



Summary of Montana's Violent Death Reporting System, 2019-2020

Introduction and Background

The Montana Violent Death Reporting System (MTVDRS) is a state-based surveillance system that pools data on violent deaths and their circumstances from multiple sources into a single anonymous database.

Prior to MTVDRS implementation in 2019, analysis of violent deaths was limited only to the information contained on the state-issued death certificates. MTVDRS expands data collection to include other sources such as law enforcement reports, coroner reports, and toxicology results. With these additional data sources, MTVDRS aims to capture information such as mental and physical health diagnoses, mental health treatment status, employment and financial status, relationship and emotional crises, legal issues, and alcohol and drug levels at time of death. Together these sources provide a more comprehensive view of violent deaths in Montana to aid in developing prevention strategies across the state.

This report analyzes the first two complete years of data collection for violent deaths in 2019 and 2020.

Data Collection

Using National VDRS guidelines, Montana violent deaths are initially identified by searching the underlying cause of death field on the death certificate for a relevant International Classification of Disease, Tenth Revision (ICD-10) code.

While working closely with the State Medical Examiner, the MTVDRS program chose to implement a statewide Death Case Management System (DCMS) offered at no cost to all county coroners. This system was funded by the Montana Department of Public Health and Human Services and implemented with the assistance of the State Crime Lab. With this system, medical examiners and the Forensic Data Abstractor with MTVDRS have access to necessary reports provided by coroners. Coroner or medical examiner reports are collected through DCMS, and law enforcement reports are requested from investigating agencies, to gain circumstantial information regarding the incident and the decedent. Toxicology reports are collected from the investigating coroner and/or the Montana State Crime Lab. All information is de-identified and uploaded into a secure access management system operated by the Centers for Disease Control and Prevention (CDC). Currently, all US states participate in the National Violent Death Reporting System. States have 18 months following the date of a death to complete data collection and abstraction before submitting it to the CDC. Data are then reviewed, cleaned, and returned to the state for further analysis in a standardized format.

Montana Violent Death Reporting System

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<https://dphhs.mt.gov/publichealth/EMSTS/vdr>



Methods

All suicides, homicides, deaths of undetermined intent, deaths due to legal intervention, and unintentional firearm deaths that occurred in Montana between January 1, 2019, and December 31, 2020 were considered violent deaths and are included in this report. Due to small numbers in other categories, this report only provides in-depth analysis of suicides and homicides.

Violent deaths that occurred in Montana were included regardless of the decedents' state of residence. MTVDRS gives analysts a variety of datasets to review when assigning a manner (i.e., intent) of death for each decedent; numbers and rates presented in this report may differ slightly from reports based solely on death certificate data. Along with manner (intent) of death, the method of injury (i.e., the mechanism used to inflict a fatal injury) was investigated.

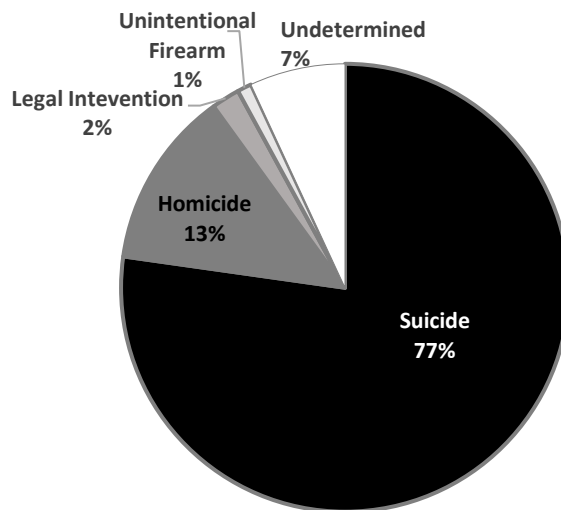
The county in which the fatal injury occurred was classified into small metro (population less than 250,000), micropolitan (population between 10,000 and 49,999), and noncore/rural (population less than 10,000), using the 2013 National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme for Counties.¹

Age-adjusted rates were calculated using the direct method with the 2000 US Standard Population.² Rates between groups were considered statistically different if the 95% confidence intervals did not overlap.

