

How we define unintentional nonfatal overdose

Vermont emergency department (ED) data from the Electronic Surveillance System for the Early Notification of Community-Based Epidemics (ESSENCE) were used to identify **unintentional nonfatal overdoses** involving cannabis, prescription medication, over the counter (OTC) medication, illicit opioids, and stimulant drugs among Vermonters under 25. **An overdose is a poisoning which has been caused by drugs rather than any potentially toxic substance** (e.g., cleaning agents and pesticides). Overdoses were included in the analysis regardless of the way the person took the drug. Overdoses related to suicide and self-harm, however, were excluded from the analysis. Although accidental overdoses from oral ingestion of substances are common among youth, unintentional overdoses from recreational substance use were also included in this report.¹

The report includes data from before, and during, the COVID-19 pandemic (2018 through 2022). Reviewing youth overdoses during this time is important because studies have suggested that the pandemic has been associated with an increase of overdoses in children under six years.²

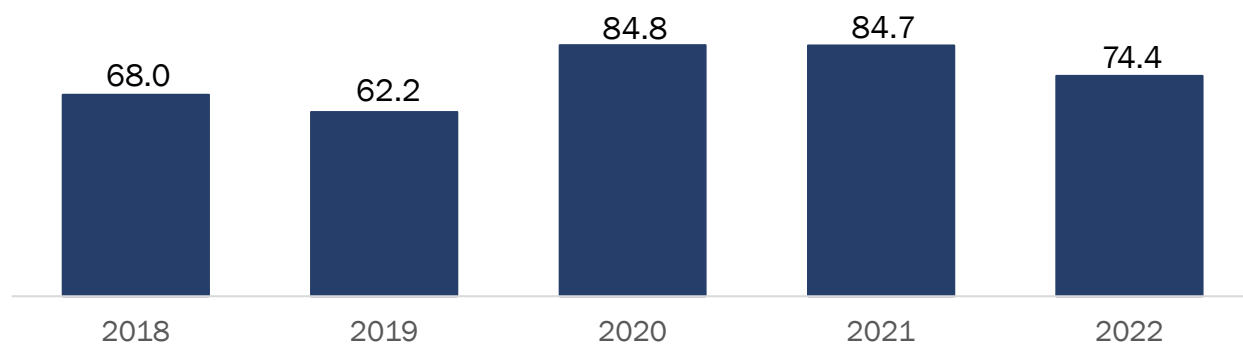
ED visit rates for unintentional nonfatal overdose increased for those under 25.

The rate of overdoses among Vermonters under 25 increased between 2018 and 2022. The rate was lowest in 2019 (62.2 per 10,000 visits) and increased to its peak in 2020 (84.8). While the rate decreased between 2021 and 2022, it remained higher than pre-pandemic rates. However, the number of ED visits for any reason decreased at the start of the COVID-19 pandemic, potentially influencing the yearly rates in 2020 and 2021.

KEY POINTS

- **Between 2018 and 2022, unintentional nonfatal overdose ED visits involving cannabis, prescription, OTC, opioid, and stimulant drugs increased among Vermonters under 25.**
- **ED visits for these kinds of overdoses increased for both teens and young children.**
- **Cannabis, prescription, OTC, and stimulant nonfatal overdoses showed the largest increase in rates.**

The rate of unintentional nonfatal overdoses per 10,000 ED visits peaked in 2020 and did not return to pre-pandemic levels.

