Vermont Social Autopsy Report

2017 Data Analysis

August 2020

VERMONT

DEPARTMENT OF HEALTH

This report is dedicated to the people who died of overdose, and their loved ones. While this is a data-driven report, we must not lose sight of the fact that behind each data point is a Vermonter who unnecessarily lost their life. The Vermont Department of Health, along with all departments that contributed data and time to this project, believe that the findings and recommendations within this document are valuable assets as we work to prevent future losses of life due to overdose.

ACKNOWLEDGMENTS

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Introduction

The Vermont Social Autopsy Project examined known points of contact that Vermont residents who died of an accidental or undetermined drug overdose in Vermont during 2017 (N=109) had with a variety of state services and databases. The goal of this project was to identify trends in how Vermonters who died of a drug overdose interacted with state systems prior to death to identify and implement intervention strategies with people at risk of an overdose. The Vermont Department of Health partnered with the departments of Corrections (DOC), Children and Families (DCF), Vermont Health Access (Medicaid), and Public Safety (DPS) to examine individuals' involvement in the programs managed by each department. This work takes as its model the West Virginia report on system involvement of West Virginians who died from an overdose in 2016.[1]

KEY POINTS

- **Nearly all people interacted with at least one agency or dataset in the years before they died.**
- **The Vermont Department of Health established collaborative relationships with external departments and agencies, creating a framework for future projects.**

The Vermont Department of Health sits within the Vermont Agency of Human Services (AHS) and includes Vermont's Vital Statistics Program, Alcohol and Drug Abuse Programs (ADAP), the Vermont Prescription Drug Monitoring System (VPMS), the Emergency Medical Services (EMS) program, the naloxone distribution program and the Office of the Chief Medical Examiner (OCME). The OCME is a statewide office with two medical examiners and approximately 32 assistant medical examiners who complete all autopsies in Vermont. Other AHS departments include Children and Families, Corrections, and Vermont Health Access, which manages Vermont's Medicaid Program. These departments are training front-line staff with skills on substance use screening and referral to treatment, creating medication assisted treatment (MAT) programs in all Vermont correctional facilities, and supporting the Vermont Hub and Spoke system for opioid use disorder treatment, respectively.[2]

CONTRIBUTING PARTNERS

- **Vermont Department of Health**
  - Health Surveillance
  - Alcohol and Drug Abuse Programs
  - Emergency Preparedness, Response and Injury Prevention
  - Office of Chief Medical Examiner
- **Department of Corrections**
- **Department for Children and Families**
  - Economic Services
  - Family Services
- **Department of Public Safety**
  - Vermont Intelligence Center
- **Department of Vermont Health Access**

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[1] https://dhhr.wv.gov/bph/Documents/ODCP%20Reports%202017/2016%20West%20Virginia%20Overdose%20Fatality%20Analysis_004302018.pdf
[2] https://www.healthvermont.gov/response/alcohol-drugs/treating-opioid-use-disorder

Methodology

The Health Department also partnered with the Department of Public Safety's Division of the Vermont Intelligence Center (VIC), VIC's Drug Monitoring Initiative, and the Health Department's State Epidemiological Outcomes Workgroup to share data related to substance use.

The Health Department approached each partner department separately, explained the project concept and goals, and asked each to identify measures they thought would best represent the intersection between clients who overdosed, the department's programming, and the datasets available for inclusion. Given the sensitivity of the person-level data involved and the need to maintain trust between partners, the project team used a collaborative approach in which each partner assisted in selecting the measures to be included in the analysis, and validated the findings and conclusions in the report.

After identifying the measures, the project team received approval from the AHS Institutional Review Board (IRB) to assure privacy of those who had died. Memorandums of understanding (MOUs) were developed and executed between the Health Department and each of the participating departments. The MOUs specified the data to be provided to the Health Department, how the data could be used, and the data suppression rules that the data-owning department required the Health Department to use to protect anonymity. Data were collected by DCF, DOC, and individual Health Department divisions and provided to the project analysts. Health Department project analysts received special clearance and training to collect data from the identified DPS and Medicaid data sets and completed the data analysis.

Upon completion of analysis, the findings were disseminated to the commissioners of the contributing agencies, and other key stakeholders, for their review. The recommendations at the conclusion of this report were collaboratively developed during the final review process. These data-driven recommendations will serve to improve data collection and analysis, linkages to treatment and care, and further the integration of state and local response efforts that ultimately impact overdoses in the state of Vermont.
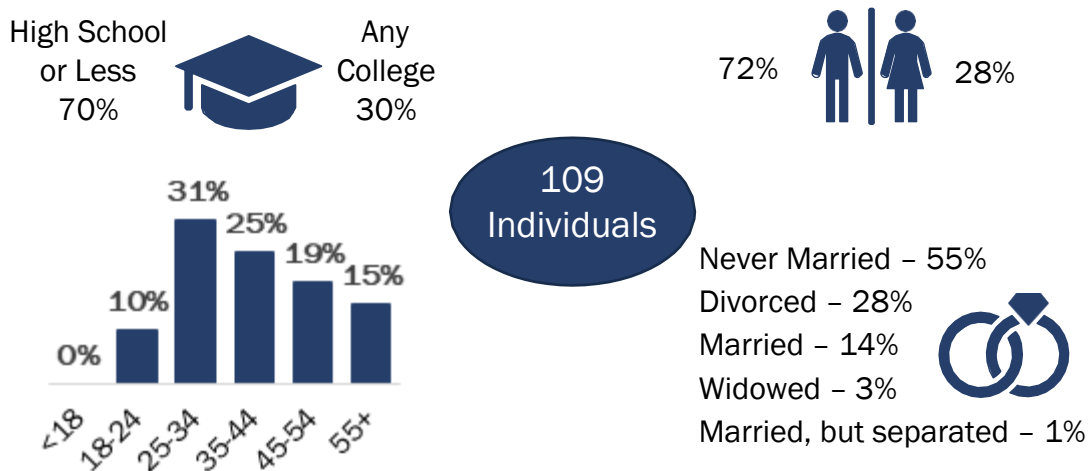
Death Certificate Information

(Source: Vital Statistics)

Demographic Profile of People Who Died of a Drug Overdose in 2017

This section is based on Vermont's Vital Statistics System death certificate data. The people included in this report were Vermont residents who died of a drug overdose in Vermont in the 2017 calendar year. Methodology for identifying drug overdoses can be found at the end of the annual opioid-related fatalities brief. Most were white and non-Hispanic (95%), male (72%), between the ages of 25 and 44 (56%), had a high school education or less (70%), and were divorced (28%) or never married (55%). Those who died had a median age of 37 years.

Demographic Breakdown

High School or Less 70%   Any College 30%   72%   28%

31%   25%   19%   15%   10%   0%   109 Individuals

<18   18-24   25-34   35-44   45-54   55+

Never Married – 55%
Divorced – 28%
Married – 14%
Widowed – 3%
Married, but separated – 1%

Comparatively, out of all Vermont resident deaths in 2017 (N = 6,397), 98% were white and non-Hispanic, approximately half were male (51%), and 64% had a high school education or less. Only 17% were divorced, and 12% were never married. Most Vermont resident deaths occurred among those who were at least 55 years of age (88%), compared to only 15% of the 109 people who died of a drug overdose. All percentages presented above, except for those with a high school education or less, differ significantly compared to the 109 people who died of a drug overdose.

Most deaths involved multiple drugs, but fentanyl was the most common.

Death certificate data were analyzed to identify commonly occurring drugs and drug combinations contributing to the person's death. Of the 109 deaths included in this analysis, opioids were involved in 101 (93%). Deaths typically involved a combination of drugs, the most commonly being fentanyl with heroin (27%) and fentanyl with cocaine (22%). Fentanyl was the most frequently identified individual drug (61%), followed by heroin (36%), cocaine (34%), and prescription opioids (30%).[3]

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[3] Individual drug categories and combinations are not mutually exclusive, as one death may involve multiple substances.

Top-Five Individual Drugs and Drug Combinations Identified

Individual Drugs:

1. Fentanyl (61%)
2. Heroin (36%)
3. Cocaine (34%)
4. Prescription Opioids (excludes Fentanyl) (30%)
5. Alcohol (16%)

Drug Combinations:

1. Fentanyl and Heroin (27%)
2. Fentanyl and Cocaine (22%)
3. Cocaine and Heroin (13%)
4. Fentanyl and Prescription Opioids (10%)
5. Cocaine, Heroin, and Fentanyl (9%)

Most people who died worked in industries and occupations related to service and construction.

Death certificates include information about the industry and occupation of those who have died. In this context, industry and occupation both refer to work performed during most of the person's working life. These data are collected through interviews with relatives or others who knew the deceased person. Therefore, this information is not always coded consistently, and some data are missing.

While industry is described as "the type of activity at a person's place of work," occupation refers to "the kind of work a person does to earn a living."[4] In other words, industry describes where a person works, whereas occupation describes what a person does at their job.