Results

782 violent deaths occurred in 2019-2020 in Montana; 95% of whom were Montana residents. The most common manner of violent death was suicide (77%), followed by homicide (13%), and undetermined intent (7%). Two percent of deaths were due to legal intervention, which include deaths in which a person was killed or died as a result of injuries inflicted by law enforcement or other peace officer (i.e., a person with specified legal authority to use deadly force), while acting in the line of duty. Unintentional firearm-related deaths accounted for 1% of all violent deaths (Figure 1).

Figure 1. Proportion of Violent Deaths by Manner, Montana, 2019-2020





Nine people died in multiple-death (or murder-suicide) scenarios, where there was at least one victim and one suspect who died in the same incident. Every multiple-death incident in 2019-2020 was perpetrated by males and involved interpersonal relationship issues (e.g., roommate disagreements and impending divorce). All were residents of Montana.

Suicides

Due to difficulty in ascertaining intent among children under 10, analysis of suicides was limited to decedents aged 10 and older.³

Demographics

During 2019 and 2020, there were 604 single-suicides (not associated with a murder-suicide), 95% of whom were Montana residents. This represents 31.5 suicides per 100,000 people. The suicide rate among males was three times higher than the rate among females (47.6 vs 14.7 per 100,000) and people aged 25-44 had a significantly higher rate of suicide than other age groups (Table 1). American Indian/Alaska Natives (AI/AN) had a significantly higher suicide rate than whites (51.5 vs 29.6 per 100,000). Suicides occurred more frequently in rural counties (38%) followed by small metro (32%) then micropolitan (30%). Small metro counties had the lowest rate of suicide, with rural counties having the highest (27.9 vs. 37.4 per 100,000 people, respectively) (Table 1).

Table 1. Demographic Characteristics of People Who Died by Suicide, Montana, 2019-2020
Rate per 100,000 Residents

Demographics	Number (%)	Rate (95% CI) ^a
Total	604 (100)	31.5 (29.0-34.0)
Age Group		
10-24	103 (17)	6.3 (5.1-7.5)
25-44	186 (31)	12.0 (10.3-13.8)
45-64	171 (28)	8.2 (7.0-9.5)
65+	144 (24)	5.0 (4.2-5.8)
Sex		
Male	468 (77)	47.6 (43.3-51.9)
Female	136 (23)	14.7 (12.2-17.2)
Race		
White alone	524 (87)	29.6 (27.1-32.2)
AI/AN alone	61 (10)	51.5 (38.6-64.5)
Other	16 (3)	†
Urban/rural Classification of County (Location of Injury)		
Rural	232 (38)	37.4 (32.6-42.2)
Small Metro	192 (32)	27.9 (24.0-31.9)
Micropolitan	180 (30)	30.0 (25.7-34.5)
Educational Level[§]		
Did not complete high school	43 (8)	
High school or GED	197 (40)	
Some college	110 (22)	
Associate/Bachelor/Master/Doctorate	144 (29)	

^a Rates calculated and weighted for decedents ≥10 years of age

[†] Rates not calculated for <20 cases

[§]Limited to persons ≥25 years of age (n=494); excludes unknown status



Toxicology and Methods

Toxicology was available for 301 suicides (50%) during 2019-2020. It is important to note that toxicology reports do not indicate whether the substance(s) detected contributed to the suicide.

Of suicide decedents with toxicology results, 14% had one substance detected and 53% had two or more. The most detected substance was alcohol (31%), followed by antidepressants (20%) and marijuana (16%) (Table 2).

