Circumstances Surrounding Opioid Toxicity Deaths Across Occupational Sectors in Ontario, 2018 to 2024

A report prepared by:

The Ontario Drug Policy Research Network

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Ontario Opioid Drug Observatory

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Acknowledgments

The Ontario Drug Policy Research Network (ODPRN) wishes to acknowledge all families, friends, colleagues and loved ones of people 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. This report cannot adequately reflect the burden borne by loved ones across the province. Further, we acknowledge the contributions of workers across Ontario's diverse occupational sectors, whose skills, dedication, and expertise help build, maintain, and strengthen our communities, economy, and quality of life.

We acknowledge that the land on which we conduct this research is the traditional territory of a diverse group of First Nations Peoples across Ontario. The ODPRN conducts its work in Toronto, which is within the traditional territory of the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples, and most recently the Mississaugas of the Credit. This acknowledgement is a reminder of the responsibilities the ODPRN shares in advancing the well-being and rights of First Nations Peoples across Ontario and is particularly meaningful within the context of this report as the drug toxicity crisis in Canada has disproportionately impacted Indigenous Peoples across the country as a result of the current and continuing impacts of colonization, including the deep harms of the residential school system and the resulting intergenerational trauma.

Finally, we wish to acknowledge the work of the entire death investigation service including investigating coroners, toxicologists at the Centre of Forensic Sciences, pathologists at the Ontario Forensic Pathology Service, 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.

Background

Ontario continues to face a substantial burden of harms related to substance use, driven by a highly toxic and unpredictable unregulated drug supply. Between January and September 2025, fentanyl contributed to over two-thirds of opioid toxicity deaths, with 70% also involving stimulants, and 61% involving other psychoactive substances, reflecting the significant contribution of multiple substances in opioid-related mortality.[1] These patterns have emerged alongside rising opioid toxicity death rates, which more than doubled between 2017 and 2021 (9.1 to 19.3 deaths per 100,000) following the onset of the COVID-19 pandemic.[2] Although modest declines in opioid toxicity death were observed by 2024 (14.0 per 100,000), rates remain elevated compared to pre-pandemic estimates.[2] Importantly, these harms vary significantly across the population, with emerging evidence highlighting important differences by occupational and employment conditions.[3-8] Studies from the United States and Canada show that workers in certain sectors – particularly those characterized by higher rates of work-related injury and more precarious or non-standard employment – often experience elevated risks of substance-related mortality.[3-5, 7-10] Specifically, work-related injury occurs more frequently in occupations such as construction, manual labour and the skilled trades, with these injuries sometimes associated with exposure to prescription opioids, higher healthcare utilization, and reliance on unregulated drug supplies to manage undertreated pain.[7, 8] In some cases, prolonged exposure to opioids for pain management may also increase the risk of opioid dependence and subsequent substance-related harms.[11-13]

Beyond this, other occupational factors can contribute to risk of opioid-related harm. While physically demanding work can increase the likelihood of pain and injury, workplace psychosocial stressors and job insecurity may worsen mental health and limit access to healthcare and treatment.[12, 14] Limited access to employer-provided health benefits may further constrain timely and appropriate access to care, particularly among workers in hourly, non-unionized, or otherwise precarious employment arrangements.[5, 7, 8] In Canada, the COVID-19 pandemic further intensified these risks by broadly disrupting access to treatment and harm reduction services and exacerbating economic and workplace instability across multiple sectors.[6] These impacts may have been especially pronounced among workers in precarious or frontline occupations, where job loss, income insecurity, and continued exposure to physically and psychologically demanding work may have contributed to increases in opioid-related morbidity and mortality.[15] Some groups, such as healthcare workers and first responders, may also face elevated risk of harms from substance use due to exposure to trauma, burnout, and mental health-related challenges – factors which were particularly prevalent early in the COVID-19 pandemic.[16]

In 2022, a report conducted by the Ontario Drug Policy Research Network (ODPRN) examined opioid toxicity deaths among individuals with a history of employment in the construction industry, a sector characterized by high rates of work-related injury, physically demanding labour, and employment instability.[17] This analysis found that construction workers represented nearly 1 in 13 opioid toxicity deaths in Ontario between July 2017 and December 2020,[17] identifying people working within construction as a group disproportionately affected by opioid-related harm and the importance of considering occupation as a key determinant of substance-related harm.[17] This research was used to help inform conversations and support the development of awareness initiatives, workplace supports, and harm reduction strategies aimed at reducing substance-related harms among construction workers. However, little is known about how these harms have evolved since the COVID-19 pandemic, or how they vary across a broader range of occupational groups. Through ongoing engagement with knowledge users, the ODPRN identified a need to expand this work to better understand occupational differences in opioid-related harms to help identify other high-risk occupations, inform targeted workplace and public health interventions, and support evidence-based policy responses aimed at reducing substance-related harms and improving access to care in the employed population. Therefore, we sought to assess the circumstances surrounding opioid toxicity deaths across occupational groups to identify sectors where individuals may be experiencing disproportionately high rates of harm.

Methods

Overview

We conducted a descriptive cross-sectional study of trends and circumstances surrounding opioid toxicity deaths across individuals in multiple employment sectors in Ontario, Canada between January 1, 2018 and December 31, 2024. We captured all people who died of an opioid-related toxicity during the study period, as determined by the investigating coroner. An opioid toxicity death was defined as an acute 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. We excluded individuals younger than 15 years of age as they are not legally eligible for employment in Ontario.[18] We also excluded those with missing age at death.

Decedents with known occupation information were classified based on information recorded during the coroner's investigation, which represents their employment (current or previous) prior to death. This may include occupational titles, industry of employment, or a combination of both. For the purposes of this report, these classifications are collectively referred to as "occupational sectors." As such, the categories presented should be interpreted as broad employment-related groupings, rather than well-defined occupational or industry classifications. Further, multiple occupational sectors may be reported by the investigating coroner, which may represent a sector the decedent was actively working in at the time of death, or had previously worked in while being unemployed, on medical leave, or retired at the time of death. Definitions of each occupational sector category are provided below in Table 1.

Table 1: Occupation category definitions

Occupation Category	Included Occupations
Construction & Trades	Construction, trades
Manufacturing	Manufacturing and utility
Transportation, Warehousing, & Equipment Operators	Transportation and warehousing; transport and equipment operators
Natural Resources & Agriculture	Agriculture, forestry, fishing and hunting; agriculture and related production; mining, quarrying, and oil and gas extraction; natural resources
Civic & Government Services	Public administration (i.e., police and military); community and government services; firefighter
Administrative, Financial, & Support Services	Administrative and support; waste management and remediation services; finance and insurance; business, finance, and administration
Information Technology, Science, & Legal	Professional, scientific and technical services; information technology; natural and applied sciences; legal
Arts & Recreation	Art, entertainment and recreation; art and culture; recreation and sport; information and cultural industries
Retail	Retail trade; wholesale trade; sales and services
Hospitality	Accommodation and food services; hospitality
Healthcare	Paramedic (EMS); health care and social assistance
Other	Includes caring for family, student status, educational services, and management occupations

Data Sources

We obtained the data used in this report from ICES (formerly known as the Institute for Clinical Evaluative Sciences), including the Registered Persons Database (RPDB) and the Drug and Drug/Alcohol-Related Death Database (DDARD). We identified people who died due to an opioid toxicity and the associated circumstances surrounding death using the DDARD, which contains records from investigations of probable and confirmed drug toxicity deaths completed by the death investigation service at the Office of the Chief Coroner/Ontario Forensic Pathology Service. The DDARD captures detailed information on cause and manner of death, substances directly contributing to death, toxicology findings, occupation/industry at the time of death, living arrangements, and other circumstances surrounding death. Demographic characteristics including age were defined using RPDB (supplemented with the DDARD in cases of missing data), with gender defined using the DDARD. These datasets were linked using unique encoded identifiers and analyzed at ICES. The use of data in this project was authorized under section 45 of Ontario's Personal Health Information Protection Act, which does not require review by a Research Ethics Board.

Measures

We reported the rate of opioid toxicity deaths during each year of the study period and compared the total number of opioid toxicity deaths in 2018 and 2024 to examine changes over the study period. We described the manner of death, classified as accidental, intentional, or undetermined, with >98% of intentional deaths determined to be deaths by suicide. Therefore, we refer to these as deaths by suicide throughout this report. Sociodemographic characteristics included age at death (median, IQR [interquartile range] and categorized as: 15–24, 25–44, 45–64, and 65+ years), gender (categorized as: women, men, transgender, and other/unknown gender [including agender or missing]), and employment status at the time of death (categorized as: employed, retired, unemployed, or unknown).

Circumstances surrounding death included living arrangement at the time of death, categorized as private dwelling, collective dwelling/hospital, homeless, and other (unknown or pending). We also assessed whether another individual was present at the time of death who could intervene, and the location where the incident took place (private residence, hotel/motel, outdoors or in a vehicle, public building, shelter or supportive housing, or unknown/other) (see **Appendix B** for relevant definitions).

Finally, we reported the type of opioids contributing to death, categorized as pharmaceutical opioids only (opioids approved for medical use in Canada), non-pharmaceutical opioids only, or both. We further examined the specific type of pharmaceutical opioids involved, including those indicated for pain and for opioid use disorder. We also reported other non-opioid substances which directly contributed to death, including benzodiazepines, methamphetamine, cocaine, and alcohol. Finally, we reported the number of deaths where benzodiazepines were detected, regardless of whether they were identified as a direct contributor to death (as thresholds for direct contribution of benzodiazepines to death have not been well established over time).

All measures were stratified by occupational sector.

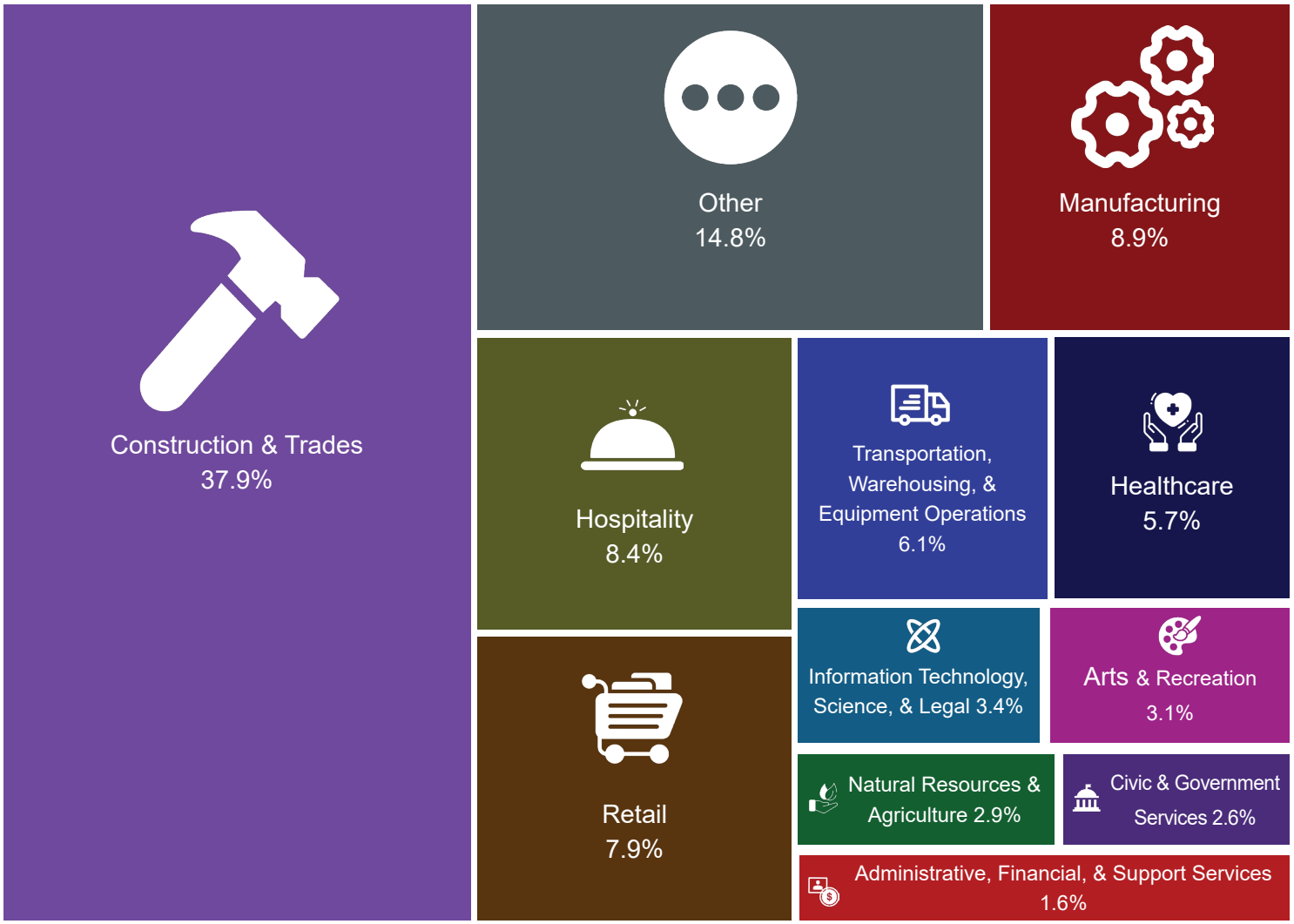
Analysis

Annual rates of opioid toxicity death were calculated per 100,000 workers in each sector using annual industry denominators representing the number of individuals employed in each industry obtained from Statistics Canada,[19] as the occupational sector categories mapped most closely to industry classifications and therefore industry rather than occupation denominators were used. We used descriptive statistics to summarize all measures, with missing, unknown, and pending values reported as a separate category. Small cell sizes less than or equal to 5 were identified and handled in accordance with reporting and privacy requirements.

