AT A GLANCE

4th Leading cause of death

Drug poisonings were the fourth-leading cause of injury deaths in Montana, after motor vehicle crashes, firearm deaths, and falls between 2009-2020

Drug-related deaths were rising

Opioid-related overdoses increased significantly from 2017-2018 to 2019-2020

Majority of deaths were unintentional

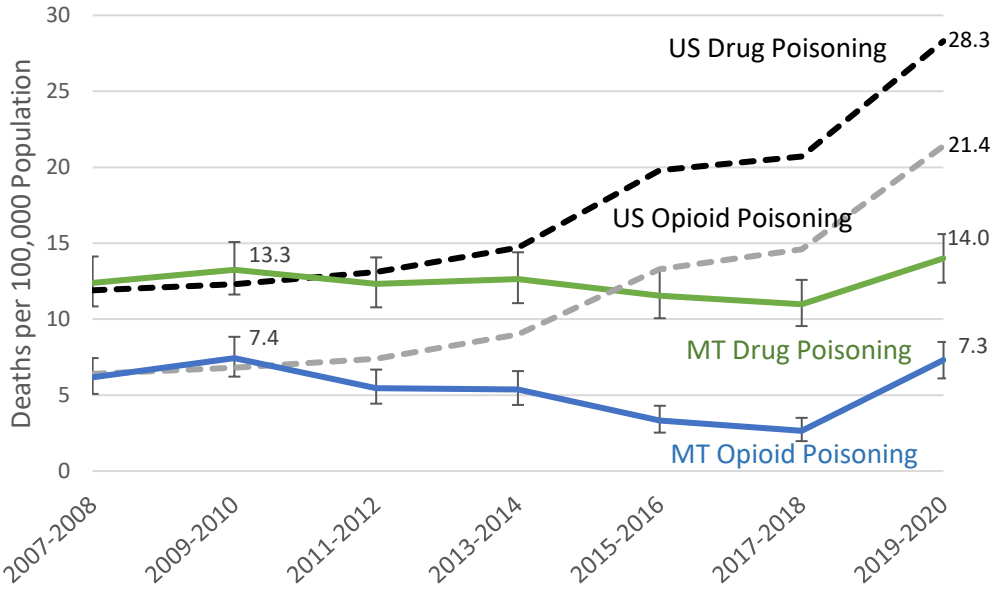
Unintentional drug overdoses increased by 39% in 2019-2020. There was no change in intentional drug overdoses

Drug Poisoning Deaths in Montana, 2009-2020

Introduction

Drug poisonings were the fourth-leading cause of injury deaths in Montana, accounting for 1,484 deaths between 2009-2020, after motor vehicle crashes (2,288), firearm deaths by all intents (2,288), and falls (1,935).[1,2] Drug poisonings have been on the rise across the county, particularly in the last few years.[3] This report describes drug poisoning deaths in Montana from 2009-2020 by demographics and drug type. Drugs chosen for analysis can be found on Table 1. This report is an update to prior reports published in 2016 and 2020 by the Montana Department of Public Health and Human Services.[4,5] By continually monitoring drug trends, proper interventions can be devised.

Figure 1. US and Montana Drug and Opioid Poisoning Age-adjusted Death Rates, 2007-2020



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Methods

Data used in this report came from the Montana Office of Vital Records and were restricted to drug poisoning deaths among Montana residents who died in Montana. The Montana Office of Vital Records also receives data on deaths to Montana residents who die out of state, but information on decedents who died in another jurisdiction may be incomplete; often only the underlying cause of death is reported. For this reason, national studies reporting state-level information may differ from the number and rates reported in this publication.

Drug poisoning deaths were defined as having an ICD-10 underlying cause of death code of X40-X44 (unintentional poisoning), X60-X64 (suicide by drug poisoning), X85 (homicide by drug poisoning), or Y10-Y14 (undetermined intent by drug poisoning).[6] Among deaths with an underlying cause of death of drug poisoning, ICD-10 codes indicating the specific types of drugs involved were ascertained from the accompanying multiple cause of death fields.[7] Age-adjusted death rates were calculated with the direct method using the 2000 US standard population.[8]

A total of 1,484 drug poisoning deaths occurred between 2009-2020 in Montana and were included in this analysis. For Montana, years were combined into two-year intervals for reporting purposes. For national data, annual numbers and rates were used. Frequency and rates were calculated separately for each drug of interest mentioned on the death certificate. Medical examiners may list more than one drug on the death certificate, thus reported counts of specific drug deaths may exceed the total number of poisoning deaths reported. Rates were not calculated for events with fewer than 20 observations. Joinpoint Regression Program software was used to determine significance of overall drug overdose trends.[9]