Table 2. Toxicology Results Among People Who Died by Suicide, Montana, 2019-2020

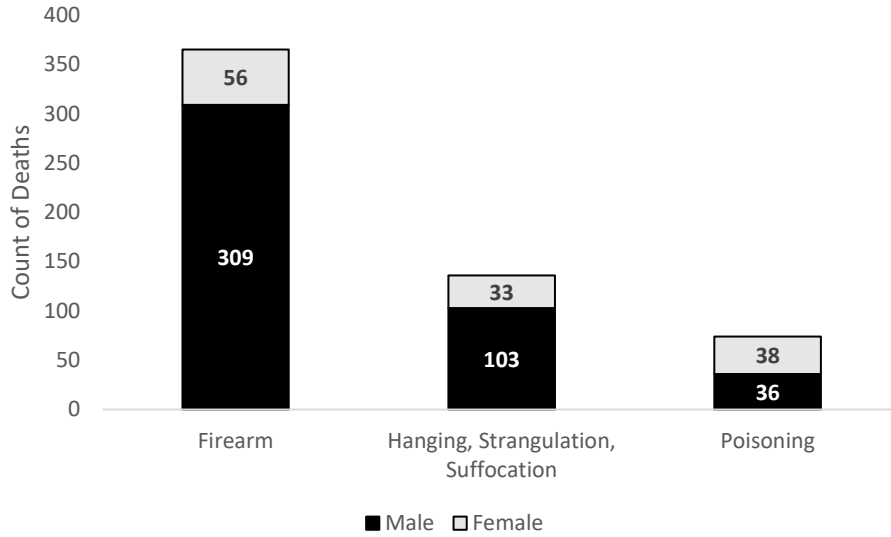
Toxicology Results	Count	Percent
Any toxicology performed	301	100%
Number of Substances Detected		
0	100	33%
1	43	43%
2 or more	158	52%
Substances Detected		
Alcohol	93	31%
Antidepressants	61	20%
Marijuana	49	16%
Opiates	33	11%
Amphetamines	31	10%
Benzodiazepines	27	9%
Anticonvulsants	20	7%
Muscle Relaxants	13	4%
Antipsychotics	10	3%
Cocaine	6	2%
Barbiturates	3	1%
Other	15	5%

The most common method of suicide was by firearm (61%), followed by hanging, strangulation, or suffocation (23%), and poisoning (12%) with variation by sex. Males accounted for the majority of firearm suicides (85%) and hanging/strangulation/suffocation (76%), while poisonings were similar between males and females (Figure 2).





Figure 2. Method of Suicide by Sex, Montana, 2019-2020



The most common type of firearm used in a suicide was a handgun (80%) and most decedents (59%) owned the gun that was used in their suicide. Over half (52%) of the guns were reported to be stored loaded in the home. Only two cases involved a gun that was stored unloaded in the home; all other gun-related suicides (45%) were missing information on the status of the gun prior to death.

Circumstances

MTVDRS was able to collect information on circumstances leading to the suicide in nearly all cases (91%), allowing a unique perspective on suicide in Montana. Forty-six percent of decedents had a known life stressor prior to their suicide, with the most common being a physical health problem (26%). 187 decedents (34%) had a known substance problem; 25% of these had a reported problem with alcohol. A majority of decedents were noted by friends or family to have a depressed mood leading up to the suicide (53%), and one-third were noted to have a diagnosed mental health condition (Table 3).

Over a third of decedents (35%) had a history of expressing suicidal thoughts or plans, and one out of every six had a history of a suicide attempt (17%). Thirty-two percent left a note or some form of communication to be found after their death. Thirty-six percent of decedents were reported to have disclosed their intent to commit suicide to someone in the month prior to their death. Decedents most frequently disclosed their intent to a current or previous intimate partner or family member (38% and 34%, respectively). Fifteen percent of decedents told a friend or colleague of their plans. Healthcare workers were only warned of suicidal intent in 5% of cases (Data not shown).