Key Findings

Between 2018 and 2024, we identified 15,952 opioid toxicity deaths across Ontario. Among these, 8,686 decedents (54.5%) had unknown or missing occupation/industry and employment status information, and 3,732 (23.4%) were unemployed with unknown or missing occupation/industry information. We excluded these deaths from our current analysis, which resulted in 3,534 opioid toxicity deaths (22.2% of total) with at least one known occupational sector listed by the Office of the Chief Coroner. Among these, 113 had more than one occupational sector listed, and therefore the groups reported in our analysis are not mutually exclusive. Among deaths where occupation/industry was recorded by the coroner over the study period, approximately one-third of deaths occurred among people who worked in **Construction & Trades** (N=1,338; 37.9%), and close to 10% occurred among people who worked in **Manufacturing** (N=313, 8.9%), **Hospitality** (N=298, 8.4%), and **Retail** (N=279, 7.9%) (see **Figure 1** for details). Deaths in other occupational sectors were less common, although these data should be interpreted within the context of large differences in the number of people working in different sectors across the province. **Figures 2a-2c** provide further context related to trends over time, and rates of deaths that consider occupational sector sizes.

Figure 1: Proportion of opioid toxicity deaths occurring across occupational sectors, 2018 - 2024

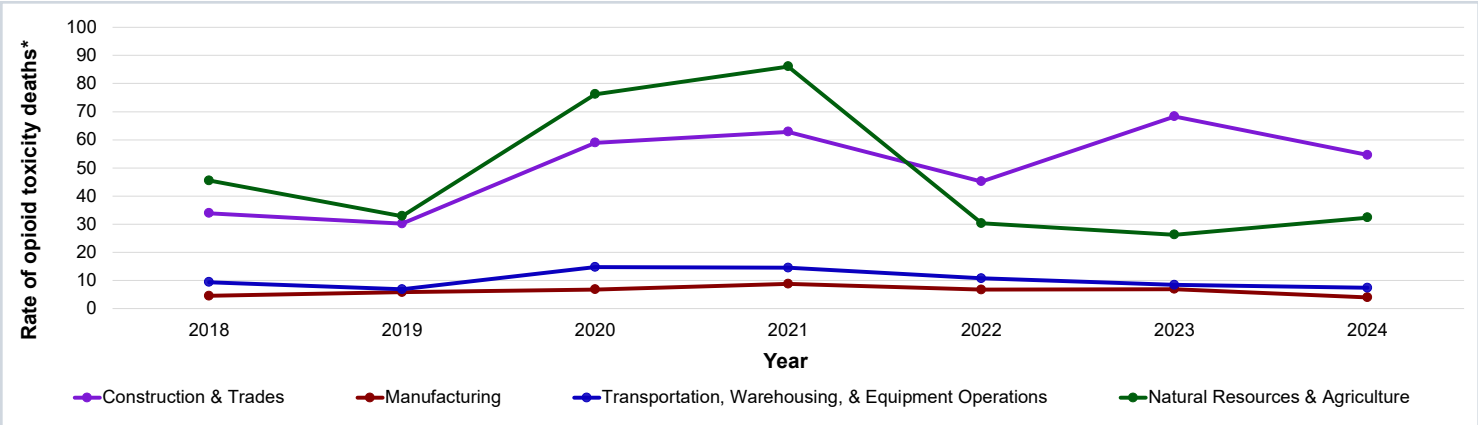


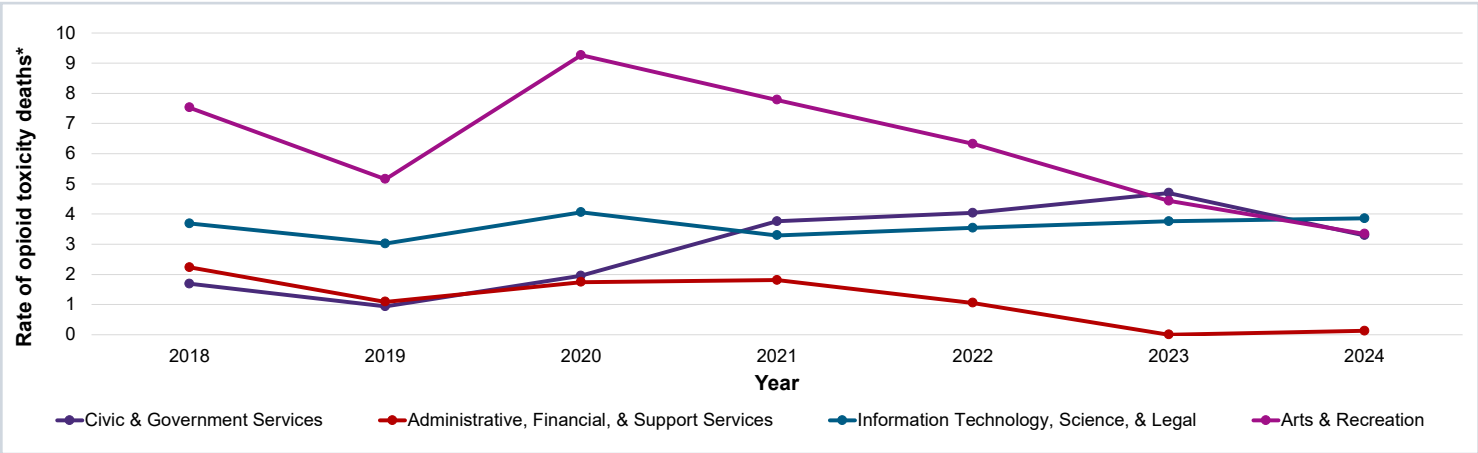
NOTE

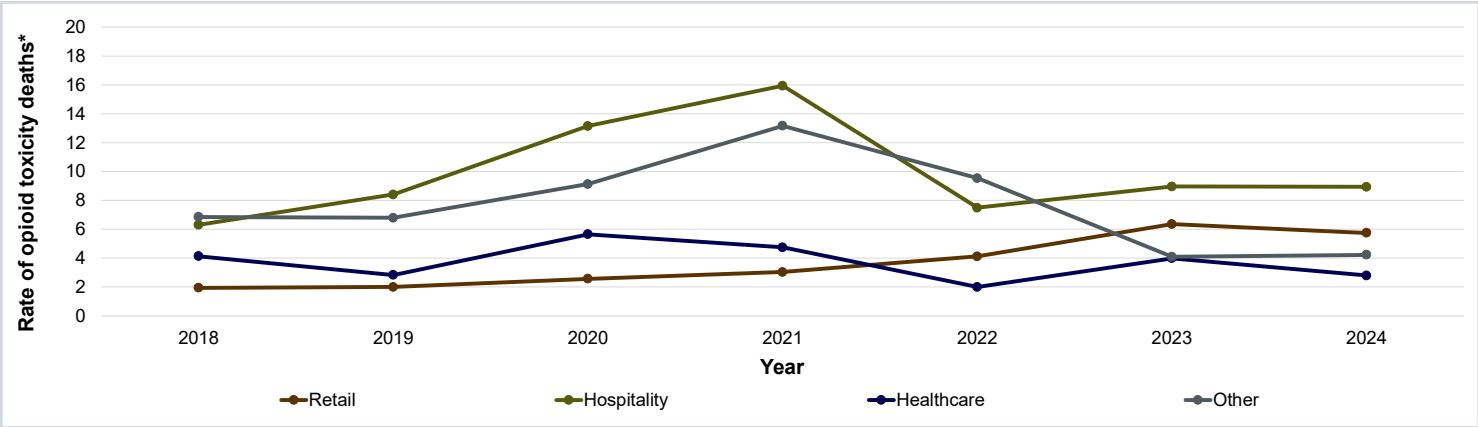
Denominator is opioid toxicity deaths where occupational information was recorded (3,534).

Trends in Deaths Across Sectors

Figure 2a-2c: Rates of opioid toxicity deaths by occupational sector from 2018 to 2024







NOTE

* Rates are per 100,000 people working in each occupation sector.

† See **Table A1** for corresponding data table.

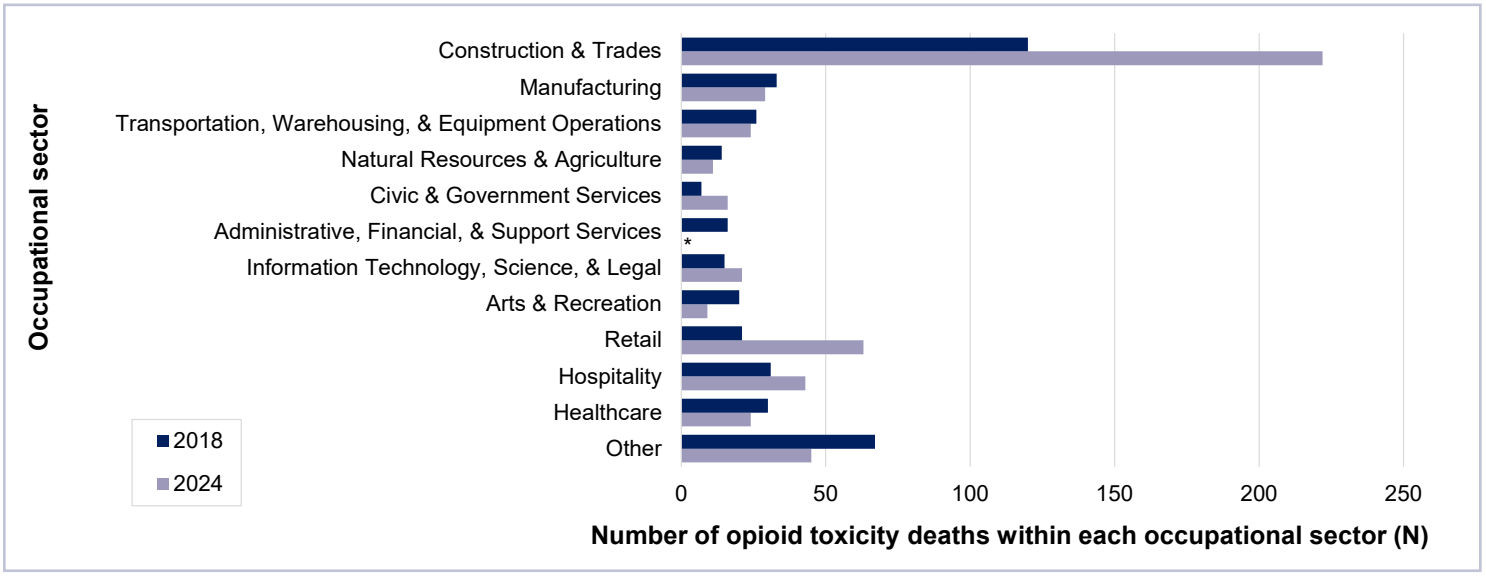
Figures 2a–2c, use different y-axis scales to better show changes over time. As a result, visual differences between sectors may appear larger or smaller than they actually are. Please consider the axis scales when making comparisons.

Over the study period, the rate of opioid toxicity death across occupational sectors varied considerably. Specifically, we found that the rate of opioid toxicity deaths increased substantially between 2019 and 2021 among those who worked in **Construction & Trades** (+108.3%, 30.2 to 62.9 deaths per 100,000) and **Natural Resources & Agriculture** (+161.4%, 32.9 to 86.0 deaths per 100,000). Following this, the rate of opioid toxicity deaths among people who worked in **Construction & Trades** fluctuated, with a peak in 2023 of 68.3 deaths per 100,000, followed by 54.6 deaths per 100,000 observed in 2024. In contrast, after an initial increase early in the COVID-19 pandemic,

the rate of opioid toxicity deaths among people who worked in **Natural Resources & Agriculture** followed a downward trend between 2022 and 2024, with 32.3 deaths per 100,000 observed at the end of the study period. Among those who worked in **Hospitality**, we observed a similar trend, with increasing opioid toxicity deaths between 2018 and 2021 (+152.4%, 6.3 to 15.9 deaths per 100,000), followed by a decline over the remainder of the study period. In contrast, we observed a consistent increase throughout 2018 to 2023 in rates of opioid toxicity deaths among those who worked in **Retail** (+236.8%, 1.9 to 6.4 deaths per 100,000) and **Civic & Government Services** (+176.5%, 1.7 to 4.7 deaths per 100,000), with modest declines observed in 2024 among both occupational sectors.

