



The Commonwealth of Massachusetts
Executive Office of Health and Human Services
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October 10th, 2024

Steven T. James
House Clerk
State House Room 145
Boston, MA 02133

Michael D. Hurley
Senate Clerk
State House Room 335
Boston, MA 02133

Dear Mr. Clerk,

Pursuant to Section 138 of Chapter 126 of the Acts of 2022, the Fiscal Year 2023 General Appropriations Act, please find enclosed a report from the Department of Public Health entitled "An Examination of Opioid-Related Overdose Deaths among Massachusetts Residents."

Sincerely,

A handwritten signature in black ink, appearing to be "R. Goldstein".

Robert Goldstein, MD, PHD
Commissioner
Department of Public Health

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An Examination of Opioid-Related Overdose Deaths among Massachusetts Residents

July 2024

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Legislative Mandate

The following report is issued pursuant to Section 138 of Chapter 126 of the Acts of 2022, the Fiscal Year 2023 General Appropriations Act as follows:

- a) *Notwithstanding any general or special law to the contrary, the secretary of health and human services, in collaboration with the commissioner of public health, shall conduct or provide for an examination of the prescribing and treatment history, including court-ordered treatment or treatment within the criminal legal system, of persons in the commonwealth who suffered fatal overdoses in calendar years 2019 to 2021, inclusive, and annually thereafter, and shall report in an aggregate and de-identified form on trends discovered through the examination. The secretary of health and human services may contract with a nonprofit or educational entity to conduct data analytics on the data set generated in the examination; provided, however, that the executive office shall implement appropriate privacy safeguards consistent with state and federal law.*
- b) *To facilitate the examination pursuant to subsection (a), the department of public health shall request, and the relevant offices and agencies shall provide, information necessary to complete the examination from the division of medical assistance, the executive office of public safety and security, the center for health information and analysis, the office of patient protection, the department of revenue and the chief justice of the trial court, which may include, but shall not be limited to, data from the: (i) prescription drug monitoring program established in [section 24A of chapter 94C](#) of the General Laws; (ii) all-payer claims database established in [section 12 of chapter 12C](#) of the General Laws; (iii) criminal offender record information database established in [section 172 of chapter 6](#) of the General Laws; and (iv) court activity record information system established in [section 9 of chapter 258E](#) of the General Laws. To the extent feasible, the department of public health shall request data from the Massachusetts Sheriffs Association, Inc. relating to treatment within houses of correction.*
- c) *Not later than July 1, 2023, and annually thereafter, the secretary of health and human services shall publish a report on the findings of the examination including, but not limited to: (i) the overall prescription history of the individuals, including both agonist and antagonist medications for opioid use disorder; (ii) the mental and behavioral health and substance use treatment history of the individuals, including an outcome comparison of voluntary versus involuntary treatment, controlling for other factors; (iii) structural factors that contribute to heightened risk of overdose including, but not limited to, employment status, housing status, criminal legal involvement, income, medical comorbidities including, but not limited to, bacterial or viral infections and substance use sequelae and other demographic markers including, but not limited to, race, ethnicity, age, gender identity, sexual orientation and*

immigration status; (iv) trends in the substances observed in overdose events; (v) whether the individuals had attempted to enter but were denied access to mental or behavioral health or substance use treatment; (vi) whether the individuals had received past treatment for a substance overdose; and (vii) whether any individuals had been previously detained, committed or incarcerated and, if so, whether they had received treatment and treatment type during the detention, commitment or incarceration.

The reports shall be filed with the clerks of the house of representatives and senate, the house and senate committees on ways and means, the joint committee on mental health, substance use and recovery, the joint committee on public health and the joint committee on health care financing.

Executive Summary

Section 138 of Chapter 126 of the Acts of 2022 requires an examination of the prescribing and treatment history, including court-ordered treatment or treatment within the criminal legal system, of persons in the Commonwealth who suffered fatal overdoses in calendar years 2019 to 2021. This report contains the results of preliminary analyses that are responsive to the reporting requirements outlined in the legislation.

Section 138 of Chapter 126 specifically directs reporting on:

1. the overall prescription history of the individuals, including both agonist and antagonist medications for opioid use disorder;
2. the mental and behavioral health and substance use treatment history of the individuals, including an outcome comparison of voluntary versus involuntary treatment, controlling for other factors;
3. structural factors that contribute to heightened risk of overdose including, but not limited to, employment status, housing status, criminal legal involvement, income, medical comorbidities including, but not limited to, bacterial or viral infections and substance use sequelae and other demographic markers including, but not limited to, race, ethnicity, age, gender identity, sexual orientation, and immigration status;
4. trends in the substances observed in overdose events;
5. whether the individuals had attempted to enter but were denied access to mental or behavioral health or substance use treatment;
6. whether the individuals had received past treatment for a substance overdose;
7. whether any individuals had been previously detained, committed or incarcerated and, if so, whether they had received treatment and treatment type during the detention, commitment, or incarceration.

DPH determined that this evaluation can best be accomplished by using and expanding the Public Health Data Warehouse (PHD) instead of building a new system. The [Public Health Data Warehouse \(PHD\)](#) is authorized by Section 237 of Chapter 111. It provides access to timely, linkable, longitudinal data from across state and local government agencies to enable secure analysis of priority population health trends. Section 237 mandates that the Department prioritize analyses of fatal and non-fatal opioid overdoses.

By linking Death Certificate Records with Prescription Monitoring Program data, All-Payer Claims Data, the Bureau of Substance Addiction Services Treatment Data, and the Department of Correction Prison Data, DPH analyzed the prescription histories of people who died of an opioid-related overdose or any drug-related overdose. Results show that people who died of either an opioid-related overdose or any drug overdose from 2019 through 2022 were more likely to have had a prescription for certain drugs (MOUD, opioid, benzodiazepine, or stimulant) the further away in time from the death. Looking back to 2011, people were more likely to have had a prescription for an opioid compared to the other drugs. This shows a need for greater use of and retention in MOUD.

To compare involuntary and voluntary treatment episodes, those with a Section 35 treatment episode were compared to those with a voluntary treatment episode (WMS +/- CSS). Section 35 treatment episodes more frequently were aged 18-29, female and non-Hispanic white. They more frequently had prior BSAS treatment enrollment within 6 months, were recently incarcerated, had a previous documented psychiatric diagnoses and receipt of benzodiazepine prescription, and were more likely living in rural areas of Massachusetts.

To assess outcomes between voluntary versus involuntary treatment while controlling for differences, a case-crossover analysis was conducted that included only those individuals who experienced both involuntary and voluntary treatment episodes. Analyses showed that those released from a Section 35 commitment had significantly greater odds of experiencing a non-fatal opioid overdose in both the 30- and 90-days following Section 35 as compared to the 30- and 90-day period following voluntary treatment.

Those released from a Section 35 commitment had greater odds of dying of any cause in both the 30- and 90-days following Section 35 as compared to the 30- and 90-day period following voluntary treatment. This result was not statistically significant, but the association is similar to the trends observed for non-fatal overdose.

Several analyses demonstrated that there are structural factors related to the heightened risk of overdose, including recent release from a county correctional facility; Black non-Hispanic, American Indian non-Hispanic, and Hispanic race or ethnicity; homeless housing status; criminal/legal involvement; less than a high school education; a mental health disability diagnosis; and a history of a prior work-related injury. Massachusetts communities with more significant social determinants of health (SDoH) challenges and fewer assets (social capital) exhibited higher opioid overdose mortality rates. Additionally, communities with higher ratios of Black, Hispanic, American Indian, or Alaska Native (AIAN), and Multiracial residents relative to white non-Hispanic residents coupled with more significant SDoH challenges had the highest opioid overdose mortality rates¹.

By linking Death Certificate Records with post-mortem toxicology results, trends related to what substances are present in opioid-related overdose deaths were analyzed. Fentanyl continues to be a driver of both opioid-related and all drug-related overdose. After fentanyl, cocaine is the drug most found in post-mortem toxicology of both opioid-related and all drug-related overdoses.

By linking Emergency Medical Services (EMS), Hospitalization, Death, and BSAS records through the PHD, we can identify who had received medical treatment for a past opioid-related overdose and who had received any treatment within the BSAS system. 62% of people who experienced a fatal opioid-related overdose from 2019 through 2021 had

¹ Massachusetts Department of Public Health. 2023. 2023 Report on Priority Public Health Trends from the Public Health Data Warehouse. <https://www.mass.gov/doc/phd-2023-legislative-report-0>.

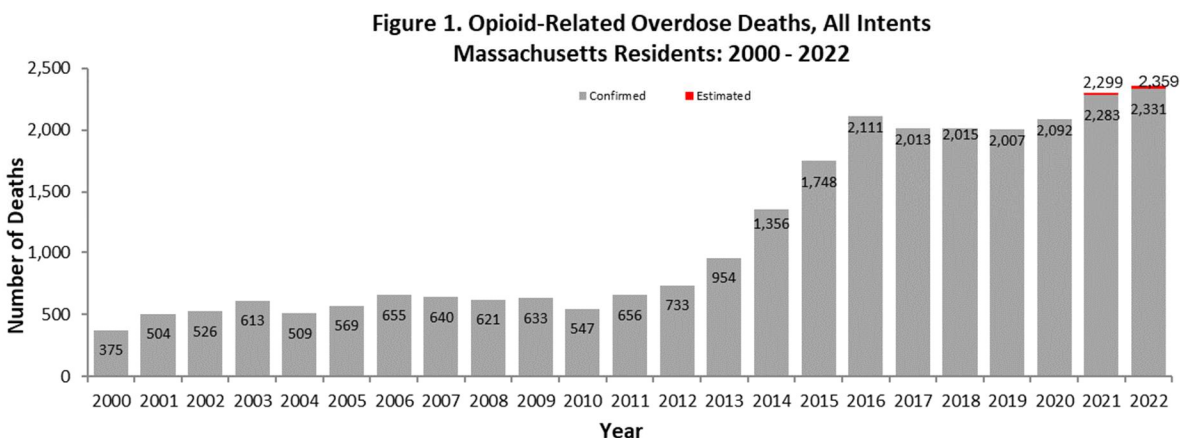
ever enrolled in BSAS treatment prior to their fatal overdose. 45% of these people had at least one prior opioid-related overdose before their fatal opioid-related overdose.

DPH could not conduct analyses on whether individuals had attempted to enter but were denied access to mental or behavioral health or substance use treatment, as there are no data or data sources available that include information on people who were denied access to mental or behavioral health or substance use treatment.

DPH will be able to report on an in-depth evaluation of treatment programs within houses of correction later in 2024. In the next year, DPH will continue work to bring into the PHD the additional datasets needed to refine the requested analyses. Continuing to provide accurate and detailed data analyses related to the opioid crisis in Massachusetts is critical to ensuring ongoing appropriate allocation of resources and access to care. We present this report so approaches and resources to end the epidemic can continue to be allocated effectively.

Introduction

Fatal drug overdoses, driven in Massachusetts by opioids, remain a persistent public health problem. From 2019 through 2022, 89% of all drug overdoses were opioid-related in Massachusetts. In 2022, an estimated record high 2,359 Massachusetts residents died of an opioid-related overdose².



