

Accidental Drug Overdose Deaths in Rhode Island: January 1, 2016–December 31, 2022

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INTRODUCTION

From 2019 to 2021, overdose deaths in Rhode Island (RI) dramatically increased, and in 2021 RI experienced the highest number of overdose fatalities in state history.¹ This coincides with nationwide trends, which show that after steadily increasing for decades, the number of fatal overdoses increased 51% from 2019 to 2021.² To inform future prevention efforts in RI, this work aims to monitor changes in fatal overdoses and impacted populations over time.

METHODS

We analyzed fatal overdose data from the Office of the State Medical Examiners (OSME) for accidental drug overdose deaths that occurred in RI from January 1, 2016 to December 31, 2022. Cause and manner of death are determined by the medical examiner and are based on information gathered from toxicology reports, scene investigations, autopsy reports, and decedent medical history.

For this analysis, we created four mutually exclusive race and ethnicity categories. Individuals who were Hispanic or Latino of any race were classified as Hispanic or Latino. Individuals who were not Hispanic or Latino were classified based on race as non-Hispanic White, non-Hispanic Black, and “Other” which captures individuals who were not Hispanic or Latino and belonged to another or unknown race category.

Categories for substances contributing to the cause of death were not mutually exclusive, as more than one substance can contribute to cause of death. Overdoses in which any opioid, cocaine, alcohol, benzodiazepines, or amphetamines did not contribute to death was categorized as “Other”.

To compare the rate of fatal overdose by decedent race and ethnicity, counts were restricted to overdoses occurring among RI residents. Population estimates were obtained from CDC Wonder.³

All counts with fewer than five individuals are listed as <5 to comply with the Rhode Island Department of Health

(RIDOH) Small Numbers Policy. Categories were compared by year of death using chi-square and Fisher’s exact tests. Analyses were performed in SAS [Version 9.4].

FINDINGS

From January 1, 2016, to December 31, 2022, 2,535 fatal overdoses occurred in RI, with fatal overdoses increasing by 29.2% from 2016 to 2022 (Table 1). Overall, the highest proportion of deaths occurred among individuals ages 25–54 (72.0%), males (72.2%) and non-Hispanic White individuals (77.8%). When accounting for the underlying RI population, from 2019 to 2022 the rate of overdose deaths was consistently highest among the non-Hispanic Black population (Figure 1). In 2022, the rate of fatal overdose deaths was highest among non-Hispanic Black individuals (54.3 per 100,000), followed by Hispanic or Latino individuals (38.3 per 100,000), and lowest among non-Hispanic White individuals (34.1 per 100,000). While the rate of fatal overdoses decreased from 2021 to 2022 for non-Hispanic White individuals (38.0 per 100,000 to 34.1 per 100,000), the rate among Hispanic or Latino residents increased by 50%, from 25.6 per 100,000 in 2021 to 38.3 per 100,000 in 2022 and remained significantly elevated (54.3 per 100,000) among non-Hispanic Black residents. While most decedents were 25–55 years of age, the greatest increase in overdose deaths occurred among those ages 55–64; from 72 fatalities in 2021 to 90 fatalities in 2022. Among those with a known location, most fatal overdoses in RI continued to occur in private locations (83.6%) (Table 1).

Illicit substances continue to drive fatal overdoses in RI, with 64.8% of overdoses caused by illicit drugs alone, and an additional 23.9% of overdoses caused by a combination of prescription and illicit substances (Table 2). The substances most commonly contributing to cause of death were opioids (85.1%), fentanyl (70.3%), and cocaine (47.0%). From 2016 to 2022, RI experienced an increase in the proportion of overdoses involving fentanyl (58.6% to 74.4%), cocaine (38.1% to 50.5%), alcohol (21.7% to 25.4%), and amphetamines (3.0% to 9.7%). In contrast, benzodiazepine-involved deaths decreased during the same timeframe (2016: 23.2%; 2022: 10.8%).

Table 1. Demographics for individuals who died of an accidental overdose in Rhode Island: January 1, 2016–December 31, 2022.