Several occupational sectors experienced a peak rate of opioid toxicity deaths in 2020, including **Transportation, Warehousing, & Equipment Operations** (14.8 deaths per 100,000), **Arts & Recreation** (9.3 deaths per 100,000), **Healthcare** (5.7 deaths per 100,000), and **Information Technology, Science, & Legal** (4.1 deaths per 100,000), prior to declining over the remainder of the study period. **Manufacturing** followed a similar pattern, with consistently high rates throughout the study period, peaking in 2021 (8.8 deaths per 100,000). Finally, opioid toxicity deaths among those who worked in **Administrative, Financial, & Support Services** gradually declined over the study period (-95.5%, 2.2 to 0.1 deaths per 100,000). By 2024, the highest rate of opioid toxicity death was observed among people who worked in **Construction & Trades** (54.6 deaths per 100,000, N=222), **Natural Resources & Agriculture** (32.3 deaths per 100,000, N=11), **Hospitality** (8.9 deaths per 100,000, N=43), and **Transportation, Warehousing, & Equipment Operations** (7.4 deaths per 100,000, N=24). In contrast, in 2024, the lowest rates were observed among people who worked in **Healthcare** (2.8 deaths per 100,000, N=24) and **Administrative, Financial, & Support Services** (0.1 deaths per 100,000, N ≤5).

Figure 3: Number of opioid toxicity deaths by occupational sector, 2018 vs. 2024



NOTE

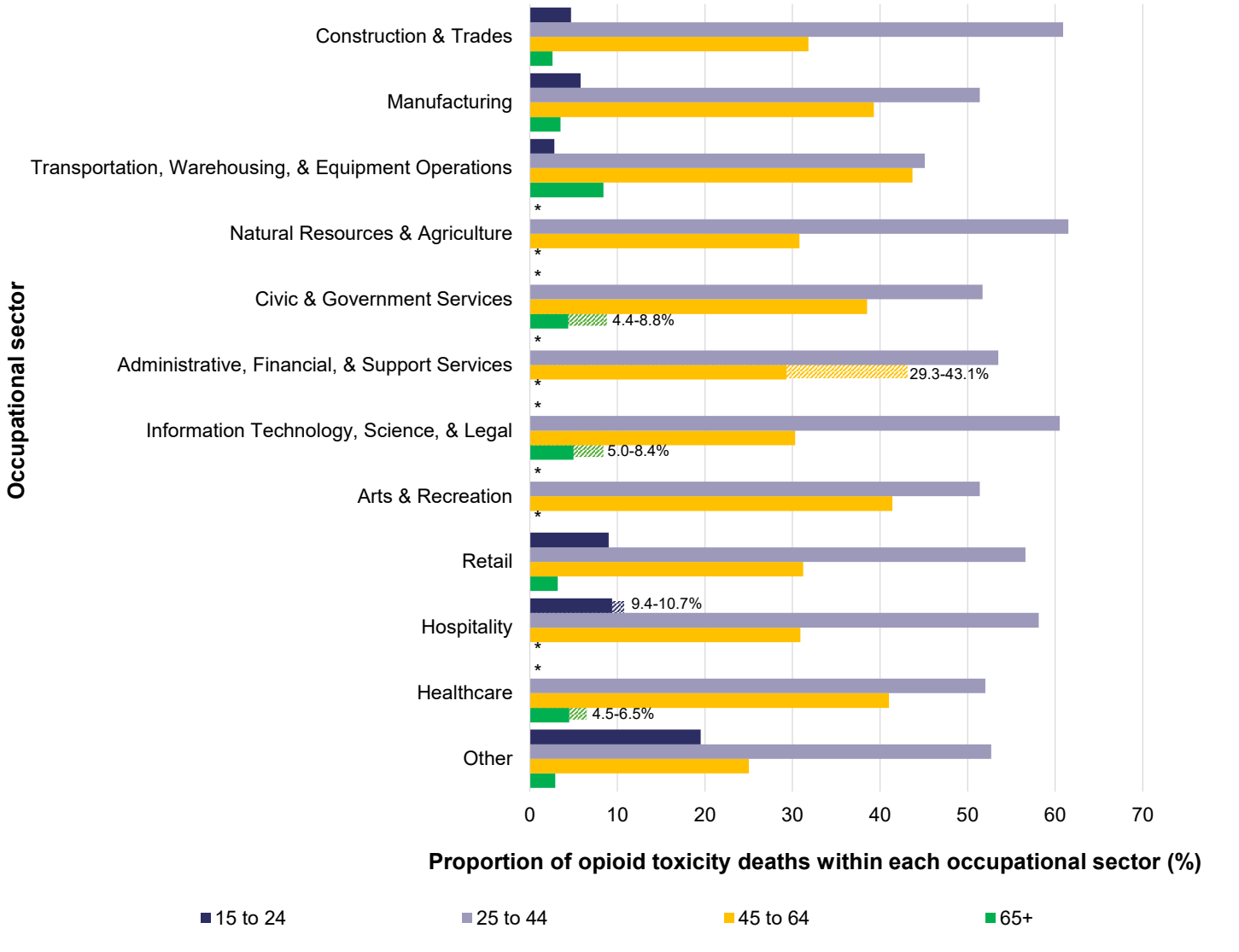
† See **Table A2** for corresponding data table.

Figure 3 includes the total count of opioid toxicity deaths, which do not account for potential changes in the number of people working in each occupational sector over time.

When comparing the first and final years of the study period (2018 vs. 2024), we found that the absolute number of opioid toxicity deaths increased across several occupational sectors. We observed the largest relative increase in opioid toxicity deaths among people who worked in **Retail** (+200.0%; N=21 to 63 deaths), **Civic & Government Services** (+128.6%; N=7 to 16 deaths), and **Construction & Trades** (+85.0%; N=120 to 222 deaths). By 2024, the occupational sectors with the highest absolute number of opioid toxicity deaths included **Construction & Trades** (N=222), **Retail** (N=63), and **Hospitality** (N=43).

Demographic Characteristics

Figure 4: Age of individuals who died of an opioid toxicity by occupational sector, 2018 - 2024



NOTE

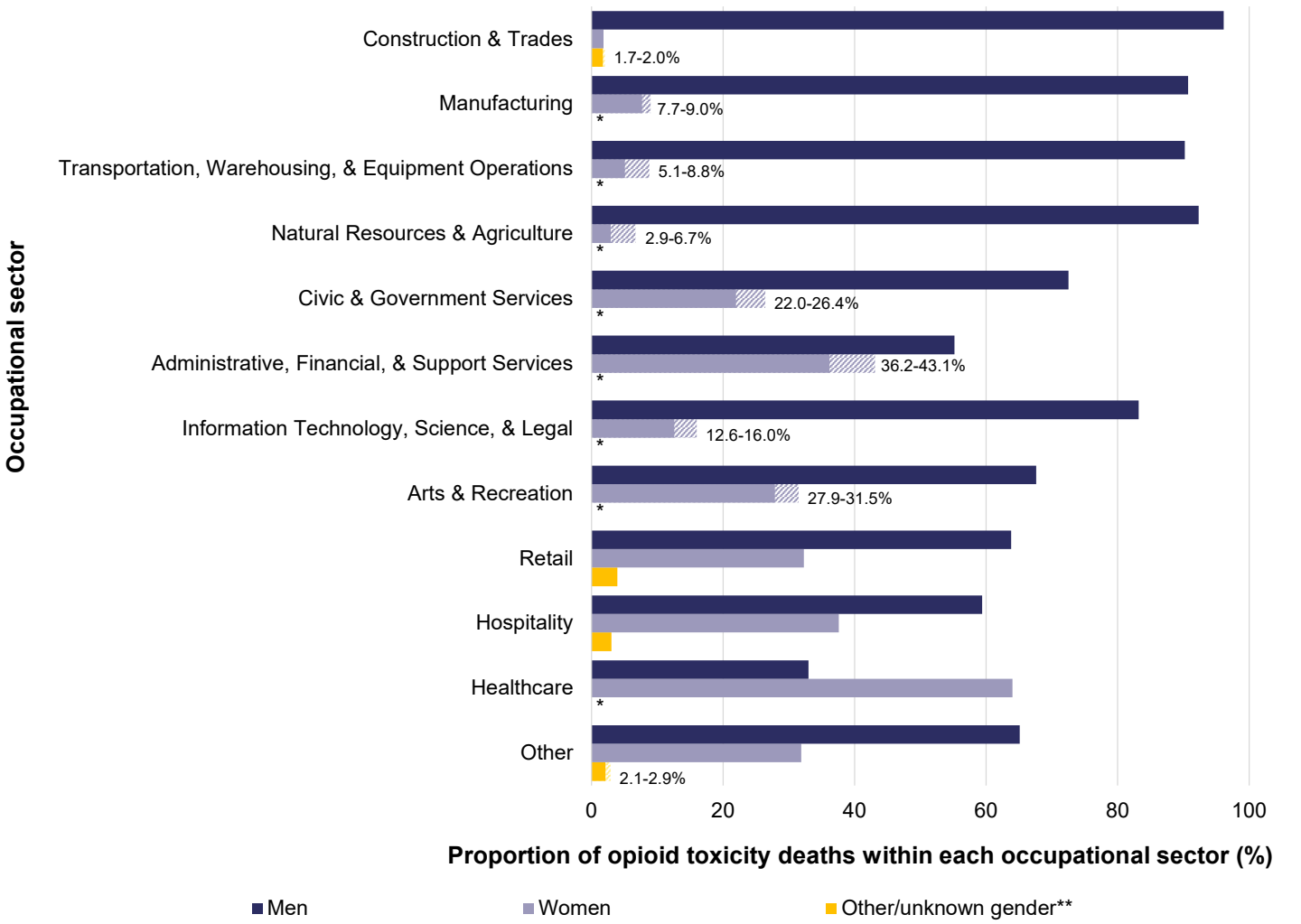
* Not reported as per ICES privacy requirements.

† See **Table A3** for corresponding data table.

Data reported as ranges represent categories where residual suppression was applied as per ICES privacy requirements; the solid portion of each bar represents the lower-bound estimate, while the patterned portion extends to the upper-bound estimate.

Across occupational sectors, the median age of decedents ranged from 36 years (interquartile range [IQR]=29 to 46) among those who worked in **Hospitality** to 46 years (IQR=37 to 57 years) among those who worked in **Transportation, Warehousing, & Equipment Operations**. People aged 25 to 44 years represented approximately half of all deaths across occupational sectors, followed by people aged 45 to 64 years who represented approximately one-third of opioid toxicity deaths. Opioid toxicity deaths among people aged 65+ years were relatively uncommon, with the exception of those who had worked in **Transportation, Warehousing, & Equipment Operations**, where approximately 1 in 12 deaths occurred among those in this age group (8.4%, N=18). Lastly, less than 5% of opioid toxicity deaths occurred among people aged 15 to 24 years across occupational sectors, with the exception of those who worked in **Retail** (9.0%, N=25), **Hospitality** (9.4-10.7%, N=28-32), and occupations/industries grouped as '**Other**' (19.5%, N=102). This latter finding may reflect that students were captured within this category.

Figure 5: Gender of individuals who died of an opioid toxicity by occupational sector, 2018 - 2024



NOTE

* Not reported as per ICES privacy requirements.