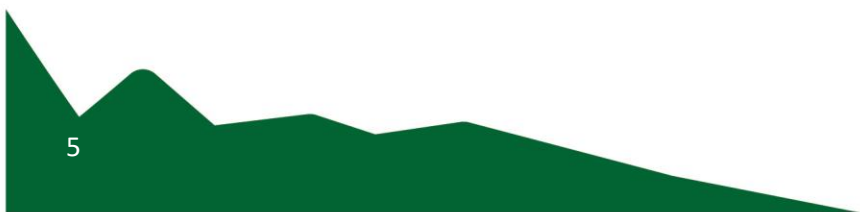




Table 3. Circumstances Around Suicide, Montana, 2019-2020

Circumstances	Count	Percent
Known circumstances	548	100%
Mental Health		
Diagnosed with mental health condition*	182	33%
Depression	129	24%
Anxiety	31	6%
Bipolar	22	4%
PTSD	14	3%
Schizophrenia	13	2%
Other/unknown	16	3%
Substance Use		
Any Substance Use	187	34%
Alcohol misuse	138	25%
Substance misuse	88	16%
Both alcohol and substance misuse	39	7%
Other addiction	14	3%
Interpersonal Stressors		
Any Relationship Problem	170	31%
Intimate partner problem	120	22%
Family relationship problem	46	8%
Other relationship problem	15	3%
Situational Stressors		
Any Life Stressors	253	46%
Physical health problem	143	26%
Contributing criminal problem	52	9%
Job/financial problem	52	9%
Death of friend or family member	25	5%
Eviction or loss of home	21	4%
Recent suicide of friend or family members	11	2%
Current depressed mood**	290	53%

*Decedent had been identified as having a current diagnosis of a mental health condition in coroner/medical examiner or law enforcement reports

**Not a diagnosis

Subtotals include any mention of their respective circumstances listed. Decedents can experience more than one circumstance; therefore, their sum may exceed the reported subtotal



Youth Suicide

Suicide rates among teens and young adults (aged 10-24 years) across the nation have increased in recent years; from 2007-2018, the national average suicide rate among this age group increased 57%.⁴ Between 2019-2020, 103 youths died by suicide in Montana, 99 of whom were residents of the state. Twenty-three of these suicides occurred among children under 18 years of age. As in the case with the rest of the country, youth suicides occurred more frequently among males (77%). Notably, over a quarter of youth (26%) who died by suicide in 2019-2020 were AI/AN. Among Montanans aged 25 and older who died by suicide, 7% were AI/AN.

Firearms were the most common method of suicide among youth aged 10-24 years (60%) followed by hanging, strangulation, or suffocation (31%). In this 2-year timeframe, among those who committed suicide, a higher percent of 10- to 17-year-olds used a gun compared to young adults aged 18-24 (70% vs 58%, respectively).

Circumstances surrounding the suicide among youth were known for 88% of cases. Forty-five percent of these decedents were known to have a depressed mood leading up to the suicide, and 26% had a diagnosed mental health problem. A third had a history of thoughts or plans regarding suicide and disclosed this information to another person within a month of their death, and 23% had a prior suicide attempt. Friends or colleagues (35%), other family members (32%), or former intimate partners (26%) were most commonly told about suicidal ideation.



Homicides

Demographics

Table 4. Demographic Characteristics of Homicide Victims, Montana, 2019-2020

Rate per 100,000 Residents

Demographics	Number (%)	Rate (95% CI) [‡]
Total	100 (100)	5.0 (4.0-6.0)
Age Group		
0-9	8 (8)	†
10-24	18 (18)	†
25-44	44 (44)	2.4 (1.7-3.1)
45-64	24 (24)	1.0 (0.6-1.4)
65+	6 (6)	†
Sex		
Male	73 (73)	7.3 (5.6-9.0)
Female	27 (27)	2.7 (1.7-3.7)
Race		
White Alone	68 (68)	3.8 (2.9-4.7)
AI/AN Alone	26 (26)	17.7 (10.9-24.5)
Other	12 (12)	†
Urban/rural Classification of County (Location of Injury)		
Rural	42 (42)	6.6 (4.6-8.6)
Small Metro	39 (39)	5.7 (3.9-7.4)
Micropolitan	18 (18)	†
Educational Level[§]		
Did not complete high school	12 (16)	
High school or GED	32 (43)	
Some college	13 (18)	
Associate/Bachelor/Master/Doctorate	15 (20)	