	Overall n=2,535 n (%)	2016 n=336 n (%)	2017 n=324 n (%)	2018 n=314 n (%)	2019 n=308 n (%)	2020 n=384 n (%)	2021 n=435 n (%)	2022 n=434 n (%)	p-value ¹
Demographic Characteristics									
Age									
0–18	9 (0.4)	<5	<5	<5	<5	<5	<5	<5	0.1062
19–24	139 (5.5)	23 (6.9)	17 (5.3)	15 (4.8)	17 (5.5)	20 (5.2)	25 (5.8)	22 (5.1)	
25–34	610 (24.1)	96 (28.6)	84 (25.9)	69 (22.0)	78 (25.3)	86 (22.4)	105 (24.1)	92 (21.2)	
35–44	623 (24.6)	64 (19.1)	83 (25.6)	92 (29.3)	82 (26.6)	97 (25.3)	99 (22.8)	106 (24.4)	
45–54	591 (23.3)	97 (28.9)	77 (23.8)	59 (18.8)	65 (21.1)	93 (24.2)	105 (24.1)	95 (21.9)	
55–64	445 (17.6)	49 (14.6)	49 (15.1)	60 (19.1)	55 (17.9)	70 (18.2)	72 (16.6)	90 (20.7)	
65+	118 (4.7)	6 (1.8)	12 (3.7)	18 (5.7)	10 (3.3)	16 (4.2)	28 (6.4)	28 (6.5)	
Sex									
Female ²	705 (27.8)	91 (27.1)	106 (32.7)	66 (21.0)	84 (27.3)	95 (24.7)	141 (32.4)	122 (28.1)	0.0072
Male	1,830 (72.2)	245 (72.9)	218 (67.3)	248 (79.0)	224 (72.7)	289 (75.3)	294 (67.6)	312 (71.9)	
Race/Ethnicity									
Non-Hispanic White	1,972 (77.8)	292 (86.9)	257 (79.3)	253 (80.6)	234 (76.0)	299 (77.9)	334 (76.8)	303 (69.8)	0.0008
Non-Hispanic Black	211 (8.3)	13 (3.9)	27 (8.3)	22 (7.0)	30 (9.7)	36 (9.4)	42 (9.7)	41 (9.5)	
Hispanic or Latino	319 (12.6)	28 (8.3)	37 (11.4)	37 (11.8)	40 (13.0)	45 (11.7)	53 (12.2)	79 (18.2)	
Other	33 (1.3)	<5	<5	<5	<5	<5	6 (1.4)	11 (2.5)	
Location of Overdose³									
Private	1,770(69.8)	237 (70.5)	210 (64.8)	228 (72.6)	213 (69.2)	272 (70.8)	310 (71.3)	300 (69.1)	<0.0001
Public	139 (5.5)	16 (4.8)	10 (3.1)	17 (5.4)	12 (3.9)	20 (5.2)	28 (6.4)	36 (8.3)	
Semi-Private	136 (5.4)	9 (2.7)	17 (5.3)	15 (4.8)	18 (5.8)	11 (2.9)	43 (9.9)	23 (5.3)	
Unknown/Missing	490 (19.3)	74 (22.0)	87 (26.9)	54 (17.2)	65 (21.1)	81 (21.1)	54 (12.4)	75 (17.3)	

Source: Office of the State Medical Examiners.

1 Chi-square test. 2 Inclusive of individuals who are transgender female. 3 Private included apartment or residence, semi-public included hotel, motel, shelter, nursing home, hospital, prison, group home, assisted living, or treatment facility, while public included theater, concert, show, office, park, school, bar/restaurant, roadway, or cemetery.

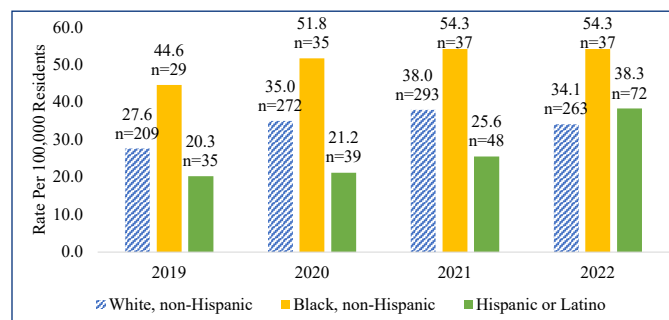
Table 2. Substances that contributed to death for individuals who died of an accidental overdose in Rhode Island: January 1, 2016–December 31, 2022.