** Other/unknown gender: agender, unknown, missing.

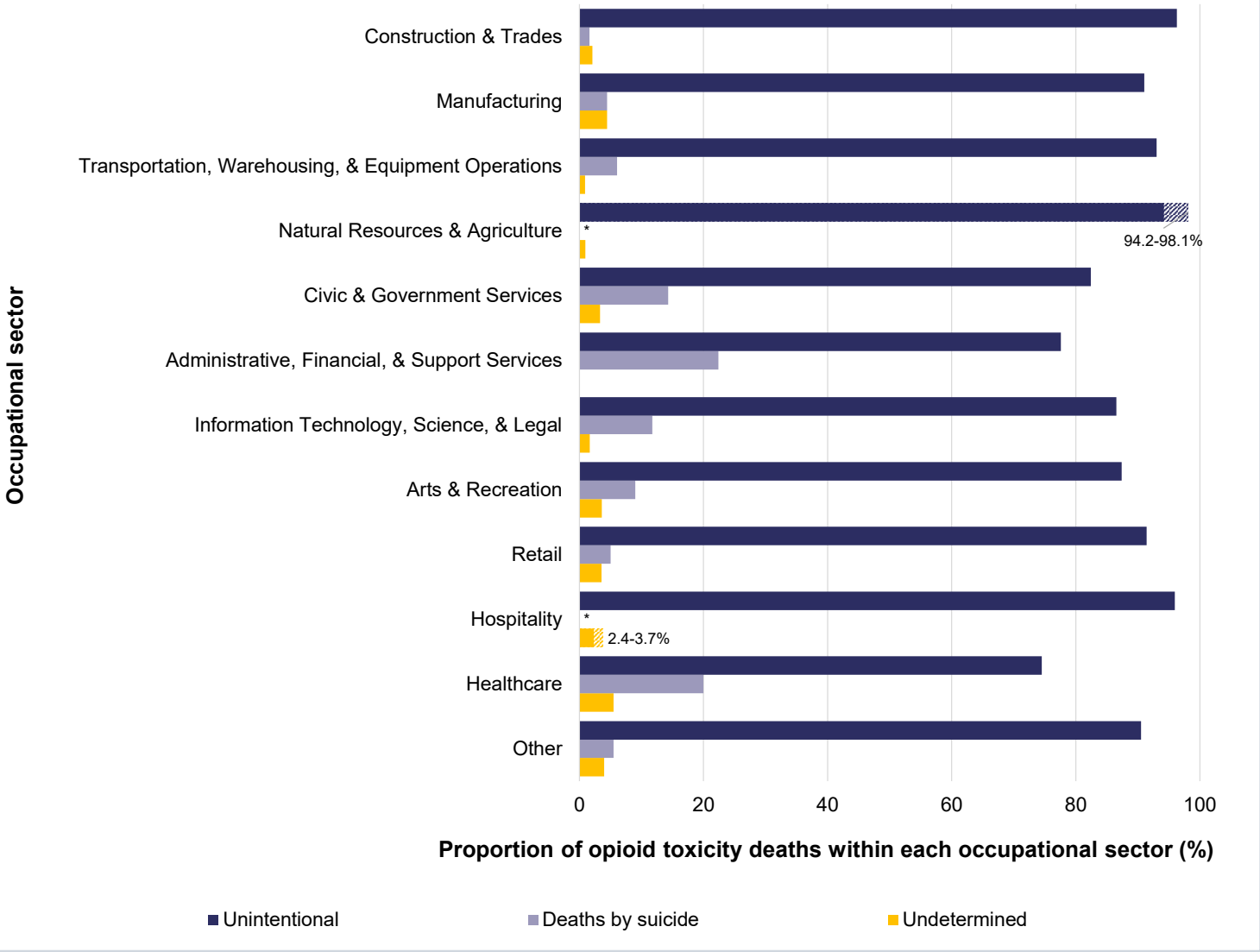
† See **Table A4** for corresponding data table.

Data reported as ranges represent categories where residual suppression was applied as per ICES privacy requirements; opioid toxicity deaths among transgender people are not shown in the figure above, due to small counts (≤5) across all occupational sectors; the solid portion of each bar represents the lower-bound estimate, while the patterned portion extends to the upper-bound estimate.

Men accounted for most opioid toxicity deaths in all sectors studied, except for **Healthcare**, where almost two-thirds of opioid toxicity deaths were among women (64.0%, N=128). The concentration of deaths among men was particularly high (over 90%) among those who worked in **Construction & Trades** (96.1%, N=1,286), **Natural Resources & Agriculture** (92.3%, N=96), **Manufacturing** (90.7%, N=284), and **Transportation, Warehousing, & Equipment Operations** (90.2%, N=194). Occupational sectors where opioid toxicity deaths were more common among men, but where approximately one-third of deaths occurred among women included **Hospitality** (37.6%, N=112), **Administrative, Financial, & Support Services** (36.2-43.1%, N=21-25), **Retail** (32.3%, N=90), and occupations/industries grouped as '**Other**' (31.9%, N=167). Deaths among transgender people were rare, with ≤5 deaths observed among people who worked in **Construction & Trades**, **Transportation, Warehousing, & Equipment Operations**, **Healthcare** and occupations/industries grouped as '**Other**', and no deaths among transgender people reported in the remaining occupational sectors.

Circumstances Surrounding Death

Figure 6: Manner of death among individuals who died of an opioid toxicity by occupational sector, 2018 - 2024



NOTE

* Not reported as per ICES privacy requirements.

† See **Table A5** for corresponding data table.

Data reported as ranges represent categories where residual suppression was applied as per ICES privacy requirements; the solid portion of each bar represents the lower-bound estimate, while the patterned portion extends to the upper-bound estimate.

Across all occupational sectors, the majority of deaths were determined to be unintentional. Unintentional deaths represented over 90% of deaths across most occupational sectors; however, we observed three sectors with higher proportions of deaths by suicide: **Administrative, Financial, & Support Services** (22.4%, N=13), **Healthcare** (20.0%, N=40), and **Civic & Government Services** (14.3%, N=13). When looking at the proportion of unintentional deaths by gender (data not shown), we found that almost 85% of deaths among men were unintentional across occupational sectors, with the exception of men who worked in **Healthcare** where we observed a lower proportion of unintentional deaths (75.8%, N=50). Among women, the proportion of unintentional deaths ranged across occupational sectors, with the lowest proportion observed among women who worked in **Administrative, Financial, & Support Services** (60.0%, N= 15) and the highest proportion among women in **Construction & Trades** (95.8%, N=23).

Table 2: Employment status among individuals who died of an opioid toxicity by occupational sector, 2018 - 2024

Occupational Sector	Employed	Unemployed	Retired	Unknown
Construction & Trades	629 (47.0%)	532 (39.8%)	31 (2.3%)	146 (10.9%)
Manufacturing	151 (48.2%)	113 (36.1%)	19 (6.1%)	30 (9.6%)
Transportation, Warehousing, & Equipment Operations	93 (43.3%)	84 (39.1%)	9 (4.2%)	29 (13.5%)
Natural Resources & Agriculture	52 (50.0%)	37 (35.6%)	6 (5.8%)	9 (8.7%)
Civic & Government Services	28 (30.8%)	33 (36.3%)	15 (16.5%)	15 (16.5%)
Administrative, Financial, & Support Services	30 (51.7%)	19 (32.8%)	≤5 (≤8.6%)	≤5 (≤8.6%)
Information Technology, Science, & Legal	59 (49.6%)	39 (32.8%)	8 (6.7%)	13 (10.9%)
Arts & Recreation	50 (45.1%)	45 (40.5%)	≤5 (≤4.5%)	11-15 (9.9-13.5%)
Retail	128 (45.9%)	109 (39.1%)	9 (3.2%)	33 (11.8%)
Hospitality	142 (47.7%)	131 (44.0%)	≤5 (≤1.7%)	20-24 (6.7-8.1%)
Healthcare	96 (48.0%)	70 (35.0%)	14 (7.0%)	20 (10.0%)
Other	222 (42.4%)	210 (40.1%)	14 (2.7%)	78 (14.9%)

Approximately half of all opioid toxicity deaths within each occupational sector occurred among people who were employed at the time of death, apart from **Civic & Government Services** (30.8%, N= 28). This was followed by people who were unemployed at the time of death, which accounted for more than one-third of deaths within each occupational sector, with an elevated proportion among people who worked in **Hospitality** (44.0%, N=131), **Arts & Recreation** (40.5%, N=45) and sectors categorized as '**Other**' (40.1%, N=210). Opioid toxicity deaths among people who were retired were relatively uncommon, with the exception of people who worked within **Civic & Government Services** (16.5%, N=15).

Table 3: Living arrangement among individuals who died of an opioid toxicity by occupational sector, 2018 - 2024

Occupational Sector	Private Dwelling	Collective Dwelling*	Homeless**	Unknown/ Pending
Construction & Trades	1,063 (79.5%)	102 (7.6%)	139 (10.4%)	34 (2.5%)
Manufacturing	254 (81.2%)	23 (7.4%)	31 (9.9%)	5 (1.6%)
Transportation, Warehousing, & Equipment Operations	179 (83.3%)	15 (7.0%)	16 (7.4%)	5 (2.3%)
Natural Resources & Agriculture	84 (80.8%)	8 (7.7%)	10 (9.6%)	2 (1.9%)
Civic & Government Services	82 (90.1%)	≤5 (≤5.5%)	≤5 (≤5.5%)	1 (1.1%)
Administrative, Financial, & Support Services	48-56 (82.8-96.6%)	≤5 (≤8.6%)	≤5 (≤8.6%)	0 (0.0%)
Information Technology, Science, & Legal	109 (91.6%)	≤5 (≤4.2%)	≤5 (≤4.2%)	1 (0.8%)
Arts & Recreation	96 (86.5%)	≤5 (≤4.5%)	6 (5.4%)	≤5 (≤4.5%)
Retail	238 (85.3%)	15 (5.4%)	20 (7.2%)	6 (2.2%)
Hospitality	241 (80.9%)	22 (7.4%)	27 (9.1%)	8 (2.7%)
Healthcare	181 (90.5%)	7 (3.5%)	8 (4.0%)	4 (2.0%)
Other	430 (82.1%)	42 (8.0%)	34 (6.5%)	18 (3.4%)

NOTE

* Collective dwelling/hospital: including lodging and rooming houses, hotels, military bases, sober living facility, hospital or long-term care home, mental health facility/mental health unit in hospital, correctional facility, residential care facility (including group homes), retirement home (including senior residences).

** Homeless: including unsheltered, emergency sheltered, provisionally accommodated, or at immediate risk of homelessness.

The majority of decedents resided in a private dwelling at the time of death; although there was a relatively high percentage of deaths occurring among people experiencing homelessness in many sectors. Specifically,

approximately 10% of opioid toxicity deaths occurred among people experiencing homelessness who worked in **Construction & Trades** (10.4%, N=139), **Manufacturing** (9.9%, N=31), **Natural Resources & Agriculture** (9.6%, N=10), and **Hospitality** (9.1%, N=27). Similarly, we observed the largest proportions of people residing in a collective dwelling at the time of death across the same four occupational sectors: **Construction & Trades** (7.6%, N=102), **Manufacturing** (7.4%, N=23), **Natural Resources & Agriculture** (7.7%, N=8), and **Hospitality** (7.4%, N=22).

Table 4: Incident location among individuals who died of an opioid toxicity by occupational sector, 2018 - 2024

Occupational Sector	Private Residence	Hotel/Motel	Outdoors/in Vehicle	Public Building	Shelter/Supportive Housing*	Unknown/ Other**
Construction & Trades	999 (74.7%)	78 (5.8%)	109 (8.2%)	34 (2.5%)	78 (5.8%)	40 (3.0%)
Manufacturing	246 (78.6%)	21 (6.7%)	20 (6.4%)	≤5 (≤1.6%)	15 (4.8%)	6-10 (1.9-3.2%)
Transportation, Warehousing, & Equipment Operations	159 (74.0%)	16 (7.4%)	24 (11.2%)	≤5 (≤2.3%)	9 (4.2%)	≤5 (≤2.3%)
Natural Resources & Agriculture	80 (76.9%)	8 (7.7%)	≤5 (≤4.8%)	≤5 (≤4.8%)	≤5 (≤4.8%)	≤5 (≤4.8%)
Civic & Government Services	75 (82.4%)	≤5 (≤5.5%)	8 (8.8%)	0 (0.0%)	≤5 (≤5.5%)	≤5 (≤5.5%)
Administrative, Financial, & Support Services	46 (79.3%)	≤5 (≤8.6%)	≤5 (≤8.6%)	0 (0.0%)	≤5 (≤8.6%)	≤5 (≤8.6%)
Information Technology, Science, & Legal	100 (84.0%)	7 (5.9%)	6 (5.0%)	≤5 (≤4.2%)	≤5 (≤4.2%)	≤5 (≤4.2%)
Arts & Recreation	94 (84.7%)	≤5 (≤4.5%)	6 (5.4%)	≤5 (≤4.5%)	≤5 (≤4.5%)	≤5 (≤4.5%)
Retail	220 (78.9%)	9 (3.2%)	22 (7.9%)	≤5 (≤1.8%)	16 (5.7%)	7-11 (2.5-3.9%)
Hospitality	231 (77.5%)	13 (4.4%)	17 (5.7%)	9-13 (3.0-4.4%)	23 (7.7%)	≤5 (≤1.7%)
Healthcare	163 (81.5%)	10 (5.0%)	9 (4.5%)	≤5 (≤2.5%)	10 (5.0%)	3-7 (1.5-3.5%)
Other	408 (77.9%)	28 (5.3%)	34 (6.5%)	10 (1.9%)	32 (6.1%)	12 (2.3%)