For example, the construction industry employs people working in a variety of occupations, including carpenters, accountants, and human resource personnel, among others.

Industry of Those Who Died of a Drug Overdose in 2017

Construction: 18%

Accommodation and Food Services: 14%

Retail: 9%

According to the Bureau of Labor statistics, only 5% of Vermonters worked in construction. Of those who died of a drug overdose, 18% worked in the construction industry, which is statistically significantly higher. This was followed by the accommodation and food services (14%) and retail (9%) industries.

Compared to Vermonters currently working in 2017, a significantly higher proportion of those who died of a drug overdose in 2017 worked in occupations related to "natural resources, construction, and maintenance" (24% vs 9%), while significantly fewer worked in "management, business, science, and arts" (11% vs 36%) and "sales and office" (12% vs 23%) occupations.

Occupation of People Dying of Drug Overdoses Compared to Vermont Overall in 2017

■ Drug-Related Fatalities   ■ Vermont Overall

*denotes statistical significance
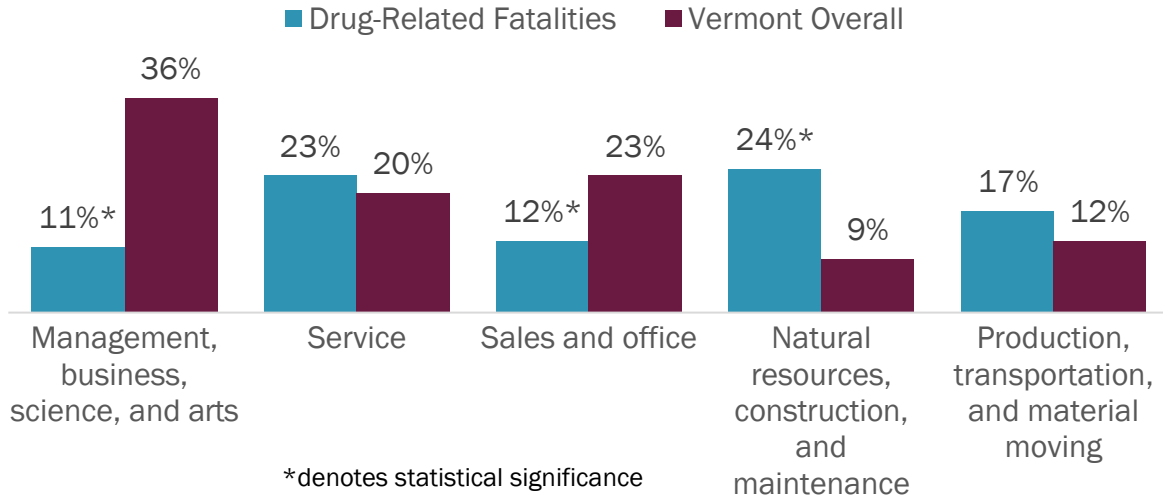
Although death certificates offer no indication as to whether the deceased person was working in a full- or part-time capacity at the time of their death, the most common industries and occupations listed on individuals' death certificates for those who died of an overdose typically employ workers part-time or seasonally. These positions also tend to be lower-paying and more physically demanding than some of the industries and occupations that are less represented in the data presented above.

Overdoses most frequently occurred in the person's home.

Place of injury is where the overdose occurred. Most people overdosed in their home (70%) or a friend's home (9%). Motels (2%), parking lots (3%), and work (2%) were less common locations for an overdose to occur. Sixteen injuries (i.e. overdoses) occurred in other specified locations or were not known (15%).

Place of Injury Among Individuals (2017)		
	Frequency	Percent
Home	76	70%
Friend's Home	10	9%
Motel	2	2%
Parking Lot	3	3%
Work	2	2%
Other/unknown	16	15%

Most people died either at home (62%) or in the hospital (22%). Within the hospital, an equal number of individuals died in the emergency room, inpatient care, and the intensive care unit.

Place of Death Among Individuals (2017)		
	Frequency	Percent
At a Home	68	62%
Emergency room	8	7%
Inpatient	8	7%
Hospital Intensive Care Unit	8	7%
Other	17	16%

The majority of those who overdosed in their home or a friend's home died in that location. Of those who overdosed at home, 11% eventually died in the hospital. Records do not specify whether those who died in the hospital were transported by EMS, friends, or family.

Place of Injury by Place of Death (2017)			
	Place of Death		
	Home	Hospital	Other
Home or Friend's Home	65%	11%	10%
Other	3%	13%	7%

History and Circumstances Surrounding Overdose

(Source: State Unintentional Drug Overdose Reporting System)

State Unintentional Drug Overdose Reporting System (SUDORS)

SUDORS collects detailed information on accidental and undetermined deaths from drug overdose using death certificates, law enforcement reports, and medical examiner reports (including toxicology results). This database includes demographics, overdose specific circumstances, substances present on toxicology, and other reported drug overdose risk factors. While there is significant breadth of information in SUDORS, the availability of this information is subject to what is reported by medical examiners, law enforcement, or in the death certificate. Therefore, there is a chance for an underestimation of any given circumstance reported.

Social Determinants of Health

Social determinants of health are the social, economic, and physical environment that affect a wide range of health, functioning, quality of life, risks and outcomes.[4] The World Health Organization recognizes 10 factors that affect health and life expectancy: social gradient, stress, early life experiences, social exclusion, work, unemployment, social support, addiction, food, and transportation.[5,6] Throughout this report, there is clear illustration of the health disparities that exist among Vermonters who died of drug overdose. When available, comparisons are made to the general Vermont adult population to look at differences and disparities from those who died of a drug overdose.[7]

Substance Use: Nearly all who died of a drug overdose had a substance use disorder (95%). One-quarter (27%) had alcohol use disorder.

Education: Vermonters who died of a drug overdose are significantly more likely to have lower educational attainment defined as high school or less (70%) compared to the overall Vermont adult population (38%).

Social Isolation: One in five (20%) were last heard from two or more days before their death, indicating that some may have experienced social isolation prior to death.

Unemployment: One in five (20%) were unemployed at the time of death. This is five times higher than the unemployment rate in Vermont adult population overall (4%).

Housing: Six percent were homeless at the time of death. Homelessness refers to people who did not have a permanent address of residence. Homelessness does not include Vermonters who were living with a friend, family member, or other acquaintance.

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[4] https://www.healthvermont.gov/sites/default/files/documents/pdf/PLN_HE_Glossary.pdf
[5] http://www.euro.who.int/_data/assets/pdf_file/0005/98438/e81384.pdf
[6] The social gradient is the extent of equity or the difference in wealth and opportunity between those with the most and those with the least.
[7] Healthvermont.gov/BRFSS2018

Multiple Health Conditions

Physical and mental wellness influence quality of life, health conditions and outcomes. Having multiple health conditions places a person at greater risk for poor quality of life and outcomes.

Mental Health: Forty-two percent of Vermonters who died of a drug overdose in 2017 had a mental health diagnosis. The most commonly reported mental health diagnosis was depression (29%), followed by anxiety (17%). The prevalence of depression in Vermonters who died of a drug overdose is similar to the prevalence in the general Vermont population (25%). Eighteen percent had two or more mental health diagnoses, and 9% had three or more mental health diagnoses.

Suicidal Thoughts or Behavior: Fifteen percent had a history of thoughts of suicide (15%). Fewer had a history of ever attempting suicide in the past (8%).

Chronic Disease[8]: The most common chronic health condition reported among those who died from an overdose was hypertension (19%). Heart disease was prevalent in 6%. The prevalence of hypertension and heart disease among Vermonters who died of a drug overdose is similar to the prevalence in the general Vermont adult population (Vermont adults: 26% hypertension, 8% heart disease). Eight percent of Vermonters who died of a drug overdose had diabetes, also similar to the prevalence of diabetes in the general Vermont adult population. Asthma was prevalent in 6% of Vermonters who died of a drug overdose, statistically lower than the prevalence in the general Vermont adult population (12%). Chronic obstructive pulmonary disease was prevalent in 3%. This is lower than the general Vermont population (6%).

Chronic Pain: Back pain was prevalent in 9% of Vermonters who died of a drug overdose. Chronic pain, separate from back pain, was prevalent in 7% of deaths.

Hepatitis C: Hepatitis C was prevalent in 4% of Vermonters who died of a drug overdose.[9]

Underweight, Overweight, and Obesity: Four percent of Vermonters who died of a drug overdose were underweight, 30% were normal weight, 28% overweight, and 38% were obese. The prevalence of being underweight, overweight, or obese in Vermonters who died of a drug overdose is similar to the general Vermont population (Vermont adults underweight 2%, overweight 35%, obese 28%).

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[8]Disclaimer: chronic disease, chronic/back pain, and hepatitis are not individual fields in the SUDORS system, they are based on free-text coding from the case narrative.
[9] Diagnosed with hepatitis C ever.

