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Colorado Violent Death Reporting System (CoVDRS)

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# Violent Deaths in Colorado: Health Statistics Region 5, 2010-2014

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## Introduction

In the United States, approximately 55,000 people die annually as a result of violence<sup>1</sup>. Nationally, violent death is estimated to cost \$107 billion a year in medical care expenses and lost productivity, mentally and economically, affecting millions of people<sup>2,3</sup>. With both suicide and homicide consistently ranking high among leading causes of death, especially in younger populations, violent death remains at the forefront as a public health concern<sup>1</sup>. Violent death occurrence varies geographically across Colorado, both in magnitude and in precipitating circumstances.

In an attempt to better understand this issue, violent deaths can be analyzed regionally using data from the Colorado Violent Death Reporting System (CoVDRS). The CoVDRS is an enhanced public health surveillance system designed to obtain a complete census of violent deaths in Colorado, and was implemented in 2004. Colorado is one of 42 states currently participating in the broader National Violent Death Reporting System (NVDRS), which is maintained and funded by the Centers for Disease Control and Prevention (CDC). The CoVDRS collects data from multiple sources including death certificates, coroner and medical examiner reports, and law enforcement investigations, which allow for greater case detail than death certificates alone.

This report focuses on profiling violent death in Colorado Health Statistics Region (HSR) 5. Included in HSR 5 are Cheyenne, Elbert, Kit Carson, and Lincoln counties. Cheyenne, Kit Carson, and Lincoln counties are categorized as frontier, while Elbert County is characterized as urban<sup>4</sup>. The report provides descriptive information using CoVDRS surveillance data from 2010 to 2014 and includes trends, and circumstances surrounding violent death in this region. The purpose of this report is to increase violent death awareness, and to gain a better understanding of regional violent death in HSR 5. The information presented in this report may be used to promote prevention and intervention efforts aimed at decreasing the impact of violent death in local and regional communities.

## Methods

Data for this report were obtained from the CoVDRS database and include homicide, suicide, and unintentional firearm deaths that occurred in Colorado among each region's residents from 2010 to 2014, excluding legal intervention deaths. Deaths were selected for inclusion in the CoVDRS based on either the indication of violent death as the manner of death on the death certificate or International Classification of Disease, 10th Revision (ICD-10)-coded underlying cause of death as reported on the death certificate<sup>5</sup>. A full description of the data collection processes of the NVDRS is provided elsewhere<sup>6</sup>. Circumstances associated with most violent deaths were obtained through coroner/medical examiner investigation and autopsy reports; as well as the law enforcement investigation reports provided to CoVDRS.

Violent deaths were analyzed by health statistics region (HSR), lethal means, victim circumstances, and toxicology. For this report, lethal means of suicide are reported as: firearm, hanging, poisoning, and other (sharp instrument, fall, etc.). Violent deaths are presented as counts, percentages or as an age-adjusted mortality rate (a frequency of death per 100,000 population) with the ninety-five percent (95%) confidence intervals.

Population estimates used in computing mortality rates are based on 2014-based estimates from the Colorado Demography Office, Colorado Department of Local Affairs. Age-adjusted suicide rates were calculated using the direct method and standardized according to the 2000 United States standard population. To calculate violent death rates and frequencies by geographic location within the state, counties in Colorado were categorized by Health Statistics Region (HSR), a method often used to examine regional differences for various health indicators within Colorado.

## Results

**Violent Death Rates** Table 1 presents the violent death counts and age-adjusted rates for both HSR 5 and Colorado as a whole. In HSR 5, the age-adjusted suicide rate for males is significantly greater than for females, 26 deaths per 100,000 population (n=28) as compared to 5.6 deaths per 100,000 population (n=6), respectively (data not shown).