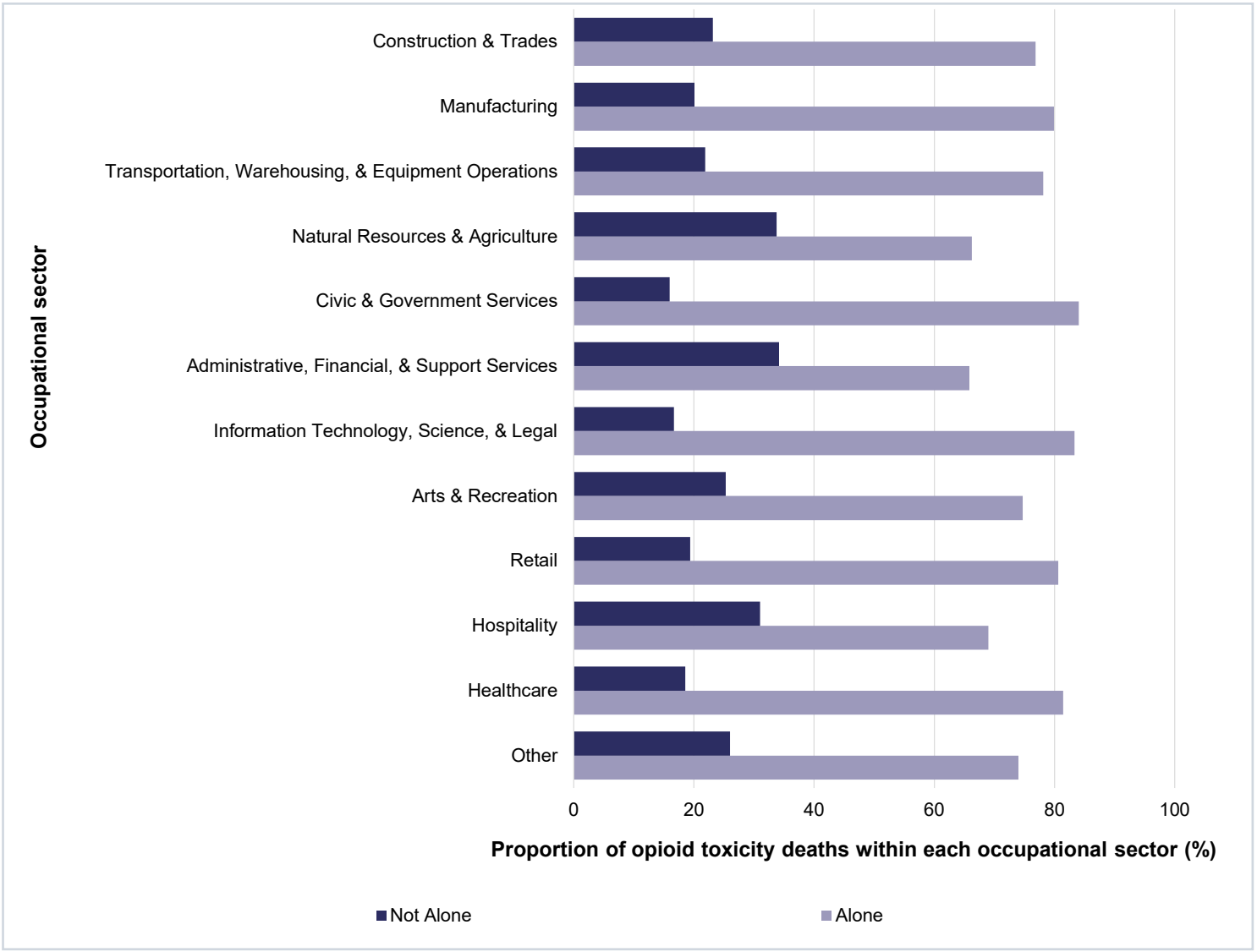
NOTE

* Shelter/supportive housing: including shelter, and congregate living.

** Unknown/other: including unknown, correctional facility/in custody, hospital/clinic, industrial (construction site, factory, plant, warehouse, mine), pending, other.

Approximately, three-quarters of opioid toxicity deaths occurred in private residences across individuals in the majority of occupational sectors. This ranged from 74.0% among people in **Transportation, Warehousing, & Equipment Operations** to 84.7% among people who worked in **Arts & Recreation**. People who worked in **Construction & Trades**, **Manufacturing**, and **Transportation, Warehousing, & Equipment Operations** more often experienced their opioid toxicity in a hotel/motel, shelter/supportive housing, or outdoors/in a vehicle. Opioid toxicity deaths occurring in a public building or other settings were rare.

Figure 7: Individual present at time of opioid toxicity death by occupational sector,* 2018 - 2024



NOTE

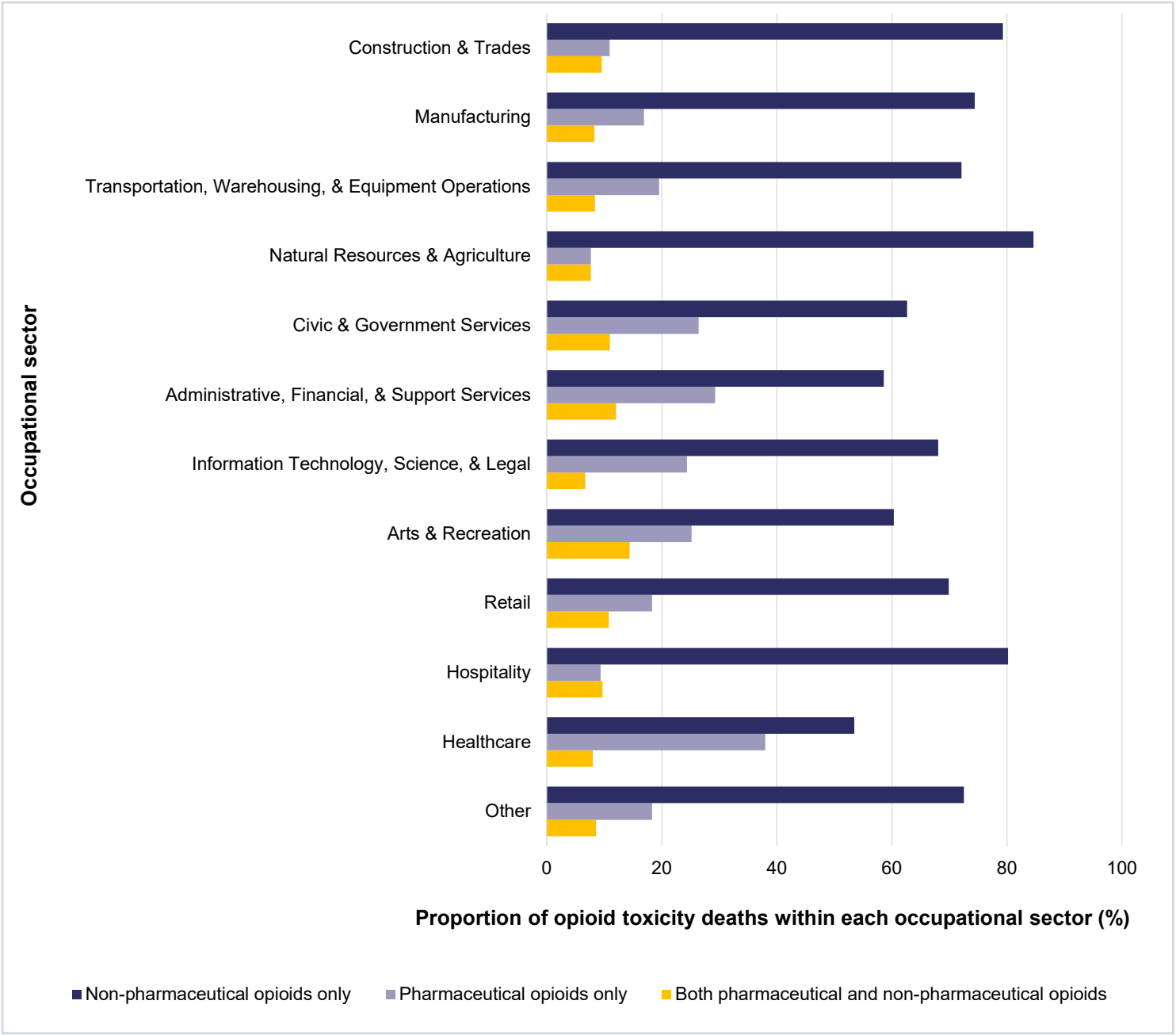
* Only includes deaths where it is known whether an individual was present or not. Unknown or pending cases were excluded (26.9% of deaths, N= 949).

† See **Table A6** for corresponding data table.

Among opioid toxicity deaths where it could be determined by the coroner that someone was present (73.1%, N= 2,585) approximately two-thirds of deaths occurred when the decedent was alone. We observed the highest proportion of deaths that occurred without another individual present among people who worked in **Civic & Government Services** (84.1%) and **Information Technology, Science, & Legal** (83.3%). In contrast, opioid toxicity deaths that occurred when another individual was present were most frequent among people who worked in **Administrative, Financial, & Support Services** (34.1%) and **Natural Resources & Agriculture** (33.8%).

Substances Contributing to Death

Figure 8: Origin of opioids directly contributing to opioid toxicity deaths by occupational sector, 2018 - 2024

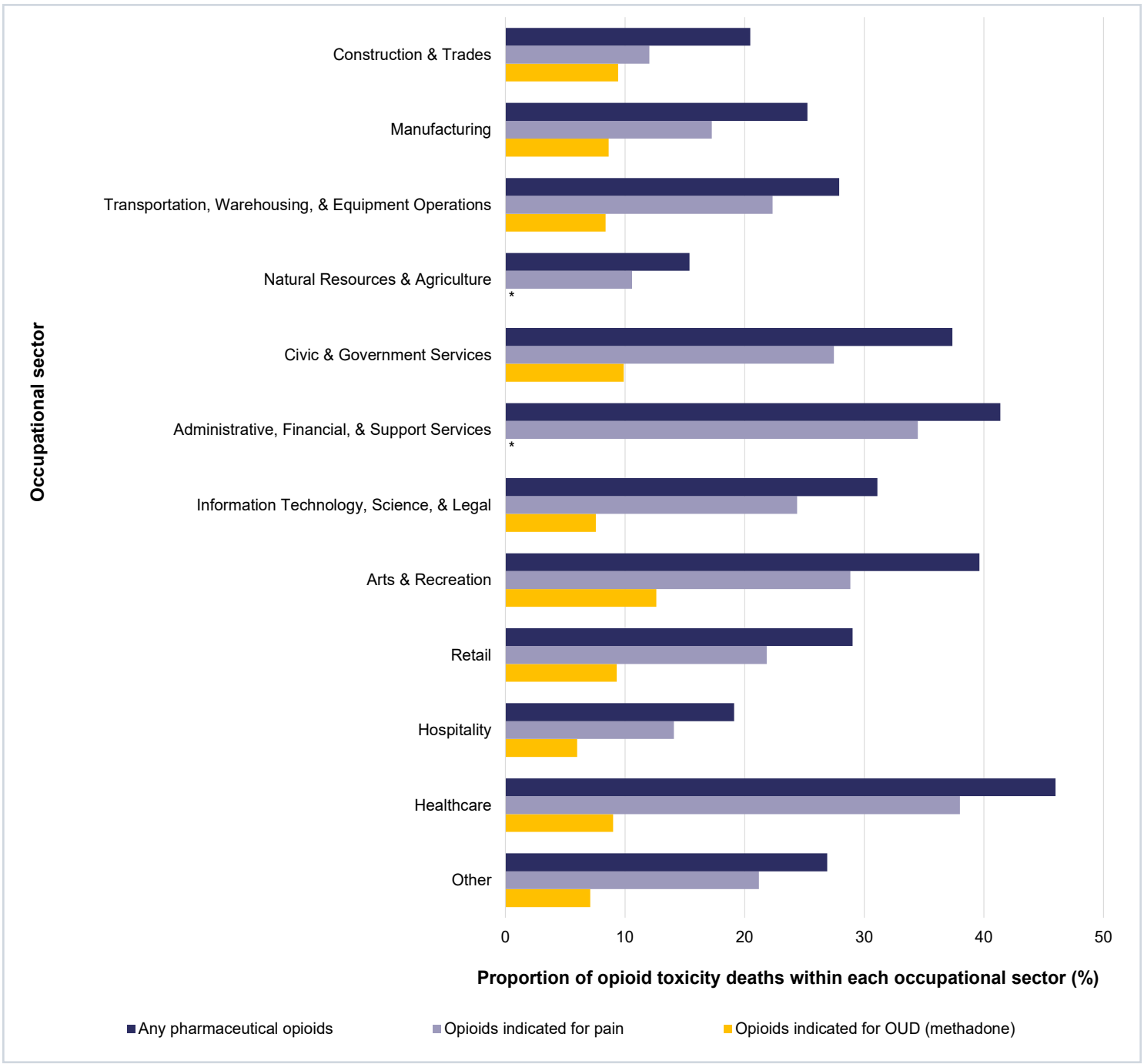


NOTE

† See Table A7 for corresponding data table.

While the majority of opioid toxicity deaths had only non-pharmaceutical opioids (primarily fentanyl from the unregulated drug supply) directly contributing to death, this varied across occupational sectors. Deaths attributed to only non-pharmaceutical opioids occurred most frequently among people who worked in **Natural Resources & Agriculture** (84.6%), **Hospitality** (80.2%), and **Construction & Trades** (79.3%). In contrast, deaths attributed to only pharmaceutical opioids occurred most frequently among people who worked in **Healthcare** (38.0%), **Administrative, Financial, & Support Services** (29.3%), and **Civic & Government Services** (26.4%). Finally, across occupational sectors, approximately 10% of deaths were attributed to both pharmaceutical and non-pharmaceutical opioids.