Results

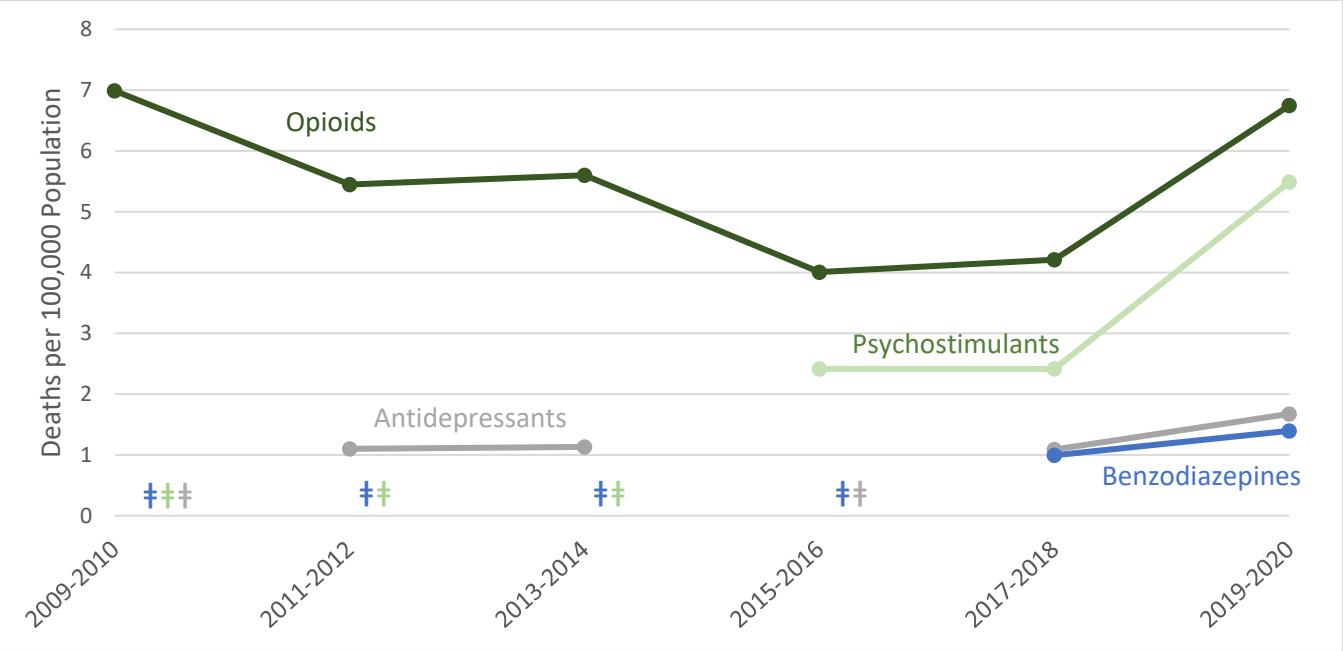
After nearly a decade of decline, drug poisoning deaths increased from 11 deaths per 100,000 residents in 2017-2018 to 14 in 2019-2020 (Figure 1). Though this represented 28% more deaths, the change in rate between these years was not statistically significant. Opioid deaths have been the major driver of increased drug overdose nationally as well as in Montana.[3] Montana's opioid overdose death rate almost tripled from 2.7 deaths per 100,000 residents in 2017-2018 to 7.3 in 2019-2020 (Figure 1). This was a statistically significant increase and brings the death rate in 2019-2020 back up to the former 'peak' seen in 2009-2010. Drug poisoning rates in Montana for 2019-2020 are two- and three-fold lower than the US, respectively.

There were no significant changes in drug poisoning death rates among any of the age groups in Montana from 2009-2020 (Table 2). The youngest and oldest age groups (less than 24 years and 65 years and older, respectively), did not have adequate data for death rate reporting throughout the 2009-2020 time, and could not have a reliable trend determined. There were no significant differences in age-adjusted death rates among males compared to females
(Table 2).

The Montana American Indian/Alaska Native (AI/AN) population consistently had higher drug poisoning death rates than Whites over the study period. The average age-adjusted death rate among AI/AN residents over the 10-year period was more than twice as high as the rate among White residents (24.4 vs 11.5 per 100,000 people, respectively, data not shown).

When examining specific drugs using the multiple-cause approach, opioids were mentioned most frequently on the death certificate from 2009-2020. The period of2019-2020 saw an increase in the number of mentions of all drug types of interest: opioids (T40.0-T40.4, T40.6), benzodiazepines (T42.4), tricyclic, tetracyclic, and other antidepressants (T43.0, T43.2), and psychostimulants with abuse potential (T43.6) (Table 3). Heroin and synthetic narcotics drove the increase in opioid deaths.