Risk Factors for Overdose

SUDORS categorizes the type of overdose by capturing the context in which the drugs contributing to the fatal overdose were used by the individual. The purpose is to understand why the person who fatally overdosed used substances. Most Vermonters who died of a drug overdose had an overdose related to substance use disorder (92%). Among the remaining Vermonters who died of a drug overdose, 5% had an overdose related to overmedication from prescribed medications and 4% had insufficient information to determine the type of drug overdose.

One in five Vermonters who died of a drug overdose (20%, N=23) had a history of relapsing, defined as overdosing after starting to use opioids again after a period of abstinence. While the timing of opioid use relapse is unclear for 43% of Vermonters (10 of 23), 6% had evidence of relapsing within two weeks, and 5% within three months of their death.[10]

20% **Had evidence of opioid use relapse**

People recently released from a prison, jail, residential treatment facility, or hospital may be at elevated risk for overdose since their body may not tolerate the dose they used in the past.[11] Further, of the Vermonters who had evidence of opioid use relapse, 41% had been released from an institution within approximately one month of their death (9 of 22).

12% **Had evidence of recent release from jail, residential facility, or a hospital**

More than one in 10 of the drug overdose deaths had evidence of being released from a facility within a month of their death (12%). Among those with evidence of recent release, half had evidence of being recently released from prison (7 of 13), few from a residential facility (4 of 13) or from a hospital (3 of 13).

Intravenous drug use is a risk factor for death including death by overdose.[12] Scene evidence suggests that the most common mode of use among Vermonters who died from a drug overdose was intravenous (49%), ingestion (42%), or snorting (24%).[13]

A history of a previous overdose was reported for 28% of Vermonters who died of a drug overdose. Of the Vermonters who had a previous overdose, 20% overdosed more than a year before and 23% had a previous overdose within the last month.

28% had a previous overdose

44% of those people had an overdose between 1 month and 1 year prior to death

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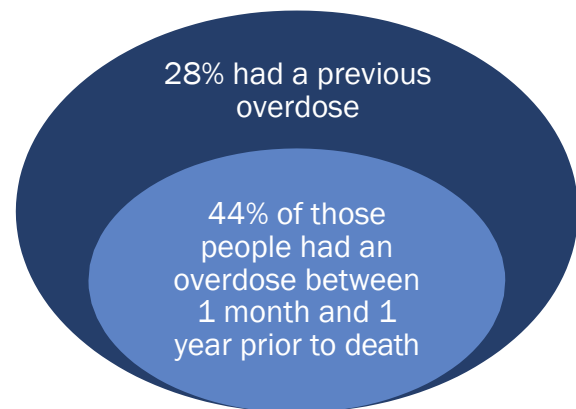
[10] 5% had evidence of relapsing >2 weeks and <3 months.
[11] Residential facilities include treatment and other long-term facilities.
[12] C A Perucci, M Davoli, E Rapiti, D Abeni, and F Forastiere, 1991: Mortality of intravenous drug users in Rome: a cohort study. American Journal of Public Health 81, 1307_1310, https://doi.org/10.2105/AJPH.81.10.1307
[13] Nine deaths did not have enough information to determine how the person used drugs at the time of death.

Most Vermonters who died of a drug overdose had drug use that was not witnessed by a bystander prior to overdose (72%). Bystanders are defined as individuals who were physically nearby during or shortly preceding the overdose. Most who had unwitnessed drug use did not have a bystander present at the time of overdose (59%, 46 of 78).[14] Scene evidence also suggests that a fifth of individuals had a rapid overdose (21%).[15]

72% had drug use that was unwitnessed

59% of those people were likely completely alone when they overdosed

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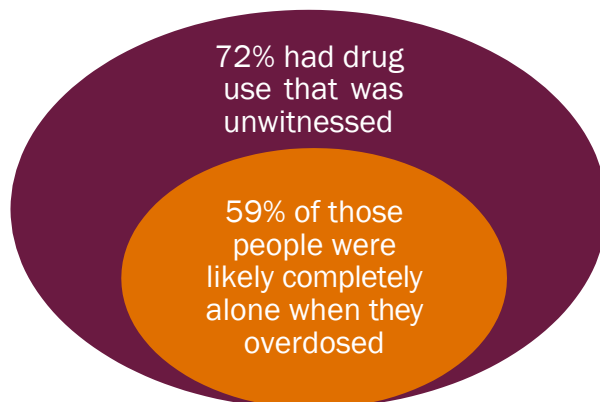
[14] 46 of the 78 Vermonters who had both complete information for drug use witnessed and bystander presence.
[15] Scene evidence suggestive of rapid overdose: needle still in person, person slumped over drugs, person's body positioning relative to drug paraphernalia, if bystander present, the person went into overdose state within 10 minutes of using drugs.

Interactions with Emergency Medical Services

(Source: Statewide Incident Reporting Network)

Half of those who died interacted with EMS between 2015 and their date of death.

This section uses data from the Statewide Incident Reporting Network (SIREN). SIREN is Vermont's emergency medical services (EMS) electronic patient care reporting system. All EMS ambulance agencies with transport capabilities are required to use SIREN to document each incident within one business day of when it occurred. While first response (non-transporting) EMS agencies are also required to document their calls, they are not required to report electronically into SIREN. Currently, nearly half of first response agencies voluntarily report data into SIREN. As a result, not all non-transporting agencies' data are included. The following analysis includes data from 2015 through 2017.

Of the 109 Vermonters who died of a drug overdose, 91 were identified within the SIREN database. Of those 91 people, 72 were either declared dead on scene by EMS personnel or died in the hospital after being transported by EMS. Fifty-one percent of people who died of an overdose had at least one past interaction with EMS in the years prior to their death. All numbers presented below exclude the incidents where the person was either declared dead on scene, or died at the hospital with no prior EMS interactions.

In 2017, Vermont EMS providers documented nearly 90,000 calls. Just over half of the patients involved in the total calls were women (52%). Comparatively, of the 56 overdose decedents who had an EMS interaction between 2015 and 2017, only one-third were women (32%).

Vermont EMS personnel responded to a total of 1,400 drug overdoses, 4,200 incidents involving a psychiatric problem, and 5,700 motor vehicle accidents in 2017.[16] Out of the 56 people who died of an overdose and had an interaction with EMS prior to their death, nearly half had an interaction with EMS that involved substance use (48%, N=27). Mental health (20%) and motor vehicle crashes (18%) were also commonly identified. Fifty-nine percent had an "other" type of incident. This category includes miscellaneous injuries (e.g. pain, allergic reactions, etc.), as well as cases that could not be classified due to lack of information.

56 individuals had a prior EMS involvement.

| 59% had an "Other" Involvement | 48% Involved Substance Use | 20% Involved Mental Health | 18% Involved a Motor Vehicle Accident |

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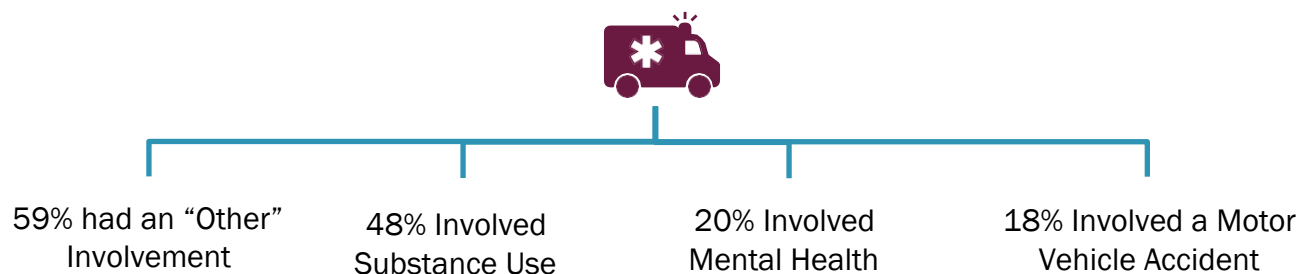
[16] https://www.healthvermont.gov/sites/default/files/DEPRIP.June%202017_EMS_Calls.pdf

EMS interactions varied by age.[17] Overall, the median age was 38 years for the 56 people who had any previous interactions with EMS personnel. Those who had a substance use-related incident had a median age of 35 years. This category had the lowest median age of the four interaction types. The oldest group was those who had an "other" interaction before they died (43 years old).

Median Age by EMS Interaction Category	
Type of Interaction	Median Age
Any EMS Interaction (N = 56)	38
Substance (N = 27)	35
Mental Health (N = 11)	41
MVC (N = 10)	38
Other (N = 33)	43

Those who interacted with emergency medical personnel typically had one incident between 2015 and their date of death. The median number of incidents decedents had with EMS was 1.5 and the mean was three. Eleven people had five or more interactions.

Most individuals had only one previous interaction with EMS at any point before their death.

