



COLORADO

Department of Public Health & Environment

Violent Deaths in Colorado: Health Statistics Region 15, 2010-2014

Center for Health and Environmental Data

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Registries and Vital Statistics Branch

Colorado Central Cancer Registry (CCCR)

Colorado Responds to Children With Special Needs (CRCSN)

Colorado Violent Death Reporting System (CoVDRS)

Vital Statistics Program

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Introduction

In the United States, approximately 55,000 people die annually as a result of violence¹. 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^{2,3}. 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 concern¹. 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) 15. Included in HSR 15 is Arapahoe County. Arapahoe County is categorized as urban. 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 15. 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 certificate⁵. A full description of the data collection processes of the NVDRS is provided elsewhere⁶. Circumstances associated with most violent deaths were obtained through coroner/medical examiner investigation and autopsy reports and law enforcement investigation reports provided to CoVDRS.



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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.) and lethal means of homicide are reported as: firearm, sharp instrument, blunt instrument, personal weapons, strangulation/suffocation, and other (poisoning, intentional neglect, 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 15 and Colorado as a whole. When comparing the overall rates in Table 1, there are some observed differences in the rates of homicide and suicide between Colorado and HSR 15, but these differences aren't statistically significant. In HSR 15, the age-adjusted suicide rate for males is significantly greater than for females, 24.9 deaths per 100,000 population (n=363) as compared to 8.3 deaths per 100,000 population (n=130), respectively (data not shown).

Table 1. Violent deaths and age-adjusted rates, Colorado and HSR 15 residents (2010-2014)

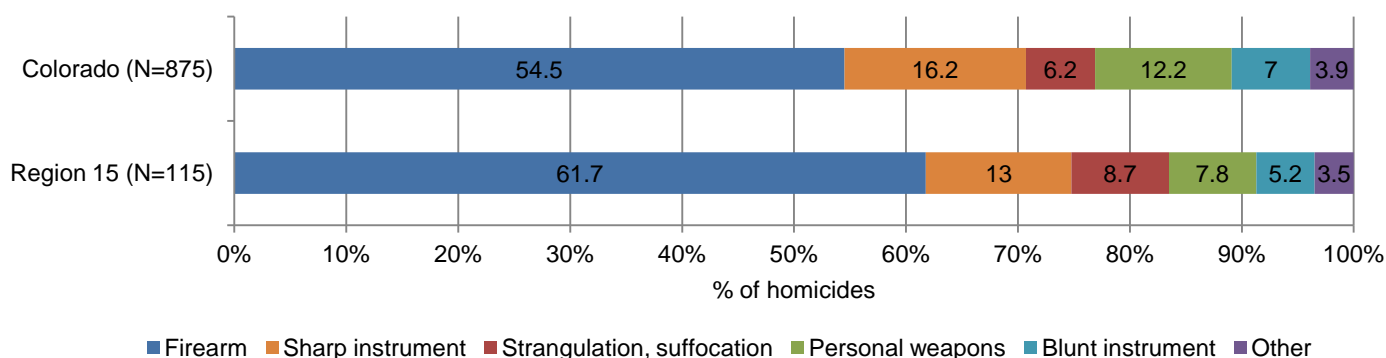
Violent Death Type	Colorado (Avg. Annual Population=5,197,313)		HSR 15 (Avg. Annual Population=596,384)	
	N	Age-Adjusted Rate (95% CI)	N	Age-Adjusted Rate (95% CI)
Suicide	4,811	18.1 (17.6-18.6)	493	16.2 (14.7-17.6)
Homicide	875	3.4 (3.2-3.6)	115	3.9 (3.2-4.6)
Unintentional Firearm	26	0.1 (0.07-0.2)	*	*

*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

Homicide Methods Figure 1 presents homicide deaths by method used to inflict the fatal injury in HSR 15 homicide victims and all Colorado homicide victims. The percentage of homicide deaths occurring by firearm in HSR 15 is nearly 10% higher than in Colorado as a whole.

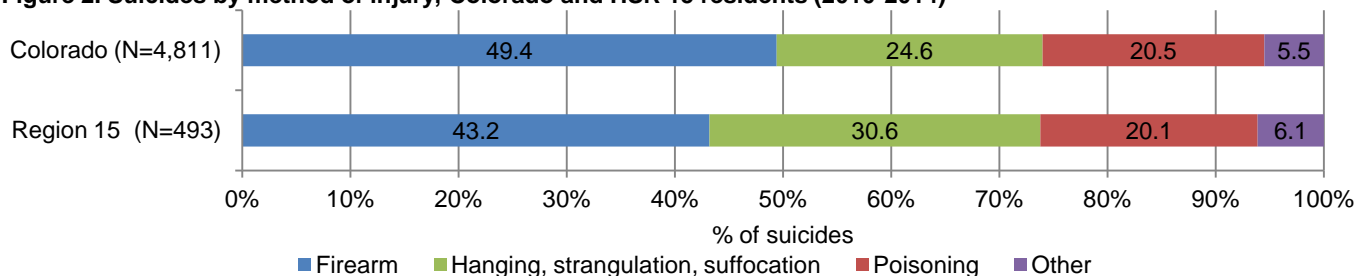
Figure 1. Homicides by method of injury, Colorado and HSR 15 residents (2010-2014)



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

Suicide Methods Figure 2 presents suicide deaths by method used to inflict the fatal injury in HSR 15 and Colorado. The figure reveals that the breakdown of the method of injury used in suicide victims in HSR 15 were fairly similar, with the main difference being that HSR 15 suicide victims died more often by hanging, strangulation, and suffocation, than all Colorado suicide victims.

