case of opioid toxicity should be a priority of local and provincial governments. Although we cannot determine whether the use of hotels as supportive housing and COVID-19 isolation centres has influenced the increased prevalence of opioid-related deaths in hotels across Ontario, this is a trend that warrants ongoing monitoring as it is imperative that the pandemic-related services are supported by harm reduction and health care partners.

Although relatively unchanged during the COVID-19 pandemic, opioid-related deaths continue to disproportionately impact men aged 25 to 44 residing in neighbourhoods with higher material deprivation (i.e., lower income, poorer quality of housing, lower education and higher likelihood of single-parent families).<sup>17</sup> Importantly, during the pandemic, we observed a shift towards opioid-related deaths occurring more frequently within communities with higher concentrations of people who are recent immigrants and/or racialized.<sup>17</sup> This parallels recent trends in COVID-19 infection and death rates that are increasingly being concentrated in ethnically diverse neighbourhoods in Ontario,<sup>8,18,19</sup> and suggests that pandemic responses are disproportionately leading to negative impacts on both COVID-19 and opioid-related outcomes among racialized communities.

The geographic analysis of opioid-related deaths across Ontario shows that, while there has been a rising trend of opioid-related deaths across most regions of Ontario during the pandemic, some areas – particularly larger urban centres like Hamilton, Toronto, Ottawa and Peel regions – are exhibiting the largest increases in rates and absolute number of cases. Therefore, while local governments across the province should consider how to provide adequate services and supports to people who use drugs during the COVID-19 pandemic, this need is most urgent in larger urban centres across the province.

In closing, the findings of this report broadly suggest a need for policies and programs designed to urgently address the increase in opioid mortality, such as to provide access to harm reduction services, a range of low-barrier opioid agonist treatment options, a safer supply of drugs, other health and social supports, and integration of these services into hotels used to house people during the pandemic. These recommendations align with those made by national organizations<sup>4</sup> and reflect the need to act quickly to provide adequate support for people who use drugs during current and anticipated future waves of this pandemic.

# Contributors

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## Ontario Drug Policy Research Network

The Ontario Drug Policy Research Network (ODPRN) is a province-wide network of researchers who provide timely, high quality, drug policy relevant research to decision makers. The ODPRN's core principles are quality, relevance, and timeliness. The ODPRN conducts research to determine real-world drug utilization, safety, effectiveness, and costs of drugs in Ontario, and has developed partnerships that allow them to engage in cross-provincial comparisons of drug safety and utilization. For more information, visit [odprn.ca](http://odprn.ca).

## Office of the Chief Coroner/Ontario Forensic Pathology Service

Together the OCC/OFPS provide death investigation services in Ontario serving the living through high quality investigations and inquests to ensure that no death will be overlooked, concealed or ignored. The findings are used to generate recommendations to help improve public safety and prevent further deaths. In Ontario, coroners are medical doctors with specialized training in the principles of death investigation. Coroners investigate approximately 17,000 deaths per year in accordance with section 10 of the Coroners Act. The OFPS provides forensic pathology services in accordance with the Coroners Act. It provides medicolegal autopsy services for public death investigations under the legal authority of a coroner. The OFPS performs approximately 7,500 autopsies per year. For more information, visit [mcscs.jus.gov.on.ca](http://mcscs.jus.gov.on.ca).

## Public Health Ontario

Public Health Ontario (PHO) is a Crown corporation dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. PHO links public health practitioners, frontline health workers and researchers to the best scientific intelligence and knowledge from around the world. PHO provides expert scientific and technical support to government, local public health units and health care providers relating to the following:

- communicable and infectious diseases
- infection prevention and control
- environmental and occupational health
- emergency preparedness
- health promotion, chronic disease and injury prevention
- public health laboratory services

PHO's work also includes surveillance, epidemiology, research, professional development, and knowledge services. For more information, visit [publichealthontario.ca](http://publichealthontario.ca).

## Centre on Drug Policy Evaluation

The Centre on Drug Policy Evaluation (CDPE), based at St. Michael's Hospital in Toronto, ON, strives to improve community health and safety by conducting research and outreach on best practices in drug policy. The CDPE works collaboratively with governments, affected communities, and civil society to guide effective and evidence-based policy responses to substance use. For more information, visit [cdpe.org](http://cdpe.org).

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# Authors

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## **Ontario Drug Policy Research Network**

Tara Gomes, Sophie Kitchen, Diana Martins, Mina Tadrous

## **Office of the Chief Coroner/Ontario Forensic Pathology Service**

Regan Murray, Symron Bansal

## **Public Health Ontario**

Pamela Leece, Lori McKinnon

## **Centre on Drug Policy Evaluation**

Dan Werb

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The authors wish to acknowledge all families, friends and loved ones of those who were lost to an opioid-related death in Ontario. We would like to recognize that embedded within the data of this report are stories of loss for countless Ontarians who are grieving during the isolation that accompanies the ongoing pandemic. This report cannot adequately reflect the burden borne by loved ones across the province. The authors also wish to acknowledge all harm reduction workers, peer support workers, first responders, and health care professionals who are working tirelessly to support affected individuals and families during the extraordinary circumstances of the COVID-19 pandemic. Finally, the authors wish to acknowledge the work of all investigating coroners, toxicologists at the Centre of Forensic Sciences, pathologists at the OFPS, nurse investigators and all support staff; their enduring commitment to a robust death investigation system has directly contributed to all of the data presented in this report.