	28	17	11
	1	2 to 4	5 or More

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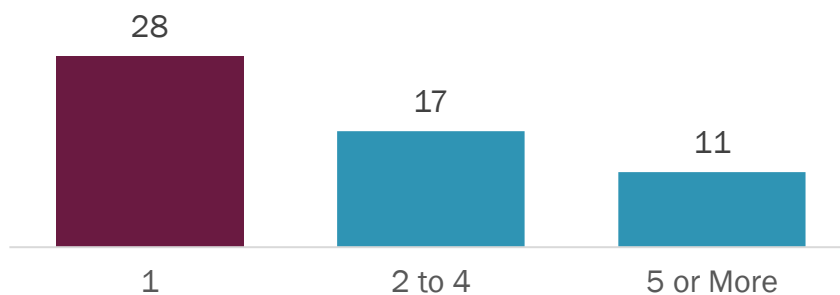
[17] Interaction types are not mutually exclusive. In other words, individuals could have had interactions with EMS that involved substance use and mental health and would be considered in both categories.

Most people had an interaction with EMS personnel one or more years before they died of an overdose. Interactions with EMS personnel were less common in the month before death (N=8).

Most individuals had an interaction with EMS more than one year before their death.

One Month Prior	One Year Prior	More Than One Year Prior
8	28	42
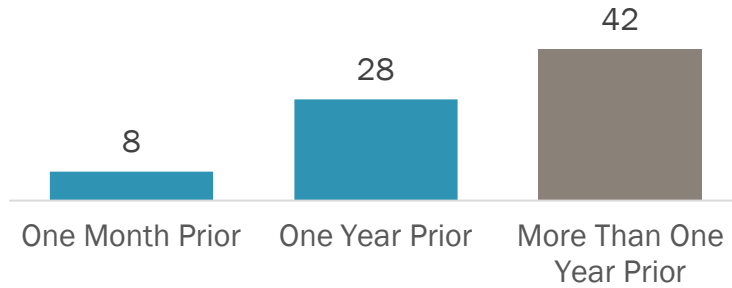
Controlled Substance Prescription History

(Source: Vermont Prescription Monitoring System)

Controlled Prescriptions History Using Vermont's PDMP Data

Vermont's prescription drug monitoring program (PDMP), known as the Vermont Prescription Monitoring System (VPMS) is a statewide electronic database of controlled substance prescriptions dispensed from Vermont-licensed pharmacies. VPMS is a clinical tool that is used to promote the appropriate prescribing of controlled substances for legitimate medical purposes, while deterring the misuse, abuse, and diversion of controlled substances.

For this project, the names and dates of birth of people who died of a drug overdose were matched to VPMS data.

Prescribed medications contributed to the deaths of 17 of the 109 overdose decedents in 2017. Eleven had an active prescription in the VPMS for at least one of the substances detected in their toxicology report. For the other six individuals, overuse or overdose of prescribed medication was listed among the causes of death.

More than 80 percent (84%) of the people who died of a drug overdose in 2017 had at least one controlled substance prescription in VPMS between 2012 and 2017. Twenty percent had an active prescription at the time of their death. An active prescription is defined as a prescription with an end date (based on days of supply and fill/sold date) that is on the same day as death or later. Over half (57%) received a prescription within a year of their death.

Percent of Individuals with at Least One Prescription in VPMS
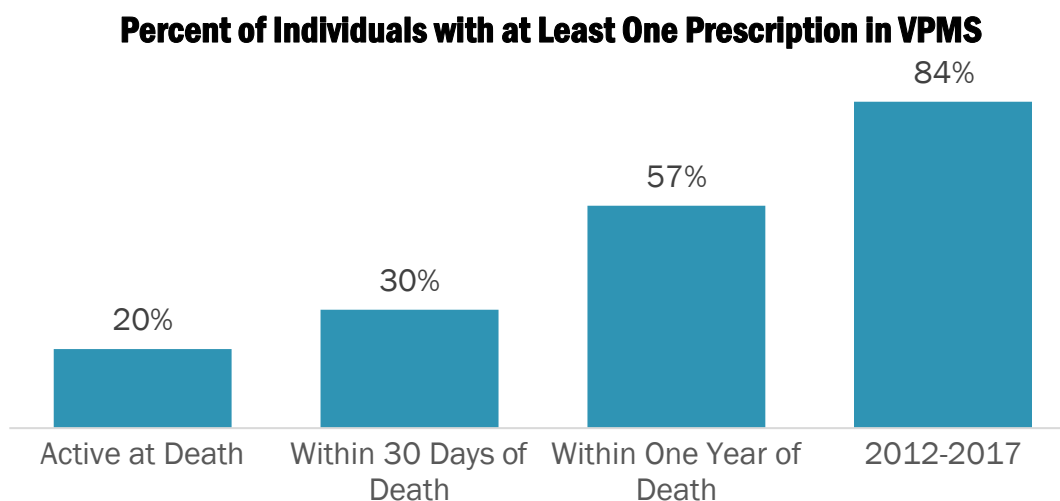
The VPMS Annual Report 2017 details the percentage of the Vermonters who received at least one prescription in each drug class during the year. The assignment of drugs to drug classes is based on the U.S. Centers for Disease Control and Prevention's (CDC) treatment classes. The drug types included in this report are:

- Opioid analgesics: opioids used in the treatment of pain.
  Examples: oxycodone, hydrocodone, prescribed fentanyl

- Medication Assisted Treatment (MAT) opioid agonist/antagonist: medications used to treat opioid use disorder. With a few exceptions, any drug containing buprenorphine is considered a MAT opioid.
  Examples: Suboxone, Subutex

- Benzodiazepines: sedatives to treat anxiety, insomnia and other conditions.
  Examples: lorazepam, clonazepam, diazepam

- Stimulants: medication to increase alertness, attention and energy.
  Examples: methylphenidate, amphetamine

- Other: all other schedule II-IV drugs that are not in the other categories.

People who died of a drug overdose in 2017 were more likely to receive prescriptions in each drug class than the Vermont population.

Percent of Population with at Least One Prescription by Drug Class

■ Individuals who died of a drug overdose   ■ Vermont, 2017

Drug Class	Individuals who died of a drug overdose	Vermont, 2017
Analgesic Opioid	25%	14%
Benzodiazepine	22%	9%
MAT Opioid	12%	1%
Stimulant	9%	4%
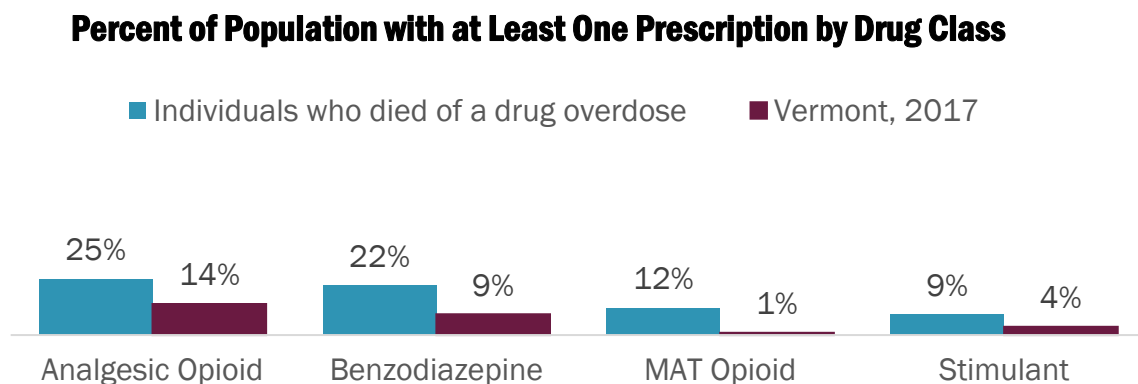
The most common drug class of prescriptions received recently by people who died of a drug overdose was benzodiazepines. However, the most common drug class over the five-year period of 2012-2017 was analgesic opioids. MAT opioids also made up a smaller proportion of prescriptions active at time of death than any other time period.

Prescriptions by Drug Class

	Analgesic Opioid	Benzodiazepine	MAT	Other	Stimulant
Active at Death	25%	33%	20%	3%	18%
Within 30 Days of Death	25%	26%	27%	5%	16%
Within 1 Year of Death	34%	18%	28%	4%	15%
2012-2017	43%	19%	21%	5%	12%
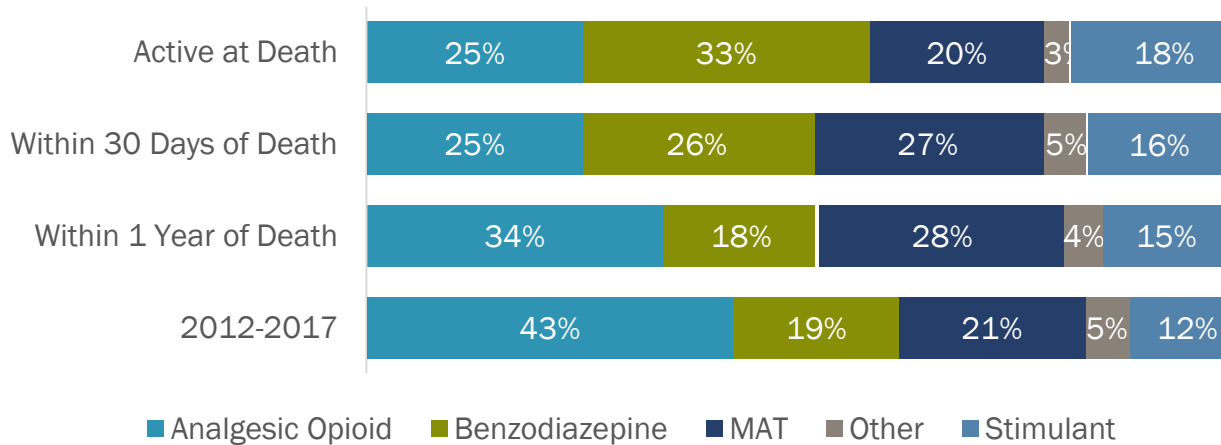
Because opioid pain medication strengths and dosages vary, Morphine Milligram Equivalents (MME) are used to express the strength of an analgesic opioid prescription as a standardized measure.