Figure 9: Type of pharmaceutical opioid directly contributing to opioid toxicity deaths* by occupational sector, 2018 - 2024



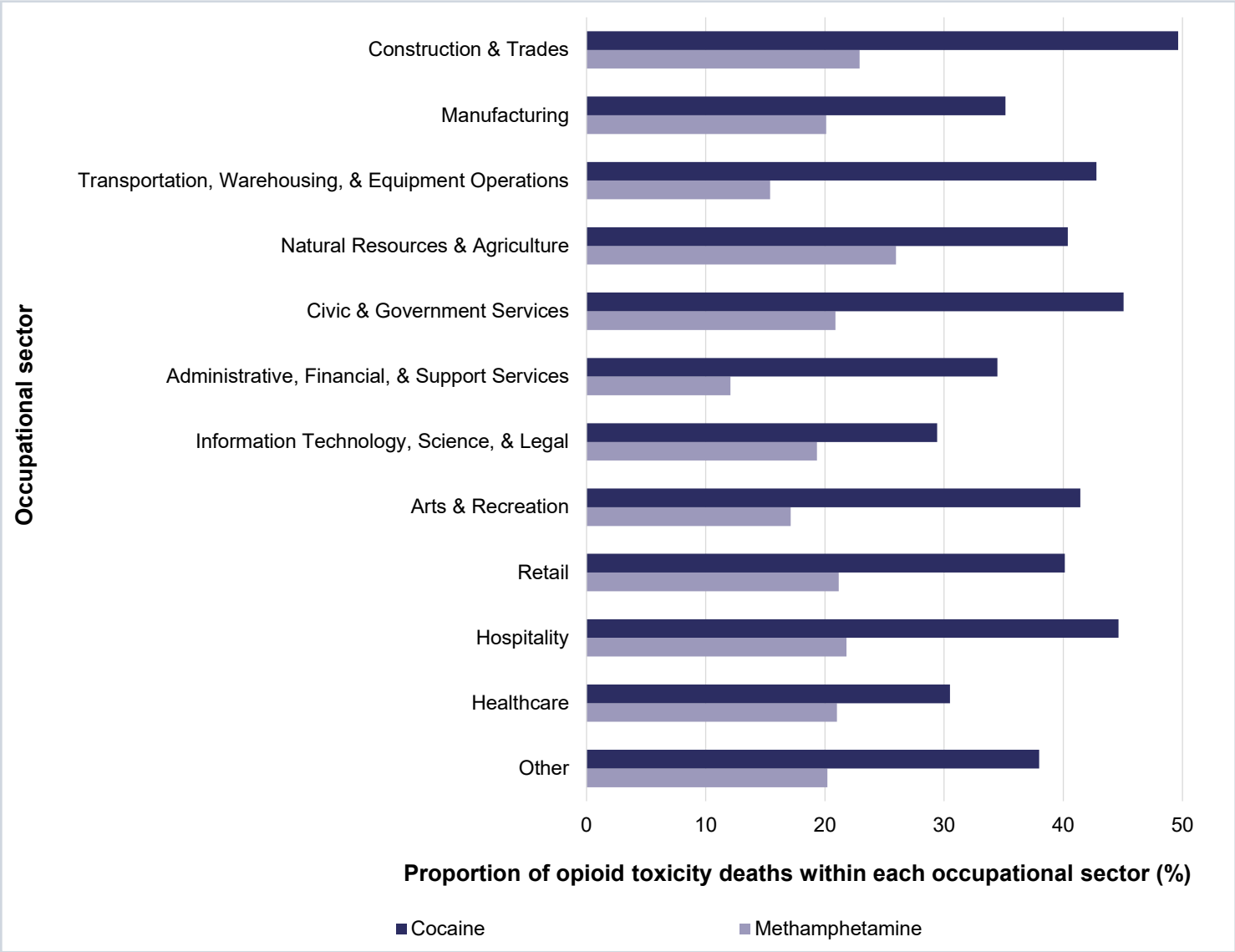
NOTE

* Denominator includes all opioid toxicity deaths, regardless of whether a pharmaceutical opioid directly contributed to death.

† See **Table A8** for corresponding data table.

Opioids indicated for pain were more commonly detected as direct contributions to opioid toxicity deaths, with their presence ranging from 10.6% among people in **Natural Resources & Agriculture** to 38.0% among people who worked in **Healthcare**. Opioids indicated for the treatment of opioid use disorder were identified in approximately 10% of opioid toxicity deaths, ranging only slightly by sector (6.0% among those in **Hospitality** to 12.6% among people who worked in **Arts & Recreation**).

Figure 10: Opioid toxicity deaths where cocaine and/or methamphetamine contributed to death by occupational sector, 2018 - 2024

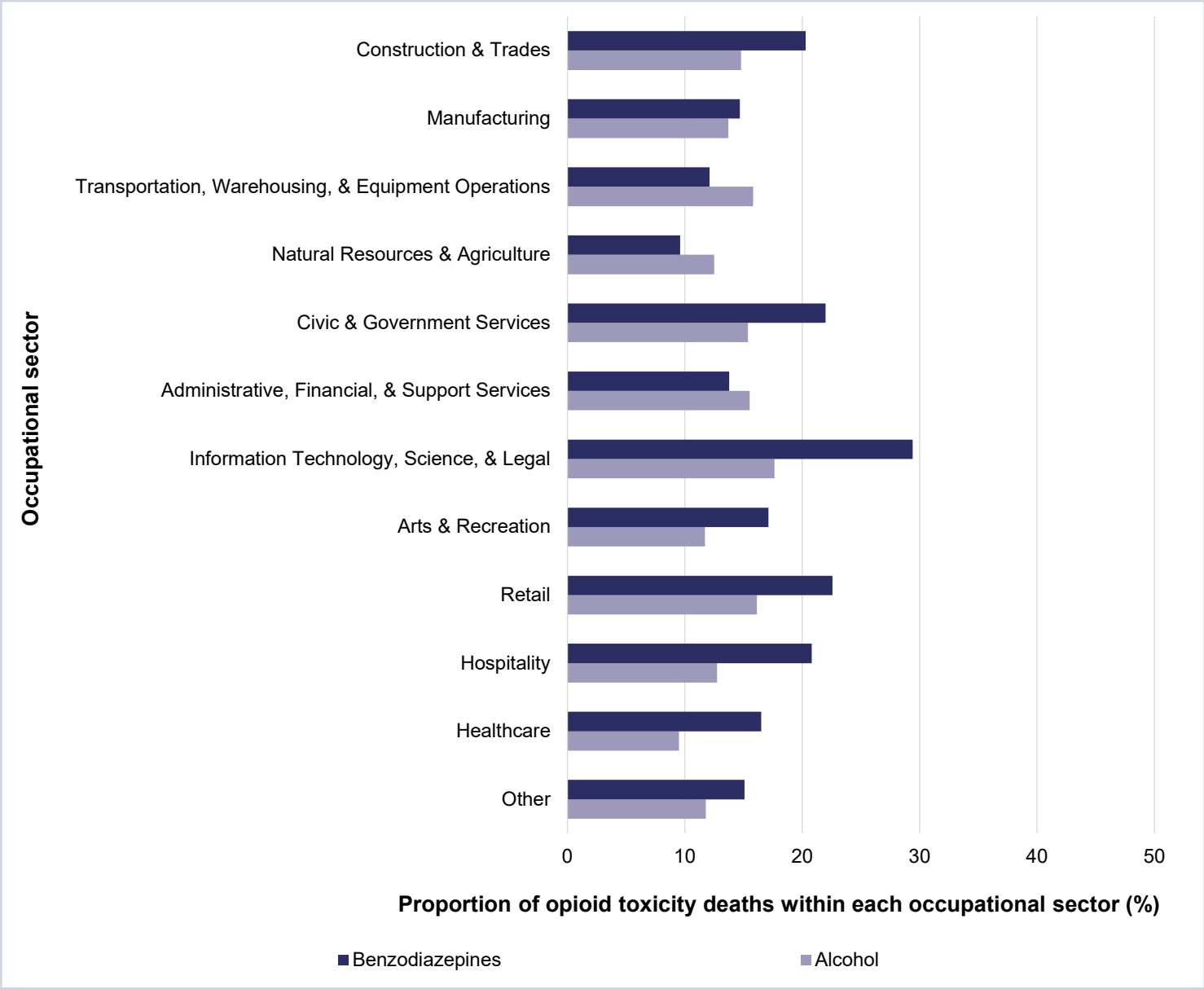


NOTE

† See **Table A9** for corresponding data table.

We observed a high degree of stimulant involvement in opioid toxicity deaths across occupational sectors. Cocaine was most commonly identified among people who worked in **Construction & Trades** (49.6%), **Civic & Government Services** (45.1%), and **Hospitality** (44.6%). Methamphetamine was less commonly present as a direct contributor to death, but was identified most commonly among those who worked in **Natural Resources & Agriculture** (26.0%) and **Construction & Trades** (22.9%).

Figure 11: Opioid toxicity deaths where benzodiazepines and/or alcohol contributed to death by occupational sector, 2018 - 2024



NOTE

† See **Table A10** for corresponding data table.

Opioid toxicity deaths where a benzodiazepine directly contributed to death ranged across occupational sectors, from 9.6% among people who worked in **Natural Resources & Agriculture** to 29.4% among people who worked in **Information Technology, Science, & Legal**. In most sectors, 70-80% were non-pharmaceutical benzodiazepines. When expanding our definition to opioid toxicity deaths where a benzodiazepine was detected (but was not necessarily identified as a direct contributor to death), this increased to almost half of deaths across all occupational sectors. Finally, we found that alcohol contributed to 10-16% of opioid toxicity deaths across all occupational sectors.

Snapshot summary by employment sector

Click on each employment sector for a tailored summary of findings

Snapshot summaries for each employment sector can be found at
https://odprn.ca/research/publications/opioid-toxicity-deaths-across-occupational-sectors

Limitations

1. Over half of all opioid toxicity deaths in Ontario (54.7%) had missing or incomplete employment information, resulting in an underestimation of deaths within occupational sectors. Missingness may be more common among individuals in precarious or unstable employment (i.e., temporary or seasonal work), where occupation/industry is harder to ascertain. In addition, occupational sector data are based on reporting from next-of-kin or other people providing information during a coroner's death investigation and may not always be accurate or complete. Some misclassification is therefore likely and should be considered when interpreting these findings.
2. Occupational sector classifications were derived from information documented during the coroner's investigation and may reflect occupation, industry, or a combination of both. As a result, some categories do not align with standard occupational or industry classification systems, and findings should be interpreted as representing broad employment-related groupings rather than discrete occupations or industries.
3. Occupation and employment status may not reflect circumstances at the time of death. Occupational sector likely represents last known employment, and individuals may have changed jobs, exited the workforce, or taken a medical leave due to injury, substance use, or mental health-related challenges prior to death.
4. This analysis is cross-sectional and does not allow for assessment of temporal relationships. It is not possible to determine whether occupation-related factors may have contributed to substance use, whether substance use contributed to changes in employment status, or both.
5. Toxicology results identify substances present at the time of death and are considered alongside other information gathered during the coroner's investigation when determining the cause and manner of death. However, these results do not provide information on timing or sequence of substance use. In cases involving multiple substances, it is not possible to determine which substance primarily contributed to death.
6. The data do not include detailed information on working conditions (i.e., job strain, work hours, injury history, employment stability), limiting the ability to assess the mechanisms linking occupation to opioid-related harms. Future research is needed to better understand how these workplace factors may contribute to opioid-related harms.

Discussion

Between 2018 and 2024, there were over 15,000 opioid toxicity deaths in Ontario, with past or current occupational sector recorded by an investigating coroner in approximately 1 in 5 of these deaths. Over this period, among deaths where occupational sector was known, more than 1 in 3 deaths (37.9%) occurred among people working in **Construction & Trades**, 1 in 11 (8.9%) occurred among those working in **Manufacturing**, and 1 in 12 (8.4%) among those working in **Hospitality**. However, the number of people working in each sector differs considerably, and rates of opioid toxicity deaths adjusted for number of workers demonstrated increasing trends across many occupational sectors.

