

## Key Findings

- ED visit rates for suicidal ideation and suicide attempts in Montana were 3.4 to 5.8 times greater than U.S. national estimates during 2010–2014 and 2016.
- From 2010–2019, Montanans aged 15 to 19 years had the highest ED visit rates for suicidal ideation and suicide attempts compared to all other age groups.
- Overall, ED visit rates for suicidal ideation and suicide attempts were higher among females than males, especially for children and teenagers aged 10 to 19 years.
- Among Montanans aged 20 years and older, ED visit rates for suicidal ideation and suicide attempts among males were higher than females. The difference between male and female visit rates increased with increasing age groups.

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# Emergency Care in Montana Related to Suicidal Ideation and Suicide Attempts, 2010–2019

## Introduction

In recent decades, suicide has become a major public health concern in the United States (U.S.). In 2019, suicide ranked as the 10th leading cause of death for Americans, with an age-adjusted mortality rate of 13.9 suicides per 100,000 population, representing a 30% increase from 2001 (10.7 per 100,000).<sup>1</sup> Since 2014, Montana's suicide rate has ranked among the highest in the nation.<sup>2</sup> In 2019, suicide was the seventh leading cause of death in Montana, with 26.2 suicides per 100,000 population and 5,892 years of potential life lost.<sup>1</sup>

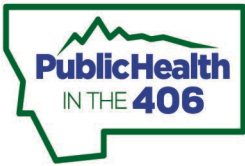
However, suicide is just one part of the broader mental health crisis affecting Americans today, as suicidal ideation (or suicidal thoughts) and attempted suicides perhaps present a larger burden in the U.S. than suicide itself.<sup>3</sup> In 2019, 4.8% of Americans aged 18 years and older (12.0 million) reported seriously considering suicide, a 29.7% increase from 2008 (3.7%).<sup>4</sup> Examined further, 11.8% (3.9 million) of young adults, aged 18–25 years, reported these thoughts, the highest prevalence among all age groups surveyed and a 73.5% increase from 2008 (6.8%).

While studies have found that only 6.7% of individuals that attempt suicide go on to die by suicide, it is estimated that the majority of individuals who eventually die by suicide made a previous attempt in the preceding year (66.7%).<sup>5</sup> Expanding our understanding of the characteristics of individuals experiencing suicidal ideation, or who have attempted suicide, presents an opportunity to further inform suicide prevention and protection strategies meant to assist individuals, families, and communities.

This report examines emergency department (ED) discharge data related to suicidal ideation and suicide attempts among Montana residents during 2010–2019.

## Methods

Using data from the Montana Hospital Discharge Data System (MHDDS),<sup>6</sup> ED visits from 2010–2019 were evaluated to identify records related to suicidal ideation and suicide attempts. ED visits were limited to Montana residents aged 5–105 years; records where values for age or sex were missing or unknown were excluded. A total of 2,488,345 records were included in this analysis. Montana-based data were compared to U.S. national estimates using data acquired from the Healthcare Cost and Utilization Project (HCUP).<sup>7</sup>



ED visits related to suicidal ideation and suicide attempts were identified using International Classification of Diseases, 9th and 10th Revision, Clinical Modification diagnosis codes (ICD-9-CM: V62.84; ICD-10-CM: R45.851 and T14.91).<sup>8</sup> Records were flagged when a diagnosis code of interest was found in the primary diagnosis field (first-listed) or any secondary diagnosis field (listings 1–8). Records with more than one diagnosis code of interest were only counted once.

Numbers, percentages, and age-adjusted rates by demographic characteristics were calculated and reported. County of residence, for each record, was classified by the corresponding urban-rural designation using the 2013 National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme for Counties: small metro (population less than 250,000), micropolitan (population 10,000 to 49,999), and noncore (population less than 10,000).<sup>9</sup> Age-adjusted rates were calculated using a direct method, with NCHS 2019 bridged-race postcensal population estimates and age-adjustment weights based on the 2000 US standard population.<sup>10,11</sup> Age-specific rates were calculated for ED visits by age category using the same method. Data were analyzed using SAS Enterprise Guide software, version 7.15 (SAS Institute Inc., Cary, NC).