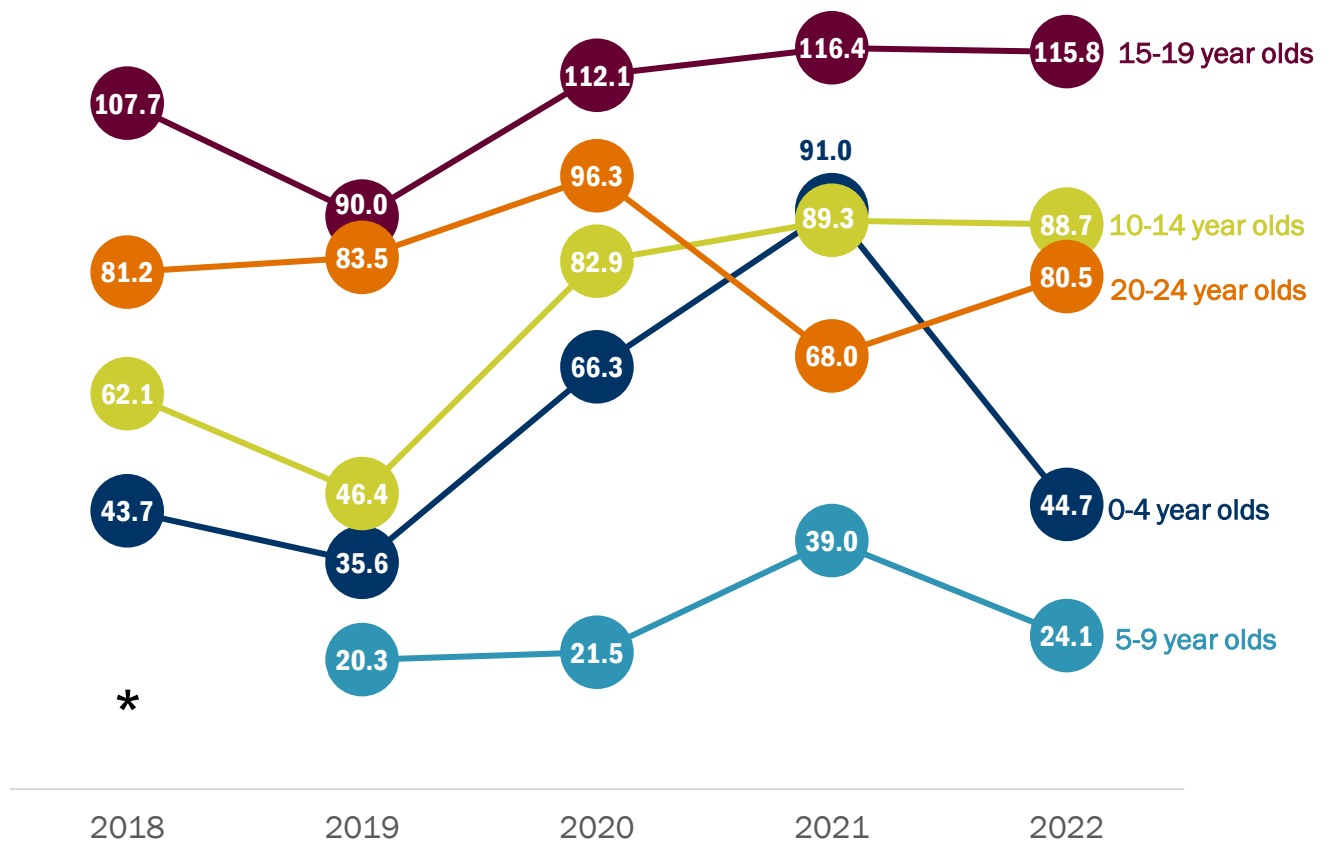


Unintentional Nonfatal Drug Overdose ED Visits Among Vermonters Aged <25 Years

Unintentional nonfatal overdose rates vary across age categories.

Teenagers and young adults typically had higher rates of unintentional nonfatal overdose compared to younger Vermonters between 2018 and 2022, with **15-19-year-olds** having the highest rates. All but the **20-24** age category showed a general trend of increase during this time, and some of these increases were greater than others. While the rate of nonfatal overdose among Vermonters **0-4 years old** was more than 2.5 times higher in 2021 than in 2019 (the largest increase among age categories), the rate decreased in 2022. Children aged **5-9** consistently had the lowest rate of nonfatal overdose between 2018 and 2022. This generally matches national trends, with teens and younger children having higher rates than pre-teens and older elementary schoolers.

The rate of unintentional nonfatal overdoses per 10,000 ED visits was highest among 15-19 year olds and lowest among 5-9 year olds.



* The suppressed rate, indicated by the asterisk, was omitted and reflects a rate that was calculated from a count (number of people who had a nonfatal overdose) that is higher than zero but lower than six.†