Figure 2. Age-adjusted Death Rates by Type of Drug, 2009-2020



‡ Rate could not be calculated due to low numbers

Figure 2 furthers shows the change in trends seen in the number of deaths associated with each category. Opioids, as a category, continue to have the highest rate of death when compared to psychostimulants, all antidepressants, and benzodiazepines. Though all substances categories have increased in the last 2 years, psychostimulants with abuse potential, which include drugs such as methamphetamine, amphetamine, methylphenidate (Ritalin), and 3,4-methylenedioxy-methamphetamine (MDMA, Ecstasy),[10] have shown an increase of 131% from 2017-2018 to 2019-2020, compared with an increase of 63% among opioids (Figure 2 and Table 3).

When looking at the overall trends in the number of deaths associated with a specific substance in the last decade, there were some declines; codeine, morphine, and other opioids (-19%); methadone (-71%); and tricyclic and tetracyclic antidepressants (-30%). However, between 2017-2018 and 2019-2020, nearly every substance was associated with a greater number of deaths (Table 3).

Discussion

Across the nation as well as in Montana, overdose deaths have increased in recent years. In the United States, the greatest increases were seen among those involving synthetic opioids other than methadone (T40.4) and psychostimulants with abuse potential (T43.6).[3] Deaths involving illicitly manufactured fentanyl (IMF) increased from 2019 to 2020 by 94% in Western states, with methamphetamine being the most commonly co-involved stimulant in these deaths.[11]

The sudden reversal of Montana's decade of progress in reduced overdose deaths in the last two years is concerning. Though deaths due to psychostimulants with abuse potential were on the rise in Montana starting in 2015-2016 (Table 3), drug overdose deaths have accelerated during the COVID-19 pandemic across the nation, including in Montana.[12] The COVID-19 pandemic has impacted access to substance use disorder treatment and harm reduction services while breaking down social networks and services.[13]

Many resources are available across Montana to help combat the overdose epidemic. Naloxone, an opioid overdose reversal drug, is widely available through a state-initiated standing order and through pharmacies and community partners to prevent overdose deaths. Treatment and recovery services are also available. If you or someone you know is struggling with a substance use disorder, refer to the resources below for more information.

Resources

Substance Use Disorder Services and Resources

Information on substance use in Montana and treatment information:
https://dphhs.mt.gov/amdd/substanceabuse

Behavioral health Treatment Services Locator

A confidential and anonymous source of information for persons seeking treatment facilities in the United States for substance use and/or mental health problems:
https://findtreatment.samhsa.gov/

Montana Suicide Prevention Lifeline

Call the 24/7 crisis hotline **1-800-273-8255** or text 'MT' to 741 741

Naloxone Resources

Information on accessing naloxone for yourself or your organization, and other guidance:
https://dphhs.mt.gov/AMDD/naloxone/index

Table 1. ICD-10 Codes and Labels for Select Drugs[§]

ICD-10 Code	Literal text label and example from ICD-10 manual*	Generic and brand name examples
T40.1	**Heroin**	
T40.2	**Other opioids**[ǂ] Codeine Morphine	Hydrocodone MS Contin™ Roxanol™ Percocet™ OxyContin™ Vicodin™
T40.3	**Methadone**	Methadose™
T40.4	**Other synthetic narcotics**[¤] Pethidine	Fentanyl Propoxyphene Meperidine Duragesic™ Darvan™ Demerol™
T40.5	**Cocaine**	
T40.6	**Other and unspecified narcotics**	
T40.7	**Cannabis (derivatives)**	
T42.4	**Benzodiazepines**	Alprazolam Ativan Valium Xanax™
T43.0	**Tricyclic and tetracyclic antidepressants**	Amitriptyline Doxepin Tofranil™
T43.2	**Other and unspecified antidepressants**	SSRIs Zoloft™ Prozac™
T43.6	**Psychostimulants with abuse potential (excludes cocaine)**	Methamphetamine Dexadrine Adderall™

[§]Adapted from table by the CSTE Overdose Subcommittee. Available from URL: https://cdn.ymaws.com/www.cste.org/resource/resmgr/Injury/2012-Drug-Deaths-SER-Instruc.pdf

*World Health Organization. International classification of diseases. Available from URL: http://www.who.int/classifications/icd/en/

[ǂ]T40.2 “Other opioids” indicates opioids other than heroin or opium.