The Public Health Data Warehouse (PHD), which combines individually linkable data across 24 state and county data sources with three community-level datasets, has been critical for generating insight on public health priorities not available from single sources of data. The PHD includes data related to public health, health care, public safety, the criminal/legal system, and the Social Determinants of Health.

² [Massachusetts Department of Public Health. \(2023 December\). Data Brief: Opioid-Related Overdose Deaths among Massachusetts Residents. Mass.gov.](https://www.mass.gov/info-details/data-brief-opioid-related-overdose-deaths-among-massachusetts-residents)

Section 138 of Chapter 126 of the Acts of 2022 requires an examination of the prescribing and treatment history, including court-ordered treatment or treatment within the criminal legal system, of persons in the Commonwealth who suffered fatal overdoses in calendar years 2019 to 2021.

To facilitate this examination, the legislation specifies six agencies that shall provide data:

1. Division of Medical Assistance
2. Executive Office of Public Safety and Security
3. Center for Health Information and Analysis
4. Office of Patient Protection
5. Department of Revenue
6. Chief Justice of the Trial Court

It further specifies four datasets/databases to be included:

1. Prescription Monitoring Program
2. All-Payer Claims Database
3. Criminal Offender Record Information Database
4. Court Activity Record Information System.

It goes on to specify that to the extent feasible, the Department of Public Health (DPH) shall request data from the Massachusetts Sheriffs Association, Inc. relating to treatment within Houses of Correction.

Additionally, it directs reporting on this examination including, but not limited to seven areas:

1. the overall prescription history of the individuals, including both agonist and antagonist medications for opioid use disorder;
2. the mental and behavioral health and substance use treatment history of the individuals, including an outcome comparison of voluntary versus involuntary treatment, controlling for other factors;
3. structural factors that contribute to heightened risk of overdose including, but not limited to, employment status, housing status, criminal legal involvement, income, medical comorbidities including, but not limited to, bacterial or viral infections and substance use sequelae and other demographic markers including, but not limited to, race, ethnicity, age, gender identity, sexual orientation, and immigration status;
4. trends in the substances observed in overdose events;
5. whether the individuals had attempted to enter but were denied access to mental or behavioral health or substance use treatment;
6. whether the individuals had received past treatment for a substance overdose;
7. whether any individuals had been previously detained, committed or incarcerated and, if so, whether they had received treatment and treatment type during the detention, commitment, or incarceration.

The examinations required by this legislation are a natural extension of work that was initially conducted pursuant to Chapter 55 of the Acts of 2015 as amended by Chapter 133 of the Acts

of 2016 and which is presently conducted utilizing the Public Health Data Warehouse (PHD) pursuant to Chapter 111 Section 237 of the General Laws^{3,4,5}. As such, DPH has determined that these examinations can best be accomplished by using and expanding the already existing PHD⁶.

This is the second report made pursuant to Section 138.

Background on the Public Health Data Warehouse

The [Public Health Data Warehouse \(PHD\)](#) is authorized by Section 237 of Chapter 111. It provides access to timely, linkable, longitudinal data from across state and local government agencies to enable secure analysis of priority population health trends. The PHD is a nationally recognized innovation, proven as an effective tool for accelerating data analysis and dissemination of actionable information to guide the Commonwealth's response to priority public health issues. Section 237 mandates that the Department prioritize analyses of fatal and non-fatal opioid overdoses. Since the examination required by Section 138 aligns with the mandate in Section 237 and the PHD already includes much of the data – although not all -- needed to conduct the required examination for Section 138, DPH determined that this evaluation can best be accomplished by using and expanding the PHD instead of building a new system.

Of the data-providing *agencies* outlined in the legislation, the PHD does not currently include data from the Office of Patient Protection, the Department of Revenue, or the Chief Justice of the Trial Court. Of the specific *datasets* outlined in the legislation, the PHD does not currently include the Criminal Offender Record Information database or the Court Activity Record Information System. Bringing data into the PHD for the first time is a significant process that requires coordination among legal, program, data, and IT staff from DPH and that data-providing agency. At the time of this report, DPH is still working to bring these new datasets into the PHD.

³ [Massachusetts Department of Public Health. \(2016, September 15\). *An Assessment of Opioid- Related Deaths in Massachusetts \(2013 – 2014\)*. Mass.gov.](#)

⁴ [Massachusetts Department of Public Health. \(2017, August 16\). *An Assessment of Fatal and Nonfatal Opioid Overdoses in Massachusetts \(2011 – 2015\)*. Mass.gov.](#)

⁵ [Massachusetts Department of Public Health. \(2019, November\). *Impact of the Opioid Epidemic on High-Risk Populations and Maternal Health: Results from the Public Health Data Warehouse*. Mass.gov.](#)

⁶ [Massachusetts Department of Public Health. \(2023, January 19\). *Modernizing the Public Health Data Warehouse: Tracking Public Health Trends 2021*. Mass.gov.](#)

Analysis #1: Examination of the overall prescription history of the individuals, including both agonist and antagonist medications for opioid use disorder

By linking Death Certificate Records with Prescription Monitoring Program data, All-Payer Claims Data, the Bureau of Substance Addiction Services Treatment Data, and the Department of Correction Prison Data, we can look back at the prescription histories of people who died of an opioid-related overdose or any drug-related overdose.

- Between 2019 and 2022, a total of 9,575 Massachusetts residents died of any drug-related overdose and had a record in the PHD; this number increased yearly from 2,188 in 2019 to 2,564 in 2022. Opioid-related overdose deaths made up 89% of these drug-related overdose deaths.
- Looking back to 2011 (the first year available in the PHD), over 81% of those who died of any drug-related overdose, as well as those who died of an opioid-related overdose, had at least one opioid prescribed to them during that time.
- Within one year leading to their death (for both those who died of any drug-related overdose as well as those who died of an opioid-related overdose), 24% had an opioid prescription. Within the 30 days leading to their death, 9% had an opioid prescription.
 - While the percentage of individuals with an opioid prescription within a year of their death has been slowly decreasing each year for both those who died of any drug-related overdose as well as those who died of an opioid-related overdose, the percent of individuals with an opioid prescription within the 30 days leading to their death among those who died of an opioid-related overdose has been increasing marginally each year.
- In comparison, only slightly more than half of these individuals who died of an opioid-related overdose (56%) had methadone, buprenorphine, or naltrexone - collectively known as medications for opioid use disorder (MOUD)- prescribed to them since 2011.
- MOUD were only prescribed to 11% of individuals who died of an opioid overdose within the 30 days leading to their death; this number has been decreasing slightly by year, from 13% of individuals in 2019 being prescribed MOUD in the 30 days leading to their death to 11% of individuals in 2022.
- More than one quarter (26% of those who died of an opioid-related overdose and 27% of those who died of any drug-related overdose) had a benzodiazepine prescription within one year of their death. Within the 30 days leading to their death, 19% of those who died of an opioid-related overdose and 20% of those who died of any drug-related overdose had a prescription for a benzodiazepine.

Concurrent benzodiazepine prescriptions increase the risk of complications among individuals with opioid use disorder. Benzodiazepines are a class of depressant drugs used to treat conditions such as seizures, anxiety, and insomnia; however, when combined with opioids, they increase the odds of a fatal opioid overdose as medications increase sedation and reduce respirations.

The data show that the use of Medications for Opioid Use Disorder (MOUD) goes down as the

time between receipt of MOUD and opioid-related overdose narrows. While just over half of people who died of an opioid-related overdose received at least one MOUD, looking back to 2011, this dropped to 32% at one year before death, 18% at 90 days before death, and 11% within 30 days after death. This shows a need for greater use of and retention in MOUD.

Figure 2: Selected prescription histories for Massachusetts residents who experienced a fatal opioid overdose from 2019 through 2022 (n=8,530)

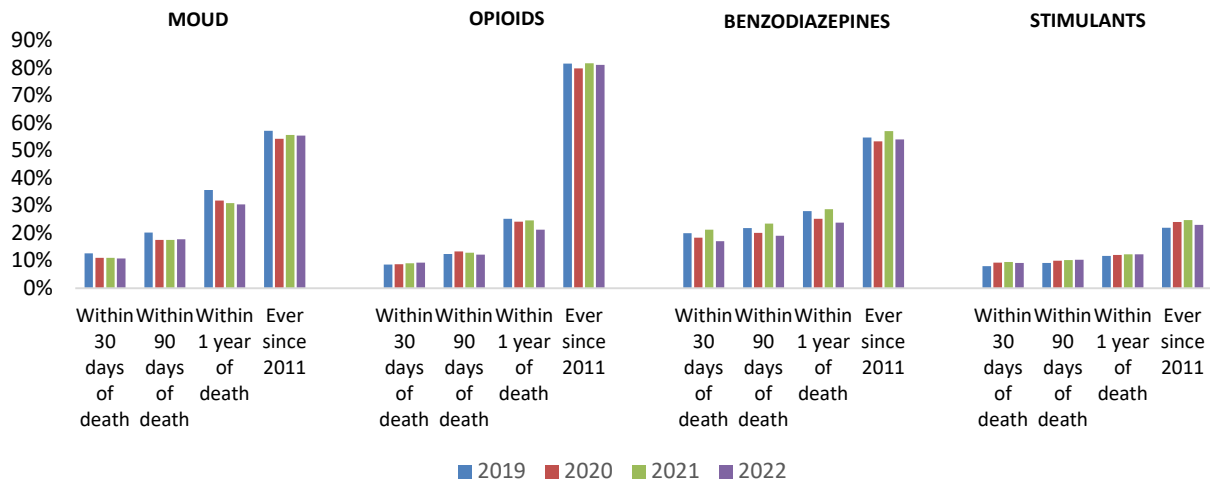
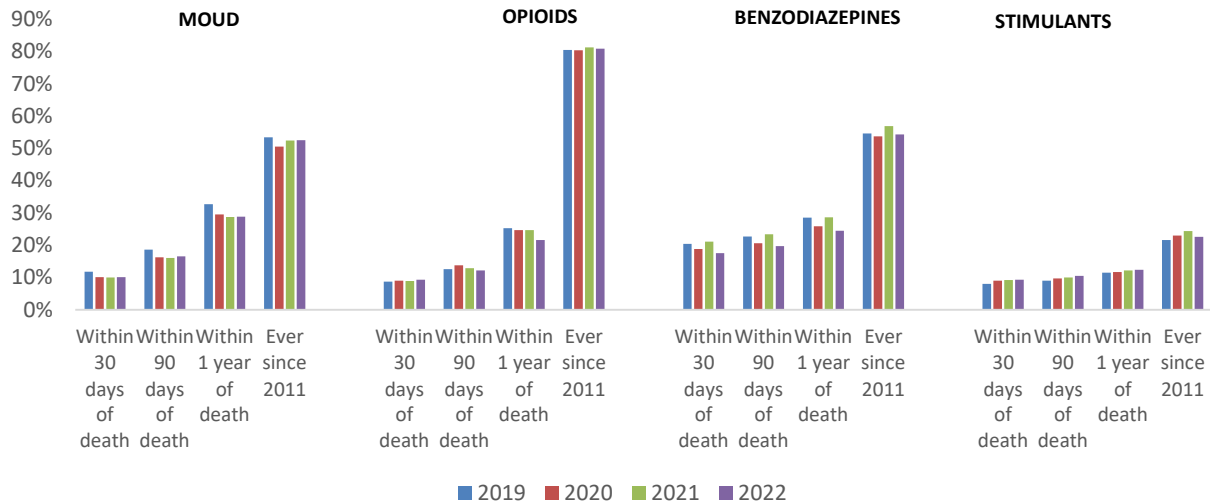


Figure 3: Selected prescription histories for Massachusetts residents who experienced a fatal drug overdose from 2019 through 2022 (n=9,575)



Analysis #2: Examination of the mental and behavioral health and substance use treatment history of the individuals, including an outcome comparison of voluntary versus involuntary treatment, controlling for other factors

In Massachusetts, individuals may be civilly committed for involuntary substance use disorder treatment under MGL ch.123, s. 35 (or Section 35) for up to 90 days. Under Section 35, a Petitioner may petition a court to involuntarily commit an individual believed to have an alcohol or substance use disorder for treatment. At the hearing on commitment, the court must find, by clear and convincing evidence, that (1) the respondent is an individual with a SUD; and (2) that there is a likelihood of serious harm as a result of the respondent's SUD.