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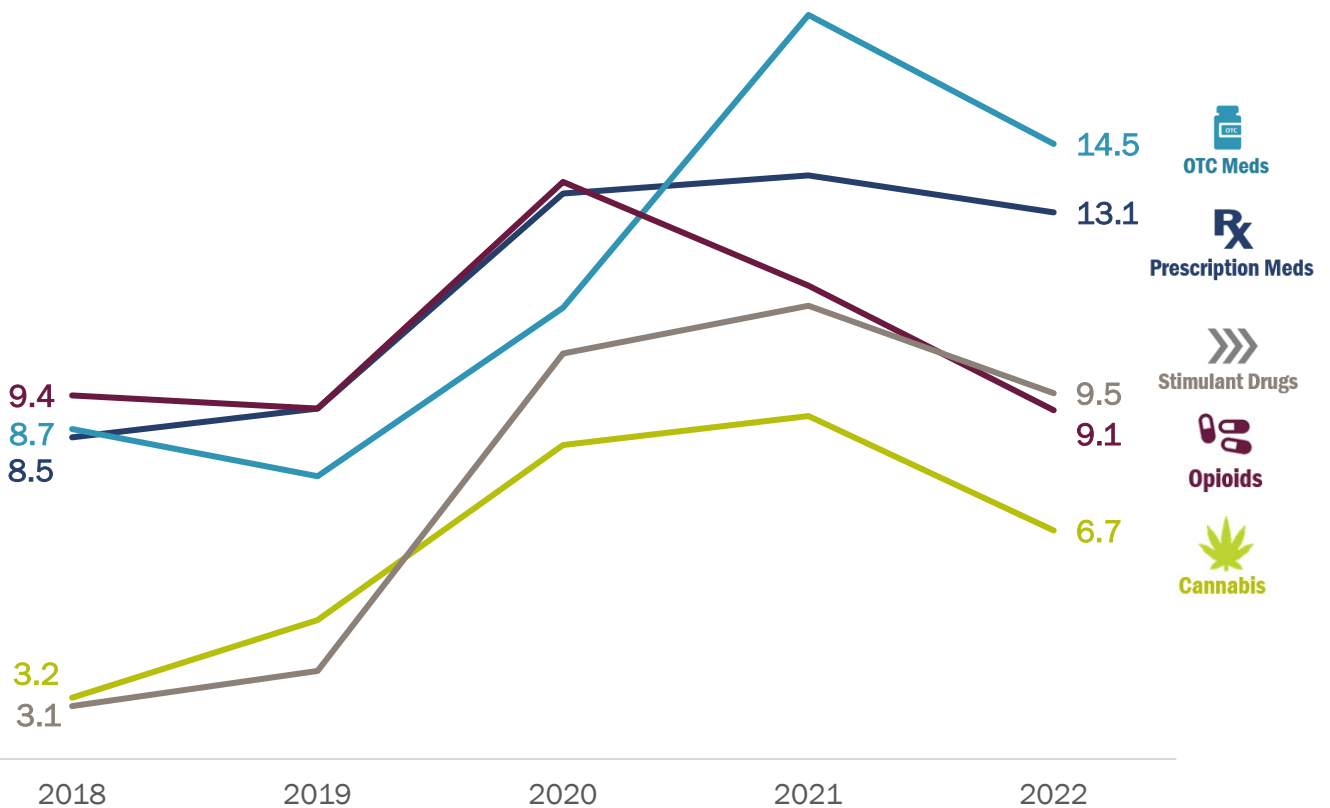
Rates of unintentional nonfatal overdose by substance vary over time.

Between 2018 and 2022, the rate of overdoses among Vermonters younger than 25 increased for most substances, with peaks in 2020 and 2021. During this time period, the rate of overdose involving over-the-counter (OTC) medication (e.g., Tylenol®, Advil®, melatonin, Claritin®, Nyquil®) increased the most. Overdoses involving stimulants, cannabis, and prescription medications used to treat health conditions (e.g., atorvastatin, levothyroxine, metformin, lisinopril, amlodipine) also increased. Between 2018 and 2021, the rate of cannabis, prescription medication, and stimulant poisonings increased each year.



From 2018-2022, the rate of unintentional nonfatal overdose involving over-the-counter (OTC) medication increased the most.

The rate of unintentional nonfatal overdoses per 10,000 ED visits for people under age 25 increased for most substances between 2018 and 2022.


















Unintentional Nonfatal Drug Overdose ED Visits Among Vermonters Aged <25 Years

Substances involved in unintentional nonfatal overdose vary by age category.

The substances involved in overdose in 2022 vary by age – the top three substances by age group are shown below. Detailed rate information is available in the [appendix](#) and shows some data was suppressed due to low numbers in some age groups. Rates of unintentional nonfatal overdoses related to medications to treat opioid use disorder (MOUD) were omitted because they remained low throughout the five-year period without any trend of increase. Most MOUD overdoses were ingestions involving children 0-4 years old. Unintentional nonfatal overdoses involving opioids were most common among people aged 20-24 and among those aged 0-4. Although stimulants were the most common substances involved in nonfatal overdoses among 5-to-9-year-olds in 2022, the rate of stimulant overdoses was highest for people aged 10 and up. Note: nicotine poisonings were not observed during the 2018 to 2022 timeframe.