[¤]T40.4 “Other synthetic narcotics” indicates opioids other than methadone, which is also synthetic.

Table 2. Number and Age-adjusted Rates of Drug Poisoning Deaths by Selected Characteristics and Intent among Montana Resident Occurrences, 2009-2020

Total[1]	2009 - 2010		2011 -2012		2013 -2014		2015 -2016		2017 -2018		2019 -2020	
	N	Rate (95% CI)	N	Rate (95% CI)	N	Rate (95% CI)	N	Rate (95% CI)	N	Rate (95% CI)	N	Rate (95% CI)
Total Deaths	251	**13.3** (11.6-15.1)	243	**12.3** (10.8-14.1)	245	**12.6** (11.1-14.4)	233	**11.5** (10.1-13.2)	225	**11.0** (9.5-12.6)	287	**14.0** (12.4-15.6)
Sex[1]												
Male	131	**14.0** (11.6-16.7)	116	**11.7** (9.6-14.1)	121	**12.5** (10.3-15.0)	118	**11.5** (9.4-13.8)	128	**12.5** (10.4-15)	176	**17.3** (14.8-19.9)
Female	120	**12.4** (10.2-15.0)	127	**13.0** (10.7-15.6)	124	**12.8** (10.5-15.4)	115	**11.6** (9.5-14.1)	97	**9.3** (7.5-11.5)	111	**10.7** (8.7-12.7)
Race[1]												
White	212	**12.2** (10.5-14.0)	212	**11.7** (10.1-13.4)	215	**12.0** (10.4-13.8)	208	**11.3** (9.8-13.0)	196	**10.3** (8.8-11.9)	233	**11.5** (10.0-13.0)
AI/AN	37	**32.5** (21.9-50.3)	27	**22.0** (14.3-35.9)	27	**23.4** (15.2-37.2)	23	**17.1** (10.7-28.6)	23	**19.5** (12.3-31.1)	48	**32.1** (23.0-41.1)
Age (years)[2]												
24 and younger	21	**7.8** (4.8-11.9)	20	**7.4** (4.5-11.4)	16	ǂ	15	ǂ	24	**8.8** (5.6-13)	19	ǂ
25 - 34	46	**18.9** (13.8-25.2)	43	**17.1** (12.4-23.1)	40	**15.5** (11.1-21.2)	44	**16.7** (12.1-22.4)	43	**15.7** (11.4-21.2)	49	**17.7** (13.0-23.2)
35 - 44	65	**28.7** (22.1-36.6)	50	**22.2** (16.5-29.2)	60	**26.0** (19.9-33.5)	51	**21.5** (16.0-28.3)	50	**20.0** (14.9-26.4)	73	**28.1** (21.7-34.8)
45 - 54	77	**25.6** (20.2-32.0)	68	**24.0** (18.6-30.4)	70	**26.3** (20.5-33.3)	59	**23.3** (17.7-30.0)	44	**18.1** (13.1-24.3)	64	**27.2** (21.0-34.8)
55 - 64	29	**10.6** (7.1-15.2)	38	**13.0** (9.2-17.9)	43	**14.4** (10.4-19.4)	52	**17.2** (12.8-22.5)	42	**13.8** (10.0-18.7)	55	**18.3** (12.9-24.0)
65 and older	11	ǂ	22	**7.1** (4.5-10.8)	12	ǂ	12	ǂ	22	**5.6** (3.5-8.5)	27	**6.5** (4.2-9.4)
Intent[1]												
Unintentional	148	**7.9** (6.7-9.4)	158	**8.2** (6.9-9.6)	140	**7.3** (6.1-8.7)	149	**7.3** (6.2-8.7)	166	**8.2** (7.0-9.6)	230	**11.5** (10.0-13.0)
Intentional	62	**3.1** (2.4-4.1)	40	**1.9** (1.3-2.6)	58	**2.9** (2.2-3.8)	35	**1.7** (1.1-2.4)	46	**2.1** (1.5-2.9)	49	**2.1** (2.6-1.5)
Undetermined	41	**2.2** (1.5-3.0)	45	**2.3** (1.6-3.1)	47	**2.4** (1.7-3.2)	47	**2.4** (1.8-3.3)	13	ǂ	8	ǂ

[1]Age-adjusted rates per 100,000 population

[2]Age-specific rates per 100,000 population

ǂ Figure does not meet standards of reliability or precision

Table 3. Number of Drug Poisoning Deaths by Drug Type Mentioned, Montana Resident Occurrences, 2009-2020