To find that a likelihood of serious harm exists, courts must determine that either: (1) there is a substantial risk of physical harm to the respondent demonstrated by evidence of, threats of, or attempts at suicide or serious bodily harm; (2) there is a substantial risk of physical harm to other persons, as evidenced by homicidal or other violent behavior by the respondent; or (3) there is a very substantial risk of physical impairment or injury to the respondent demonstrated by evidence that the respondent's judgment is so affected that they are unable to protect themselves in the community and that reasonable provision for the respondent's protection is not available in the community. *Matter of G.P.*, 473 Mass. 112, 124-25 (2015).

Courts have further elaborated that the likelihood of serious harm must be "imminent," meaning that the harm will materialize "in the reasonably short-term—in days or weeks rather than in months." *Id.* at 128. Courts are also required to evaluate and determine that there are no appropriate, less restrictive alternatives that would adequately protect a respondent from a likelihood of imminent and serious harm before ordering commitment. *Matter of Minor*, 484 Mass. 295, 308-10 (2020).

Once committed under Section 35, the necessity of the commitment must be reevaluated by the program on days 30, 45, 60, and 75, as long as the commitment continues. M.G.L. c. 123 § 35. A person committed under Section 35 may be released prior to the expiration of the commitment after the program determines, in writing, that release of the person will not result in a likelihood of serious harm.

There are four agencies that operate or contract for Section 35 facilities: the Department of Public Health (DPH), the Department of Mental Health (DMH), the Department of Correction (DOC), and the Hampden County Sheriff's Department (HCSD). Section 35 programs offer treatment services at two different levels of care, Withdrawal Management Services (WMS), also known as Acute Treatment Services (ATS), and Clinical Stabilization Services (CSS).

WMS is a substance use disorder treatment service with 24-hour, seven-day-per-week nursing and medical supervision that includes withdrawal symptom management as part of medically

supervised withdrawal and/or induction into maintenance treatment. CSS is a substance use disorder treatment service that includes 24-hour-per-day supervision, observation, and support for individuals. The use of WMS and CSS services is based on an individual's treatment needs.

In the voluntary treatment system, WMS and CSS programs are distinct. Individuals typically engage in WMS for approximately 5 days and CSS for approximately 12 days. Individuals who enter a WMS level of care may or may not continue to a CSS program afterward, and individuals may access a CSS level of care without first using WMS. In co-located service settings, patients, if deemed clinically appropriate, can transition seamlessly from withdrawal management to clinical stabilization services.

To compare involuntary and voluntary treatment episodes, those with a Section 35 treatment episode were compared to those with a voluntary treatment episode (WMS +/- CSS). As is usual, some individuals in voluntary WMS continued CSS treatment, but many did not. We looked at adults (18 years of age and older) with indications of opioid use and/or opioid use disorder in the 12 months before their treatment for substance use between January 2015 and September 2021. We were able to identify adults by linking treatment records from the Bureau of Substance Addiction Services (BSAS) and Department of Mental Health (DMH), incarceration records from the Department of Correction (DOC) and Houses of Corrections (HOC), medical information from the Prescription Monitoring Program, Massachusetts Ambulance Trip Record Information System (MATRIS) records, All-Payer Claims Data (APCD) medical insurance records and Case Mix hospitalization records, and birth and death records from the Registry of Vital Records and Statistics. Individuals who went directly from Section 35 treatment to incarceration at a DOC or HOC facility or vice versa were removed from this analysis because individuals with coinciding civil commitment and criminal detention/incarceration had unique treatment pathways and opportunities (different from most Section 35 treatment episodes). Voluntary WMS and CSS data are representative of BSAS-contracted facilities only (e.g., neither those facilities operated by DOC, HOC, or DMH or BSAS-licensed facilities that are not BSAS funded). DPH anticipates incorporating non-contracted facilities into analyses in next year's report.

Between January 2015 and September 2021, there were 52,221 unique individuals with either indications of opioid use and/or opioid use disorder in the 12 months before their Section 35 or ATS treatment (who did not have coinciding criminal detention). Of those individuals, 74% (n=38,662) only ever received voluntary ATS treatment; the other 26% (n=13,559) received Section 35 treatment. Of the total 13,559 individuals who received Section 35 treatment, 64% also received voluntary ATS treatment (n=8,662).

**Figure 4: Treatment histories of all eligible individuals
(n=52,221)**

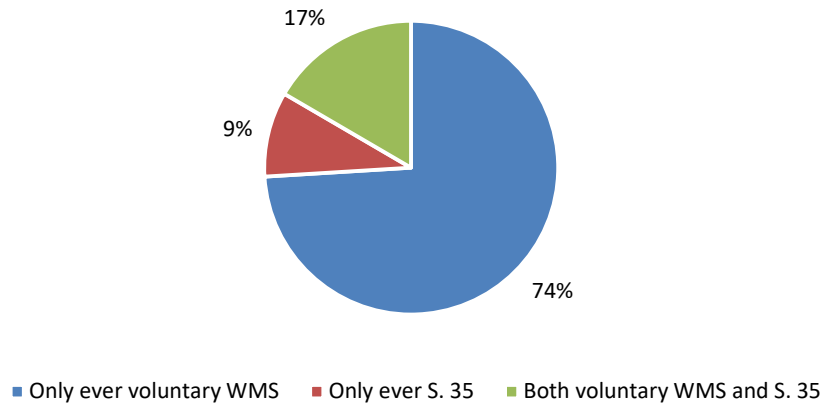


Table 1 shows the descriptive statistics summary of all WMS +/- CSS treatment episodes versus all Section 35 treatment episodes. In summary:

- Age
 - Compared to WMS+/-CSS episodes, the proportion of people aged 18-29 was higher among Section 35 treatment episodes (29.8% vs. 42.8%), and the proportions of people aged 30-44 and 45+ were lower among Section 35 treatment episodes (49.2% vs. 40.9%; 21% vs. 16.3%, respectively).
- Sex
 - Compared to WMS+/-CSS episodes, the proportion of females was higher among Section 35 treatment episodes (25.1% vs 39.2%).
- Race/ethnicity
 - Compared to WMS+/-CSS episodes, the proportion of non-Hispanic white individuals was higher among Section 35 treatment episodes (72.5% vs. 81.6%), and the proportions of Hispanic individuals and Black non-Hispanic individuals were lower among Section 35 treatment episodes (17.2% vs 11.3%; 6.9% vs. 4.8%, respectively).
- Prior BSAS treatment
 - Compared to WMS+/-CSS episodes, the proportion of admissions with prior (within 6 months) BSAS treatment enrollment for problem alcohol, stimulant, or cannabis was higher among Section 35 treatment episodes:
 - Alcohol (34.1% WMS+/-CSS vs 24.6% Section 35)
 - Stimulants (30.5% WMS+/-CSS vs 20.5% Section 35)
 - Cannabis (8.7% WMS+/-CSS vs 5.9% Section 35)
- Recent incarceration

- Compared to WMS+/-CSS episodes, the proportion of admissions with a previous incarceration history (within 6 months) was higher among Section 35 than WMS treatment episodes (18.6% vs 17.9%)
- Psychiatric diagnoses & treatments
 - Compared to WMS+/-CSS episodes, the proportion of admissions with previous documented psychiatric diagnoses and receipt of benzodiazepine prescriptions (within 6 months) was higher among Section 35 treatment episodes.
 - Anxiety (57.1% WMS+/-CSS vs 64.6% Section 35)
 - Depression (56.4% WMS+/-CSS vs 61.8% Section 35)
 - Bipolar disorder (24.8% WMS+/-CSS vs 31.9% Section 35)
 - Psychosis (18.7% WMS+/-CSS vs 27.6% Section 35)
 - Benzodiazepine prescription (15.5% WMS+/-CSS vs 21.7% Section 35)
- Rurality
 - Compared to WMS+/-CSS episodes, the proportion of admissions of individuals living in rural areas of Massachusetts was higher among Section 35 treatment episodes (5.5% vs 8.2%)

Table 1: Descriptive summary of all treatment episodes

| | Section 35 (Involuntary) | WMS +/-CSS (Voluntary) | p-value |
|--|-------------------------------------|-----------------------------------|----------------|
| N (treatment episodes) | 22,558 | 191,746 | |
| Age | | | <0.001 |
| 18-29 | 9,660 (42.8%) | 57,171 (29.8%) | |
| 30-44 | 9,214 (40.9%) | 94,411 (49.2%) | |
| 45+ | 3,684 (16.3%) | 40,164 (21.0%) | |
| Male sex | 13,709 (60.8%) | 143,641 (74.9%) | <0.001 |
| Race/ethnicity | | | <0.001 |
| White, non-Hispanic | 18,399 (81.6%) | 138,934 (72.5%) | |
| Black, non-Hispanic | 1,088 (4.8%) | 13,218 (6.9%) | |
| Hispanic | 2,541 (11.3%) | 32,878 (17.2%) | |
| Other | 530 (2.4%) | 6,707 (3.5%) | |
| Previous opioid WMS (within 6 months prior) | | | <0.001 |
| 0 | 15,964 (70.8%) | 87,737 (45.8%) | |
| 1 | 3,562 (15.8%) | 42,114 (22.0%) | |
| 2 | 1,417 (6.3%) | 22,648 (11.8%) | |
| 3+ | 1,615 (7.2%) | 39,247 (20.5%) | |
| Substance* listed as problematic during BSAS enrollment (within 6 months prior) | | | |
| Alcohol | 5,551 (24.6%) | 65,463 (34.1%) | 0.004 |
| Stimulant | 4,625 (20.5%) | 58,539 (30.5%) | <0.001 |
| Sedative | 2,830 (12.6%) | 38,624 (20.1%) | 0.24 |

