January 2018

Veteran Suicide in Montana, 2013-2016

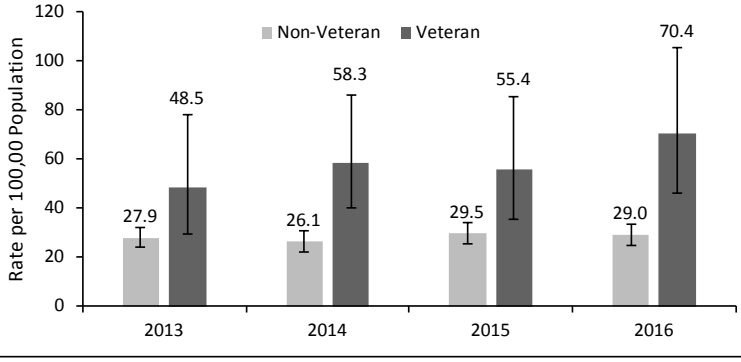
AT A GLANCE

- Montana's veteran suicide rate of 70.4 deaths per 100,000 was more than twice the non-veteran rate of 29.0 deaths per100,000 in 2016
- Veterans account for 1 out of every 5 suicides in Montana
- Risk factors associated with suicide for veterans and non-veterans are difficult to determine using the death certificate alone

Introduction

Montana continues to have one of the highest rates of suicide in the United States. Rates of suicide in the United States have increased 21%, from 10.5 to 13.3 per 100,000 population between 1999 and 2015, respectively. [1] During the same period of time, suicide rates in Montana increased 30%, from 17.7 to 25.3 deaths per 100,000 population. Montana is also home to a large number of veterans which constitute more than 13% percent of its population 18 years of age and older.[2] While Montana's veteran population is relatively small, veterans account for more than one out of every five suicide deaths in Montana. This report examines suicide deaths and associated characteristics described on the Montana death certificate by veteran status from 2013 to 2016.

Figure 1: Age-adjusted Suicide Rates
by Veteran Status
Montana Residents 18+ Years of Age, 2013-2016



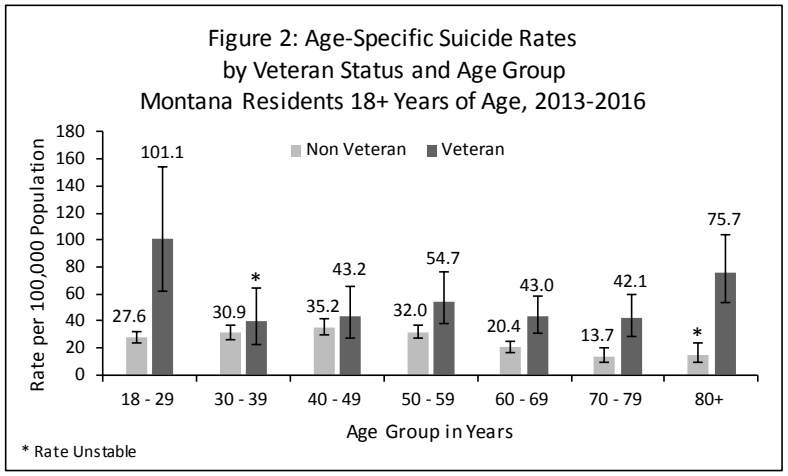
Methods

Data used in this report come from the Montana death certificates collected by the Montana Office of Vital Records and were limited to Montana residents. Suicide deaths were defined using the International Classification of Diseases-10th revision with the following underlying cause of death codes: Intentional self-harm (X60-X84); Sequelae of intentional self-harm (Y87.0); and Provisional Code (U03).[3] Geographical designations were based on the following population sizes; metropolitan (population 50,000 - 250,000), micropolitan (population 10,000 – 49,999), and rural (population less than 10,000). [4]

CONTACT
Todd M. Koch, MPH
Lead Vital Statistics Epidemiologist
Office of Vital Statistics
406-444-1756
tkoch@mt.gov