# Disclaimer

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This document was co-developed by the ODPRN, OCC/OFPS, PHO, and the CDPE.

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## How to Cite this Document

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# Appendix

## Data Capture and Completeness

	Pre-Pandemic Cohort	Pandemic Cohort	Variables included in analysis
<b>Total Opioid-Related Deaths</b>	<b>519</b>	<b>705</b>	
Opioid Investigative Aid (OIA)	513 (99%)	669 (95%)	
No OIA	6 (1%)	36 (5%)	
<b>Confirmed Opioid-Related Deaths</b>	<b>504 (97%)</b>	<b>617 (88%)</b>	
OIA	498 (99%)	588 (95%)	All variables
No OIA	6 (1%)	29 (5%)	Age group, sex, manner of death, substance involvement, week, public health unit, neighbourhood indicators
<b>Suspected Opioid-Related Deaths</b>	<b>15 (3%)</b>	<b>88 (12%)</b>	
OIA	15 (100%)	81 (92%)	Age group, sex, week, public health unit, neighborhood indicators, location of incident, likely mode of drug use, resuscitation attempts, location of incident, individual present who could intervene
No OIA	0 (0%)	7 (8%)	Age group, sex, week, public health unit, neighbourhood indicators

### NOTE

The “No OIA” category reflects cases where an OIA is pending and was not available at the time of the report.

## Number and rate of opioid-related deaths\* during the pandemic, by public health unit

Public Health Unit	Population	Pre-Pandemic Cohort (N; Rate per 100,000)	Pandemic Cohort (N; Rate per 100,000)	P-Value
<b>Ontario (Total)</b>	<b>14,634,260</b>	<b>519 (3.5)</b>	<b>705 (4.8)</b>	<b>&lt;0.01</b>
Algoma Public Health	114,395	14 (12.2)	19 (16.6)	0.38
Brant County Health Unit	152,733	12 (7.9)	9 (5.9)	0.51
Chatham-Kent Public Health	105,385	4 (3.8)	6 (5.7)	0.75
City of Hamilton Public Health Services	584,765	18 (3.1)	40 (6.8)	<b>&lt;0.01</b>
Durham Region Health Department	701,760	27 (3.8)	24 (3.4)	0.67
Eastern Ontario Health Unit	209,678	1 (0.5)	6 (2.9)	0.13
Grey Bruce Health Unit	166,974	3 (1.8)	5 (3)	0.72
Haldimand-Norfolk Health Unit	112,101	4 (3.6)	7 (6.2)	0.55
Haliburton, Kawartha, Pine Ridge District Health	186,520	9 (4.8)	10 (5.4)	0.81
Halton Region Public Health	607,042	9 (1.5)	9 (1.5)	1.00
Hastings Prince Edward Public Health	165,588	2 (1.2)	7 (4.2)	0.18
Huron County Health Unit	138,715	2 (1.4)	2 (1.4)	1.00
Kingston, Frontenac and Lennox & Addington Public Health	211,243	11 (5.2)	13 (6.2)	0.68
Lambton Public Health	130,153	7 (5.4)	11 (8.5)	0.35
Leeds, Grenville & Lanark District Health Unit	171,109	0 (0)	5 (2.9)	0.06
Middlesex-London Health Unit	497,806	29 (5.8)	29 (5.8)	1.00
Niagara Region Public Health	466,255	37 (7.9)	41 (8.8)	0.65
North Bay Parry Sound District Health Unit	129,183	7 (5.4)	17 (13.2)	<b>0.04</b>
Northwestern Health Unit	81,963	4 (4.9)	3 (3.7)	1.00
Ottawa Public Health	1,033,679	22 (2.1)	38 (3.7)	<b>0.04</b>
Peel Public Health	1,569,190	26 (1.7)	63 (4.0)	<b>&lt;0.01</b>
Peterborough Public Health	144,431	9 (6.2)	17 (11.8)	0.12
Porcupine Health Unit	85,295	10 (11.7)	7 (8.2)	0.47
Public Health Sudbury & Districts	200,347	21 (10.5)	27 (13.5)	0.38
Region of Waterloo Public Health	571,973	23 (4.0)	24 (4.2)	0.88
Renfrew County and District Health Unit	108,422	1 (0.9)	1 (0.9)	1.00
Simcoe Muskoka District Health Unit	583,736	31 (5.3)	33 (5.7)	0.8
Southwestern	207,698	9 (4.3)	8 (3.9)	1.00
Thunder Bay District Health Unit	154,473	14 (9.1)	13 (8.4)	0.81
Timiskaming Health Unit	33,235	2 (6.0)	1 (3.0)	1.00
Toronto Public Health	3,063,359	114 (3.7)	153 (5.0)	<b>0.02</b>
Wellington-Dufferin-Guelph Public Health	303,466	3 (1.0)	12 (4.0)	<b>0.04</b>
Windsor-Essex County Health Unit	418,581	16 (3.8)	23 (5.5)	0.26
York Region Public Health	1,223,007	18 (1.5)	20 (1.6)	0.75

### NOTE

\* Includes confirmed and suspected opioid-related deaths, the distribution of which may vary by geographic region.