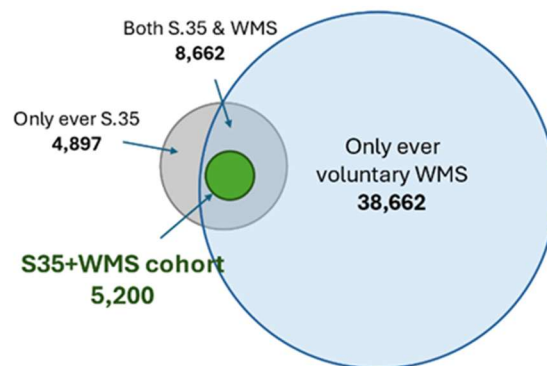
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|--|----------------|-----------------|--------|
| Cannabis | 1,333 (5.9%) | 16,752 (8.7%) | <0.001 |
| Medical insurance | | | <0.001 |
| Commercial | 1,835 (8.1%) | 7,101 (3.7%) | |
| Medicaid | 16,166 (71.7%) | 145,762 (76.0%) | |
| Medicare Advantage | 411 (1.8%) | 1,976 (1.0%) | |
| Other | 467 (2.1%) | 2,863 (1.5%) | |
| Missing | 3,679 (16.3%) | 34,044 (17.8%) | |
| Previous incarceration (within 6 months prior) | 4,190 (18.6%) | 34,285 (17.9%) | <0.001 |
| Previous methadone (within 6 months prior) | 3,321 (14.7%) | 36,380 (19.0%) | 0.17 |
| Previous buprenorphine (within 6 months prior) | 6,843 (30.3%) | 61,985 (32.3%) | <0.001 |
| Previous naltrexone (within 6 months prior) | 3,146 (14.0%) | 20,823 (10.9%) | <0.001 |
| Anxiety (within past year) | 14,564 (64.6%) | 109,450 (57.1%) | <0.001 |
| Depression (within past year) | 13,949 (61.8%) | 108,056 (56.4%) | <0.001 |
| Bipolar disorder (within past year) | 7,202 (31.9%) | 47,506 (24.8%) | <0.001 |
| Psychosis (within past year) | 6,230 (27.6%) | 35,801 (18.7%) | <0.001 |
| Benzodiazepine prescription (within 6 months prior) | 4,893 (21.7%) | 29,771 (15.5%) | <0.001 |
| Opioid overdoses in the past year | | | 0.37 |
| 0 | 15,029 (66.6%) | 143,656 (74.9%) | |
| 1 | 2,702 (12.0%) | 16,562 (8.6%) | |
| 2 | 934 (4.1%) | 6,567 (3.4%) | |
| 3+ | 3,893 (17.3%) | 24,961 (13.0%) | |
| Veteran | 2,596 (11.5%) | 22,244 (11.6%) | 0.65 |
| Rurality | | | <0.001 |
| Urban | 20,484 (90.8%) | 181,373 (94.6%) | |
| Rural | 1,248 (5.5%) | 7,183 (3.8%) | |
| Very rural | 597 (2.7%) | 3,190 (1.7%) | |
| Missing/unknown | 229 (1.0%) | 0 (0%) | |
| Disability | | | |
| Developmental | 7,662 (34.0%) | 53,212 (27.8%) | 0.52 |
| Intellectual | 671 (3.0%) | 2,959 (1.5%) | 0.59 |
| Hearing | 3,007 (13.3%) | 29,731 (15.5%) | 0.003 |
| Vision | 2,858 (12.7%) | 25,639 (13.4%) | 0.019 |
| Mobility | 13,990 (62.0%) | 124,379 (64.9%) | <0.001 |
| *These substances are not mutually exclusive; individuals could list more than one during a treatment episode. | | | |

Accessing voluntary and involuntary treatment are, by definition, very different processes. The results in Table 1 demonstrate the presence of meaningful characteristic differences between those accessing voluntary and involuntary treatment. To assess outcomes between voluntary

versus involuntary treatment while controlling for these differences, we conducted a case-crossover analysis that included only those individuals who experienced both involuntary and voluntary treatment episodes. In this case-crossover study design, each individual serves as their own control. The advantage of this design is that it controls for both measured and unmeasured individual characteristics.

Between January 2015 and September 2021, there were 8,662 individuals who had both voluntary and involuntary treatment. Sixty percent of the 8,662 individuals who had both Section 35 treatment and voluntary WMS+/-CSS treatment (n=5,200) met the additional inclusion criteria of having at least a 90-day period between their two treatment episodes (Section 35 and WMS+/-CSS) without any WMS or Section 35 admissions. This “washout” period between treatment episodes was included to limit potential carryover effects, where the effects of the first treatment are still present at the time of the second treatment.

Figure 5. Venn Diagram of Cohort of Massachusetts Residents with Opioid Use and/or Opioid Use Disorder who had at least One Episode of WMS or Section 35 Treatment, 2015-2021

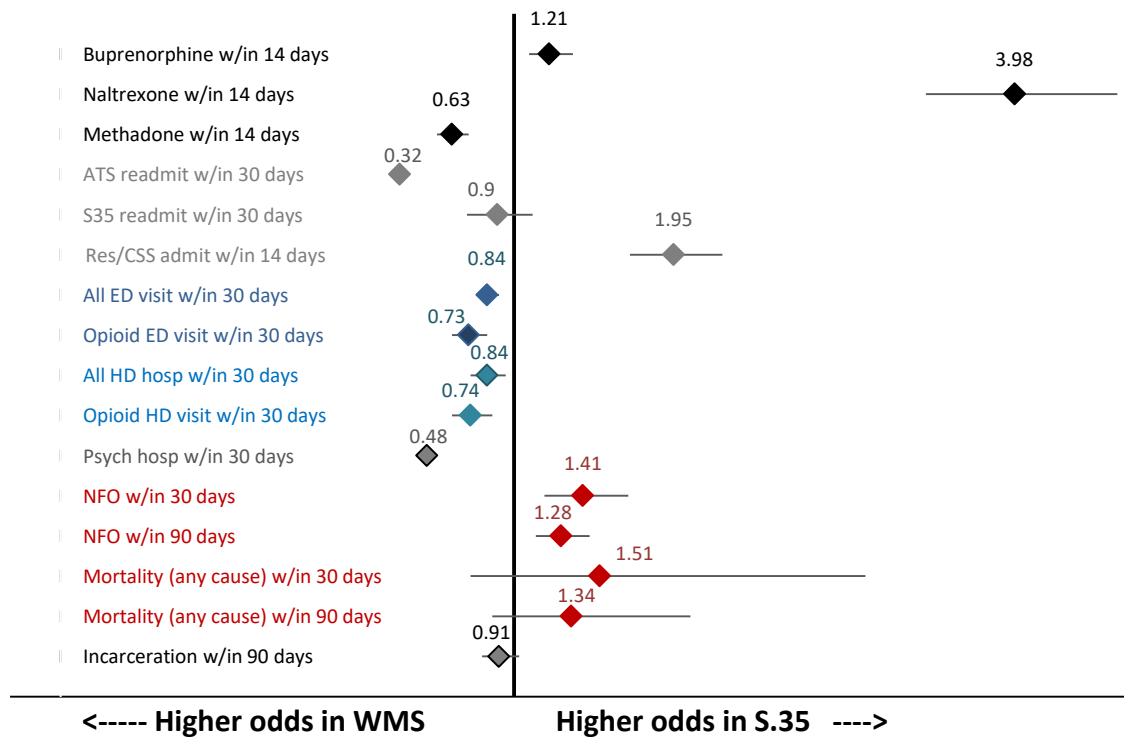


Outcomes of interest included: receipt of medications for opioid use disorder (MOUD), readmission to substance use treatment, receipt of residential aftercare for substance use, receipt of medical care, nonfatal opioid overdose, and all-cause mortality occurring after discharge. Multivariable logistic regression models (with generalized estimating equations accounting for repeated measures by individuals) were run for the comparison to estimate the effects of Section 35 treatment versus voluntary WMS+/-CSS on post-treatment outcomes. The model was adjusted for calendar time, which treatment someone received first, the amount of time between their treatment episodes, their type of medical insurance, the number of opioid overdoses they had in the past year if they had a prescription for a benzodiazepine in the 6 months before treatment, and if they had been previously incarcerated, previously received methadone, previously received buprenorphine, and previously received naltrexone in the 6 months before treatment.

Figure 6 shows the results of the analysis. In summary:

- Medication for opioid use disorder (MOUD)
 - Those released from Section 35 had 21% higher odds of being on buprenorphine within 14 days of release than those released from voluntary WMS+/-CSS (1.21, 95% CI [1.09, 1.35]).
 - Those released from Section 35 had almost 4 times the odds of being on naltrexone within 14 days of their release as compared to those released from voluntary WMS+/-CSS (3.98, 95% CI [3.45, 4.59]).
 - Those released from Section 35 had 37% lower odds of being on methadone within 14 days of their release as compared to those released from voluntary WMS+/-CSS (0.63, 95% CI [0.54, 0.73]).
- Readmissions
 - Those released from Section 35 had 68% lower odds of being admitted to voluntary WMS treatment within 30 days of their release as compared to those released from voluntary WMS+/-CSS (0.32, 95% CI [0.28, 0.37]).
- Residential aftercare
 - Those released from Section 35 had almost 2 times the odds of being admitted to residential substance use aftercare within 14 days of their release as compared to those individuals released from voluntary WMS+/-CSS (1.95, 95% CI [1.69, 2.24]).
- Medical Care
 - Those released from Section 35 had 16% lower odds of being admitted to the emergency room within 30 days of release as compared to those released from voluntary WMS+/-CSS (0.84, 95% CI [0.78, 0.91]).
 - Those released from Section 35 had 16% lower odds of being admitted to the hospital within 30 days of release as compared to those released from voluntary WMS+/-CSS (0.84, 95% CI [0.74, 0.95]).
 - Those released from Section 35 had about half the odds (52% lower odds) of psychiatric hospitalization within 30 days of release as compared to those released from voluntary WMS+/-CSS (0.48, 95% CI [0.42, 0.54]).
- Nonfatal opioid overdoses
 - Those released from Section 35 had 41% higher odds of a nonfatal opioid overdose within 30 days of release as compared to those released from voluntary WMS+/-CSS (1.41, 95% CI [1.18, 1.68]).
- All-cause mortality
 - While the difference was not statistically significant, those released from Section 35 had 51% higher odds of dying from any cause within 30 days of release (1.51, 95% CI [0.74, 3.09]) and 34% higher odds of dying from any cause within 90 days of release (1.34, 95% CI [0.87, 2.05]) as compared to those released from voluntary WMS+/-CSS.

Figure 6. Adjusted odds ratio Section 35 versus WMS treatment (n=5,200)



Overall opioid-specific ED visits and hospitalizations, as well as psychiatric hospitalizations within 30 days, were all less likely after Section 35 than after WMS +/- CSS treatment episodes. After Section 35 treatment episodes, individuals were more likely to receive further residential substance use treatment. This means that after Section 35 treatment episodes, individuals were less likely to be in the community and, therefore, not as likely to experience an ED stay or hospitalization.

Despite the higher opioid-related ED visit and hospitalization rates among those released from voluntary WMS +/- CSS treatment as compared to a Section 35 treatment episode, those released from a Section 35 episode had significantly greater odds of experiencing a non-fatal opioid overdose in both the 30- and 90-days following Section 35 as compared to equivalent periods following voluntary WMS +/- CSS.