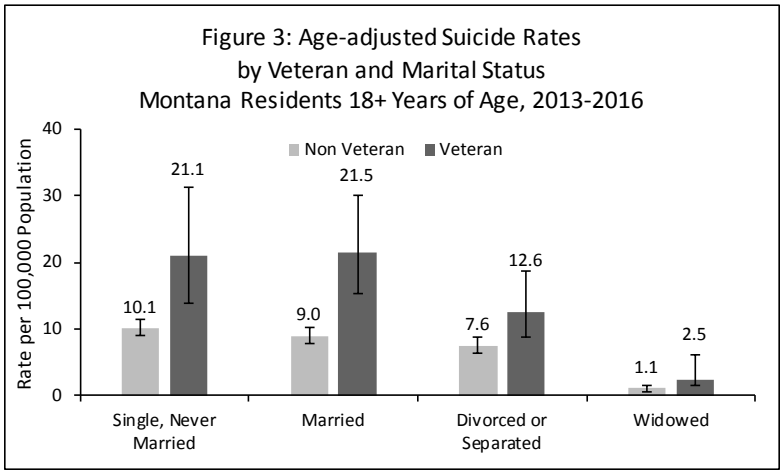
MONTANA DPHHS
Healthy People. Healthy Communities.
Department of Public Health & Human Services

Age-adjusted death rates were calculated using the direct method using the 2000 US standard population for non-veterans.[5] Age-adjusted rates for veterans were calculated using the direct method with the US Department of Veteran Affairs VetPop2016 population estimates for the denominator.[6] Rates were not calculated for events with fewer than 20 observations. Veteran and non-veterans status were classified according to the check-box on the death certificate which asks, "Was the decedent ever in the US Armed Forces." A total of 205 veteran and 771 non-veteran suicides between 2013 and 2016 were included in this analysis.

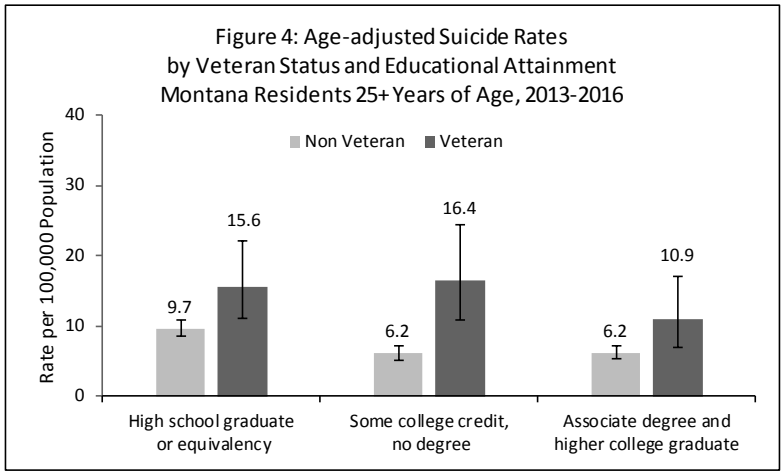


Results

Suicide rates increased for both veteran and non-veteran between 2013 and 2016, although not significantly, Among veterans, suicide rates increased the most, from 48.5 to 70.4 deaths per 100,000 population whereas rates among non-veterans increased only slightly, from 27.9 to 29.0 deaths per 100,000 population. Rates were significantly higher between veterans and non-veterans for all years except 2013 (Figure 1).



When examining non-veteran suicide by age, the rate gradually increased by age group, peaking at 35.2 deaths per 100,000 decedents aged 40 to 49 years, then gradually declined by each age group 50 years and older. Veteran suicide peaked sharply at 101.1 deaths per 100, 000 population in the 18 to 29 age group and, again, at 75.7 deaths in the 80 years and older group. Veteran and non-veteran age groups differed significantly in the 18 to 29 age group and between the age groups 50 to 79 years (Figure 2).

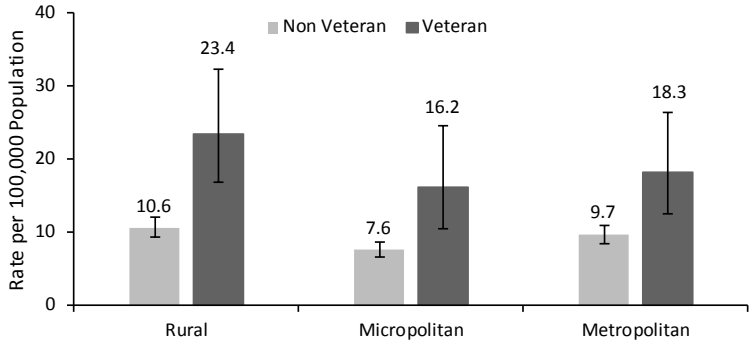


Suicide rates were highest in veterans that were single or married whereas rates in non-veterans were similar among single, married, and divorced decedents. Suicide rates were significantly lower in decedents who were widowed for both

groups (Figure 3).