The Centers for Disease Control and Prevention (CDC) Guidelines for Prescribing Opioids for Chronic Pain categorizes prescribing based on three daily MME groups: <50 MME, 50-90 MME, and >90 MME. Higher MMEs are associated with greater risks of harm. In comparison with analgesic opioid prescriptions for all of Vermont in 2017, people who died of a drug overdose in 2017 received a greater percentage of high-dose opioid prescriptions (90 or greater MME) and a correspondingly lower percentage of low-dose prescriptions (less than 50 MME). Prescriptions in the middle range (50-90 MME) were about the same for both groups.

Analgesic Opioid Prescriptions by MME Category

	<50 MME	50-90 MME	>90 MME
Individuals who died of a drug overdose	50%	22%	27%
Vermont, 2017	66%	19%	15%
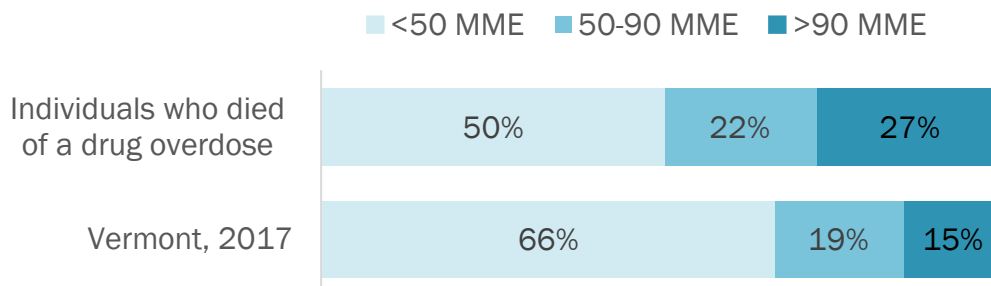
This difference in MME received is also evident in the average MME of prescriptions received by Vermonters in 2017 compared to individual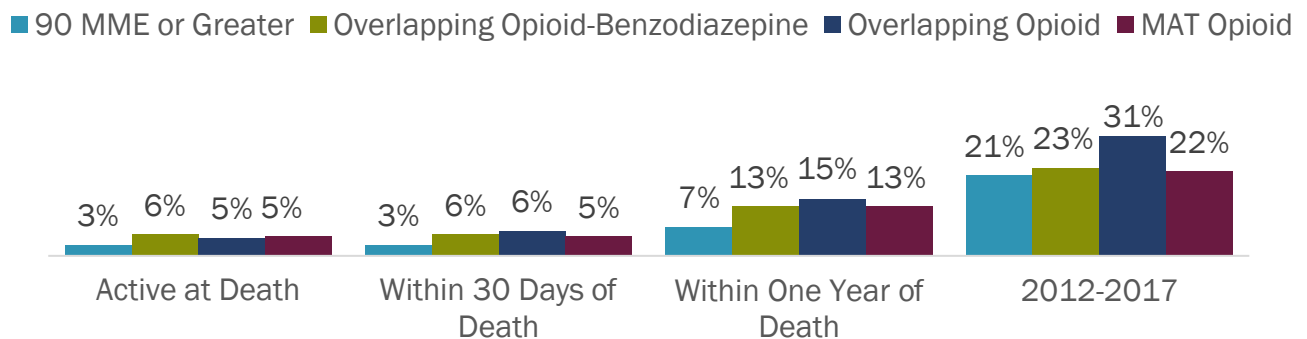s who died of a drug overdose (59 vs 81). The total amount of opioids (total MME) dispensed per 100 in the year before their death is over five times the MME per 100 Vermonters in 2017.

Individuals who died of a drug overdose had higher average daily and total MME of prescriptions compared to Vermonters in 2017.

81 | 59
Average MME

352,294 | 61,300
Total MME
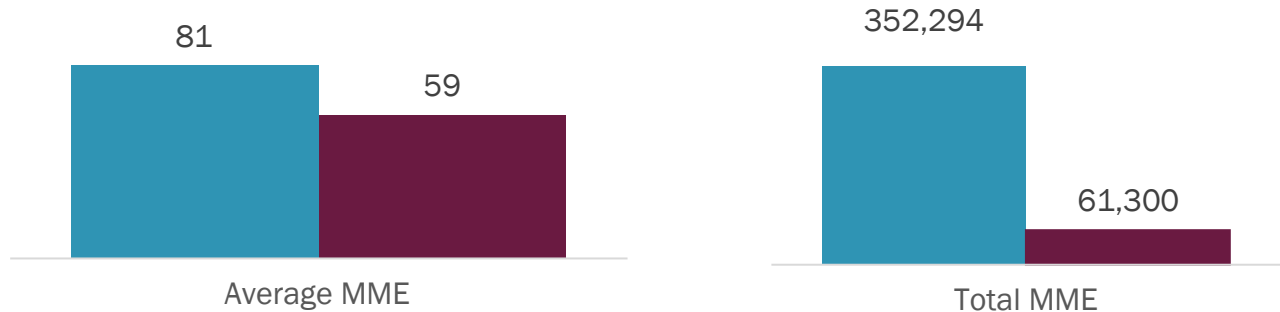
The chart below shows the percent of people who died and had a prescription in one of several categories that are considered either high risk (overlapping prescriptions, opioid prescriptions equal to 90 MME or greater), or indicate treatment for substance use disorder (MAT opioids). For more information on these categories, see the VPMS Annual Report. Over 30 percent (31%) received overlapping opioid prescriptions at least once between 2012 and 2017. While few people had active prescriptions in these categories at the time of their death, in almost all categories more than one in 10 (13-15%) received a high-risk prescription within a year of their death.

Percent of individuals with High Risk or MAT Prescriptions

■ 90 MME or Greater ■ Overlapping Opioid-Benzodiazepine ■ Overlapping Opioid ■ MAT Opioid

	90 MME or Greater	Overlapping Opioid-Benzodiazepine	Overlapping Opioid	MAT Opioid
Active at Death	3%	6%	5%	5%
Within 30 Days of Death	3%	6%	6%	5%
Within One Year of Death	7%	13%	15%	13%
2012-2017	21%	23%	31%	22%

The percentage of those who died of an overdose and received a high-risk prescription within one year of death is much higher than the percentage of Vermonters in 2017 who received a high-risk prescription in that year.

Percent of Population with High Risk or MAT Prescriptions

■ 90 MME or Greater ■ Overlapping Opioid-Benzodiazepine ■ Overlapping Opioid ■ MAT Opioid

7%	13%	15%	13%	2%	2%	3%	1%

Individuals who died of a drug overdose   Vermont, 2017
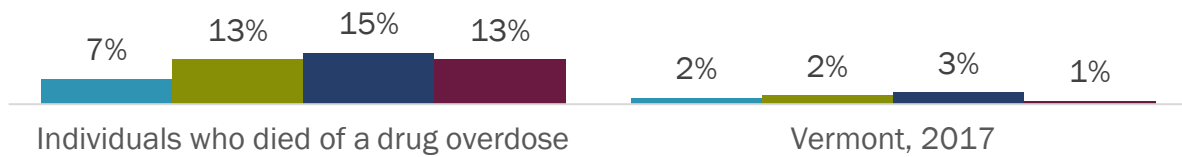
Medicaid Enrollment and Utilization

(Source: Department of Vermont Health Access)
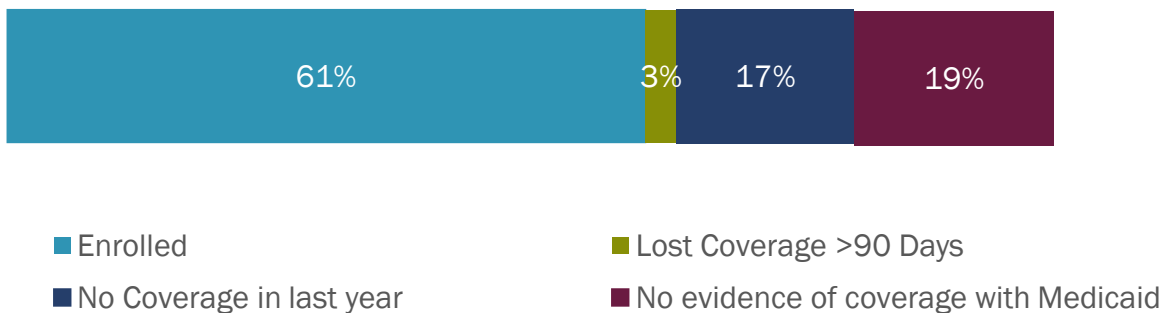
Healthcare Utilization Patterns Using Vermont's Medicaid Claims Data

Department of Vermont Health Access (DVHA) is responsible for the management of Vermont's publicly funded health insurance programs also known as Vermont Medicaid Program. Medicaid claims were analyzed to look for enrollment status prior to death in addition to health care utilization measures.