Individuals released from Section 35 treatment were also more likely to die of any cause as compared to voluntary WMS +/- CSS. While these results were not statistically significant, they are important to note as 1) the association is similar in magnitude and direction to those of non-fatal opioid overdoses and 2) all-cause mortality is an infrequent event, causing the confidence intervals to be wider than those of nonfatal opioid overdoses. Additionally, in a non-adjusted comparison of outcomes among the overall cohort of treatment episodes (described in Table 1), there was a highly statistically significant difference in the all-cause mortality in the 30 days following release (0.7% Section 35 versus 0.3% WMS +/- CSS) and in the

90-days following release (1.6% Section 35 versus 0.9% WMS +/- CSS) from Section 35 as compared to after WMS +/- CSS ($p < 0.001$).

It is important to note that the odds of receiving any medication for opioid use disorder (MOUD) after either Section 35 or voluntary WMS+/-CSS were low (below 40%). MOUD access after these treatment episodes was mixed – naltrexone and buprenorphine treatment were more common after Section 35, and methadone treatment was more common after WMS+/-CSS.

Naltrexone is a medication for addiction treatment with no addiction or diversion potential.⁷ However, naltrexone is more difficult to initiate as compared to buprenorphine and methadone because patients treated with naltrexone must be abstinent from all opioids for at least 7 days to avoid precipitated withdrawal - it is only effective for reducing use among patients who are not tolerant to opioids and does not relieve/may worsen withdrawal symptoms.⁸ Adherence to naltrexone is worse than for methadone or buprenorphine, and is especially poor for daily oral naltrexone compared to monthly extended-release injectable naltrexone, such that oral naltrexone is recommended only in limited circumstances and is not considered first line treatment.⁹ Among those who are able to initiate the medication, monthly extended-release injectable naltrexone reduces opioid use. Methadone and buprenorphine can be initiated the same day someone is using opioids. Methadone and buprenorphine relieve opioid withdrawal symptoms, reduce compulsive opioid use, and reduce the risk of opioid overdose death.¹⁰

Analysis #3: Structural factors that contribute to heightened risk of overdose including, but not limited to, employment status, housing status, criminal legal involvement, income, medical comorbidities including, but not limited to, bacterial or viral infections and substance use sequelae and other demographic markers including, but not limited to, race, ethnicity, age, gender identity, sexual orientation, and immigration status

Several ongoing analyses are partially responsive to this analysis's requirements. As such, we have provided key findings related to structural factors related to the heightened risk of overdose.

⁷ Nunes EV, Krupitsky E, Ling W, et al. Treating Opioid Dependence With Injectable Extended-Release Naltrexone (XR-NTX): Who Will Respond? *J Addict Med*. 2015;9(3):238-243. doi:10.1097/ADM.000000000000125.

⁸ Minozzi S, Amato L, Vecchi S, Davoli M, Kirchmayer U, Verster A. Oral naltrexone maintenance treatment for opioid dependence. *Cochrane Database Syst Rev*. 2011;(4):CD001333. doi:10.1002/14651858.CD001333.pub4

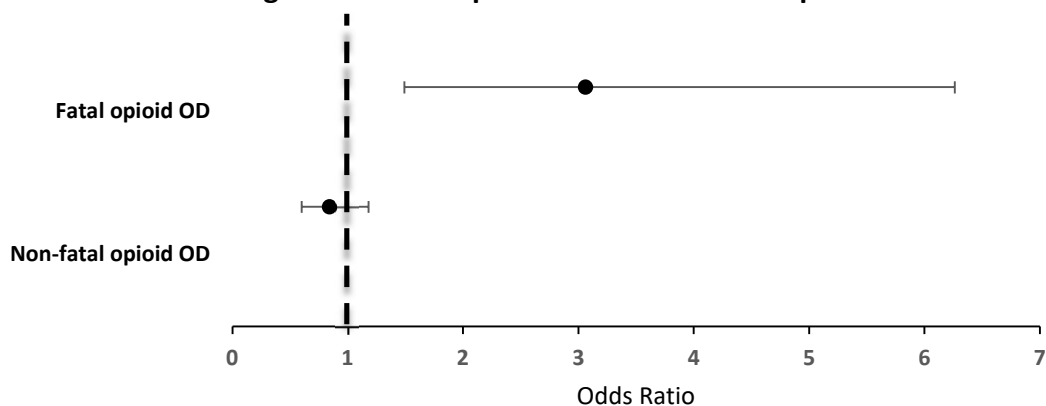
⁹ The ASAM National Practice Guideline For the Treatment of Opioid Use Disorder 2020 Focused Update.

¹⁰ A 2020 comparative effectiveness research study of 40,885 adults with opioid use disorder that compared 6 different treatment pathways, including buprenorphine, methadone, and naltrexone as the medication pathways, found that only treatment with buprenorphine or methadone was associated with reduced risk of overdose and serious opioid-related acute care use compared to no treatment during 3 and 12 months of follow-up. (Wakeman SE, Laroche MR, Ameli O, et al. Comparative Effectiveness of Different Treatment Pathways for Opioid Use Disorder. *JAMA Netw Open*. 2020;3(2):e1920622. doi:10.1001/jamanetworkopen.2019.20622)

COVID-19 and release from county correctional facilities

- In Massachusetts, individuals with opioid use disorder (OUD) released from one of seven county correctional facilities during the initial pandemic period of 2020 had three times higher odds of experiencing a fatal opioid-related overdose than individuals with OUD who were released before the COVID-19 pandemic began, but the number of associated deaths was small¹¹. This is potentially related to the difficulties created by COVID, with releases happening with short notice and disruptions in the care provided by community and medical service providers. The analysis showed that compassionate releases from these county correctional facilities were unlikely to explain much, if any, of the observed increase in community overdose during the pandemic.

Figure 7: Odds of fatal and non-fatal opioid overdose among individuals released from seven county correctional facilities in MA during the COVID-19 pandemic vs. before the pandemic



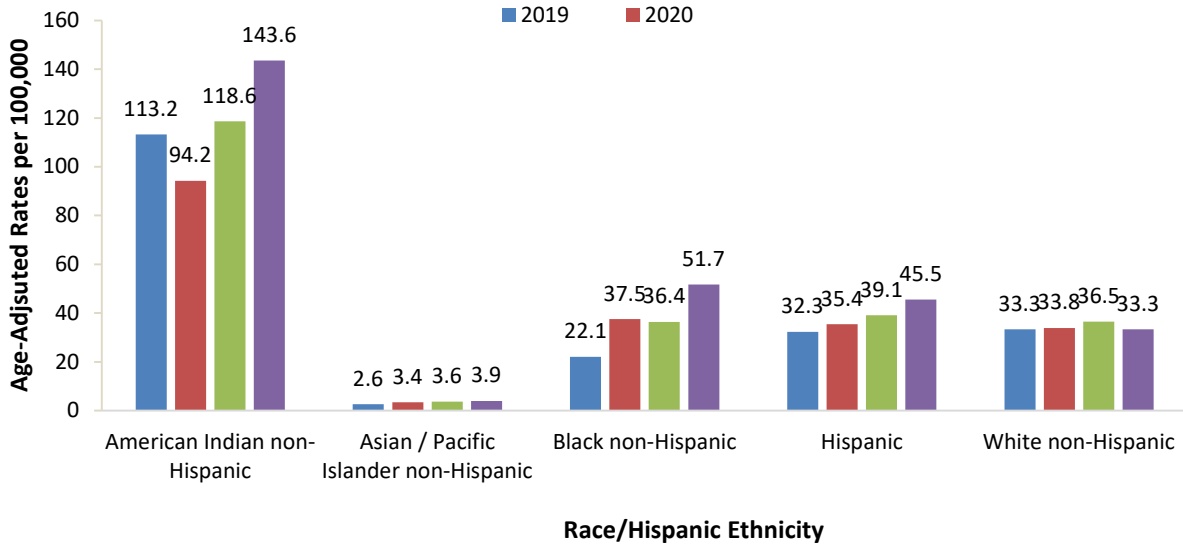
Race and I

- The age-adjusted opioid-related mortality rate for Black non-Hispanic residents increased 134% from 2019 to 2022 (from 22.1 to 51.7 per 100,000). The rate for American Indian non-Hispanic residents increased by 27% between 2019 and 2022 (from 113.2 to 143.6 per 100,000). The rate for Hispanic residents increased by 41% from 2019 to 2022 (from 32.3 to 45.5 per 100,000)¹².

¹¹Friedmann PD, Dunn D, Michener P, Bernson D, Stopka TJ, Pivovarova E, Ferguson WJ, Rottapel R, Hoskinson R Jr, Wilson D, Evans EA. COVID-19 impact on opioid overdose after jail release in Massachusetts. *Drug Alcohol Depend Rep*. 2023 Mar 6:100141. doi: 10.1016/j.dadr.2023.100141.

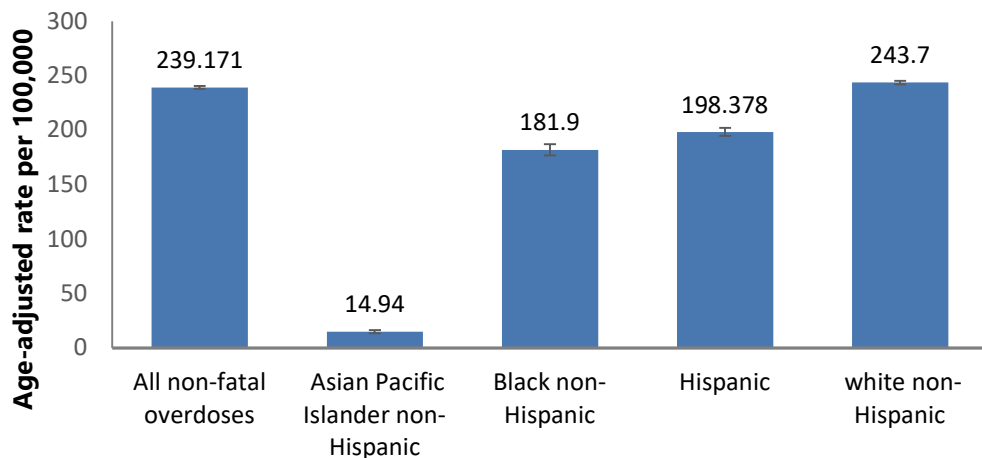
¹² Massachusetts Department of Public Health. 2023. Opioid-Related Overdose Deaths, All Intentions, MA Residents – Demographic Data Highlights. <https://www.mass.gov/doc/opioid-related-overdose-deaths-demographics-december-2023>.

**Figure 8: Confirmed opioid-related overdose death rates, all intents
Massachusetts Residents by race and Hispanic ethnicity**



- The highest rate of non-fatal opioid overdoses (NFO) in Massachusetts between 2013-2021 was among white non-Hispanic residents at 243.7 NFOs per 100,000, followed by Hispanic residents at 198.4 per 100,000, then Black non-Hispanic residents at 181.9 per 100,000. Asian/Pacific Islander non-Hispanic residents' rate of 14.9 per 100,000 was sixteen times lower than statewide¹³.