[‡] Suppressed count <5

[†] Rates not calculated for <20 cases

[§] Denominator ≥25 years of age (n=74) excludes unknown status

Between 2019 and 2020, 100 people died by single homicide (not associated with murder-suicide) in Montana; 96% of whom were residents of the state. People aged 25-44 years had the highest homicide death rate among all age groups (2.4 deaths per 100,000 people). Nearly three in every four homicides occurred among males (73%).

Though American Indian/Alaska Natives (AI/AN) represent around 7% of Montana's population, they represent 26% of the homicide victims. The death rate by homicide for the AI/AN population is 4.8 times higher than the death rate for whites (17.7 vs 3.7 per 100,000, respectively).



The greatest percent of homicides occurred in rural counties (42%) and the fewest occurred in micropolitan counties (18%).

Over half (57%) of homicides in 2019-2020 occurred in a house or apartment with marked differences by sex; 55% of male victims and 70% of female victims sustained their fatal injury in a house or apartment. The second most common location of injury for males was on a street or road, sidewalk, or alley (14%) and the second most common location of injury for females was at a commercial establishment such as a grocery store, retail outlet, or laundromat (8%).

Methods

Over half of homicides were completed with a firearm (55%). The next most common weapon was a sharp instrument (14%), followed by a blunt instrument (12%). Information on the number and location of fatal wounds (penetrating injury from a firearm, sharp instrument, or shrapnel) was available for 76 victims. Fifty-five percent of these decedents had a single wound. Twenty-one percent of victims had two or more wounds recorded, with two victims having eight wounds or more (Data not shown). The most common location of injury was the head, followed by the thorax (chest) area (Table 5).

Table 5. Wound Location Among Homicide Victims, Montana, 2019-2020

Wound location	Count*
Head	42
Thorax	22
Upper Extremity	14
Neck	12
Face	11
Abdomen	10
Lower Extremity	6
Spine	4

*Victims may have more than one wound; numbers will not add up to 76

Circumstances

There was a known circumstance for 71% of homicides in 2019-2020. The relationship of the victim to the suspect was known for 57% of the homicide victims. Among those, 88% of the suspects were known by the victim prior to the death. When demographic information about the suspect was available, the majority were male (90%) and aged 25-44 years (49%).

In 37% of cases, an argument or conflict was reported to have led to the death, with the fatal injury occurring during the argument in 84% of these cases. Alcohol and other substance use was recorded in the hours prior to the injury in 8% and 11% of cases, respectively (Table 6).

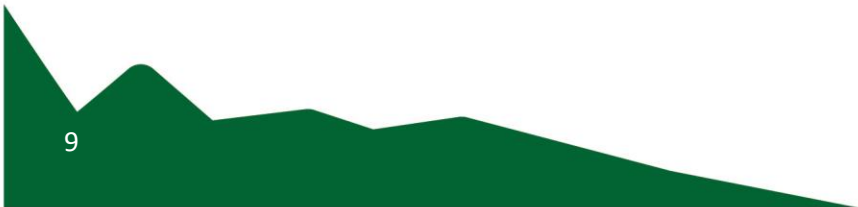




Table 6. Circumstances Around Homicide, Montana, 2019-2020

Circumstances	Number	Percent
Known circumstances	71	100%
Argument or Conflict		
Argument or conflict led to death	37	25%
Injury occurred during argument	31	44%
Homicide was related to immediate or ongoing conflict or violence between current or former intimate partners	20	28%
Had contact with law enforcement in past 12 months	9	13%
History of abuse of victim by suspect	9	13%
Contributing Cause/History		
Suspect's attack on victim is believed to be the direct result of mental illness	2	3%
Suspected alcohol use in the hours preceding the incident	8	11%
Suspected substance use in the hours preceding the incident	11	15%