Near or at the time of death, 61% of people who died of drug overdoses in 2017 were enrolled in Medicaid. Fewer people (3%) were enrolled but lost coverage more than 90 days prior to death. These analyses are estimates as some individuals do not have a complete date of death on the death certificate. Nearly all (87%) people who died of an overdose in 2017 and were enrolled in Medicaid had at least one claim in the last year. Most of those individuals had claims within three months of death.

Over 60% of individuals were enrolled in Medicaid near date of death.

61%	3%	17%	19%

■ Enrolled   ■ Lost Coverage >90 Days

■ No Coverage in last year   ■ No evidence of coverage with Medicaid

Nearly half of the individuals with a Medicaid claim within a year of death had a claim related to substance use.

The most common diagnosis and procedure codes among Medicaid enrollees who died of a drug overdose in 2017 are related to substance use or mental health. Of the people who had claims within a year of death, nearly half had a claim with a substance use disorder (SUD) as a diagnosis and of those, most have an opioid diagnosis. The second most common SUD is associated with alcohol use.

In addition, 13% of people had a claim associated with an overdose in the past year. Of those, 75% had an overdose claim within three months. A few of these individuals had multiple overdose claims within a year of death.

Nearly half of the people enrolled in Medicaid near death had a claim related to substance use treatment. Of note, this does not include treatment using Buprenorphine, as that is covered in the VPMS section. All other forms of treatment are included such as methadone, residential treatment, and outpatient services. The treatment numbers show the greatest drop in the number of people enrolled closer to the day of death. This suggests leaving treatment is a risk factor for fatal overdose.

Percent of Medicaid-Enrolled People with Substance Use-Related Claims

	Overdose	SUD diagnosis	Treatment
Within 1 year	13%	47%	45%
Within 3 months	10%	40%	35%
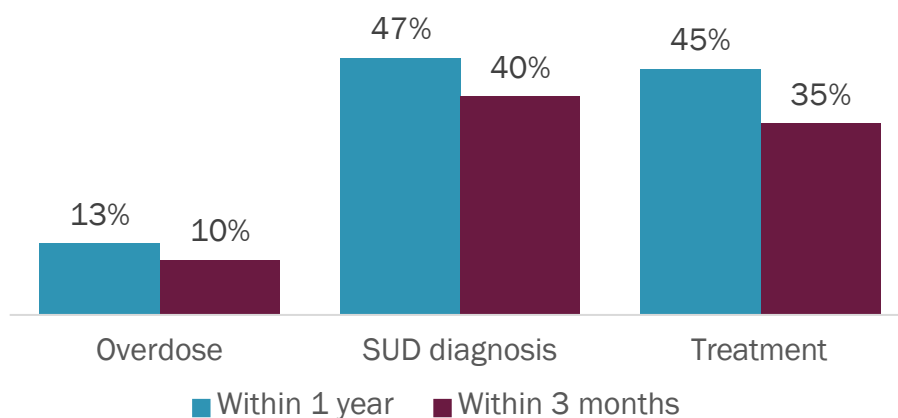
Interactions with Family Services

and Economic Services

(Source: Department for Children and Families)

Family Services Division

The Family Services Division (FSD) of the Department for Children and Families (DCF) is responsible for ensuring children and youth are safe from abuse. The FSD data system dates back to 1982. There were 48 people born after 1982 who died of a drug overdose in 2017. As children, 13% of these 48 individuals had a history of involvement with the FSD of the DCF in Vermont.

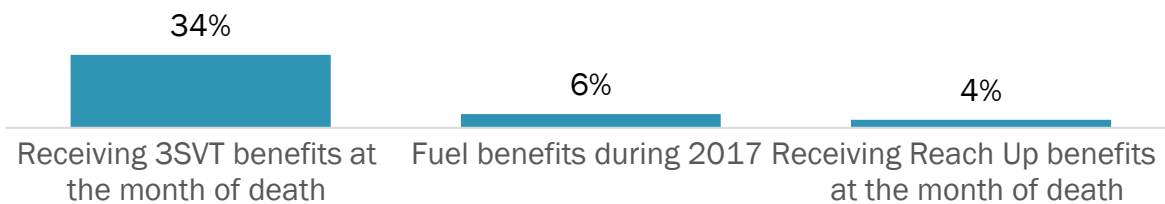**13% were involved with FSD as children.**

22% were involved with FSD as parents.

As parents, 22% had a history of involvement with the FSD of the DCF.

Economic Services Division

Some people who died were enrolled in economic services the month or year of their death. The program most frequently utilized was 3Squares Vermont, which is a supplemental nutrition assistance program offered to low income Vermonters. The fuel assistance program helps pay for heating bills for low income Vermonters who rent or own a home. Reach Up provides case management and financial supports to low income families. Reach Up and the fuel assistance program were less likely to be received by people who died of a drug overdose in 2017 compared to 3Squares Vermont. In addition to the three economic services offered to low income Vermonters, the Economic Services Division also will pay for burials of individuals without financial assets. Roughly one-third (33%) of Vermonters who died of a drug overdose had their burial paid for by the Department for Children and Families.[18]

3Squares Vermont was used more by people who died of drug overdoses compared to fuel benefits or Reach Up.

34%	6%	4%
Receiving 3SVT benefits at the month of death	Fuel benefits during 2017	Receiving Reach Up benefits at the month of death

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[18] Also, of note Vermonters who died of a drug overdose made up 7% of all burials paid for by DCF in 2017.

Interactions with Vermont State Police

(Source: Department of Public Safety)

Law Enforcement involvement Using Department of Public Safety's Database

The Vermont Department of Health partnered with the Vermont Department of Public Safety to identify and characterize interactions overdose decedents had with Vermont State Police (VSP) over the course of their lives, prior to death. Department of Health staff analyzed State Police records exclusively, as local police records were unavailable. Records were gathered from one of Vermont's law enforcement records management systems and were available dating back to 1988.

Out of all 109 people who died of a drug overdose in 2017, 89 (82%) had interacted with VSP at some point before they died. In total, the 89 individuals had 790 State Police involvements, with an average of nearly nine interactions per person. It is important to note people can have a variety of roles with law enforcement involvements such as witness, person of interest, or offender/arrestee.

In reviewing case records that involved an interaction with Vermont State Police, 13 categories of cases were used to classify each involvement: assault, witness to overdose, death investigation, non-fatal overdose, drug dealing, driving under the influence (DUI), drug possession, suspicious, domestic violence, family issue, driving with a license suspended (DLS), theft/burglary/larceny, and non-criminal/other. Some categories were created as areas of interest prior to or during the analysis, while others were categories native to the database. Placement of each case into a given category was left to the discretion of the analysts.

The most common category was "Non-Criminal or Other" (357 involvements), which included a variety of cases, typically those that did not result in charges or further State Police involvement. This was followed by cases related to "Theft, Burglary, and Larceny" (145 involvements). There were 75 involvements related to criminal DLS or DUI and 53 involvements related to drug dealing or possession.

Total State Police Interactions – Common Categories

Non-Criminal/Other – 357

Theft/Burglary/Larceny – 145

Criminal DLS or DUI – 75

Drug Dealing/Possession – 53

The top categories of interactions people had with Vermont State Police are similar to those reported in the FBI Crime Data Explorer for Vermont overall.[19] Between 2010 and 2017, "other" offenses (excluding traffic offenses) accounted for the greatest proportion of arrests in Vermont, followed by DUI, simple assault, and larceny/theft. The population described in this report differs from that of Vermont overall in that interactions involving assault were infrequent among those who died of overdose. Although the data reported by the FBI exclusively refer to arrests, they are similar to the interaction types observed in this study.

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[19] https://crime-data-explorer.fr.cloud.gov/explorer/state/vermont/arrest

Among those who interacted with Vermont State Police in the years before they died, the categories in which those interactions were classified were diverse. Interactions with police fell into a median of three categories out of the 13 that were used for this analysis. Most people (72%) had interactions that were classified into between one and four categories.

Within the non-criminal/other category, people had an average of 4.6 interactions if they were classified into this category. This is followed by theft/burglary/larceny cases (3.8 interactions) and DLS cases (2.5 interactions). These averages further reflect how common these case types were among those who died of a drug overdose, regardless of whether the person was implicated as the offender. For most interaction types, the person was usually listed as the offender or a person of interest.