The three most common substances involved in unintentional nonfatal overdoses in 2022 by age:

Age	①	②	③
0 to 4	 OTC Meds	 Prescription Meds	 Cannabis
5 to 9	 Stimulant Drugs	 Cannabis	 Prescription Meds
10-14	 OTC Meds	 Prescription Meds	 Stimulant Drugs
15-19	 Prescription Meds	 OTC Meds	 Stimulant Drugs
20-24	 Opioids	 Stimulant Drugs	 Prescription Meds

How does Vermont compare to the U.S.?

Unintentional overdoses involving medication and illicit substances in youth pose unique health risks. The largest share of nonfatal overdoses among youth in the U.S. involve medications, and of these medication overdoses, most are among children ingesting the substance while unsupervised.³

Other states, such as Michigan and Colorado, have observed increases in unintentional cannabis overdoses in youth after cannabis has been legalized for medical or recreational use. Cannabis overdoses are nonfatal, but it is recommended to seek medical attention in the event of an overdose. Since Vermont legalized cannabis for non-medical use in 2018 and opened the legal cannabis market in Vermont in 2022, there should be continued monitoring of cannabis overdoses in youth.^{4,5}

The COVID-19 pandemic has been associated with an increase in unintentional nonfatal overdoses in youth, particularly by means of ingestion of illicit substances. According to a study of 47 children's hospitals nationwide, in children 5 and younger, there was a 25.6% increase in ingestion rate at the start of the pandemic. This means young children ingested drugs at higher rates compared to the years before the pandemic, and this increase was statistically significant. The study also found that the number of ingestions continued to increase throughout the pandemic.²

Other studies also suggest that age is related to unintentional nonfatal overdoses in youth. Pre-teens and older elementary schoolers tend to have lower rates of this kind of overdose compared to their younger and older counterparts. Meanwhile, unintentional nonfatal overdose rates are highest among teens and among the youngest children, with children under 5 years having the highest frequency of ingestion as the route of exposure.^{4,3,5} These trends were generally observed in the Vermont data shown in this brief.

Key Takeaways

Since 2018, there has been an increase in accidental ingestion and unintentional overdose rates in Vermonters under 25. Nonfatal data from Vermont emergency departments suggest a trend of increase in cannabis, prescription, OTC, opioid, and stimulant overdoses, which is most pronounced in the youngest age categories. Overdose rates vary by both substance and age category, and between 2018 and 2022, there has been an increase in prescription, OTC, and stimulant overdoses among all youth age categories.

**Kids under 10
experienced the greatest
increase in non-fatal
overdose related ED
visits.**

Vermont's programming to address overdose among youth and young adults

To avoid overdoses, medication and other substances should always be stored securely out of reach of children, and children should be supervised around these substances to reduce the possibility of ingestion. Poisoning in children is associated with lethargy, loss of coordination, an altered mental status, vomiting, and difficulty breathing. **If you suspect ingestion or observe symptoms of poisoning and overdose, call [poison control](https://www.poisoncontrol.org) immediately at 1-800-222-1222.**

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Through education and behavior change campaigns, the Health Department's Division of Substance Use Programs increases awareness on safely storing potentially harmful substances like alcohol, cannabis products and medications, to help lower the risk of accidental ingestion:

[Healthy at Home](#) provides simple steps to keep your home, and everyone in it, healthy and safe. Securing substances is one of five key steps to help prevent disease and injury. The Health Department is working with partners to launch a pilot project providing free lock bags to store cannabis products safely. Lock bags will be distributed at select cannabis retail locations.

[Do Your Part](#) provides tips on safe storage and disposal of medications to help prevent accidental ingestion by children and pets, and to protect the environment. Messaging promotes safely storing and disposing of unwanted medications through drop-off kiosks and mail-back disposal envelopes, and participation in National Prescription Drug Take-Back each April and October.

[Let's Talk Cannabis](#) is an educational campaign providing science-based information to increase awareness about cannabis and how it affects our bodies, minds, and health. Messaging includes information on the health and developmental risks of use among youth or people who are pregnant, prevention and safe storage tips, and how to access help.

[ParentUp](#) helps parents and caregivers to have conversations with their children about alcohol, cannabis, and other drugs. This social marketing campaign provides tailored tips for different topics, including talking about expectations, monitoring teens, storing substances out of sight, making connections with other parents, and knowing the warning signs of a problem.

