

# Racial and Ethnic Disparities in Accidental and Undetermined Drug Overdose Deaths – Rhode Island, 2016–2021

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## ABSTRACT

**BACKGROUND:** Over the last 21 years, drug overdose deaths have increased nationwide, particularly in Rhode Island (RI). The goal of this work is to identify populations that are disproportionately impacted by accidental drug overdose deaths to guide future intervention efforts.

**METHODS:** We obtained data on accidental and undetermined drug overdose deaths from the RI State Unintentional Drug Overdose Reporting System (SUDORS) database from 2016 to 2021. We compared basic demographic factors stratified by decedent race and ethnicity. Chi Square and Fisher's exact tests were used to determine differences in characteristics across racial groups.

**FINDINGS:** Across all race and ethnic groups, cocaine-involved (64.5%) fatal overdoses were higher among Black non-Hispanics. White, non-Hispanics (31.4%) were more likely to receive treatment for substance use disorder (SUD) when compared to minority groups.

**CONCLUSION:** To help address the gaps in treatment for SUD among minority groups, culturally responsive intervention efforts should prioritize connecting minority groups to treatment.

**KEYWORDS:** fatal overdose, substance use disorder, opioid use disorder, race, ethnicity

## INTRODUCTION

Over the past 21 years, there have been 932,000 drug overdose deaths recorded in the United States.<sup>1</sup> While the overdose epidemic impacts all racial and ethnic groups in Rhode Island (RI), fatal overdose rates have been highest among marginalized groups. Since 2016, the rates of fatal overdose among Black non-Hispanic and Hispanic individuals have gradually risen while reductions have been observed among the White non-Hispanic population, likely due to intervention efforts.<sup>2</sup> Previous work in RI has found that among overdose decedents, minority groups were less likely to have received substance use disorder (SUD) treatment prior to their death.<sup>3</sup>

The impact of fatal overdose among minority groups are not only associated with gaps in healthcare for the treatment

of SUD, but also a reflection of disparities in recovery capital.<sup>4</sup> People of color are faced with acute and chronic stress due to healthcare barriers to treat pain, and for those who are unemployed or underemployed, they run the risk of being uninsured which disproportionately impacts minority groups. The gap between those at the top of the social ladder and those at the bottom can result in a series of poor health outcomes and is reflective of the widened disparities across racial groups.<sup>5</sup>

To guide future intervention efforts toward a more culturally responsive overdose prevention strategy, we describe accidental and undetermined drug overdose fatalities in RI and stratify the results by race and ethnicity to determine disparities among fatal overdoses and examine underlying circumstances that contribute to the fatal outcome.

## METHODS

We collected data on overdose deaths that occurred in RI from January 1, 2016, to December 31, 2021, from the RI State Unintentional Drug Overdose Reporting System (SUDORS). This surveillance system captures fatal overdoses that are determined to be accidental or undetermined in intent by the Office of the State Medical Examiners. It includes decedent and overdose information from death certificates, medical records, medical examiner or coroner reports, toxicology results, and scene investigation findings when available.

Demographic and additional circumstance data (history of substance use treatment, prior overdose, recent release from institutions, and mental health diagnoses) are limited to decedents with known information.

Decedents with missing race and ethnicity information were excluded from all analyses (n=27). Decedents were categorized as either Hispanic (any race), non-Hispanic White, and non-Hispanic Black. To comply with the RI Small Numbers Reporting Policy, individuals identified as non-Hispanic who were Asian, American Indian, or had unknown race were excluded from the analysis (n=31).

All cells with small cell counts (<5) were suppressed. Demographic and additional circumstance data were stratified by race and ethnicity, and statistical significance was determined using chi-square and Fisher's exact tests. All analyses were performed in SAS [Version 9.4].