**Table 1. Violent deaths and age-adjusted rates, Colorado and HSR 5 residents (2010-2014)**

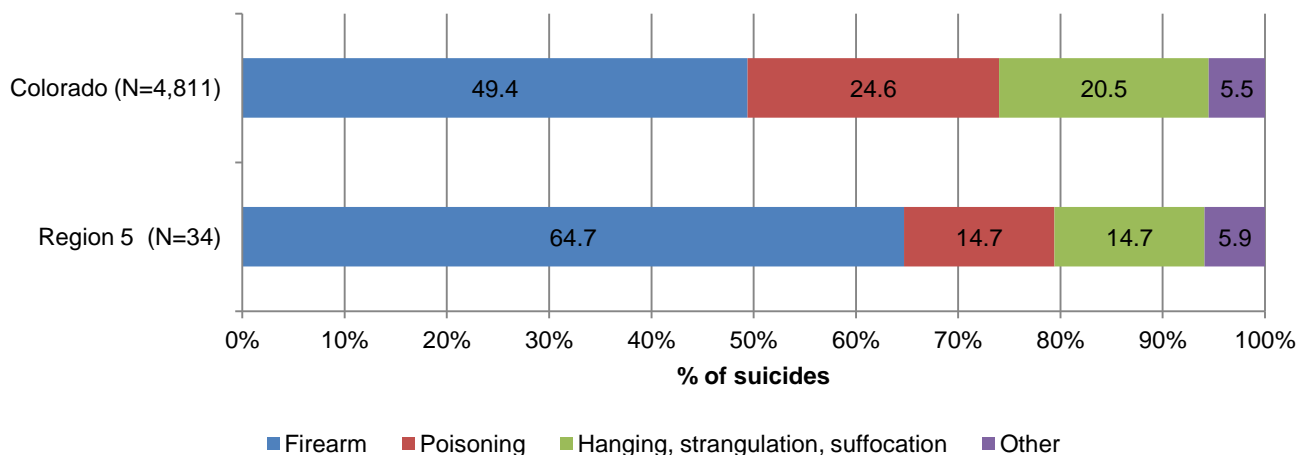
Violent Death Type	Colorado (Avg. Annual Population=5,197,313)		HSR 5 (Avg. Annual Population=38,906)	
	N	Age-Adjusted Rate (95% CI)	N	Age-Adjusted Rate (95% CI)
<b>Suicide</b>	4,811	18.1 (17.6-18.6)	34	15.9 (10.3-21.5)
<b>Homicide</b>	875	3.4 (3.2-3.6)	8	4.2 (1.2-7.3)
<b>Unintentional Firearm</b>	26	0.1 (0.07-0.2)	*	*

\*Counts of less than 3 are suppressed; rates are per 100,000 population.

Source: Colorado Violent Death Reporting System, Colorado Department of Public Health and Environment

**Suicide Methods** Figure 1 presents suicide deaths by method used to inflict the fatal injury for suicide victims in HSR 5 and Colorado. The percentage of suicides that occurred by firearm in HSR 5 was more than 15% greater than that of Colorado, and there was a smaller percentage of hanging/suffocation and poisoning suicides in HSR 5 than in Colorado as well.

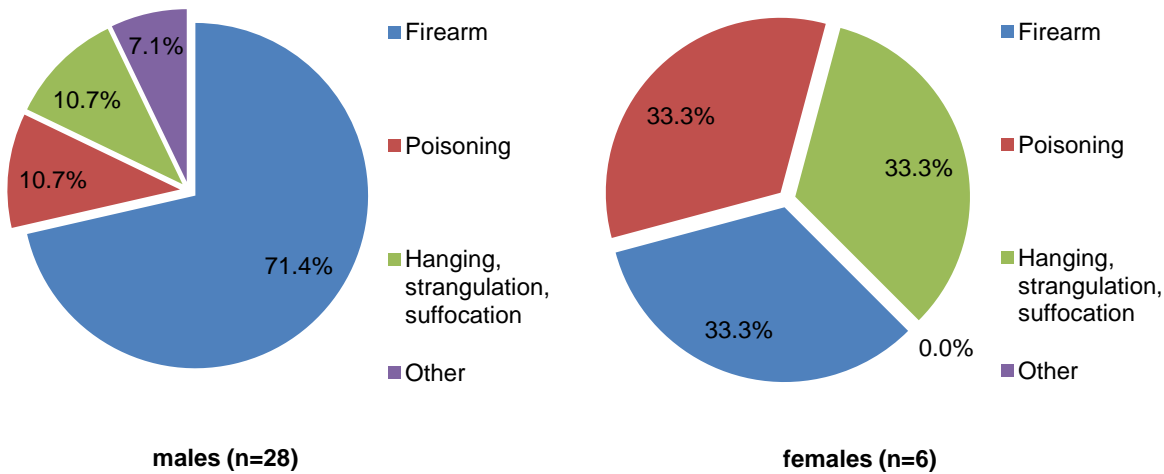
**Figure 1. Suicides by method of injury, Colorado and HSR 5 residents (2010-2014)**



Source: Colorado Violent Death Reporting System, Colorado Department of Public Health and Environment

**Suicide Methods by Gender** Figure 2 presents the breakdown of the types of methods used to inflict the fatal injury in suicide victims in HSR 5, broken out by gender. It reveals that the vast majority of male suicide victims in HSR 5 died by firearm injury, whereas women in the region died by firearm, poisoning, and hanging equally.

**Figure 2. Suicide method of injury by gender, HSR 5 residents, 2004-2014**



Source: Colorado Violent Death Reporting System, Colorado Department of Public Health and Environment

**Victim Circumstances** Table 2 outlines the circumstances most frequently associated with suicide deaths in HSR 5 compared with all Colorado suicide deaths. The percentages are computed using only cases where at least one circumstance was known. In 67.7% of suicide cases had some sort of circumstance known about the incident per information pulled from coroner/medical examiner reports and law enforcement investigations. No HSR 5 homicides during the study period had any reported circumstance information. **The highlighted cells represent the three most common circumstances for each population, which reveals differences between groups.** The most frequent circumstance associated with HSR 5 suicide deaths was that the victim left a suicide note (39.1%), whereas in Colorado it was current depressed mood (56.2%). The most notable difference includes about 40% fewer suicides in HSR 5 as compared to Colorado where the victim was in a current depressed mood prior to death.