References:

- 1 U.S. Department of Health & Human Services. (2022, December 5). CDC's Drug Overdose Surveillance and Epidemiology (DOSE) system. Centers for Disease Control and Prevention. Retrieved March 22, 2023, from <https://www.cdc.gov/drugoverdose/nonfatal/case.html>
- 2 Raffa, B. J., Schilling, S., Henry, M. K., Ritter, V., Bennett, C. E., Hyang, J. S., & Laub, N. (2023). Ingestion of illicit substances by young children before and during the COVID-19 pandemic. *JAMA network open*, 6(4):e239549. <https://doi.org/10.1001/jamanetworkopen.2023.9549>
- 3 Schillie, S. F., Shehab, N., Thomas, K. E., & Budnitz, D. S. (2009). Medication overdoses leading to emergency department visits among children. *American journal of preventive medicine*, 37(3), 181–187. <https://doi.org/10.1016/j.amepre.2009.05.018>
- 4 Dean, D., Passalacqua, K. D., Oh, S. M., Aaron, C., Van Harn, M. G., & King, A. (2021). Pediatric cannabis single-substance exposures reported to the Michigan Poison Center from 2008–2019 after medical marijuana legalization. *The journal of emergency medicine*, 60(6), 701-708. <https://doi.org/10.1016/j.jemermed.2020.12.028>
- 5 Wang, G. S., Hall, K., Vigil, D., Banerji, S., Monte, A., & VanDyke, M. (2017). Marijuana and acute health care contacts in Colorado. *Preventive medicine*, 104, 24–30. <https://doi.org/10.1016/j.yjmed.2017.03.022>

†This brief was updated in November to correct the presentation of rates in the “Rate of unintentional nonfatal overdoses per 10,000 ED visits” table.

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Appendix

Nonfatal overdoses were defined using free text fields and diagnostic coding from ED visits indicating acute, negative effects of any drug or combination of drugs. While poisoning is a term describing any such effect, overdoses fall under the poisoning umbrella.

Below are tables showing nonfatal substance overdose types by year and age, ordered by which substance was most common in 2022. **Suppressed rates, indicated by asterisks, are omitted and reflect rates that were calculated from counts (number of people who had a nonfatal overdose) that are higher than zero but lower than six.**

Table 1. Substances Involved in Nonfatal Overdoses Among Vermonters Aged 0 to 4 (Rate of nonfatal overdoses per 10,000 Visits)

	Most Common Substances Involved in Nonfatal Overdoses Among Vermonters Aged 0 to 4 (Rate per 10,000 Visits)				
	2018	2019	2020	2021	2022
OTC	8.1	5.7	*	19.3	9.7
Prescription	*	*	16.6	15.0	6.0
Cannabis	*	*	*	*	4.5
Stimulant	*	*	*	8.6	4.5
Opioid	*	*	8.9	11.8	*

Rates of nonfatal overdoses by substance and year were omitted for the 5 to 9 age group due to low counts for all years and substances.

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Table 2. Substances Involved in Nonfatal Overdoses Among Vermonters **Aged 10 to 14** (Rate of nonfatal overdoses per 10,000 Visits)

Most Common Substances Involved in Nonfatal Overdoses Among Vermonters Aged 10 to 14 (Rate per 10,000 Visits)					
	2018	2019	2020	2021	2022
OTC	15.2	7.5	14.1	32.3	33.1
Prescription	7.6	8.8	15.9	15.4	18.5
Stimulant	*	*	*	12.3	13.2
Cannabis	0	*	*	*	7.9
Opioid	*	0	*	*	0

Table 3. Substances Involved in Nonfatal Overdoses Among Vermonters **Aged 15 to 19** (Rate of nonfatal overdoses per 10,000 Visits)

Most Common Substances Involved in Nonfatal Overdoses Among Vermonters Aged 15 to 19 (Rate per 10,000 Visits)					
	2018	2019	2020	2021	2022
Prescription	17.0	18.6	23.5	23.6	24.2
OTC	12.8	14.3	20.7	26.7	21.9
Stimulant	*	5.7	12.2	14.2	10.6
Cannabis	6.4	5.7	14.1	13.4	9.1
Opioid	*	7.1	*	10.2	9.1

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Table 4. Substances Involved in Nonfatal Overdoses Among Vermonters **Aged 20 to 24** (Rate of nonfatal overdose per 10,000 Visits)

	Most Common Substances Involved in Nonfatal Overdoses Among Vermonters Aged 20 to 24 (Rate per 10,000 Visits)				
	2018	2019	2020	2021	2022
Opioid	25.9	24.5	31.9	20.3	21.4
Stimulant	5.3	6.6	17.0	12.4	13.2
Prescription	8.2	7.8	7.1	6.5	12.0
OTC	6.5	6.0	7.8	3.9	8.8
Cannabis	8.4	8.4	10.6	10.5	7.5