### Limitations

ED visits in this report do not represent individual cases. The MHDDS does not contain individual identifiers and cannot be deduplicated.

On October 1, 2015, healthcare transactions for HIPAA covered entities transitioned from ICD-9-CM to ICD-10-CM code sets.<sup>12</sup> Visits coded with ICD-9-CM diagnosis codes may not be comparable to visits for the same or similar conditions coded with ICD-10-CM diagnosis codes.

Race and ethnicity data, in the MHDDS, were only available for 2018 and 2019 datasets; as a result,

stratified analysis by these variables would have been severely limited for the years examined. While racial disparities in healthcare access are widespread in the U.S.,<sup>13</sup> these variables were not explored in this surveillance report.

### Disclaimer

This report did not analyze ED visits related to suicidal ideation and suicide attempts, which might have resulted from prolonged isolation and/or mental distress related to the COVID-19 pandemic. 2020 hospital discharge data, which could have made that analysis possible, was not yet available at the time this report was developed.

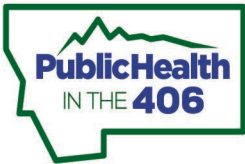
### Results

During 2010–2019, there were 33,098 suicidal ideation- and suicide attempt-related ED visits to Montana-based hospitals (1.3% of all visits) (Table 1). Among these visits, 49.2% were female and the median age was 29 years, range 5–101 years. The highest proportion of these visits were among residents in small metro counties (64.7%).

Among all visits related to suicidal ideation and suicide attempts, most discharges were listed as routine, to home or to home health care (71.3%), while another 21.9% were transferred to another healthcare facility (e.g., skilled nursing, intermediate care, federal hospital, long-term care hospital, psychiatric hospital, etc.).

In Montana, from 2010 through 2019, ED visits related to suicidal ideation and suicide attempts occurred at a rate of 377.5 visits per 100,000 population (95% Confidence Interval (CI): 373.3–381.6). During this period, Montana’s visit rates for these conditions surpassed weighted national estimates for the U.S. by 3.4 to 5.8 times (Figure 1), in each year where national statistics were available (i.e., 2010–2014, and 2016).<sup>7</sup>

Additionally, Montana’s rates for ED visits related to suicidal ideation and suicide attempts



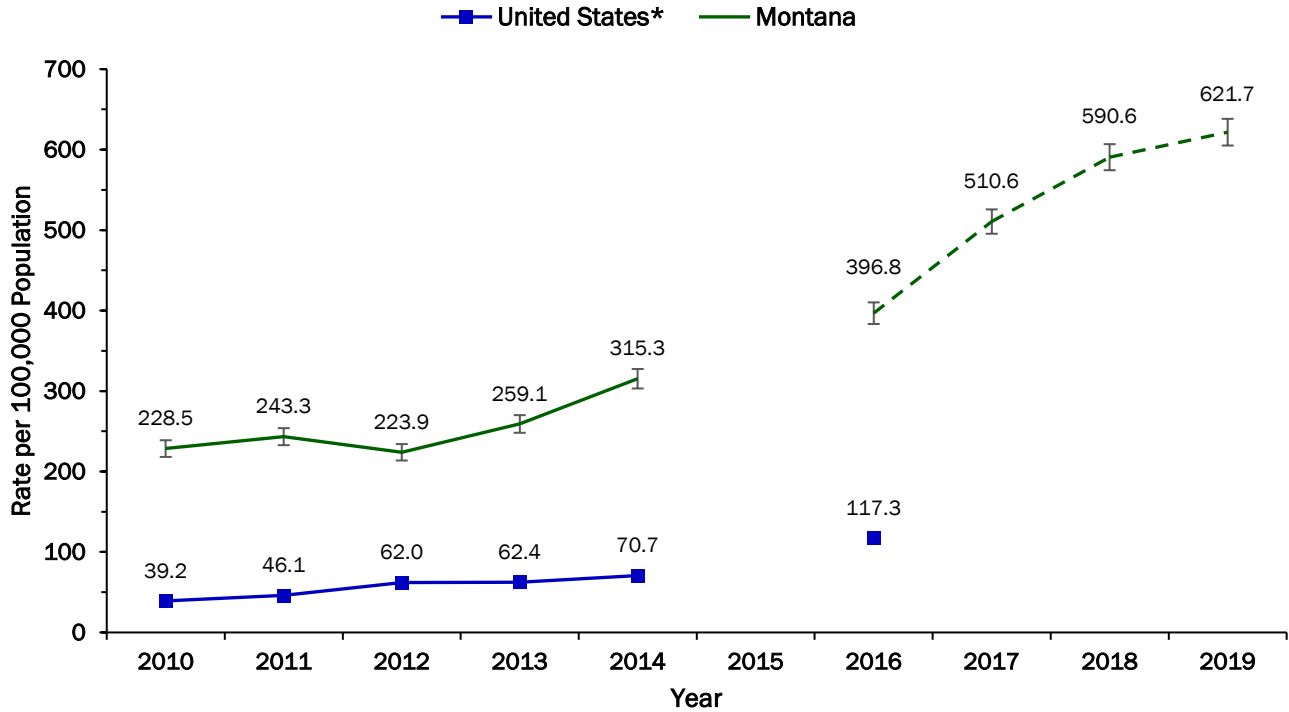
**Table 1:** Montana ED Visits Related to Suicidal Ideation and Suicide Attempts, Visit Counts, Percents, and Age-Adjusted Visit Rates Per 100,000 Population, by Characteristic or Disposition, Montana Residents, Ages 5 Years and Older, 2010–2019