Figure 9: Age-adjusted rate of non-fatal overdose per 100,000 by

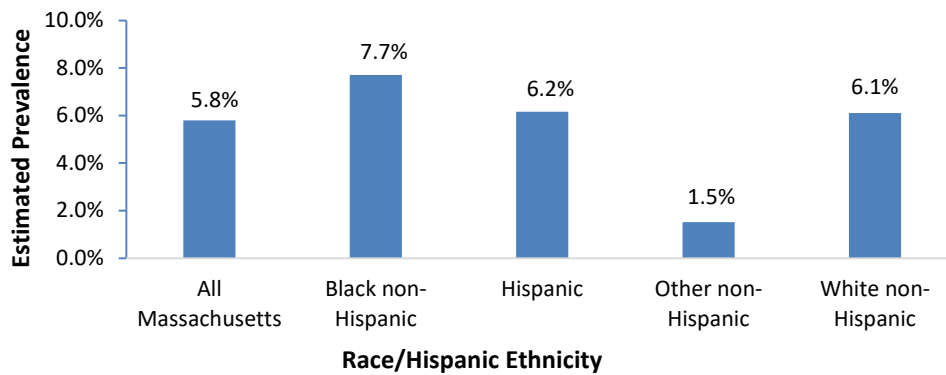


*Rates for American Indian and Alaska natives are not calculated as they are combined with 'Other' race

¹³ Massachusetts Department of Public Health. 2023 Data Brief: Characteristics of non-fatal opioid-related overdoses among Massachusetts residents, 2013-2021. <https://www.mass.gov/doc/characteristics-of-non-fatal-overdose-among-ma-residents-2013-2021>.

- Opioid use disorder is a chronic condition characterized by ongoing use of opioids despite harmful consequences and clinical impairment. Individuals with OUD are at a high risk of experiencing an opioid-related overdose. The overall estimated prevalence of OUD in Massachusetts was 5.8% in 2020¹⁴.
- The estimated prevalence of OUD among Black non-Hispanic residents was 7.7% in 2020 compared to an estimated prevalence of 6.1% among white non-Hispanic residents⁹.

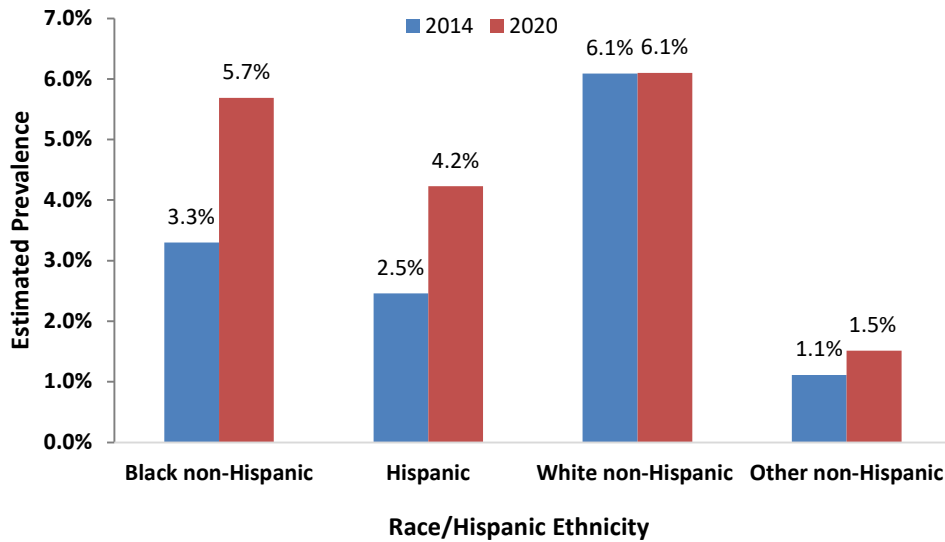
Figure 10: Estimated prevalence of opioid use disorder among Massachusetts residents in 2020 by race and Hispanic ethnicity



- The estimated prevalence of OUD among Hispanic and Black non-Hispanic females nearly doubled between 2014 and 2020 (2.5% in 2014 to 4.2% in 2020 for Hispanic females, 3.3% in 2014 to 5.7% in 2020 for Black non-Hispanic females)⁹.

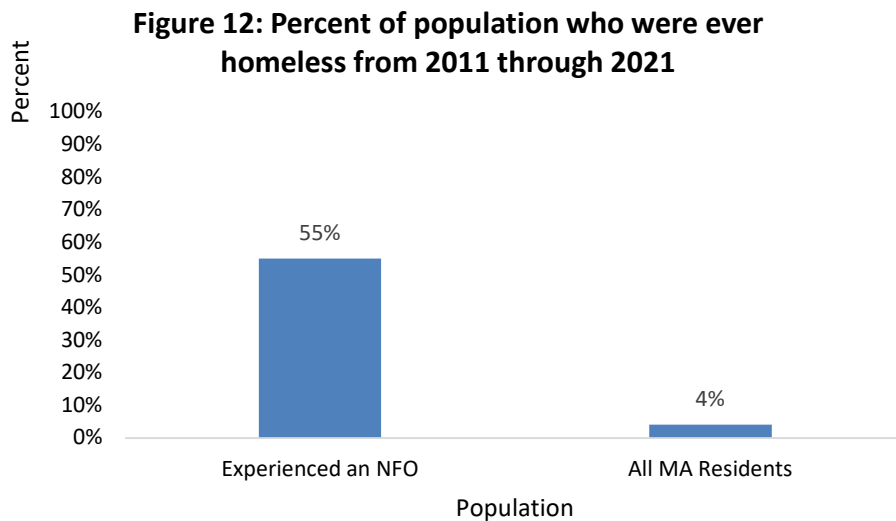
¹⁴ Wang J, Bernson D, Erdman EA, Villani J, Chandler R, Kline D, White LF, Barocas JA. Intersectional inequities and longitudinal prevalence estimates of opioid use disorder in Massachusetts 2014-2020: a multi-sample capture-recapture analysis. *Lancet Reg Health Am.* 2024 Mar 13;32:100709. doi: 10.1016/j.lana.2024.100709.

Figure 11: Estimated Prevalence of opioid use disorder among female Massachusetts residents 2014 vs. 2020



Housing Status

- More than half (55%) of residents who experienced a documented NFO from 2013 through 2021 had been homeless at some time from 2011 through 2021, compared to 4% of all MA residents during the same period¹⁵.

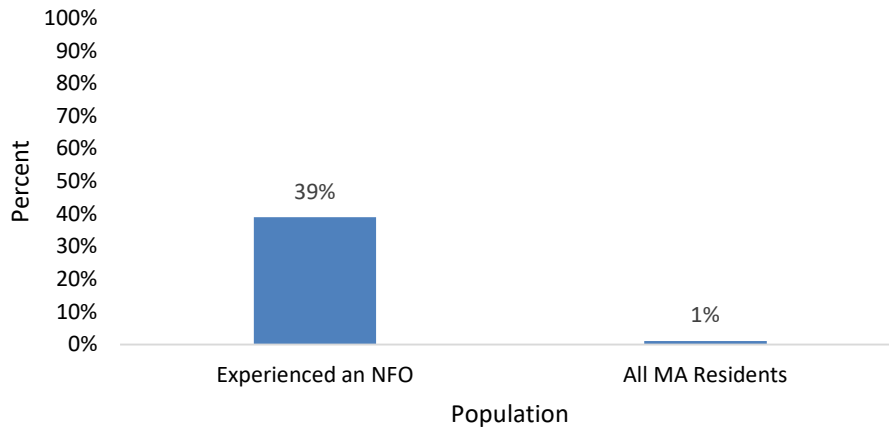


¹⁵ Massachusetts Department of Public Health. 2023 Data Brief: Characteristics of non-fatal opioid-related overdoses among Massachusetts residents, 2013-2021. <https://www.mass.gov/doc/characteristics-of-non-fatal-overdose-among-ma-residents-2013-2021>.

Criminal/Legal Involvement

- Over a third (39%) of residents who experienced a documented NFO had been incarcerated between 2011 and 2021, compared to 1.4% of all MA residents during the same period¹⁰.

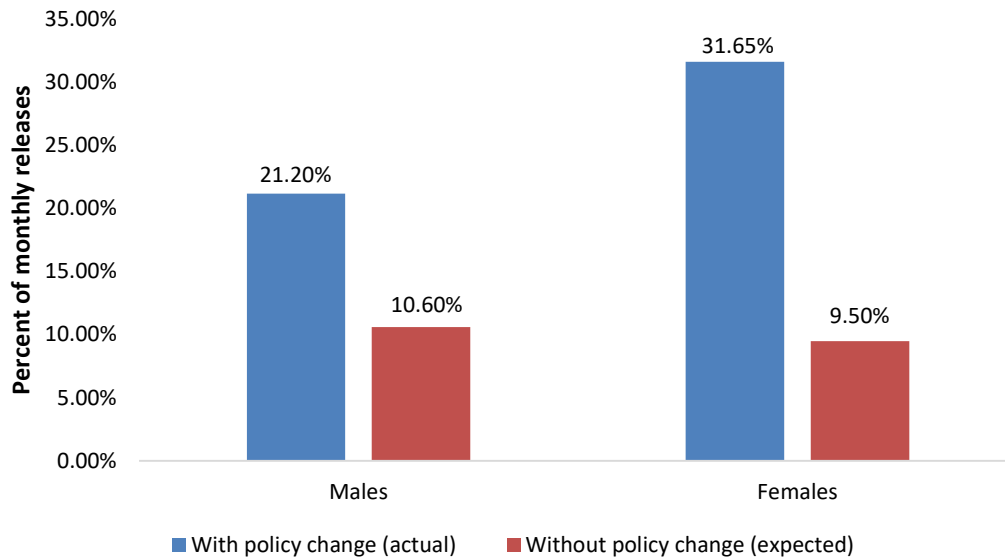
Figure 13: Percent of population who were ever incarcerated from 2011 through 2021



- Individuals in carceral settings experience a major disruption in access to their social support networks, routine clinical care, employment, and housing opportunities. For individuals with OUD, this can mean the cessation of counseling and medications needed to address their OUD. A recent study of MA’s state law providing MOUD in prison and jail facilities (Chapter 208 of the Massachusetts Acts of 2018) found:
 - An increase in buprenorphine receipt among males and females upon release after the enactment of Chapter 208 compared to releases before this time¹⁶.