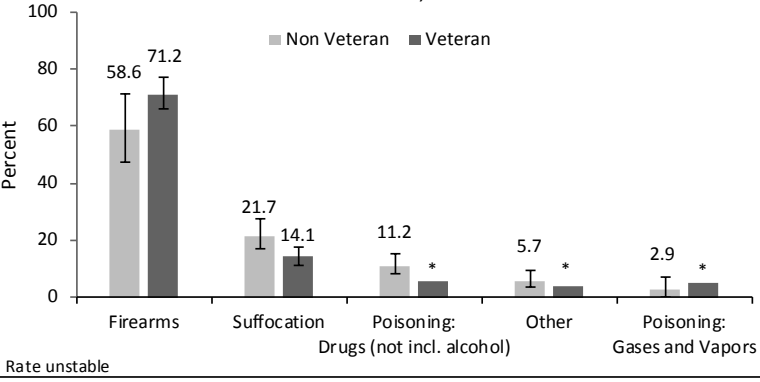
When examining educational attainment among veterans, suicide rates were highest for those without a college degree, although rates were not significantly different across educational levels. Suicide rates in non-veterans were highest among those with only a high school education and different compared to decedents with some college and those with college degrees. When comparing rates between veterans and non-veterans, only suicide rates in decedents with some college credit differed significantly (Figure 4).

Figure 5: Age-adjusted Suicide Rates
by Veteran Status and Geography
Montana Residents 18+ Years of Age, 2013-2016



Suicide rates were significantly different between veterans and non-veterans for all three geographical classifications. Rates were highest in rural counties for both veterans and non-veterans—although not significantly different for veterans (Figure 5).

Figure 6: Method of Suicide
by Veteran Status
Montana Residents, 2013-2016



Firearms were the most common method of suicide for both veterans and non-veterans. The proportion of deaths by drug poisoning and suffocation was higher among non-veterans than veterans. Across all methods, differences were not statistical significant by veteran status (Figure 6).

Numbers, rates, and confidence intervals for all figures may be found in Table.

Discussion

The rate of suicide among veterans was consistently twice the rate of non-veterans during the entire period of study. Risk and protective factors for suicide and suicidal behaviors occur at many levels, from individual factors to community and societal factors as a whole.[7] At the community and societal levels, Montana is a rural state which lacks both access and availability to healthcare and mental health services and has a high rate of gun ownership.[8,9] Individual risk factors for suicide and suicidal behavior among veterans may include experiencing a traumatic event (*e.g.*, serving in combat), having depression, anxiety, post-traumatic disorder, or history of suicide ideation or attempted suicide. According to the 2016 Montana Behavior Risk Factor Surveillance System, 44% [95% Confidence Interval 39.6-49.1%] of those who identified themselves as veterans served in a combat or war zone. Among those, 20% [16.3-24.0%] reported being diagnosed with depression, anxiety, or post-traumatic stress

disorder. Other individual level risk factors in the BRFSS survey, such as receiving psychiatric counseling or treatment, suicidal thoughts, and past suicide attempts were also reported.[10] Together, these interactions may be contributing to large difference in Montana's overall suicide rate compared to the nation.

Suicide was greater in veterans compared to non-veterans for young adults aged 18 to 29 years and middle-aged and older adults aged 50 years and older. These findings are similar to findings recently published by the United States Department of Veteran Affairs which reported increased suicide rates among veterans aged 18 to 29 years.[2] Differences between veterans and non-veterans were most likely due to the large difference in the overall suicide rates. Within the veteran group, there was little difference by marital status, educational attainment, or geography.