Characteristic or Disposition	Suicidal Ideation and Suicide Attempts	
	Visits n (%)	Age-Adjusted Visit Rate Per 100,000 Population n (95%CI)
<b>Total</b>	<b>33,098 (100.0)</b>	<b>377.5 (373.3–381.6)</b>
<b>Age Group (Years) <sup>a</sup></b>		
5–9	350 (1.1)	55.5 (49.8 – 61.6)
10–14	3,576 (10.8)	569.1 (550.6 – 588.1)
15–19	5,913 (17.9)	917.9 (894.7 – 941.6)
20–24	3,826 (11.6)	530.5 (513.8 – 547.6)
25–44	11,471 (34.7)	460.2 (451.8 – 468.7)
45–64	6,958 (21.0)	248.5 (242.7 – 254.4)
65–79	838 (2.5)	63.6 (59.4 – 68.1)
80 and older	166 (0.5)	39.1 (33.3 – 45.5)
<b>Sex</b>		
Female	16,296 (49.2)	385.8 (379.7 – 391.8)
Male	16,802 (50.8)	370.8 (365.1 – 376.5)
<b>Primary Payer <sup>b</sup></b>		
Commercial	7,844 (23.7)	NA
Medicare	4,141 (12.5)	NA
Medicaid or Other Government	13,635 (41.2)	NA
Other or Unknown	7,478 (22.6)	NA
<b>County of Residence (Urban-Rural Classification)</b>		
Small Metro	21,426 (64.7)	397.8 (392.4 – 403.2)
Micropolitan	9,019 (27.2)	423.0 (414.1 – 432.0)
Noncore	2,653 (8.0)	220.7 (212.0 – 229.3)
<b>Discharge Status</b>		
Routine discharge to home, home health care	23,604 (71.3)	NA
Admitted to the same hospital	301 (0.9)	NA
Transferred to short-term hospital	1,103 (3.3)	NA
Transferred to other healthcare facility	7,235 (21.9)	NA
Left against medical advice	326 (1.0)	NA
Died in hospital or ED	108 (0.3)	NA
Discharged alive, destination unknown	421 (1.3)	NA

<sup>a</sup> Rates listed for the Age Group category are age-specific

<sup>b</sup> Primary Payer and Discharge Status do not have equivalent population identifiers; age-adjusted rates per population could not be calculated, [NA]

**Figure 1:** ED Visits Related to Suicidal Ideation and Suicide Attempts, Age-Adjusted Visit Rates (Montana) and Weighted National Estimates (United States), Montanans Aged 5 Years and Older and Americans of All Ages, 2010–2019



\* United States: weighted national estimates for visits by all ages. Montana: age-adjusted rates for visits by those aged 5 years and older.