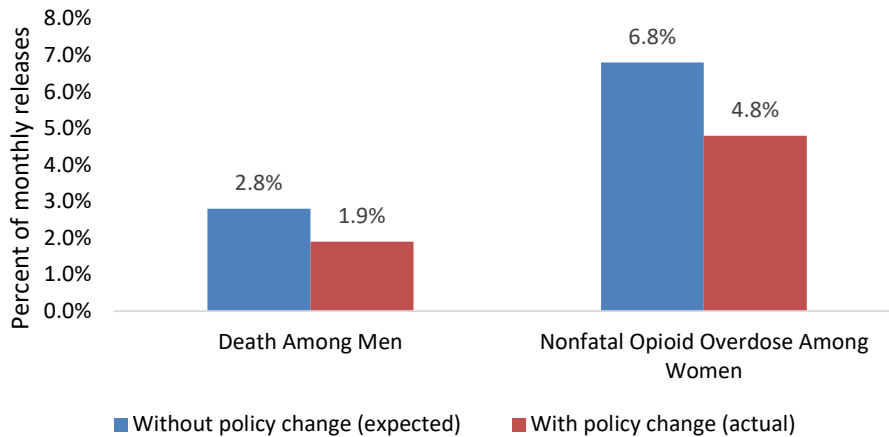
¹⁶ Bovell-Ammon BJ, Yan S, Dunn D, et al. Prison Buprenorphine Implementation and Postrelease Opioid Use Disorder Outcomes. *JAMA Netw Open*. 2024;7(3):e242732. doi:10.1001/jamanetworkopen.2024.2732

Figure 14: Buprenorphine Receipt among People with OUD Released from Massachusetts Prison before and after Chapter 208



- Males were less likely to experience mortality of any cause, and females had slightly lower rates of non-fatal opioid overdoses¹¹.

Figure 15: Differences in outcomes before and after Chapter 208



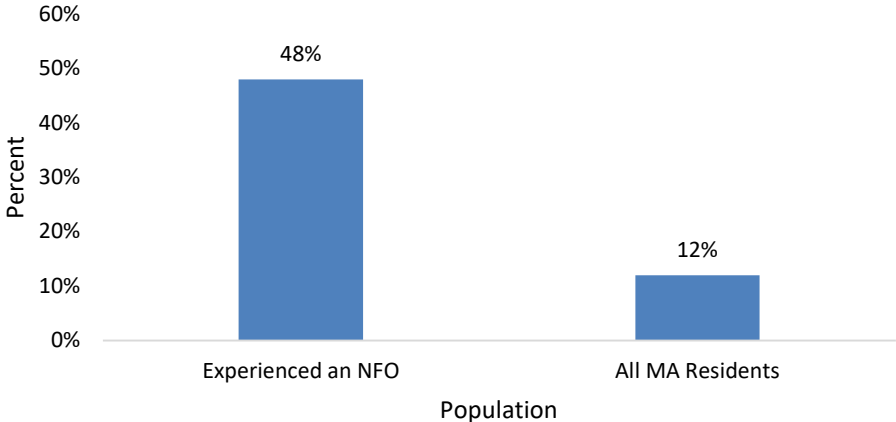
- Another analysis found that:
 - For white non-Hispanic individuals who were incarcerated, critical predictive factors for opioid overdose were binary sex, length of time spent at the prison after the admission most proximal to the final release date, and the percent of the population below poverty in the community to which the individual was released
 - For Black non-Hispanic individuals who were incarcerated, the most positive

predictive factors were the release community’s education level (percent of the population over 25 years old with less than 9th-grade education) and the release community’s percent of the population that was non-white

Education

- Nearly 50% of the residents who experienced a documented NFO had less than a high school education, which is almost four times higher than the rate in all MA residents with a known education level in the PHD¹⁷.

Figure 16: Percent of population who had less than a high school education

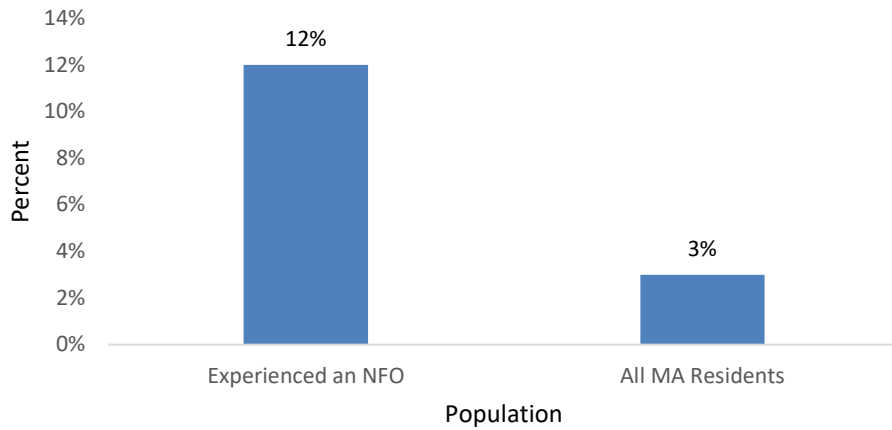


Veteran Status

- Twelve percent of residents who experienced documented NFO were known veterans, which is more than triple the 3% of residents known to be veterans in the PHD¹².

¹⁷ Massachusetts Department of Public Health. 2023 Data Brief: Characteristics of non-fatal opioid-related overdoses among Massachusetts residents, 2013-2021. <https://www.mass.gov/doc/characteristics-of-non-fatal-overdose-among-ma-residents-2013-2021>

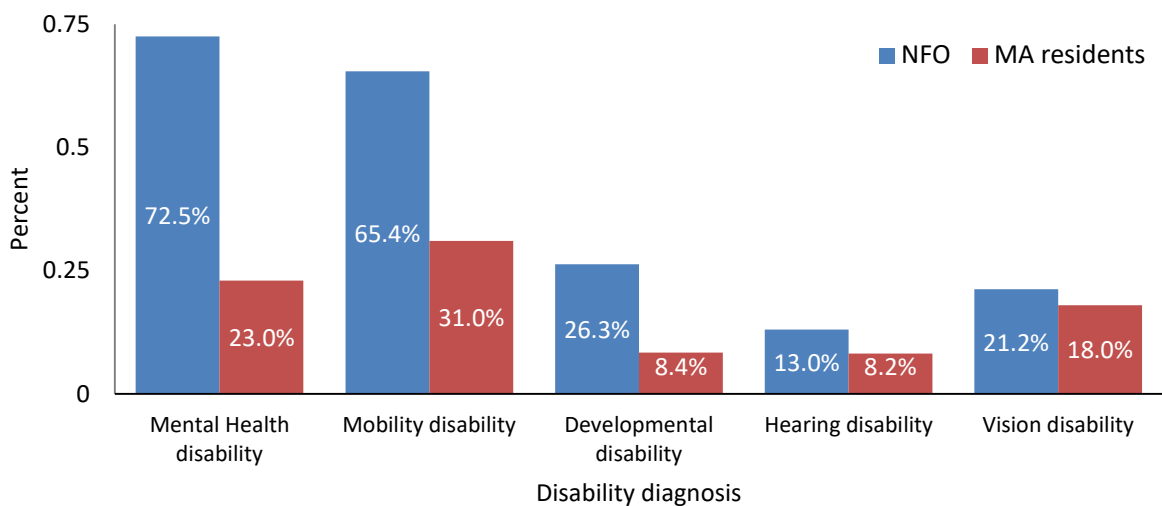
Figure 17: Percent of population who are known to be a veteran



Disability Status

- Among residents who experienced a documented NFO, 72% had a mental health disability diagnosis between 2013 and 2021, which is three times higher than the 23% of MA residents. Sixty-five percent had a mobility disability diagnosis, more than double the 31% of all MA residents. Twenty-six percent of residents experiencing an NFO were diagnosed with developmental disabilities, more than three times the rate of all MA residents in the PHD (8%). Thirteen percent of residents experiencing an NFO had a hearing disability diagnosis, nearly double the 8% of MA residents in the PHD. Twenty-one percent of residents experiencing an NFO had vision disabilities, which is slightly higher than the 18% of all MA residents in the PHD¹².

Figure 18: Non-fatal overdose in Massachusetts by disability status: 2013-2021



Community Characteristics

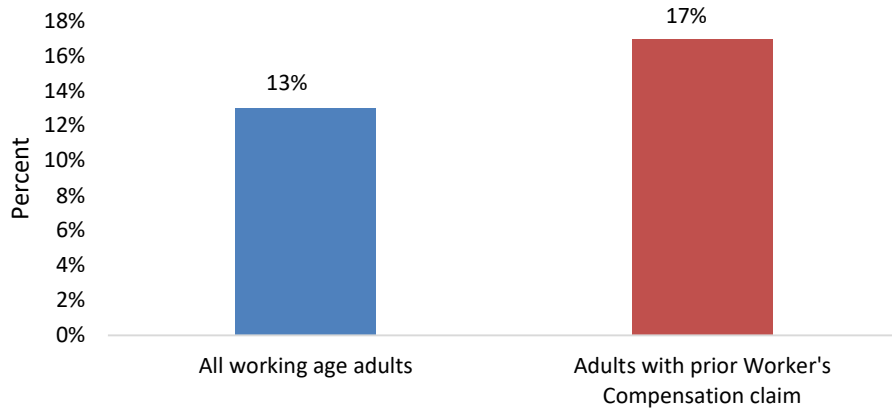
- Analyses determined that Massachusetts communities with more significant social

determinants of health (SDoH) challenges (such as lower SES, more housing challenges, more criminal legal involvement) and fewer assets (social capital) exhibited higher opioid overdose (OOD) mortality rates. Additionally, communities with higher ratios of Black, Hispanic, American Indian, or Alaska Native (AIAN), and Multiracial residents relative to white non-Hispanic residents coupled with more significant SDoH challenges had the highest opioid overdose mortality rates¹⁸.

Industry and Occupation

- Among working-age adults (16 to 64 years old) in Massachusetts who died between 2011 and 2020, those who had a prior work-related injury reported in the MA worker’s compensation system were 35% more likely to have died of an opioid-related overdose than all working-age adults (17% versus 13%)¹³.

Figure 19: Proportion of deaths whose cause was an opioid-related overdose among MA residents, 2011-2020



- The most common job categories for these individuals who died of an opioid-related overdose were Construction/Extraction jobs (28%) and Transportation & Material moving jobs (11%)¹³.

Analysis #4: Trends in the substances observed in overdose events

By linking Death Certificate Records with post-mortem toxicology results, we can analyze the trends related to what substances are present in opioid-related overdose deaths. While screening tests can be used to note the rate at which certain drugs are detected in toxicology reports, they are insufficient to determine the final cause of death without additional information. The cause of death is a clinical judgment made within the Office of the Chief Medical Examiner.

- In 2022, there were 2,432 drug-related overdose deaths where a toxicology

¹⁸ Massachusetts Department of Public Health. 2023. 2023 Report on Priority Public Health Trends from the Public Health Data Warehouse. <https://www.mass.gov/doc/phd-2023-legislative-report-0>.

screen was also available. Of these, 89% (n=2,172) were opioid-related overdose deaths.

- Among these opioid-related overdose deaths, fentanyl was present in 93%, cocaine in 53%, benzodiazepines in 27%, alcohol in 28%, prescription opioids in 11%, heroin in 6%, and amphetamines in 9%.
- Among all drug-related overdose deaths, fentanyl was present in 83%, cocaine in 53%, benzodiazepines in 27%, alcohol in 29%, prescription opioids in 10%, heroin in 6%, and amphetamines in 10%.
- The presence of fentanyl has remained high at over 90% of opioid-related overdose deaths and 80% of all drug-related overdose deaths since 2019.
- Notably, the presence of stimulants in toxicology has increased since 2019 - the presence of cocaine has increased by 2% per quarter in both opioid-related overdose deaths and all drug-related overdose deaths, and the presence of amphetamines has increased 4% per quarter since 2019 in opioid-related overdose deaths.
- The percentage of heroin or likely heroin present in both opioid-related overdose deaths and all drug-related overdose deaths decreased by 10% per quarter since 2019.