Since the veteran population estimates only contained data on age, this analysis was limited to age-adjustment in both veteran and non-veteran populations. Consequently, the distribution of rates across each characteristic (*i.e.*, marital status, education, etc.) may differ from previous reports using a different method.[11] Comparisons between men and women could not be conducted due to the small number of female veteran deaths. Lastly, rates derived from a small number of events or from small populations are statistically imprecise.[12] This is most evident in the veteran data. The large width in the veteran confidence intervals along with the small number of events provided in Table, suggest caution in interpreting these results.

The death certificate provides a convenient but imperfect tool to describe suicides.[13] While the death certificate provides a field asking whether the decedent was ever in the armed forces, it does not distinguish between active duty, Reserves or National Guard membership, or those who separated from service. In a study comparing the armed forces information on the death certificate with data from the US Department of Veterans Affairs, the death certificate was found to reliably identify military personnel (sensitivity and specificity was found to be 93.1% and 91.7%, respectively).[14] While the death certificate is able to reliably identify military service, research has suggested that there may be vulnerable subgroups such as active duty personnel.[15]

Research findings remain mixed on whether veteran status itself is risk factor for suicide.[16,17] It is suggested that when viewed over time, it is the experiences of war and its downstream effects rather than simply being in the armed services. As the suicide researcher Dr. Martha Bruce explains, "military service increases the risk of injury, which in turn increases the risk of long term disability, which serves to increase the risk of long-term disability, which serves to increase the risk of depression, joblessness, and social isolation—all of which together increase suicide risk."[17] Other than age, this report was unable to clearly demonstrate differences in the characteristics between veterans and non-veterans who died by suicide. That said, Montana veterans still die by suicide disproportionality compared to non-veterans.

Public Health Activities and Resources in Montana to Prevent Suicide

National and state public health activities to reduce suicide in veterans and non-veterans involve a number of programs and partners to address the risk factors associated with suicide. For those in crisis, immediate resources are only a phone call or text message away:

- 24/7 free, confidential support for people in distress at the National Suicide Prevention LifeLine 1-800-273-8255 (TALK) **Press 1 for Veterans**
- Text "**mt**" to 741741 to access trained crisis counselors 24/7
- Montana National Guard members can access resources through their Employee Assistance Program (EAP) at Reliant Behavioral Health
- Non-medical counseling for active military and their immediate family members at Military One Source 1-800-342-9647
- The Department of Veterans Affairs, Coaching into Care Program, helps veterans and their family members connect with resources available at their local VA and/or in their community 1-888-823-7458.

Table: Number and Rates of Suicide Deaths by Veteran Status
Montana Resident Occurrences, 2013-2016

	Veteran			Non-Veteran		
	Number	Rate	95% CI	Number	Rate	95% CI
Total[1]						
2013	37	48.5	29.1-78.0	190	27.9	23.9-32.3
2014	60	58.3	39.8-85.9	178	26.1	22.3-30.5
2015	55	55.4	35.6-85.3	205	29.5	25.5-34.1
2016	53	70.4	46.3-105.3	198	29.0	25.0-33.5
Age in years[2]						
18 -29	21	101.1	62.6-154.5	176	27.6	23.7-32.0
30-39	16	‡	‡	143	30.9	26.1-36.5
40-49	21	43.2	26.8-66.1	146	35.2	29.8-41.4
50-59	34	54.7	37.9-76.4	170	32.0	27.4-37.2
60-69	42	43.0	31.0-58.1	89	20.4	16.4-25.1
70-79	32	42.1	28.8-59.4	29	13.7	9.2-19.7
80 and older	39	75.7	53.8-103.5	18	‡	‡
Marital Status[1]						
Single, Never Married	37	21.1	13.8-31.2	275	10.1	9.0-11.5
Married	86	21.5	15.4-30.1	247	9.0	7.8-10.2
Divorced or Separated	57	12.6	8.7-18.8	209	7.6	6.5-8.7
Widowed	24	2.5	1.5-6.2	33	1.1	0.7-1.6
Educational Attainment[1]						
High school graduate or equivalency	78	15.6	11.2-22.2	262	9.7	8.5-11.0
Some college credit, no degree	49	16.4	10.9-24.4	168	6.2	5.2-7.2
Associate degree and higher college graduate	49	10.9	7.0-17.1	173	6.2	5.3-7.3
Geography[1]						
Rural	89	23.4	16.8-32.3	297	10.6	9.4-12.0
Micropolitan	47	16.2	10.5-24.6	210	7.6	6.6-8.7
Metropolitan	69	18.3	12.6-26.3	261	9.7	8.5-11.0
Method[1]						
Firearms	146	71.2	60.1-83.8	452	58.6	53.3-64.3
Suffocation	29	14.1	9.5-20.3	167	21.7	18.5-25.2
Poisoning: Drugs (not including alcohol)	12	‡	‡	86	11.2	8.9-13.8
Other	8	‡	‡	44	5.7	4.1-7.7
Poisoning: Gases and Vapors	10	‡	‡	22	2.9	1.8-4.3