Trends in Deaths Across Sectors

The two occupational sectors with the highest rates of opioid toxicity death throughout the study period were **Construction & Trades** and **Natural Resources & Agriculture**, although the trends over time differed. Specifically, rates of opioid toxicity deaths among those working in **Construction & Trades** increased throughout the study period, reaching 54.6 deaths per 100,000 workers (222 deaths) by 2024. In contrast, while we observed

a similarly high rate of opioid toxicity deaths among people who worked in **Natural Resources & Agriculture**, this rate peaked at 86.0 deaths per 100,000 workers (27 deaths) in 2021, before gradually declining over the remainder of the study period. Rates of opioid toxicity deaths were also consistently high among people working in **Manufacturing** (4.0 per 100,000 workers in 2024) and **Transportation, Warehousing, & Equipment Operations** (7.4 per 100,000 workers in 2024), and there were increasing trends in opioid toxicity deaths among people who worked in **Civic & Government Services**, for example those working as police, military personnel, and firefighters (increased 128% from 7 to 16 deaths over the study period). The disproportionate and growing burden of opioid toxicity death we observed in these sectors may reflect the intersection of physically demanding work, occupational injury, the lack of transitional services following initial opioid prescriptions, chronic pain, mental health challenges, and substance use to help manage pain, fatigue, stress, or work performance demands. Most deaths across these sectors involved non-pharmaceutical opioids, with frequent cocaine and alcohol co-involvement, and almost 10% of deaths occurring outdoors or in a vehicle. These findings align with emerging research from the Canadian Centre on Substance Use and Addiction using surveys and focus groups which suggests that reported substance use may be higher among workers in safety-sensitive positions, with managers in these fields often reporting inadequate training or resources to appropriately support employees who use substances.[20, 21] These findings suggest that focused workplace prevention, treatment, and support initiatives remain an important response to the drug toxicity crisis. This may include workplace-based harm reduction approaches, improved access to pain management and treatment services, enhanced employer training, educational campaigns and supports that promote the prevention and early management of workplace injuries, reduce the stigma of reporting pain, mental health concerns, and substance use, and help workers access appropriate care and accommodations among those in both traditionally higher-risk occupations and emerging at-risk occupational sectors. Such supports should be accessible, responsive to workers' needs, and effective in facilitating timely access to care. Interventions should also consider occupational cultures and gender norms that may normalize working through pain and delay help-seeking, creating additional barriers to early intervention and support.[22]

Employment and Living Arrangements

We also observed important differences in employment status and living arrangements across occupational sectors, suggesting variation in social and economic conditions among workers. Across sectors, nearly 1 in 3 deaths occurred among those who were unemployed at the time of death, which may reflect transitions out of the workforce related to work-related injury, chronic pain, and challenges related to mental health-related conditions or substance use disorders, all of which may increase the risk of opioid toxicity death.[23] It may also reflect the intermittent nature of employment in some sectors, particularly construction, where individuals may experience periods without formal employment. Overall, we observed the highest proportion of unemployment at time of death among people who worked in **Hospitality** (44%), which may reflect the widespread layoffs and temporary job losses experienced by workers in this sector throughout the COVID-19 pandemic. Notably, the rate of opioid toxicity deaths among **Hospitality** workers peaked in our study throughout 2020 and 2021, and workers in hospitality-related industries accounted for over 80% of all job losses in Canada during the pandemic period.[24] Beyond employment status, the differences we observed in living arrangements at the time of death also suggest variation in housing stability across occupational sectors. Although most individuals lived in a private dwelling at the time of death, approximately 10% of deaths occurred among individuals experiencing homelessness. The proportion of people experiencing homelessness was particularly elevated among those who worked in **Construction & Trades**, **Manufacturing**, and **Natural Resources & Agriculture**. These occupational sectors are often characterized by lower barriers to entry, physically demanding work, and seasonal employment, which can contribute to precarious working conditions.[25-28] This aligns with the literature, which has shown that sustained unemployment, unstable housing, and a lack of accommodation are all significantly associated with an increased risk of opioid toxicity.[29] These findings highlight the need for prevention strategies that also extend beyond workplace settings to help address drivers of substance-related harm including employment stability, income security and access to affordable housing.

Drug and Other Substance Involvement in Death

Our findings also suggest a high degree of multiple substance involvement in opioid toxicity deaths across occupational sectors, as well as variation in the types of substances involved, which mirrors population-wide data across Ontario.[30] Deaths involving only non-pharmaceutical opioids from the unregulated drug supply (primarily unregulated fentanyl) contributed to over 70% of opioid toxicity deaths in most sectors but were most prevalent (~80%) among people who worked in **Natural Resources & Agriculture**, **Construction & Trades**, and **Hospitality**. This is consistent with prior evidence from the United States showing that workers in mining, construction, accommodation and food industries have among the highest reported rates of substance use from the unregulated drug supply.[31] In contrast, methadone was detected in fewer than 10% of deaths, potentially reflecting some engagement with treatment for opioid use disorder at the time of death. This highlights the importance of ensuring low-barrier access to opioid agonist treatment for individuals with opioid use disorder, supported by models of care that support retention and flexibility.[32]

Multiple substances commonly contributed to death across sectors, with a high degree of stimulant involvement in most sectors, but particularly high rates of cocaine and/or methamphetamine involvement among people working in **Construction & Trades** and **Natural Resources & Agriculture**. In occupations characterized by long hours, fatigue, or physically demanding work, stimulants may be used to maintain alertness and sustain work performance,[33, 34] followed by the use of depressant substances, including opioids, benzodiazepines, or alcohol, outside of working hours to manage pain, stress, or facilitate rest.[35] The combined use of these substances can significantly increase the risk of opioid toxicity death,[36] given the challenges in toxicity reversal with naloxone alone when multiple sedating substances are present alongside opioids.[37, 38] These risks may be further amplified by the context in which substance use occurs, given that most opioid toxicity deaths occurred in private residences, where many people were alone at time of death. This pattern was consistent across sectors, with roughly two-thirds of deaths occurring when no other individual was present to intervene. Given that substance use extends beyond the workplace, it is critical that harm reduction strategies include expanded access to take-home naloxone, virtual or supervised consumption services, and low barrier access to treatment and mental health-related services. Workplace interventions should also aim to reduce barriers to treatment engagement including protections for workers accessing care and more flexible opioid agonist treatment dosing models.

Manner of Death

Finally, we found that although most opioid toxicity deaths (~90%) across occupational sectors were unintentional, a higher proportion of people who died by suicide worked in **Administrative, Financial, & Support Services**, as well as **Healthcare** (approximately 1 in 5 opioid toxicity deaths in each of these sectors). Approximately one-third of deaths across these sectors also involved only pharmaceutical opioids. This may suggest important differences in prescribing patterns, substance use preferences, and mental health-related diagnoses among people working in these sectors.[39, 40] Among people working in management and business-related roles, elevated levels of work-related stress have been documented, including high job strain, long work hours, and substantial workload demands, which may contribute to worsening mental health outcomes including anxiety, depression, substance use, and suicide attempts.[41] Similarly, healthcare workers may experience significant psychological demands associated with their roles including burnout, emotional labour, repeated exposure to trauma, and high rates of workplace injury.[42, 43] Barriers to accessing mental health-related services may further compound these challenges, which further intensified throughout the COVID-19 pandemic, with adverse effects on healthcare workers' mental health reported.[44, 45] This underscores the importance of implementing targeted workplace mental health supports, including early identification of distress among workers, access to confidential mental health-related services, and interventions that help to address burnout and trauma exposure in the workplace.

Conclusion

Our findings demonstrate that opioid toxicity death rates vary across occupational sectors in Ontario, with the highest burden observed among workers in **Construction & Trades** and **Natural Resources & Agriculture**. Across all sectors – but also showing broad similarities to trends in the general population - deaths commonly involved multiple substances and frequently occurred in private residences when individuals were alone. Over one-third of decedents were unemployed at the time of death, suggesting that workforce detachment may represent a period of elevated risk of substance-related harm. Substance use patterns also varied across occupational sectors, with frequent involvement of stimulants, alcohol, and benzodiazepines, highlighting the role of multiple substances in toxicity risk. Given that most deaths occur at home and often when individuals are alone, workplace-based strategies should be broadened to include educational campaigns that promote awareness and reduce stigma related to pain and substance use, expanded take-home naloxone distribution and reducing barriers to accessing appropriate pain management and treatment for substance use disorders. More broadly, the findings in this report highlight the continued need to address underlying structural factors that increase the risk of experiencing substance-related harm, including housing instability, income insecurity, and insufficient access to pain management, mental health care, and treatment. Strategies to improve the standard of care following an initial opioid prescription need to be implemented to reduce longer term harms and mitigate the risk of developing an opioid use disorder. Coordinated approaches to care must go beyond the workplace and be tailored to the unique needs of different subsets of occupational groups.

About the 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 houses the Ontario Opioid Drug Observatory (OODO) which is funded through a grant from the Canadian Institutes of Health Research (CIHR). This observatory aims to measure, assess and evaluate the use of prescription opioids, opioid-related toxicities, and opioid-related drug policy by leveraging large, population-level data sources. For more information, visit **odprn.ca**.

For more details on the underlying data or methods in this document, contact **tara.gomes@unityhealth.to**.

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Disclaimer

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Supporting Resources

The content discussed in this report deals with topics that may be challenging or sensitive due to its subject matter. The research team recognizes the need for safety measures to minimize the risks associated with potentially traumatic topics. For immediate assistance, call 1-866-531-2600. This is a provincial, toll-free call line providing mental health counselling and substance use support for people across Ontario. For concerns about suicide, call the 9-8-8: Suicide Crisis Helpline for immediate, confidential support or visit: **https://988.ca/**.

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Appendix A: Definitions

Opioids: A family of substances that include pharmaceutical opioids available through prescription for the treatment of pain and opioid use disorder (i.e., oxycodone) and non-pharmaceutical opioids (i.e., heroin).

Opioid Toxicity Death: 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.

Opioid Use Disorder (OUD): a medical condition associated with cravings for opioids that may lead to chronic use of opioids and behaviours that may interfere with the activities of daily life. Opioid agonist treatment is often used first-line for the management of OUD.

Occupational Sector: based on occupation information recorded during the coroner's investigation and reflects previous or recent employment prior to death. Individuals with multiple recorded occupations contributed to each applicable sector.

Manner of Death: categorized as unintentional, intentional (suicide or homicide), or undetermined based on coroner classification. An accidental death was defined as a death caused by an injury where death was not intended, foreseen, or expected. An intentional death (suicide or homicide) was defined as a death caused by an injury intentionally and non-accidentally inflicted by the deceased.

Origin of Opioids:

- Opioids with primarily unregulated and non-pharmaceutical origin include:
- Heroin, U-47700, nitazene.
- Fentanyl, fentanyl analogues (including carfentanil)
- Opioids with pharmaceutical origin include:
- Buprenorphine, codeine, hydrocodone, hydromorphone, methadone, morphine, oxycodone, or tramadol. This category may include opioids that were prescribed to the deceased person or that were prescribed to someone else (i.e., diverted).

Benzodiazepines: A class of sedative and anti-anxiety drugs that are widely prescribed for the treatment of anxiety, sleep disorders (i.e., insomnia), certain forms of epilepsy, and alcohol withdrawal. Currently, 14 different benzodiazepines are approved for use in Canada. Benzodiazepines that are not approved for medical use in Canada, such as etizolam, are increasingly being found in the unregulated drug supply.

Stimulants: A class of drugs used for the treatment of attention-deficit/hyperactivity disorder and sleeping disorders (i.e., narcolepsy). These drugs act on the central nervous system to increase alertness, attention and energy. This category also includes stimulants that are not approved for medical use in Canada, such as cocaine and methamphetamine.

Substance Involvement in Opioid-Related Deaths:

- **Detected:** Substances detected in toxicology testing, which may or may not have directly contributed to the death.
- **Directly contributing to death:** Substances determined by the pathologist and/or coroner to have directly contributed to the death based on the complete investigative findings, i.e., toxicology findings and the information obtained during the death investigation.

Rate: A measure of the frequency with which opioid toxicity deaths occur within a population over a specified time period. In this study, annual rates of opioid toxicity death were calculated per 100,000 workers within each occupational sector using annual industry denominators obtained from Statistics Canada, representing the number of individuals employed in each industry.