## RESULTS

From January 1, 2016, to December 31, 2021, 2,133 fatal overdoses occurred in RI, of which 2,075 met inclusion criteria and were included in the final analysis. Reflective of Rhode Island's population, most fatal overdoses occurred among 1,648 White, non-Hispanic (79.4%) decedents, with 155 deaths occurring among individuals who were Black, non-Hispanic (7.5%), and 272 among Hispanic or Latino (13.1%) populations. Overall, overdose deaths were higher among males (71.4%) across all racial and ethnic groups; however, this was notably higher among Hispanic or Latino males (81.3%; White, non-Hispanic: 69.7%; Black, non-Hispanic: 72.3%; (Table 1).

Overall, when stratified by race and ethnicity, 53.3% of White, non-Hispanic, 46.5% of Black, non-Hispanic, and 65.4% of Hispanic or Latino individuals were age 44 years and younger. Additionally, 396 White, non-Hispanic (24.0%), 37 Black, non-Hispanic (23.9%), and 54 Hispanic or Latino (19.9%) individuals were age 45–54. Lastly, 374 White, non-Hispanic (22.7%), 46 Black, non-Hispanic (29.7%), and 40 Hispanic or Latino (14.7%) individuals were age 55 and older.

Across all race and ethnic groups, 28.0% of decedents had a documented history of treatment for substance use (Table 2). A higher proportion of White, non-Hispanic (31.4%) individuals received treatment for SUD when compared to Black, non-Hispanic (14.8%) and Hispanic or Latino (14.7%) populations. Additionally, a higher proportion of White, non-Hispanic decedents (18.0%) were in active treatment at the time of fatal overdose when compared to non-Hispanic Black and Hispanic decedents (6.5%, 7.7%, respectively). Half of all overdose decedents had a documented mental health condition (50.3%; Table 2). Of these, higher proportions were observed among White, non-Hispanic (53.2%) when compared to Black, non-Hispanic (43.2%) and Hispanic or Latino (36.4%) decedents. Among individuals with a documented mental health diagnosis, the top five mental health diagnoses among decedents were depression (27.8%), anxiety (23.3%), Post-Traumatic Stress Disorder (7.9%), bipolar disorder (7.2%), and Attention Deficit or Hyperactivity Disorder

**Table 1.** Decedent demographics, substances contributing to cause of death, and history of prior overdose among fatal overdoses occurring in RI by decedent race and ethnicity, 2016–2021.

	Total	Race/Ethnicity			P-Value
	2,075 (100%)	Non-Hispanic White 1,648 (79.4%)	Non-Hispanic Black 155 (7.5%)	Hispanic/Latino 272 (13.1%)	
<b>Age (Years)</b>					0.0043*
<25	119 (5.7)	90 (5.5)	8 (5.2)	21 (7.7)	
25–34	508 (24.5)	392 (23.8)	36 (23.2)	80 (29.4)	
35–44	501 (24.1)	396 (24.0)	28 (18.1)	77 (28.3)	
45–54	487 (23.5)	396 (24.0)	37 (23.9)	54 (19.9)	
55+	460 (22.2)	374 (22.7)	46 (29.7)	40 (14.7)	
<b>Sex</b>					0.0004*
Female	594 (28.6)	500 (30.3)	43 (27.7)	51 (18.8)	
Male	1,481 (71.4)	1,148 (69.7)	112 (72.3)	221 (81.3)	
<b>Substances Contributing to Cause of Death</b>					
Opioid	1,782 (85.9)	1,416 (85.9)	122 (78.7)	244 (89.7)	0.0072*
Fentanyl	1,392 (67.1)	1,065 (64.6)	104 (67.1)	223 (82.0)	<0.0001*
Benzodiazepine	374 (18.0)	341 (20.7)	6 (3.9)	27 (9.9)	<0.0001*
Cocaine	889 (42.8)	655 (39.8)	100 (64.5)	134 (49.3)	<0.0001*
Alcohol	527 (25.4)	392 (23.8)	49 (31.6)	86 (31.6)	0.0041*
<b>Prior Overdose</b>					
Any Previous Overdose	260 (12.5)	221 (13.4)	18 (11.6)	21 (7.7)	0.0298*
Previous Overdose in Last Month	84 (4.1)	72 (4.4)	6 (3.9)	6 (2.2)	
Previous Overdose Between a Month and a Year Ago	66 (3.2)	54 (3.3)	7 (4.5)	5 (1.8)	
Prior Overdose More Than a Year ago	36 (1.7)	33 (2.0)	<5	<5	
Prior Overdose Time Unknown	74 (3.6)	62 (3.8)	<5	9 (3.3)	

Source: State Unintentional Drug Overdose Reporting System.