† The gap between trend lines reflects a shift in diagnosis coding in 2015 from ICD-9-CM to the ICD-10-CM system. The solid trend line between 2010 and 2014 represents cases identified using ICD-9-CM coding, while the dashed trend line between 2016 and 2019 represents cases identified using ICD-10-CM coding.

‡ Sources: Montana Hospital Discharge Data System, 2010-2019; HCUPnet, Healthcare Cost and Utilization Project. <http://www.hcup-us.ahrq.gov/>.

increased in six out of seven successive years, where appropriate comparisons could be made (i.e., ICD-9-CM vs. ICD-9-CM and ICD-10-CM vs. ICD-10-CM) (Table 2). In four of these seven periods, the increase was statistically significant.

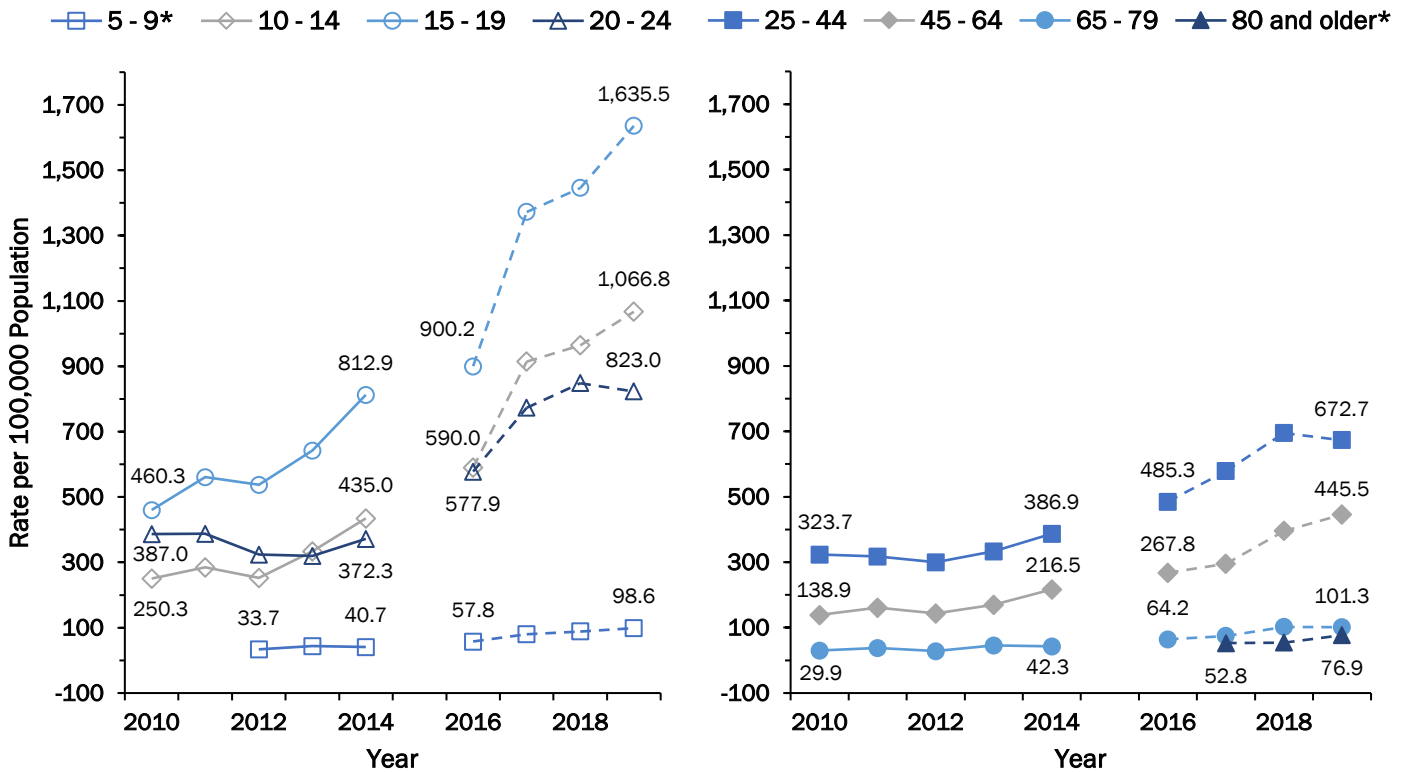
During 2010–2019, greater visit rates for suicidal ideation and suicide attempts were found among teenagers and young adults compared to older age groups (Table 1). Furthermore, in each year during the period, teenagers aged 15–19 years recorded the highest ED visit rates of any age group (Figure 2). The lowest visit rates for suicidal ideation and suicide attempts were found among the youngest (5–9 years) and oldest ( $\geq 80$  years) Montanans (Table 1).