[1] Age-adjusted Rates per 100,000 population
[2] Age-specific Rates per 100,000 population
‡ Figure does not meet standards of reliability or precision.

[1] Centers for Disease Control and Prevention. Underlying Cause of Death 1999-2015 on CDC WONDER Online Database; 2016 [cited October 2017]. Available from http://wonder.cdc.gov/ucd-icd10.html.

[2] U.S. Department of Veterans Affairs Office of Suicide Prevention. 2016. Suicide Among Veterans and Other Americans, 2001-2014.

[3] World Health Organization. International Statistical Classification of Diseases and Related Health Problems-10th Revision 5th ed. Geneva, (CH): WHO Press; 2016.

[4] Ingram D, Franco S. 2014. 2013 NCHS Urban – Rural Classification Scheme for Counties. Natl. Cent. Heal. Stat. 2.

[5] Klein RJ, Schoenborn CA. 2001. Age Adjustment Using the 2000 Projected U.S. Population. U.S. Dep. Heal. Hum. Serv. Natl. Cent. Heal. Statistics

[6] VetPop2016, U.S. Department of Veteran Affairs, National Center for Veteran Analysis and Statistics. Available at https://www.va.gov/vetdata/veteran_population.asp. Accessed April 2017.

[7] U.S. Department of Health and Human Services Office of the Surgeon General and National Action Alliance for Suicide Prevention; 2012. 2012 National Strategy for Suicide Prevention: Goals and Objectives for Action. Washington DC: HHS.

[8] Montana Department of Health and Human Services. Primary Care Office 2016 Needs Assessment. Available at http://dphhs.mt.gov/publichealth/primarycare.

[9] Kalesan B, Villarreal MD, Keyes KM, Galea S. 2015. Gun Ownership and Social Gun Culture. Inj. Prev. 101:1–5.

[10] Montana Department of Health and Human Services. 2016 Montana BRFSS Report (in print). Available at http://dphhs.mt.gov/publichealth/brfss.

[11] Koch TM. 2015. Suicide in Montana: Evidence from the Death Certificate. Mont. Dep. Public Heal. Hum. Serv. Available at http://dphhs.mt.gov/publichealth/Epidemiology/OESS-VS#223953340-reports.

[12] Montana Department of Public Health and Human Resources. 2016. Guidelines of the Release of Public Health Data Derived from Personal Health Information. Helena: MT DPHHS. Available at http://dphhs.mt.gov/Portals/85/publichealth/documents/Epidemiology/GuidelinesReportingPHI.pdf

[13] Rockett IRH, Kapusta ND, Bhandari R. 2011. Suicide Misclassification in an International Context : Revisitation and Update. Suicidology Online 2:48–61.

[14] Bahraini NH, Gutierrez PM, Harwood JE, Huggins JA, Hedegaard H, Chase M, Brenner LA. 2012. The Colorado Violent Death Reporting System (COVDRS): Validity and Utility of the Veteran Status Variable. Public Health Rep. 127:304–309.

[15] Kang HK, Bullman TA. 2008. Risk of Suicide Among US Veterans After Returning From the Iraq or Afghanistan War Zones. JAMA 300:652–653.

[16] Bossarte RM, Claassen CA, Knox KL. 2017. Evaluating Evidence of Risk for Suicide Among Veterans. Mil. Med. 175:703–704.

[17] Bruce ML. 2010. Suicide Risk and Prevention in Veteran Populations. Ann. N. Y. Acad. Sci. 1208:98–103.