Note: Due to RIDOH's Small Number Reporting Policy, counts fewer than 5 individuals (<5) have been suppressed. Due to rounding, percentages may add to more than 100%. Percentage calculations are based on available characteristic totals; thus, some categories do not sum to the yearly totals.

\*Indicates statistical significance  $p < 0.05$

(7.2%). Fewer than 15% of individuals had a known non-fatal overdose prior to their death, and no significant difference was observed when stratified by race and ethnicity.

Opioids and fentanyl contributed to most causes of death among overdose decedents irrespective of race and ethnicity (opioids: 85.9%; fentanyl: 67.1%; Table 1). Notably, higher proportions of fentanyl-involved fatal overdoses were observed among Hispanic (82.0%) decedents when compared to Black non-Hispanic (67.1%) and White non-Hispanic (64.6%) decedents. Though benzodiazepine-involved fatal overdoses were relatively minimal across all racial and ethnic groups, White, non-Hispanic (20.7%) individuals

were more likely to have benzodiazepines contribute to cause of death when compared to minority groups (Black, non-Hispanic 3.9%; Hispanic or Latino 9.9%). Cocaine-involved fatal overdoses were mostly observed among Black non-Hispanic individuals (64.5%; White non-Hispanic: 39.8% and Hispanic or Latino: 49.3%). Alcohol-involved fatal overdoses primarily impacted Black, non-Hispanic (31.6%) and Hispanic or Latino decedents (31.6%) when compared to White non-Hispanic decedents (23.8%).

Within a month prior to death, few individuals were released from an institution (8.2%; **Table 3**) which included jails, prisons, detention facilities, hospitals (including psychiatric), long-term care, or residential health facilities.

## DISCUSSION

In this retrospective cohort study of accidental and undetermined overdose deaths, we found that non-Hispanic Black and Hispanic individuals were less likely to receive SUD treatment prior to death when compared to non-Hispanic White decedents. These findings highlight health disparities in access and/or availability of treatment for SUD among minority groups and provide evidence that culturally responsive intervention efforts should be developed to help connect minority groups to treatment and improve access. This work also highlighted differences in the underlying substances contributing to the cause of death by race and ethnicity with the highest proportion (82.0%) of fentanyl-involved deaths among Hispanic or Latino decedents, while cocaine-involved overdoses were more prevalent among Black non-Hispanic (64.5%) individuals. These findings support the need for tailored harm reduction resources and messages that account for the underlying differences in substance use by race and ethnicity.

Reflective of the RI population, in this study the highest number of drug overdose deaths occurred among White, non-Hispanic individuals. However, previous work has shown when accounting for the size of the underlying population, the highest burden of fatal overdoses is among the non-Hispanic Black population in RI.<sup>2</sup> The previous analysis also showed that historical improvements in fatal overdoses from 2016 to 2019 predominantly benefitted White, non-Hispanics; with fatal overdose rates among Hispanic

Table 2. Known decedent mental health conditions and treatment for substance use disorder among fatal overdoses occurring in RI by decedent race and ethnicity, 2016-2021.