**Table 2:** Montana ED Visits Related to Suicidal Ideation and Suicide Attempts, Percent Change in Age-Adjusted Rates During Successive Years, 2010–2019

ICD Coding Classification	Period of Change (Years)	Percent Change (+/-%)	Statistically Significant
ICD-9-CM	2010 – 2011	+6.5	No
	2011 – 2012	-8.0	No
	2012 – 2013	+15.7	Yes
	2013 – 2014	+21.7	Yes
ICD-10-CM	2016 – 2017	+28.7	Yes
	2017 – 2018	+15.7	Yes
	2018 – 2019	+5.3	No

\* The gap between 2013–2014 and 2016–2017 reflects a shift in diagnosis coding in 2015 from ICD-9-CM to the ICD-10-CM system.

**Figure 2: Montana ED Visits Related to Suicidal Ideation and Suicide Attempts, Age-Specific Visit Rates, Ages 5 Years and Older, Montana Residents, 2010–2019**



\* Age-specific rates for ages 5–9 (2010 and 2011) and 80 and older (2010–2014, 2016) are suppressed; ED visit counts for these years are less than 20.  
 † The gap between trend lines reflects a shift in diagnosis coding in 2015 from ICD-9-CM to the ICD-10-CM system. The solid trend line between 2010 and 2014 represents cases identified using ICD-9-CM coding, while the dashed trend line between 2016 and 2019 represents cases identified using ICD-10-CM coding.  
 ‡ Source: Montana Hospital Discharge Data System, 2010–2019.