Drug type		Year						Total Deaths 2009-2020 (n)	Change from 2009-2020 (%)	Change from 2017-2020 (%)
ICD-10 Code	Substance	2009-2010	2011-2012	2013-2014	2015-2016	2017-2018	2019-2020			
T40.1	Heroin	0	3	5	10	27	50	95	+1,566.7*	+85.2
T40.2	Codeine, morphine, and other opioids	72	54	62	34	37	58	317	-19.4	+56.8
T40.3	Methadone	48	31	30	14	6	14	143	-70.8	+133.3
T40.4	Other synthetic narcotics	28	27	21	17	16	43	152	+53.6	+168.8
T40.5	Cocaine	3	2	1	1	2	10	19	**	+400.0
T40.6	Other and unspecified narcotics	0	2	7	9	16	22	56	+1,000.0*	+37.5
T40.7	Cannabis (derivatives)	3	2	3	3	2	1	14	**	-50.0
T42.4	Benzodiazepines	12	12	12	10	21	30	97	+150.0	+42.9
T43.0	Tricyclic and tetracyclic antidepressants	10	10	7	4	7	7	45	-30.0	0
T43.2	Other and unspecified antidepressants	17	17	17	13	20	32	116	+88.2	+60.0
T43.6	Psychostimulants with abuse potential	9	6	18	50	51	118	252	+1,211.1	+131.4

*Percent change from 2011-2020 calculated due to 0 value in 2009-2010.

**Percent change suppressed for drug types where aggregate deaths from 2009-2020 were less than 20

1. Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2020 on CDC WONDER Online Database, released in 2021. Data are from the Multiple Cause of Death Files, 1999-2020, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at http://wonder.cdc.gov/mcd-icd10.html on Jan 10, 2022
2. Montana Department of Public Health and Human Services, Montana Vital Statistics Analysis Unit, 2009-2020
3. Hedegaard H, Miniño AM, Spencer MR, Warner M. Drug overdose deaths in the United States, 1999–2020. NCHS Data Brief, no 428. Hyattsville, MD: National Center for Health Statistics. 2021. DOI: https://dx.doi.org/10.15620/cdc:112340
4. Montana Department of Public Health and Human Services, Office of Epidemiologist and Scientific Support. Drug Poisoning Deaths in Montana, 2003-2014. (2016). https://dphhs.mt.gov/Portals/85/publichealth/documents/Epidemiology/VSU/VSU_Drug_Deaths_2003-2014.pdf
5. Montana Department of Public Health and Human Services, Montana Injury Prevention Program. Drug Poisoning Deaths in Montana, 2007-2018. (2020). https://dphhs.mt.gov/assets/publichealth/EMSTS/opioids/DrugPoisoningDeathsMontana2007to2018.pdf
6. World Health Organization. International Statistical Classification of Diseases and Related Health Problems-10th Revision 5th ed. Geneva, (CH): WHO Press; 2016.
7. Nordstrom D, Yokoi-Shoelton M, Zosel A. Using Multiple Cause-of-Death Data to Improve Surveillance of Drug Related Mortality. J Public Health Management Practice. 2013; 19(5): 402-411.
8. Klein RJ, Schoenborn CA. Age-adjustment using the 2000 projected U.S. population. Hyattsveille (MD): National Center for Health Statistics (US); 2001. Healthy People Statistical Notes no.: 20.
9. Joinpoint Regression Program, Version 4.7.0.0. February, 2019; Statistical Research and Applications Branch, National Cancer Institute.
10. Kariisa M, Scholl L, Wilson N, Seth P, Hoots B. Drug Overdose Deaths Involving Cocaine and Psychostimulants with Abuse Potential - United States, 2003-2017. MMWR 2019, 68(17); 388-395.
11. O'Donnell J, Tanz LJ, Gladden RM, Davis NL, Bitting J. Trends in and Characteristics of Drug Overdose Deaths Involving Illicitly Manufactured Fentanyls—United States, 2019-2020. MMWR 2021, 70(50); 1740-46.
12. CDC Health Alert Network. Increase in Fatal Drug Overdoses Across the United States Driven by Synthetic Opioids Before and During the COVID-19 Pandemic. 2020. CDCHAN-00438. https://emergency.cdc.gov/han/2020/han00438.asp#:~:text=The%20most%20recent%20provisional%20data,May%202020%20(Figure%201).
13. Manchikanti L, Vanaparthy R, Atluri S, Sachdeva H, Kaye AD, Hirsch JA. COVID-19 and the Opioid Epidemic: Two Public Health Emergencies that Intersect with Chronic Pain. Pain Ther. 2021 Jun; 10(1): 269-286. doi: 10.1007/s40122-021-00243-2