	Overall n=2,535 n (%)	2016 n=336 n (%)	2017 n=324 n (%)	2018 n=314 n (%)	2019 n=308 n (%)	2020 n=384 n (%)	2021 n=435 n (%)	2022 n=434 n (%)	p-value ¹
Drug Type									
Illicit	1,643 (64.8)	214 (63.7)	180 (55.6)	213 (67.8)	197 (64.0)	275 (71.6)	281 (64.6)	283 (65.2)	<0.0001±
Illicit and Prescription	606 (23.9)	66 (19.6)	86 (26.5)	66 (21.0)	85 (27.6)	76 (19.8)	119 (27.4)	108 (24.9)	
Prescription	284 (11.2)	56 (16.7)	58 (17.9)	35 (11.2)	26 (8.4)	33 (8.6)	35 (8.1)	41 (9.5)	
Unknown/Missing	<5	0	0	0	0	0	0	<5	
Drug Class									
Opioid	2,158 (85.1)	289 (86.0)	286 (88.3)	272 (86.6)	256 (83.1)	323 (84.1)	375 (86.2)	357 (82.3)	0.2523
Fentanyl	1,783 (70.3)	197 (58.6)	207 (63.9)	226 (72.0)	214 (69.5)	282 (73.4)	334 (76.8)	323 (74.4)	<0.0001
Cocaine	1,192 (47.0)	128 (38.1)	119 (36.7)	143 (45.5)	157 (51.0)	194 (50.5)	232 (53.3)	219 (50.5)	<0.0001
Alcohol	663 (26.2)	73 (21.7)	80 (24.7)	92 (29.3)	91 (29.6)	109 (28.4)	108 (24.8)	110 (25.4)	0.1884
Benzodiazepine	419 (16.5)	78 (23.2)	79 (24.4)	46 (14.7)	41 (13.3)	55 (14.3)	73 (16.8)	47 (10.8)	<0.0001
Amphetamines	183 (7.2)	10 (3.0)	14 (4.3)	13 (4.1)	21 (6.8)	29 (7.6)	54 (12.4)	42 (9.7)	<0.0001
Other ²	42 (1.7)	6 (1.8)	6 (1.9)	7 (2.2)	<5	<5	8 (1.8)	11 (2.5)	0.2499

Source: Office of the State Medical Examiners.

1 Chi-square test. ± Fisher's exact test. 2 Individuals who had none of the pre-selected drug categories contributing to their cause of death were classified as other.

Figure 1. Rate of accidental overdose deaths among Rhode Island residents, by decedent race and ethnicity: January 1, 2019–December 31, 2022.



Source: Office of the State Medical Examiners.

Note: Population denominator based on CDC WONDER single-race population estimates for each year accessed September 9, 2022; 2021 estimate applied for 2022 rates.

DISCUSSION

Consistent with national trends, RI experienced a spike in overdose fatalities beginning in the fall of 2019.² After the number of overdose fatalities peaked in 2021, overdose counts stabilized in 2022, signaling the first decrease in deaths since 2019. This aligns with trends in neighboring states, with Connecticut experiencing a 4.7% decrease and Massachusetts experiencing a 2.5% increase in overdose deaths from 2021 to 2022, respectively.^{4,5}

These data demonstrate how the populations disproportionately impacted by fatal overdose and the substances contributing to death continue to change over time. While most overdose deaths occurred among non-Hispanic White individuals, population-based rates highlighted that a disproportionate burden of overdose remained among non-Hispanic Black residents, and the rate of overdose had doubled among Hispanic or Latino population from 2021 to 2022. Racial disparities observed in overdose fatality data have also been observed in Connecticut, where overdose mortality rates among non-Hispanic Black (71.6 per 100,000) and Hispanic individuals (46.0 per 100,000) surpassed that of non-Hispanic White individuals (37.0 per 100,000) in 2022.⁴ In 2022, individuals ages 55-64 contributed to over 20% of fatal overdoses for the first time since 2016, with deaths increasing by 25% among this population in a single year (2021: n=72; 2022: n=90).

Opioids and fentanyl continue to contribute to most overdose fatalities in RI, while the contribution of prescription drugs to the overdose epidemic has declined. Although data are not currently available, xylazine is expected to contribute to a growing proportion of overdose deaths in RI based on data from neighboring states.⁶ In June 2023, the RI State Health Laboratories added xylazine to the opioid toxicology panel, allowing RIDOH to monitor the future impact of this substance over time, as the number of xylazine-involved fatal overdoses in RI is currently unknown.

The State of RI has invested in multiple statewide programs to reduce the impact of fatal overdoses among high-burden populations. In July of 2021, legislation to establish the state's first Harm Reduction Center was passed with the goal of connecting individuals to treatment and support services. The Harm Reduction Center is currently scheduled to open in the spring of 2024 in Providence, RI. State-funded community organizations have significantly increased efforts to disseminate harm reduction kits, with 36,694 naloxone kits, 14,317 safer-smoking kits, and 45,355 safer-injection kits distributed in 2022.⁷ In October 2023, the RIDOH Drug Overdose Prevention Program will begin funding select organizations to expand outreach efforts among Black, Indigenous, People of Color (BIPOC) communities at risk of overdose.

Future analyses should aim to investigate additional disparities that may exist based on age, overdose setting, and substances contributing overdose, and be utilized to ensure prevention efforts appropriately target the highest burden communities.

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