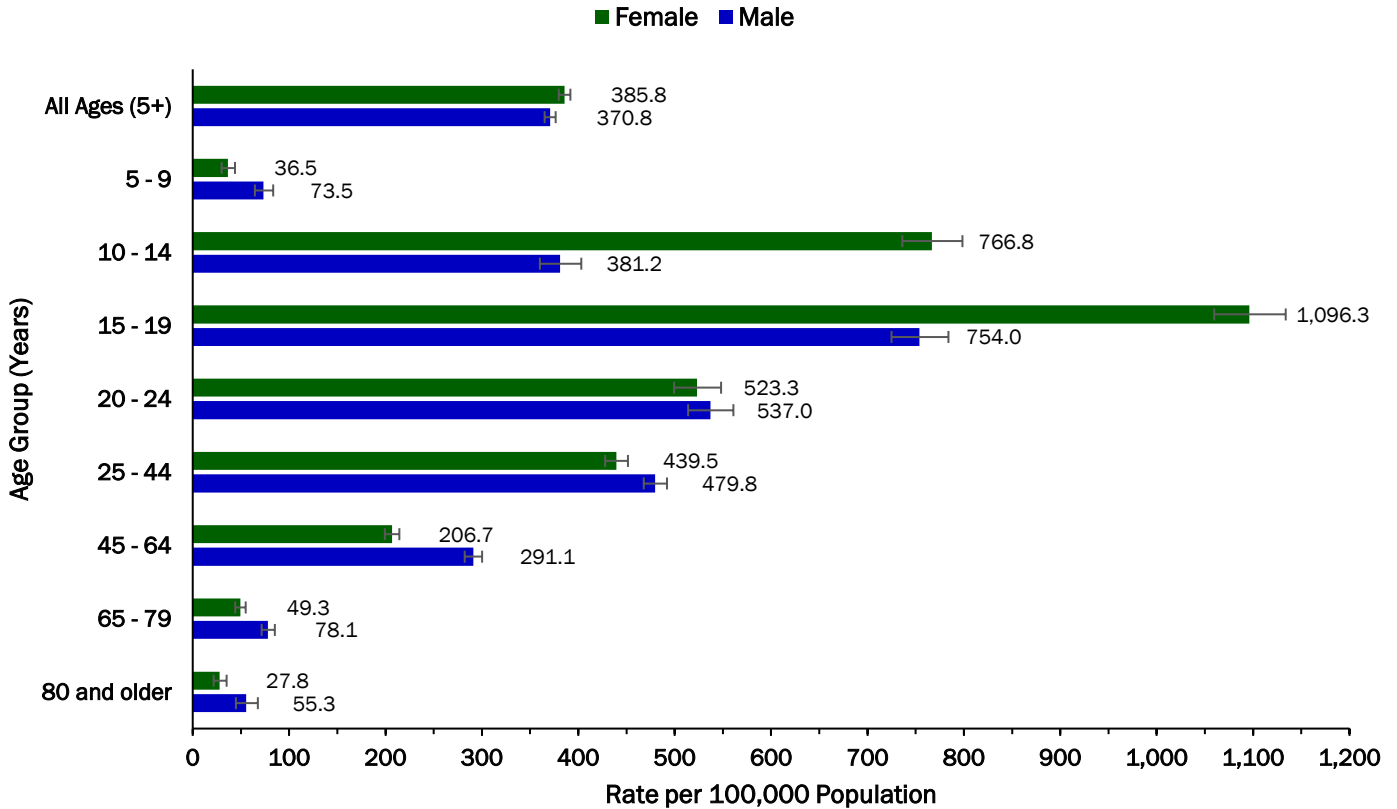
Suicidal ideation- and suicide attempt-related ED visit rates, for Montanans aged 10–79 years, decreased between 2011 and 2012 (Figure 2). During this period, there were too few visits to calculate stable rates for those aged 5–9 and ≥80 years.

Overall, ED visit rates for suicidal ideation and suicide attempts, among those aged 5 years and older, were higher among females than males (Figure 3, Table 3). This was primarily due to a concentration of exceptionally high rates among females aged 10–19 years, who recorded the highest sex-specific visit rates among all age groups examined. Suicidal ideation- and suicide

attempt-related ED visit rates among females were significantly higher than males in age groups 10–14 and 15–19 years, differing by 67.2% and 37.0%, respectively (Table 3).

Among both sexes aged 20 years and older, ED visit rates for suicidal ideation and suicide attempts decreased with increasing age groups (Figure 3). However, unlike those aged 10–19 years, ED visit rates among adults aged 20 years and older were higher among males than females. The difference between sex-specific visit rates for suicidal ideation and suicide attempts, among adults in this age range, increased with increasing age groups (Table 3).

**Figure 3: Montana ED Visits Related to Suicidal Ideation and Suicide Attempts, Age-Specific Visit Rates by Sex, Ages 5 Years and Older, Montana Residents, 2010–2019**



\* Source: Montana Hospital Discharge Data System, 2010-2019.

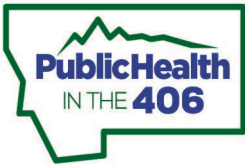
**Table 3: Montana ED Visits Related to Suicidal Ideation and Suicide Attempts, Percent Difference in Age-Specific Rates by Sex, 2010–2019**

Age Group (Years)	Sex with the Higher Visit Rate	Percent Difference (%)	Statistically Significant
All Ages (5+)	Females	4.0	Yes
5–9	Males	67.4	Yes
10–14	Females	67.2	Yes
15–19	Females	37.0	Yes
20–24	Males	2.6	No
25–44	Males	8.8	Yes
45–64	Males	33.9	Yes
65–79	Males	45.2	Yes
80 and older	Males	66.2	Yes