Appendix B: Circumstances among individuals who died of an opioid-related overdose

Category	Definition/Included Settings
Living Arrangement	
Private dwelling	A separate set of living quarters designed for or converted for human habitation. Must include a source of heat or power and must be an enclosed space that provides shelter/protection from the elements. May include people living with family or roommates.
Collective dwelling/hospital	Includes lodging and rooming houses, hotels, military bases, sober living facility, hospital or long-term care home, mental health facility/mental health unit in hospital, correctional facility, residential care facility (including group homes), retirement home (including senior residences).
Experiencing homelessness	Includes unsheltered, emergency sheltered, provisionally accommodated, or at immediate risk of homelessness.
Other	Includes locations not applicable to other categories.
Incident Location	
Private residence	Includes farm, residence, on property.
Hotel/motel	Includes hotel, motel, resort.
Outdoors/in vehicle	Includes outdoor and transportation-related settings, including in transit locations (i.e., crosswalks, highways, intersections, ramps, roads, roadsides, and sidewalks), parking lots, public outdoor areas, non-residential outdoor locations, railway areas (non-subway, not on board), rural outdoor settings, trails, urban parks, urban parkland, and transportation settings such as aircraft, boats, motor vehicles, motorcycles, off-road motorized vehicles, and public transit.
Public building	Includes indoor and institutional settings, including airports, arenas, gymnasiums, health clubs, indoor non-residential leisure settings, indoor workplaces, parking garages, schools, and subway track-level areas.
Shelter/supportive housing	Includes shelter, and congregate living (i.e., Long-term care [LTC] Facility, LTC Facility - Other (e.g. Group Home), Retirement Home, Seniors Residence, Rooming House, Boarding House, Halfway House)
Unknown/other	Includes unknown, correctional facility/in custody, hospital/clinic, industrial (construction site, factory, plant, warehouse, mine), pending, other

Appendix C: Data Tables

Table A1: Annual rates of opioid toxicity deaths in Ontario per 100,000 people working in each occupational sector, 2018 - 2024

Occupational Sector	Rates per 100,000 People Working in Each Occupational Sector						
	2018	2019	2020	2021	2022	2023	2024
Construction & Trades	33.9	30.2	58.9	62.9	45.2	68.3	54.6
Manufacturing	4.5	5.8	6.8	8.8	6.7	6.9	4.0
Transportation, Warehousing, & Equipment Operations	9.4	6.9	14.8	14.5	10.7	8.4	7.4
Natural Resources & Agriculture	45.5	32.9	76.2	86.0	30.3	26.2	32.3
Civic & Government Services	1.7	0.9	2.0	3.8	4.0	4.7	3.3
Administrative, Financial, & Support Services	2.2	1.1	1.8	1.8	1.1	0.0	0.1
Information Technology, Science, & Legal	3.7	3.0	4.1	3.3	3.5	3.8	3.9
Arts & Recreation	7.5	5.2	9.3	7.8	6.3	4.4	3.3
Retail	1.9	2.0	2.6	3.0	4.1	6.4	5.8
Hospitality	6.3	8.4	13.2	15.9	7.5	9.0	8.9
Healthcare	4.1	2.8	5.7	4.7	2.0	4.0	2.8
Other	6.9	6.8	9.1	13.2	9.6	4.1	4.2

Table A2: Number of opioid toxicity deaths by occupational sector in Ontario, 2018 vs. 2024

Occupational Sector	2018 (N)	2024 (N)
Construction & Trades	120	222
Manufacturing	33	29
Transportation, Warehousing, & Equipment Operations	26	24
Natural Resources & Agriculture	14	11
Civic & Government Services	7	16
Administrative, Financial, & Support Services	16	≤5
Information Technology, Science, & Legal	15	21
Arts & Recreation	20	9
Retail	21	63
Hospitality	31	43
Healthcare	30	24
Other	67	45

Table A3: Age of individuals who died of an opioid toxicity in Ontario, by occupational sector, 2018 - 2024

Occupational Sector	Age Categories			
	15 to 24 N (%)	25 to 44 N (%)	45 to 64 N (%)	65+ N (%)
Construction & Trades	63 (4.7%)	815 (60.9%)	425 (31.8%)	35 (2.6%)
Manufacturing	18 (5.8%)	161 (51.4%)	123 (39.3%)	11 (3.5%)
Transportation, Warehousing, & Equipment Operations	6 (2.8%)	97 (45.1%)	94 (43.7%)	18 (8.4%)
Natural Resources & Agriculture	≤5 (≤4.8%)	64 (61.5%)	32 (30.8%)	≤5 (≤4.8%)
Civic & Government Services	≤5 (≤5.5%)	47 (51.7%)	35 (38.5%)	4-8 (4.4-8.8%)
Administrative, Financial, & Support Services	≤5 (≤8.6%)	31 (53.5%)	17-25 (29.3-43.1%)	≤5 (≤8.6%)
Information Technology, Science, & Legal	≤5 (≤4.2%)	72 (60.5%)	36 (30.3%)	6-10 (5.0-8.4%)
Arts & Recreation	≤5 (≤4.5%)	57 (51.4%)	46 (41.4%)	≤5 (≤4.5%)
Retail	25 (9.0%)	158 (56.6%)	87 (31.2%)	9 (3.2%)
Hospitality	28-32 (9.4-10.7%)	173 (58.1%)	92 (30.9%)	≤5 (≤1.7%)
Healthcare	≤5 (≤2.5%)	104 (52.0%)	82 (41.0%)	9-13 (4.5-6.5%)
Other	102 (19.5%)	276 (52.7%)	131 (25.0%)	15 (2.9%)

Table A4: Gender of individuals who died of an opioid toxicity in Ontario, by occupational sector, 2018 - 2024

Occupational Sector	Gender			
	Men	Women	Other/Unknown*	Transgender
Construction & Trades	1,286 (96.1%)	24 (1.8%)	23-27 (1.7-2.0%)	≤5 (≤0.4%)
Manufacturing	284 (90.7%)	24-28 (7.7-9.0%)	≤5 (≤1.6%)	0 (0.0%)
Transportation, Warehousing, & Equipment Operations	194 (90.2%)	11-19 (5.1-8.8%)	≤5 (≤2.3%)	≤5 (≤2.3%)
Natural Resources & Agriculture	96 (92.3%)	3-7 (2.9-6.7%)	≤5 (≤4.8%)	0 (0.0%)
Civic & Government Services	66 (72.5%)	20-24 (22.0-26.4%)	≤5 (≤5.5%)	0 (0.0%)
Administrative, Financial, & Support Services	32 (55.2%)	21-25 (36.2-43.1%)	≤5 (≤8.6%)	0 (0.0%)
Information Technology, Science, & Legal	99 (83.2%)	15-19 (12.6-16.0%)	≤5 (≤4.2%)	0 (0.0%)
Arts & Recreation	75 (67.6%)	31-35 (27.9-31.5%)	≤5 (≤4.5%)	0 (0.0%)
Retail	178 (63.8%)	90 (32.3%)	11 (3.9%)	0 (0.0%)
Hospitality	177 (59.4%)	112 (37.6%)	9 (3.0%)	0 (0.0%)
Healthcare	66 (33.0%)	128 (64.0%)	≤5 (≤2.5%)	≤5 (≤2.5%)
Other	341 (65.1%)	167 (31.9%)	11-15 (2.1-2.9%)	≤5 (≤1.0%)

NOTE

* Other includes agender, missing, or unknown.

Table A5: Manner of death among individuals who died of an opioid toxicity by occupational sector, 2018 - 2024

Occupational Sector	Manner of Death		
	Unintentional	Deaths by Suicide	Undetermined
Construction & Trades	1289 (96.3%)	21 (1.6%)	28 (2.1%)
Manufacturing	285 (91.1%)	14 (4.5%)	14 (4.5%)
Transportation, Warehousing, & Equipment Operations	200 (93.0%)	13 (6.1%)	2 (0.9%)
Natural Resources & Agriculture	98-102 (94.2-98.1%)	≤5 (≤4.8%)	1 (1.0%)
Civic & Government Services	75 (82.4%)	13 (14.3%)	3 (3.3%)
Administrative, Financial, & Support Services	45 (77.6%)	13 (22.4%)	0 (0.0%)
Information Technology, Science, & Legal	103 (86.6%)	14 (11.8%)	2 (1.7%)
Arts & Recreation	97 (87.4%)	10 (9.0%)	4 (3.6%)
Retail	255 (91.4%)	14 (5.0%)	10 (3.6%)
Hospitality	286 (96.0%)	≤5 (≤1.7%)	7-11 (2.4-3.7%)
Healthcare	149 (74.5%)	40 (20.0%)	11 (5.5%)
Other	474 (90.5%)	29 (5.5%)	21 (4.0%)

Table A6: Individual present at time of opioid-related toxicity death by occupational sector, 2018 - 2024

Occupational Sector	Individual Present at Time of Death	
	Not Alone	Alone
Construction & Trades	225 (23.2%)	746 (76.8%)
Manufacturing	48 (20.1%)	191 (79.9%)
Transportation, Warehousing, & Equipment Operations	33 (21.9%)	118 (78.1%)
Natural Resources & Agriculture	27 (33.8%)	53 (66.3%)
Civic & Government Services	11 (15.9%)	58 (84.1%)
Administrative, Financial, & Support Services	14 (34.1%)	27 (65.9%)
Information Technology, Science, & Legal	16 (16.7%)	80 (83.3%)
Arts & Recreation	21 (25.3%)	62 (74.7%)
Retail	37 (19.4%)	154 (80.6%)
Hospitality	66 (31.0%)	147 (69.0%)
Healthcare	26 (18.6%)	114 (81.4%)
Other	103 (26.0%)	293 (74.0%)

NOTE

* Pending and unknown results excluded.

Table A7: Origin of opioids directly contributing to opioid toxicity deaths by occupational sector, 2018 - 2024

Occupational Sector	Origin of Opioids		
	Non-Pharmaceutical Opioids Only	Pharmaceutical Opioids Only	Both Pharmaceutical and Non-Pharmaceutical Opioids
Construction & Trades	1061 (79.3%)	146 (10.9%)	128 (9.6%)
Manufacturing	233 (74.4%)	53 (16.9%)	26 (8.3%)
Transportation, Warehousing, & Equipment Operations	155 (72.1%)	42 (19.5%)	18 (8.4%)
Natural Resources & Agriculture	88 (84.6%)	8 (7.7%)	8 (7.7%)
Civic & Government Services	57 (62.6%)	24 (26.4%)	10 (11.0%)
Administrative, Financial, & Support Services	34 (58.6%)	17 (29.3%)	7 (12.1%)
Information Technology, Science, & Legal	81 (68.1%)	29 (24.4%)	8 (6.7%)
Arts & Recreation	67 (60.4%)	28 (25.2%)	16 (14.4%)
Retail	195 (69.9%)	51 (18.3%)	30 (10.8%)
Hospitality	239 (80.2%)	28 (9.4%)	29 (9.7%)
Healthcare	107 (53.5%)	76 (38.0%)	16 (8.0%)
Other	380 (72.5%)	96 (18.3%)	45 (8.6%)

Table A8: Type of pharmaceutical opioid directly contributing to opioid toxicity deaths by occupational sector, 2018 - 2024

Occupational Sector	Type of Pharmaceutical Opioid		
	Any Pharmaceutical Opioid	Opioids Indicated for Pain	Opioids Indicated for OUD (Methadone)
Construction & Trades	274 (20.5%)	161 (12.0%)	126 (9.4%)
Manufacturing	79 (25.2%)	54 (17.3%)	27 (8.6%)
Transportation, Warehousing, & Equipment Operations	60 (27.9%)	48 (22.3%)	18 (8.4%)
Natural Resources & Agriculture	16 (15.4%)	11 (10.6%)	≤5 (≤4.8%)
Civic & Government Services	34 (37.4%)	25 (27.5%)	9 (9.9%)
Administrative, Financial, & Support Services	24 (41.4%)	20 (34.5%)	≤5 (≤8.6%)
Information Technology, Science, & Legal	37 (31.1%)	29 (24.4%)	9 (7.6%)
Arts & Recreation	44 (39.6%)	32 (28.8%)	14 (12.6%)
Retail	81 (29.0%)	61 (21.9%)	26 (9.3%)
Hospitality	57 (19.1%)	42 (14.1%)	18 (6.0%)
Healthcare	92 (46.0%)	76 (38.0%)	18 (9.0%)
Other	141 (26.9%)	111 (21.2%)	37 (7.1%)

NOTE

*Denominator includes all opioid toxicity deaths, regardless of whether a pharmaceutical opioid directly contributed to death.

Table A9: Opioid toxicity deaths where cocaine and/or methamphetamine contributed to death by occupational sector, 2018 - 2024

Occupational Sector	Other Non-Opioid Substances Directly Contributing to Death	
	Cocaine	Methamphetamine
Construction & Trades	664 (49.6%)	306 (22.9%)
Manufacturing	110 (35.1%)	63 (20.1%)
Transportation, Warehousing, & Equipment Operations	92 (42.8%)	33 (15.4%)
Natural Resources & Agriculture	42 (40.4%)	27 (26.0%)
Civic & Government Services	41 (45.1%)	19 (20.9%)
Administrative, Financial, & Support Services	20 (34.5%)	7 (12.1%)
Information Technology, Science, & Legal	35 (29.4%)	23 (19.3%)
Arts & Recreation	46 (41.4%)	19 (17.1%)
Retail	112 (40.1%)	59 (21.2%)
Hospitality	133 (44.6%)	65 (21.8%)
Healthcare	61 (30.5%)	42 (21.0%)
Other	199 (38.0%)	106 (20.2%)

Table A10: Opioid toxicity deaths where benzodiazepines and/or alcohol contributed to death by occupational sector, 2018 - 2024

Occupational Sector	Other Non-Opioid Substances Directly Contributing to Death	
	Benzodiazepines	Alcohol
Construction & Trades	272 (20.3%)	198 (14.8%)
Manufacturing	46 (14.7%)	43 (13.7%)
Transportation, Warehousing, & Equipment Operations	26 (12.1%)	34 (15.8%)
Natural Resources & Agriculture	10 (9.6%)	13 (12.5%)
Civic & Government Services	20 (22.0%)	14 (15.4%)
Administrative, Financial, & Support Services	8 (13.8%)	9 (15.5%)
Information Technology, Science, & Legal	35 (29.4%)	21 (17.7%)
Arts & Recreation	19 (17.1%)	13 (11.7%)
Retail	63 (22.6%)	45 (16.1%)
Hospitality	62 (20.8%)	38 (12.8%)
Healthcare	33 (16.5%)	19 (9.5%)
Other	79 (15.1%)	62 (11.8%)