	Total	Race/Ethnicity			P-Value
	2,075 (100%)	Non-Hispanic White 1,648 (79.4%)	Non-Hispanic Black 155 (7.5%)	Hispanic/Latino 272 (13.1%)	
<b>Mental Health</b>					
Known Mental Health Condition	1,043 (50.3)	877 (53.2)	67 (43.2)	99 (36.4)	<0.0001*
<b>Top 5 Mental Health Diagnoses</b>					
Depression	576 (27.8)	478 (29.0)	39 (25.2)	59 (21.7)	0.0335*
Anxiety	483 (23.3)	422 (25.6)	22 (14.2)	39 (14.3)	<0.0001*
Post-Traumatic Stress Disorder	163 (7.9)	133 (8.1)	16 (10.3)	14 (5.2)	0.1246
Bipolar Disorder	149 (7.2)	130 (7.9)	9 (5.8)	10 (3.7)	0.0353*
Attention Deficit/Hyperactivity Disorder (ADHD)	149 (7.2)	132 (8.0)	5 (3.2)	12 (4.4)	0.0145*
<b>Treatment for Substance Use Disorder</b>					
Any Treatment for Substance Use Disorder	580 (28.0)	517 (31.4)	23 (14.8)	40 (14.7)	<0.0001*
Active in Treatment at Time of Death	327 (15.8)	296 (18.0)	10 (6.5)	21 (7.7)	
Not Active in Treatment, But Treated in Past	253 (12.2)	221 (13.4)	13 (8.4)	19 (7.0)	
No Treatment	1,495 (72.1)	1,131 (68.6)	132 (85.2)	232 (85.3)	

Source: State Unintentional Drug Overdose Reporting System.

Note: Due to RIDOH's Small Number Reporting Policy, counts fewer than 5 individuals (<5) have been suppressed. Due to rounding, percentages may add to more than 100%. Percentage calculations are based on available characteristic totals; thus, some categories do not sum to the yearly totals.

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and non-Hispanic Blacks gradually increasing from 2016–2020.<sup>2</sup> Additionally, it found that from 2016 to 2020, the non-Hispanic Black population in RI had the highest rate of fatal overdoses overall, as well as the highest rates for opioid, fentanyl, and cocaine-involved overdoses, followed closely by rates among the Hispanic population, when compared to the non-Hispanic White population.<sup>2</sup> These trends align with national data which shows that while the rate of overdose deaths increased among all individuals following the onset of the COVID-19 pandemic, Black non-Hispanic individuals experienced a disproportionate increase in fatal overdoses from 2019 to 2020, particularly in areas with high availability of mental health and opioid treatment providers.<sup>6</sup> Changes in access to healthcare due to the pandemic, limitations in access to public supports and harm reduction services, changes in drug supply, and an increase in individuals using drugs alone may have contributed to the observed increase in fatal overdoses.<sup>7</sup> These factors may have also impacted the proportion of decedents in our study

who experienced fatal overdose after the onset of the pandemic and were engaged in treatment for substance use disorder prior to death. Together, these findings emphasize the need for continued overdose prevention efforts specifically targeting Hispanic and non-Hispanic Black Rhode Islanders.

In this analysis, half of all fatal overdose decedents had at least one diagnosed mental health condition (e.g., depression, anxiety, bipolar disorder etc.), aligning with prior work on the association between mental health and substance use co-occurring disorders.<sup>8</sup> The proportion of Black non-Hispanic and Hispanic decedents who received a mental health diagnosis were disproportionately lower than their White counterparts; however, rather than a true difference in the prevalence of underlying mental health conditions, this could be due to reduced access to care or differences in care-seeking behavior.<sup>9</sup>

This analysis also found that the White non-Hispanic population had a higher proportion of individuals who received SUD treatment prior to their fatal overdose. Treatment at the time of death is a treatment failure. Though there are diverse complexities surrounding SUD treatment and co-occurring disorders, a timely and pragmatic approach to address the systemic gaps in treatment is imminently needed.<sup>10,11</sup> To establish health equity, evidence-based treatment for SUD and culturally appropriate interventions are imperative to bridge the gap that disproportionately affect minority communities. In addition to increasing access, SUD treatment initiation, maintenance, and long-term recovery are likely easier among individuals with higher recovery capital. As such, a public health approach that focuses on social determinants of health (e.g., education, socioeconomic status, job security etc.) and building recovery capital is needed to eliminate disparities among those at risk for SUD.<sup>4</sup> Unaddressed, these social determinants can contribute to a cycle of intergenerational health inequities which exacerbates the risk of overdose fatalities.<sup>5,12</sup>

In addition to improving recovery capital, prior work on racial disparities in accessing treatment for SUD observed that the lack of cultural competency in the healthcare workforce impacted treatment access and retention.<sup>13</sup> Research shows that older Black and Hispanic patients were more likely to seek treatment and were less likely to complete treatment because they are usually asked to leave before treatment is complete when compared to White, non-Hispanics due to uninsurance, and inadequate coverage.<sup>14</sup>

**Table 3.** Decedent recent release from institutions among fatal overdoses occurring in RI by decedent race and ethnicity, 2016–2021.