## Conclusion

During 2010–2019, in Montana, ED visit rates for care involving suicidal ideation and suicide attempts increased in each successive year, with the change between 2011 to 2012 the only exception. During the decade, Montana’s ED visit rates for these conditions exceeded U.S. national estimates by 3.4 to 5.8 times, where comparable data was available. Children and teenagers aged 10–19 years recorded the highest ED visit rates for suicidal ideation and suicide attempts throughout 2010–2019 compared to other age groups. Overall, ED visit rates for suicidal ideation and suicide attempts for females were greater than males. This difference was mainly a result of





visit rates concentrated among females aged 10–19 years, which were exceptionally high compared to other sex-specific age group categories. Among Montanans aged 20 years and older, ED visit rates for suicidal ideation and suicide attempts among males were higher than females. The difference between male and female visit rates increased with increasing age groups.

Describing ED visits related to suicidal ideation and suicide attempts among Montanans, by demographic characteristics, provides valuable information. However, it only partially explains the extent of the current mental health crisis within the state, as there are other communities where further assessment is required. Presently, the MHDDS does not include data from the Indian Health Service (IHS) or Veterans Health Administration (VA).<sup>6</sup> Considering that over 78,000 American Indians/Alaska Natives and 91,000 veterans currently reside in Montana (7.3% and 8.5% of the population, respectively),<sup>10,14</sup> and that some of the highest suicide rates in America occur among American Indian/Alaska Native and veteran populations,<sup>3,15</sup> this analysis fails to fully account for the burden of suicidal ideation and suicide attempts among two particularly high risk groups. Additional analyses of data from IHS and VA health systems would offer a more comprehensive picture of the burden of mental health disorders and illnesses affecting these communities.

Information detailed in this surveillance report should be considered in conjunction with current situational knowledge of mental health needs and available services. State, tribal, and local public health jurisdictions, in partnership with healthcare systems, should utilize this information to inform how and where mental health services are employed across the state to meet the healthcare needs of all Montanans.

## Recommendations

### Prevention<sup>16</sup>

#### *Strengthen Economic Supports*

Strengthen household financial security and housing stabilization policies.

#### *Strengthen Access and Delivery of Suicide Care*

Expand the coverage of mental health conditions in health insurance policies, reduce provider shortages in underserved areas, and build safer suicide care through systems change.

#### *Create Protective Environments*

Reduce access to lethal means among persons at risk of suicide, implement organizational culture and policies to promote protective environments, and establish community-based policies to reduce excessive alcohol use.

#### *Promote Connectedness*

Establish peer norm programs and community engagement activities.

#### *Teach Coping and Problem-Solving Skills*

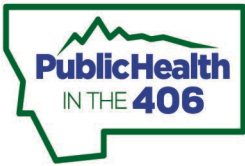
Create and offer social-emotional learning and parenting skill and family relationship programs.

#### *Identify and Support People at Risk*

Improve and expand services with gatekeeper training, crisis intervention, treatment for people at risk of suicide, and treatment to prevent re-attempts.

#### *Lessen Harms and Prevent Future Risk*

Implement postvention activities, as well as safe reporting and messaging about suicide.



## Additional Resources

- Call the [National Suicide Prevention Lifeline](#) at: 1-800-273-TALK (1-800-273-8255).
- Text a crisis counselor through the [Crisis Text Line](#): text “MT” or “HOME” to 741741, or message them on Facebook.
- Visit [Lifeline Crisis Chat](#) online at: [suicidepreventionlifeline.org/chat](https://suicidepreventionlifeline.org/chat).
- Call the [Mental Health America of Montana Warmline](#) at: 1-877-688-3377.
- Visit [Montana THRIVE](#) online at: [thriveformontana.com](https://thriveformontana.com).

For other mental health support and suicide prevention information and resources, visit the Montana Department of Public Health & Human Services online at:

- <https://dphhs.mt.gov/suicideprevention/suicideresources>
- <https://dphhs.mt.gov/amdd/covid19>

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