Average Number of Involvements by Case Type for People Who Died of a Drug Overdose in 2017
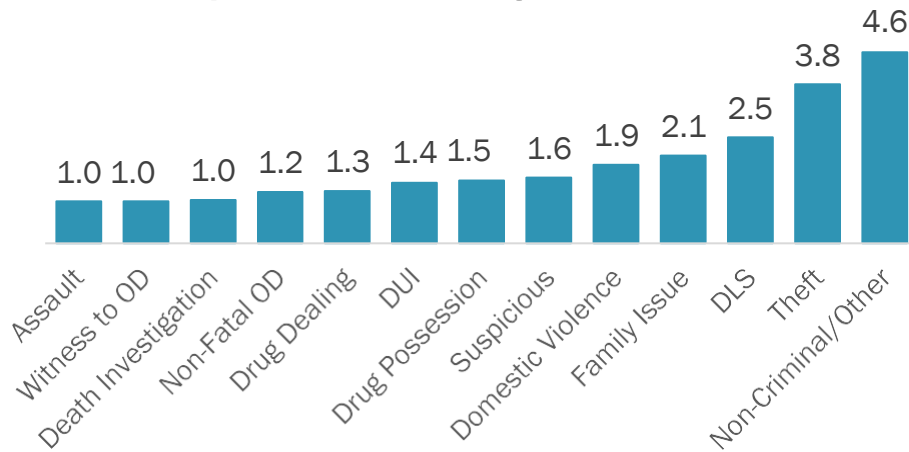
This is particularly true for cases of DUI and DLS, where 77% of people were classified as an offender, and 17% were a person of interest. Of note, a "person of interest" designation within the database does not always imply a suspicion that the individual was involved as a possible offender in the case. Rather, the person could have been interviewed for additional information related to the case or they could have been named by another individual involved with the case.

Role of DLS and DUI Involvements Among Individuals who Interacted with VSP
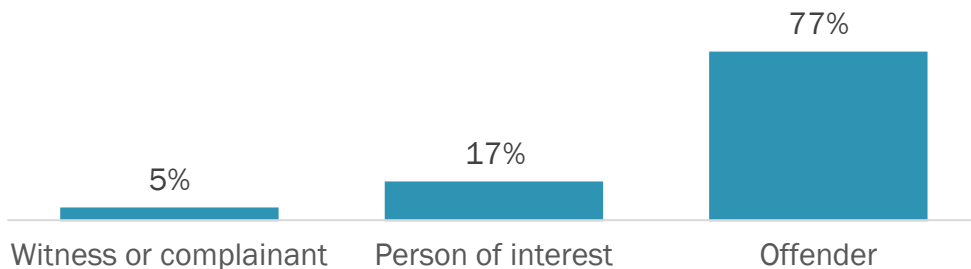
Incarceration History

(Source: Department of Corrections)

## Incarceration History Using Department of Corrections Data

The Health Department partnered with Vermont Department of Corrections (DOC) to review the 109 drug-related deaths in Vermont in 2017 to determine whether the individuals had been recently incarcerated and if so, whether they had participated in a substance use screening during their incarceration. Notably, the DOC's medication assisted treatment (MAT) program was in a pilot phase in 2017, and allowed the continuation of all forms of federally approved MAT for inmates who were verified to have been receiving MAT at the time of incarceration with treatment continuation — not induction — the only standard of care during the timeframe. When Vermont Act 176 went into effect on July 1, 2018, the DOC was directed to not only continue all forms of federally approved and verified MAT, but to also induct inmates on buprenorphine when it was medically necessary, and the inmate elected to begin the treatment. Thus, there is limited MAT data for this cohort because the standard of care in 2017 did not include inducting inmates on MAT while in a correctional facility.

Of the 109 people who died of a drug overdose in 2017, 17% had a history of incarceration since 2014, with a median length of stay of 10 days for their most recent incarceration. This subpopulation was predominately male (89%) and white (89%), with a mean age of 38 years.

Of the 19 people with a recent history of incarceration, 18 (95%) were screened for substance use disorder upon entering a correctional facility. Again, at the time of this analysis, the Vermont DOC standard of care included screening for mental health and substance use disorders but did not include induction on MAT within the correctional facility. Of these 19 people, 18 did not have a verified community-based MAT prescription, and therefore did not receive MAT while in a DOC facility; one of the 19 received MAT in a facility.

In addition, 11 (58%) of the 19 overdose deaths among people with recent history of incarceration occurred within the first three months after release from a correctional facility.

Months Between Release from Incarceration and Death

■ 3 or less months   ■ 4+ months
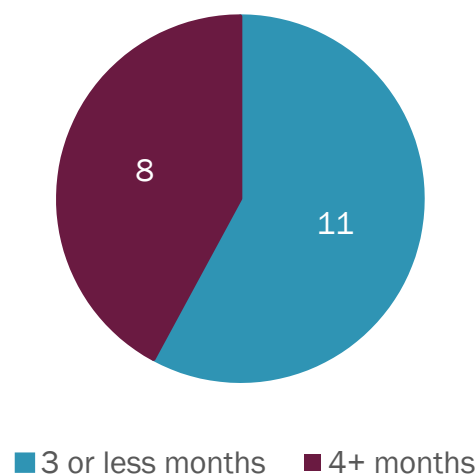
It is important to note that the analyses in this report do not purport to fully describe the scope of, or reflect on, the DOC's current treatment practices of those with substance use disorder within Vermont correctional facilities. Moreover, because the frequencies included in this data are very small (N=19), with little time spent within the correctional facility (median = 10 days), and involve only a one-year snapshot, larger, longitudinal datasets are needed to draw predictive conclusions and provide a more comprehensive narrative.
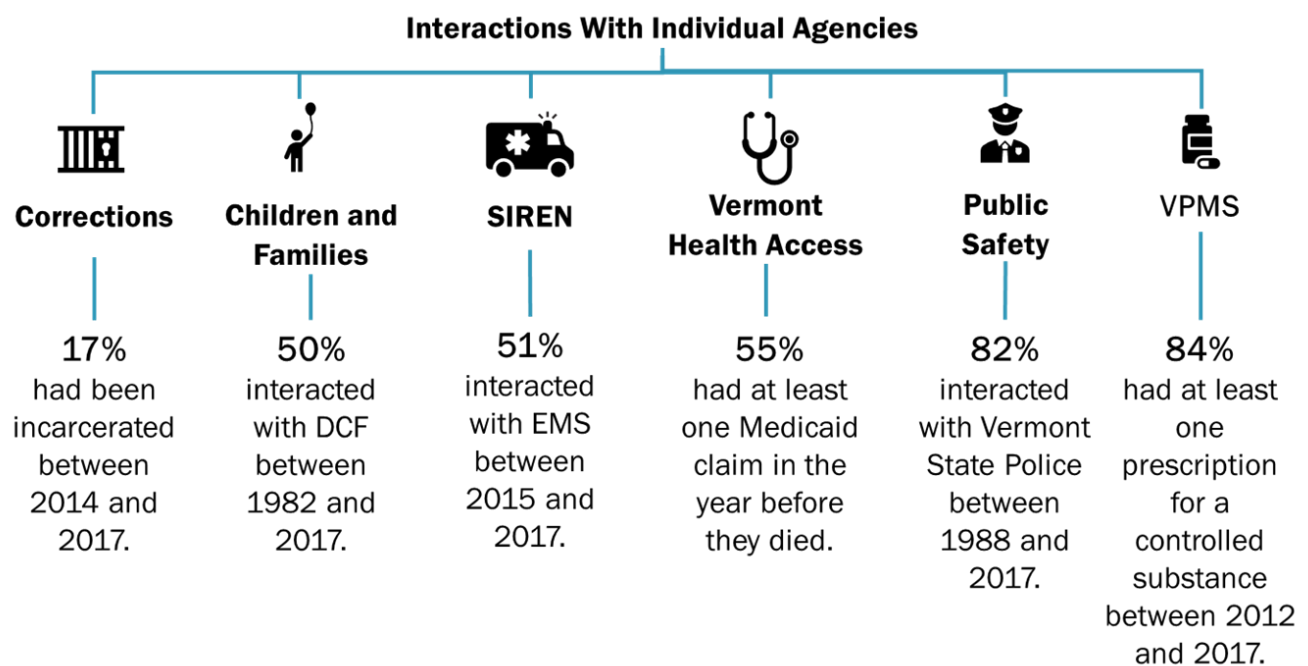
Overall Interactions

Nearly all individuals interacted with at least one state agency in the years before they died.

Four Department of Health datasets and data from four other State of Vermont agencies were included in this project. Data from Vital Statistics, State Unintentional Drug Overdose Reporting System (SUDORS), Statewide Incident Reporting Network (SIREN), and Vermont Prescription Monitoring System (VPMS) are managed by the Department of Health. Data from the departments of Public Safety (DPS), Corrections (DOC), and Vermont Health Access (DVHA) and the Department for Children and Families (DCF) were included as datasets external to the Department of Health.