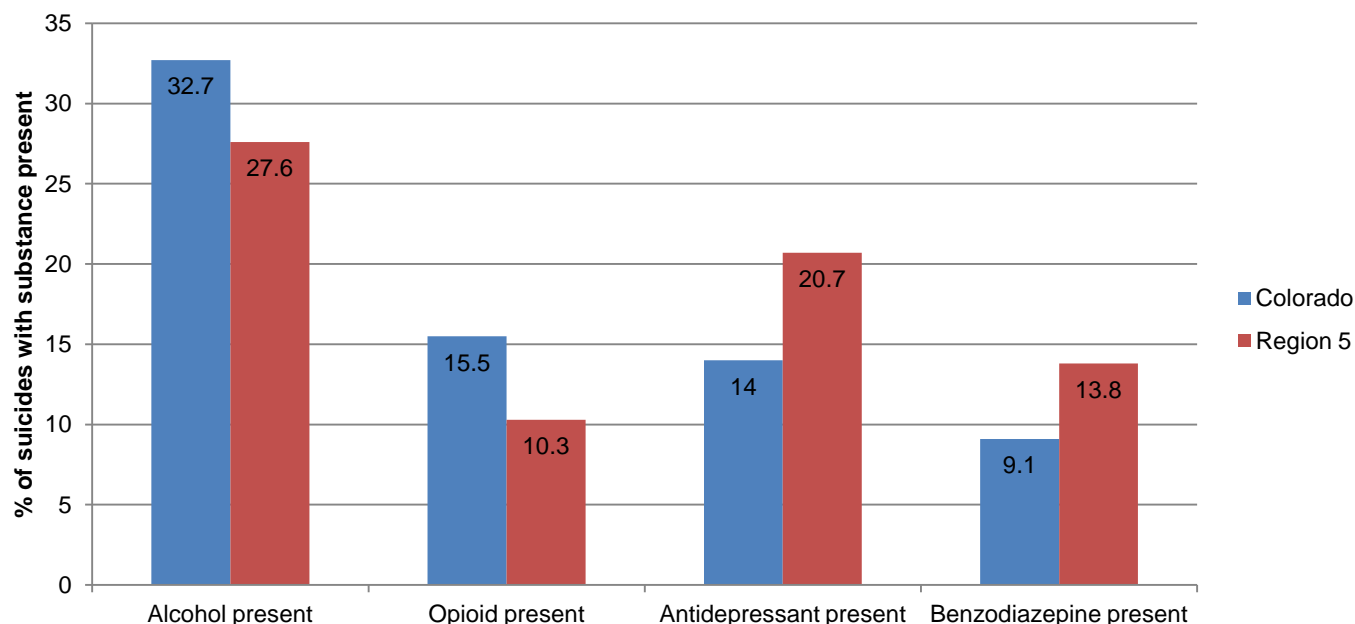
**Table 2. Suicide deaths by circumstances, Colorado and HSR 5 residents (2010-2014)**

Suicide Circumstances	Colorado		HSR 5	
	n	% of suicides with known circumstance	n	% of suicides with known circumstance
<b>Suicides with 1+ known circumstance</b>	4,380	91	23	67.7
<b>Current depressed mood</b>	2,462	56.2	4	17.4
<b>Current mental health problem</b>	2,023	46.2	6	26.1
<b>Ever treated for mental health problem</b>	1,749	39.9	4	17.4
<b>Left a suicide note</b>	1,591	36.3	9	39.1
<b>Intimate partner problem</b>	1,530	34.9	6	26.1
<b>Diagnosis of depression</b>	1,514	34.6	5	21.7
<b>Disclosed intent to commit suicide</b>	1,488	34	4	17.4
<b>Physical health problem</b>	1,392	31.8	3	13
<b>Current mental health treatment</b>	1,374	31.4	4	17.4
<b>Problem with alcohol</b>	1,196	27.3	4	17.4

Source: Colorado Violent Death Reporting System, Colorado Department of Public Health and Environment

**Suicide Toxicology** Figure 3 presents documented toxicological results associated with HSR 5 suicide deaths, that is, what substances were present in the victim’s system at the time of death. Among suicide deaths for which toxicology results were available (29, or 85.3% of all cases), alcohol (27.6%) was the most frequently identified substance, followed by antidepressant (20.7%), benzodiazepine (13.8%), and opioid (10.3%).

**Figure 3. Suicide deaths by presence of substances, Colorado and HSR 5 residents (2010-2014)**



Source: Colorado Violent Death Reporting System, Colorado Department of Public Health and Environment

## Discussion

This analysis reveals the trends and characteristics of violent deaths in Health Statistics Region 5. The results of these analyses serve to inform local and state agencies for violence and injury prevention planning and intervention efforts by providing a better understanding of the populations at greatest risk for violent death. These results represent only a snapshot of the types of data the CoVDRS collects. For more information on the types of data collected by CoVDRS or specific data questions or needs contact the CoVDRS team (contact info on first page).

## Acknowledgements

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