Figure 20: Percent of opioid-related overdose deaths with specific drugs present among Massachusetts residents: 2019-2022

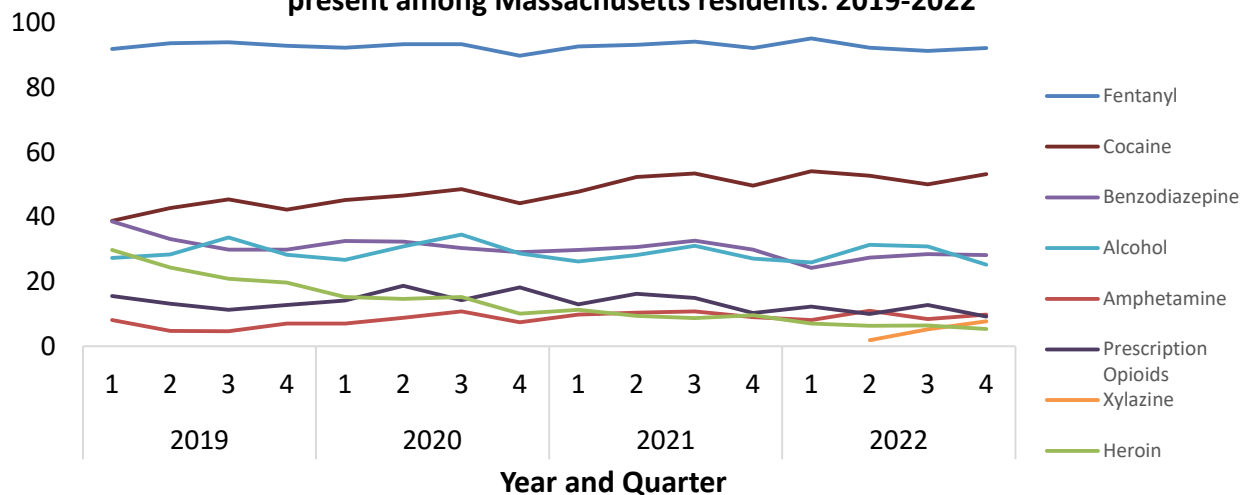
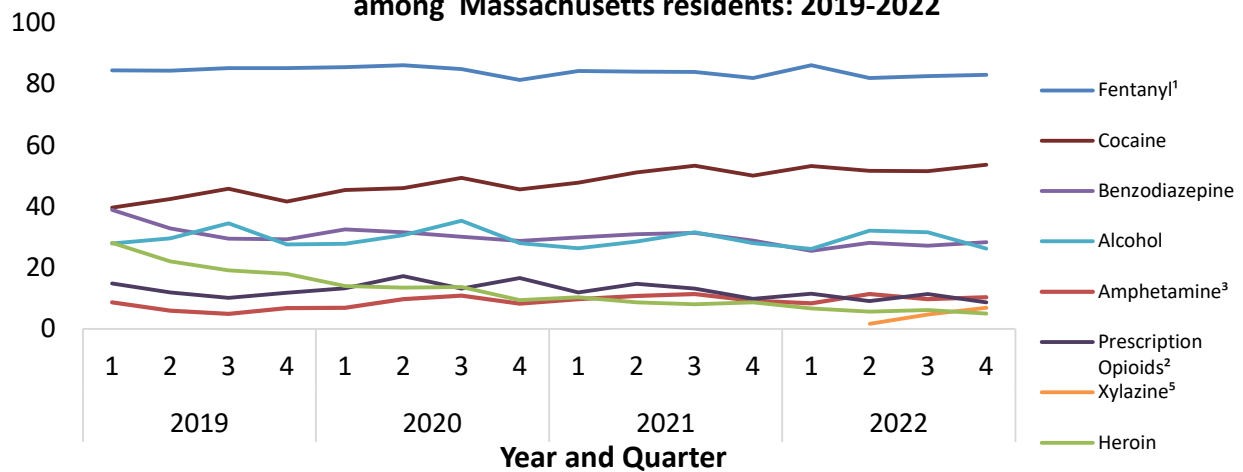


Figure 21: percent of all drug overdose deaths with specific drugs present among Massachusetts residents: 2019-2022



Analysis #5: Whether the individuals had attempted to enter but were denied access to mental or behavioral health or substance use treatment

DPH cannot conduct this analysis with the data that are currently in the PHD, and there are no data sources available that include information on people who were denied access to mental or behavioral health or substance use treatment.

Analysis #6: Whether the individuals had received past treatment for a substance overdose

By linking Emergency Medical Services (EMS), Hospitalization, Death, and BSAS records through the PHD, we can identify who had received medical treatment for a past opioid-related overdose and who had received any treatment within the BSAS system.

- From 2019 through 2021, a total of 6,255 Massachusetts residents died of an opioid-related overdose and had a record in the PHD. Of these:
 - 62% (3,867) had enrolled in BSAS treatment prior to their fatal opioid-related overdose. This number decreased yearly, from 63% in 2019 to 60% in 2021.
 - 45% (2,799) had at least one prior opioid-related overdose before the fatal opioid-related overdose. This number decreased slightly from 46% in 2019 to 44% in 2021.

Figure 22: Enrolled in BSAS treatment prior to fatal opioid overdose, Massachusetts residents (n=6,255)

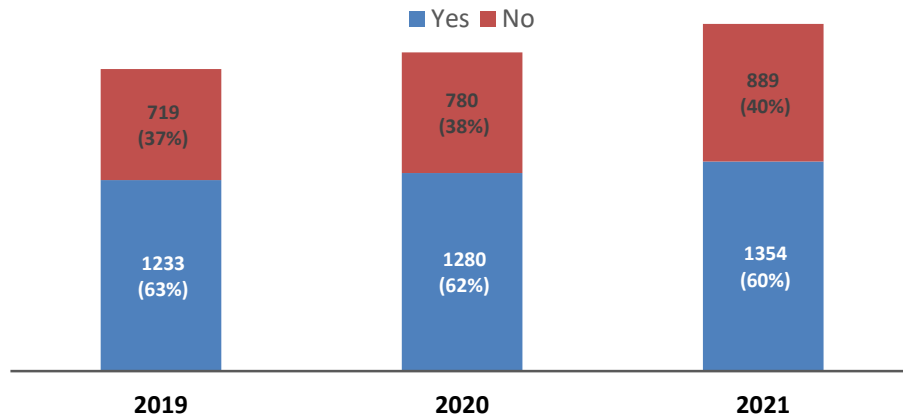
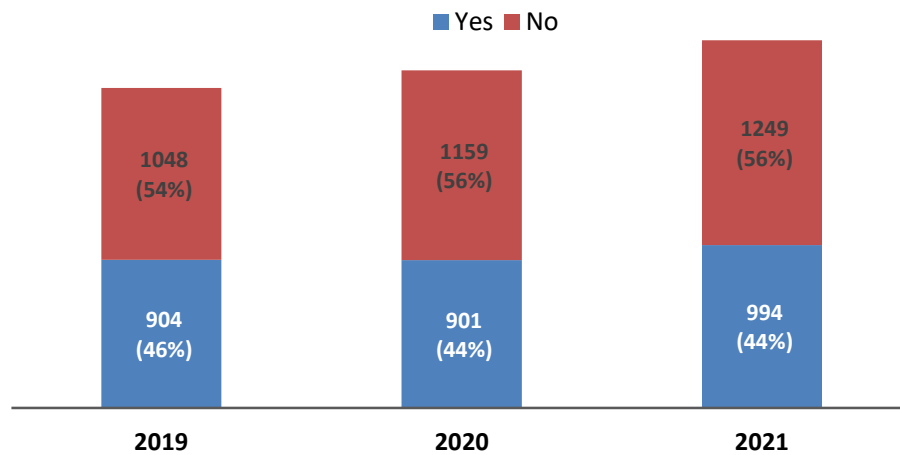


Figure 23: Medical treatment for opioid overdose prior to fatal opioid overdose, Massachusetts residents (n=6,255)



Analysis #7: Whether any individuals had been previously detained, committed, or incarcerated and, if so, whether they had received treatment and treatment type during the detention, commitment, or incarceration.

Chapter 208 of the Acts of 2018 required DPH and the following five county houses of correction (HOCs) to participate in a pilot program offering broad access to FDA-approved medications for opioid use disorder (MOUD) to individuals housed within their facility:

1. Franklin County House of Correction
2. Hampshire County House of Correction
3. Hampden County House of Correction

4. Middlesex County House of Correction
5. Norfolk County House of Correction

As a part of this legislation, DPH must report annually on the outcomes of the established MOUD programs.

The following two additional HOCs were later added to this requirement in the Fiscal Year 2019 supplemental budget:

1. Essex County House of Correction
2. Suffolk County House of Correction

DPH is currently conducting an in-depth evaluation of these treatment programs and will be able to report on outcomes later in 2024.

Conclusion

- Results show that people who died of either an opioid-related overdose or any drug overdose from 2019 through 2022 were more likely to have had a prescription for certain drugs (MOUD, opioid, benzodiazepine, or stimulant) the further away in time from the death. Looking back to 2011, people were more likely to have had a prescription for an opioid compared to the other drugs.
- While the odds of receiving naltrexone within 14 days of discharge were much higher after an S.35 admission compared with a voluntary WMS WMS+/-CSS discharge, this is not necessarily a positive finding. Naltrexone is only effective for reducing use among patients who are not tolerant to opioids and does not address withdrawal symptoms. Adherence to naltrexone is worse than for methadone or buprenorphine and is especially poor for daily oral naltrexone compared to monthly extended-release injectable naltrexone, such that oral naltrexone is recommended only in limited circumstances. Among those who initiate the medication, monthly extended-release injectable naltrexone reduces opioid use.
- The odds of experiencing the different ED/hospitalization outcomes were reduced after discharge from S.35 as compared with voluntary WMS WMS+/-CSS discharge; the S.35 discharges were more likely to be associated with a further Residential/CSS admission, meaning that a person was less likely to be in the community and “eligible” to experience an ED stay or hospitalization after their S.35 discharge.
- Last, while there was no significant difference in all-cause mortality at 30 or 90 days, the odds ratios do point to high odds after S.35 discharges compared with voluntary WMS WMS+/-CSS discharges. In a larger sample, it is possible that an analysis would find a statistically significant difference between the two groups; however all-cause mortality is a relatively rare event so we cannot assess this.
- Several analyses demonstrated that there are structural factors related to the heightened risk of overdose.

- Fentanyl continues to be a driver of both opioid-related and all drug-related overdose. After fentanyl, cocaine is the drug most found in post-mortem toxicology of both opioid-related and all drug-related overdoses.
- 62% of people who experienced a fatal opioid-related overdose from 2019 through 2021 had ever enrolled in BSAS treatment prior to their fatal overdose. 45% of these people had at least one prior opioid-related overdose before their fatal opioid-related overdose.

In the next year, DPH will continue work to bring into the PHD the additional datasets needed to refine the requested analyses.

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