In addition to the analyses presented throughout this report related to each individual agency or dataset, interactions across agencies and datasets were also analyzed. This section excludes data from Vital Statistics and SUDORS because these datasets include all 109 people by definition.

Overall, the largest proportion of people interacted with VPMS (84%), followed by DPS (82%), DVHA (55%), SIREN (51%), DCF (50%), and DOC (17%). Data from the six remaining datasets varied in terms of which years were available. This likely impacted the number of involvements that were found among those in this study.

Interactions With Individual Agencies

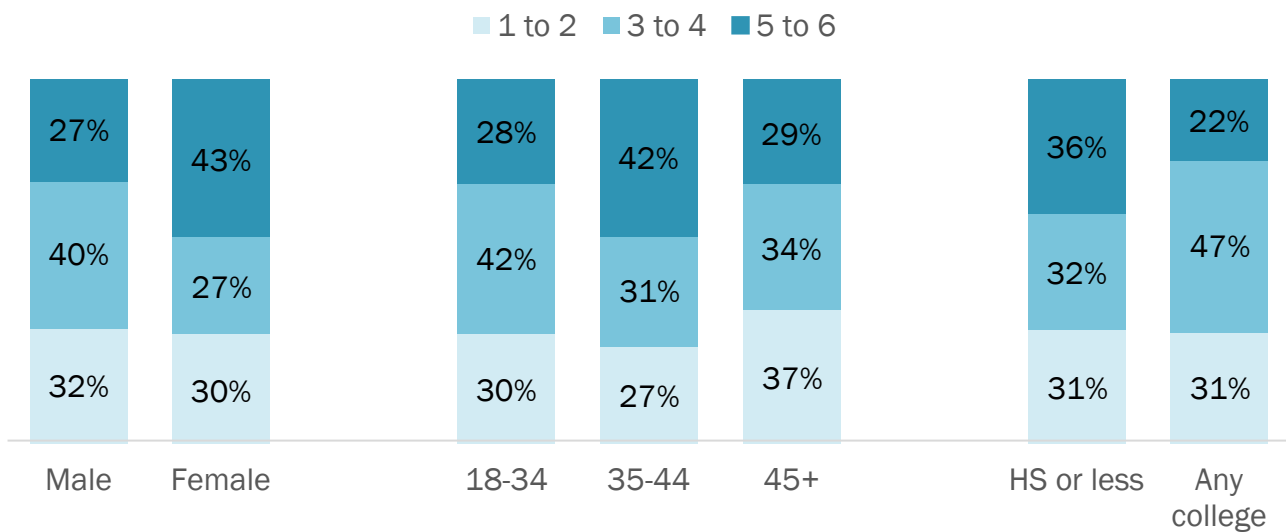| Corrections	Children and Families	SIREN	Vermont Health Access	Public Safety	VPMS
17% had been incarcerated between 2014 and 2017.	50% interacted with DCF between 1982 and 2017.	51% interacted with EMS between 2015 and 2017.	55% had at least one Medicaid claim in the year before they died.	82% interacted with Vermont State Police between 1988 and 2017.	84% had at least one prescription for a controlled substance between 2012 and 2017.

Nearly all of the 109 people who died of a drug overdose interacted with at least one agency in the years before they died (98%). Because most people had interacted with either VPMS or DPS individually, this was expected. However, two-thirds of the 109 individuals interacted with three or more agencies in the years before they died.

Number of State Agencies Interacted with Before Death

Category	Percentage
0	2%
1 or 2	31%
3 or 4	36%
5 or 6	31%
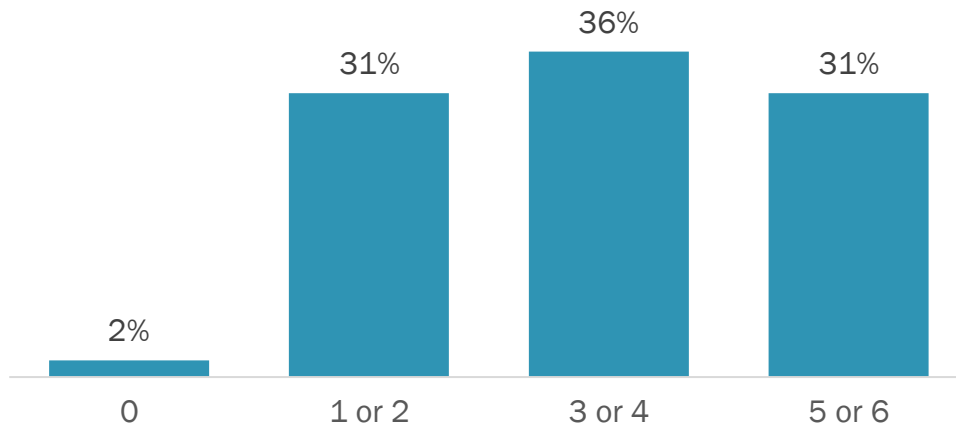
Of the people who interacted with at least one agency, the demographic groups who interacted with the greatest number of agencies were women, middle-aged individuals (ages 35-44), and those who had a high school education or less. Of note, the number of agencies people interacted with did not significantly differ by demographic group.

Number of State Agencies Interacted with by Sex, Age, and Education

Legend: 1 to 2 ∎ 3 to 4 ∎ 5 to 6

	Male	Female	18-34	35-44	45+	HS or less	Any college
5 to 6	27%	43%	28%	42%	29%	36%	22%
3 to 4	40%	27%	42%	31%	34%	32%	47%
1 to 2	32%	30%	30%	27%	37%	31%	31%

Conclusions and Next Steps

The data provided in this report indicate that many people who died of an accidental or undetermined drug overdose in 2017 interacted with State of Vermont programs prior to their deaths, with some contacts occurring close to the time of death and other contacts going back many years. The datasets from DPS and DCF provide a more longitudinal view with records going back to the 1980s, which may increase the likelihood of finding interactions because more data was available to analyze.

Overall, people frequently had contacts in the Vermont Prescription Monitoring Program and the State Police data system. People who died of a drug overdose in 2017 had complex needs, including physical and mental health conditions, more prescriptions for controlled substances and multiple interactions with EMS, DVHA and DCF. Many of these interactions were related to substance use. It is clear from this analysis that these Vermonters were known to, and interacted with, a variety of State programs.

The results of this analysis indicate that there are opportunities to provide overdose interventions within State-managed programs. A list of recommendations drafted by the commissioners of the participating state agencies is included at the end of this report.

An analysis of 2018 deaths is in progress using the same methods. Additional data sets are being explored for further analysis. An additional year of data may allow more in-depth analysis to refine opportunities for intervention.

The Health Department will continue to explore where people who died of a drug overdose in 2018 interacted with state systems and identify additional opportunities for intervention.

Recommendations

<u>Expand data collection and analysis to inform interventions.</u>

- Enhance analytic capacity for identifying overdose trends by accessing additional datasets from partners such as the Impaired Driver Rehabilitation Program, Department of Motor Vehicles, Department of Mental Health, and local law enforcement.
- Continue to use the Vermont Prescription Monitoring System to inform prescribing quality improvement and education on non-opioid pain management among providers.

<u>Establish and enhance linkages to care.</u>

- Maintain standards of care defined in <u>Act 176,</u> an act relating to the provision of Medication Assisted Treatment (MAT) for inmates, 2018.
  - Develop and maintain quality assurance measures and review processes for:
    - Timeliness and quality of assessment; medical necessity determinations; treatment plans
    - MAT Care Coordination at release
    - Assessing inmates who do not have a history of community-based MAT
    - Re-assessing inmates who have been medically removed from MAT while incarcerated and for whom a release date is known
- Collaborate with the Department of Vermont Health Access (DVHA) to ensure Medicaid enrollment at release to support continuity of care.
- Collaborate with DVHA to offer opioid use disorder chronic care coordination, post incarceration.
- Enhance connectivity for law enforcement and peer recovery counselors, embedded counselors, Emergency Medical Services, Emergency Departments (EDs) and Syringe Service Programs (SSPs) as potential sites for Rapid Access to MAT (RAM).
- Support the <u>Department of Mental Health's VISION 2030 Plan for Integrated and Holistic System of Care</u>, specifically Action Areas 4 and 5, which address expanding access to community-based care and enhancing intervention and discharge services to Vermonters in crisis.

<u>Integrate state and local prevention and response efforts.</u>

- Work across state agencies to promote screening for substance use disorder and/or mental health as a standard of practice, with the goal of increasing access to applicable recovery and harm reduction services such as recovery centers, peer recovery programs, RAM in EDs, and SSPs.
- Engage leadership across the Vermont Agency of Human Services (AHS) in an overdose death prevention working group to explore cross-agency and cross-system strategies to share data, implement screening practices and connect people to resources and services.
- Address Adverse Childhood Experiences in adolescents and young adults who are using or are at risk of using substances through a collaboration with the Division of Maternal and Child Health and AHS Trauma Prevention and Resilience Development expertise.