	Total	Race/Ethnicity			P-Value
	2,075 (100%)	Non-Hispanic White 1,648 (79.4%)	Non-Hispanic Black 155 (7.5%)	Hispanic/Latino 272 (13.1%)	
<b>Recent Release from Institutions</b>					
Any Evidence of Recent Release	170 (8.2)	145 (8.8)	10 (6.5)	15 (5.5)	0.0017*±
<b>Types of Institutions</b>					<0.0001*±
Jail, Prison, or a Detention Facility	46 (2.2)	34 (2.1)	5 (3.2)	7 (2.6)	
Hospital	53 (2.6)	44 (2.7)	<5	5 (1.8)	
Psychiatric Hospital or Institution	27 (1.3)	25 (1.5)	0	<5	
Long-Term Care and Residential Health Facility	38 (1.8)	36 (2.2)	<5	<5	
Other/ Unknown	6 (0.3)	6 (0.4)	0	0	

Source: State Unintentional Drug Overdose Reporting System.

Note: Due to RIDOH's Small Number Reporting Policy, counts fewer than 5 individuals (<5) have been suppressed. Due to rounding, percentages may add to more than 100%. Percentage calculations are based on available characteristic totals; thus, some categories do not sum to the yearly totals.

\*Indicates statistical significance p<0.05

±Indicates the use of Fisher's exact test

Medicaid expansion is expedient to ensure significant increases in SUD treatment admissions, particularly for minority populations.<sup>15</sup> The harmful effects of substance use stigma among marginalized groups is a formidable obstacle to seeking sustained treatment. Society tends to judge individuals with SUDs more harshly and are viewed through the lens of moral failures which increases the degree of shame experienced by victims with SUD when compared to individuals with other forms of mental health disorders.<sup>16</sup>

To address these disparities, the Rhode Island Department of Health (RIDOH) has expanded existing interventions to target minority communities. First, the RI Opioid Settlement Advisory Committee, in collaboration with the RI Governor's Overdose Prevention Task Force and Intervention Racial Equity Work Group, requires potential vendors to describe in detail how the organization acknowledges and addresses structural racism, as well as how their project aims to improve the health of RI's minority communities to eliminate disparities. Second, RIDOH has increased funding for naloxone distribution and other harm reduction intervention outreach in high burden and underserved communities. Finally, the State's Overdose Fatality Review team has conducted case review meetings with key community stakeholders to recommend specific structural interventions to guide prevention efforts, with an emphasis on marginalized populations that are disproportionately impacted by fatal overdose.



The study is subject to at least three limitations. First, these analyses are limited to substances contributing to the cause of death and could not comment to racial differences in substance use intentionality. Secondly, to comply with the RIDOH Small Number Reporting Policy, non-Hispanic Asians, American Indians/Pacific Islanders, and individuals of unknown ethnicity were excluded from this analysis, and therefore we could not incorporate disparities in these groups. Finally, SUDORS data is limited to reports and narratives gathered from law enforcement, medical examiner, and available medical records which may underestimate overdose circumstance data and overdose risk factors.

To better inform intervention efforts, future analyses should investigate whether substances contributing to death were illicit or prescribed, as well as bystander presence and interventions performed at the time of fatal overdose across racial and ethnic groups.

## CONCLUSIONS

Drug overdose fatalities disproportionately impact Hispanic and non-Hispanic Black communities in RI. To help address the gaps in treatment for SUD among minority groups, culturally responsive intervention efforts should be targeted towards connecting minority groups to treatment services to reduce overdose fatalities.

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