Discussion

Violence is a public health problem, and many violent deaths happen in a preventable way. This suggests that early prevention can help reduce the number of these deaths. This report has identified populations of interest, as well as described some of the circumstances surrounding these deaths. The Montana Violent Death Reporting System collects data that can support effective prevention strategies.

This report reiterates the burden of suicide faced by Montanans, especially among American Indian/Alaska Native youth. Findings from emergency department data in Montana showed that once reaching adulthood, males are more likely than females to attempt suicide and have suicidal ideation which is reflected in their significantly higher rates of successful suicide compared to females.⁵

The role that firearms play in violent death in Montana cannot be understated, especially in the case of suicide. More Montanans died from a self-inflicted gunshot wound than by any other method of homicide. Most victims owned the firearm and stored it loaded in their home. Montana is estimated to have one of the highest rates of gun ownership per household in the nation, so ensuring that the population has adequate education on proper gun safety and storage is paramount.⁶

While over a third of Montanans disclosed plans to commit suicide to another person within a month of dying, most of the people who were informed were family or friends, not medical providers. Educating friends and family of people experiencing a depressed mood or difficult life circumstances about the importance of taking threats of suicide seriously, as well as empowering people to help their loved ones get help, may save lives.



Limitations

Montana began collecting data in accordance with VDRS guidelines in mid-2019. This report reflects a period with a steep learning curve in which abstractors were trained in how to use the system properly and coroners were trained on submitting data. While all records have complete demographic information, variables on the circumstances surrounding each violent death were not always complete.

In order to allow for easy access and sharing of data between coroners, the State Crime Lab, and the MTVDRS abstractors, a confidential case management system was put in place in 2019. However, adoption of the system has not been uniform across counties, and as of 2023 four counties do not participate.

While it is fortunate that Montana has relatively few violent deaths, small numbers make it difficult to fully analyze trends in types of violent death beyond suicide and homicide. Combined with the limitations described above, it will be a few years before a more complete understanding of the circumstances around unintentional firearm death and deaths due to legal intervention can be achieved.

Next Steps

MTVDRS staff continue to strive for improvements in data quality, functionality, and access of the program. The death case management system (DCMS) is offered to all 56 county coroners at no cost. To further incentivize counties to use the system for all cases, the Crime Lab and MTVDRS worked to integrate toxicology into each case, which means that coroners can now obtain those results through the case management system rather than the mail.

Furthermore, the MTVDRS program has sponsored training for Montana's coroners to attend the annual Coroner Association Meeting to promote the MTVDRS. Technology support was provided to coroners of counties who use the DCMS. These efforts will continue until every county is enrolled in the DCMS.

These data are important in identifying populations and areas of improvement for the lives of Montanans struggling with life stressors and circumstances of concern. As the program continues, the data collected by this program will help public health officials and prevention specialists support their interventions with data.

Resources

Montana 988 Suicide and Crisis Lifeline 24/7

Call: 988

Text: "MT" to 741 741

Domestic Violence Hotline

Call: 1 800-799-7233

Text: 88788

More information on suicide and suicide prevention in Montana, including AI/AN specific resources, can be found at: <https://dphhs.mt.gov/suicideprevention/index>

More resources on domestic violence can be found at <https://www.thehotline.org/>

Montana-specific sexual violence prevention and victim services can be found at: <https://dphhs.mt.gov/ecfsd/adolescenthealth/svpvs>



Citations

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