Figure 2. Suicides by method of injury, Colorado and HSR 15 residents (2010-2014)



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 and homicide deaths in HSR 15 compared with all Colorado suicide and homicide deaths. The percentages are computed using only cases where at least one circumstance was known. In HSR 15, 99.4% of suicide cases and 75.7% of homicide cases had some sort of circumstance known about the incident per information pulled from coroner/medical examiner reports and law enforcement investigations. **The highlighted cells represent the three most common circumstances for each population, which reveals differences between groups.** The most frequent circumstance associated with HSR 15 and Colorado suicide deaths was current depressed mood (57.8% and 56.2%, respectively). The most frequent circumstance associated with HSR 15 and Colorado homicide deaths was that an argument preceded the death (both 40.2%). The most notable difference includes nearly 10% more suicides in HSR 15 as compared to Colorado where the victim had a current mental health problem including a clinical diagnosis of depression.

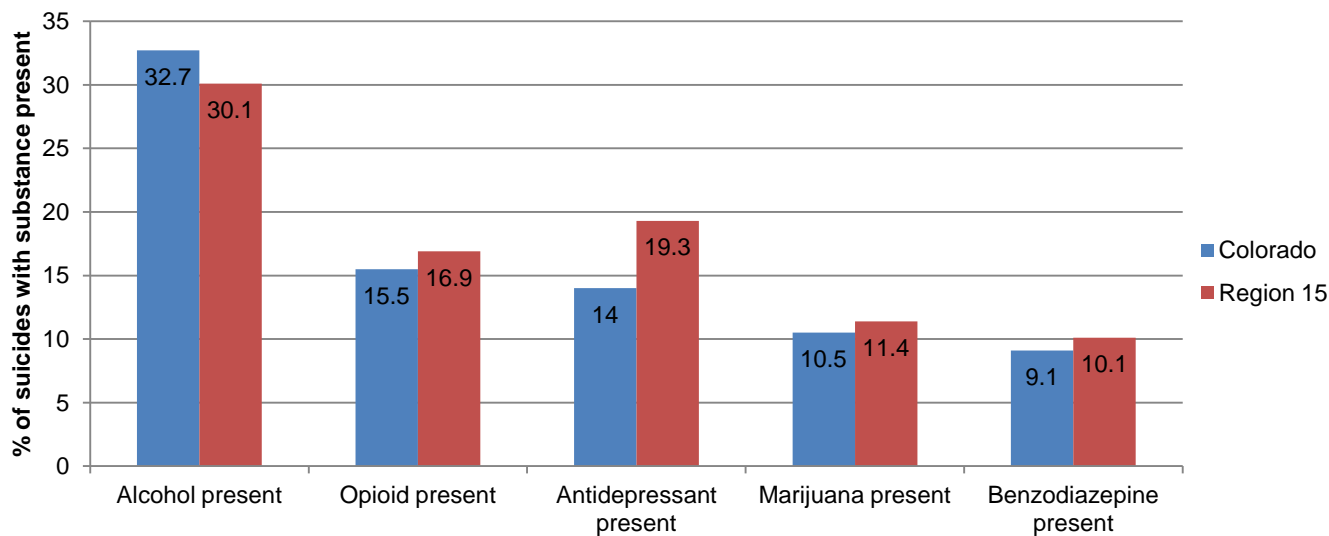
Table 2. Violent deaths by circumstances, Colorado and HSR 15 residents (2010-2014)

Suicide Circumstances	Colorado		HSR 15	
	n	% of suicides with known circumstance	n	% of suicides with known circumstance
Suicides with 1+ known circumstance	4,380	91	490	99.39
Current depressed mood	2,462	56.2	283	57.8
Current mental health problem	2,023	46.2	279	56.9
Ever treated for mental health problem	1,749	39.9	223	45.5
Left a suicide note	1,591	36.3	206	42.0
Intimate partner problem	1,530	34.9	174	35.5
Diagnosis of depression	1,514	34.6	220	44.9
Disclosed intent to commit suicide	1,488	34	195	39.8
Physical health problem	1,392	31.8	179	36.5
Current mental health treatment	1,374	31.4	178	36.3
History of previous suicide attempts	1,214	27.7	154	31.4
Homicide Circumstances	n	% of homicides with known circumstance	n	% of homicides with known circumstance
Homicides with 1+ known circumstance	632	72.2	87	75.7
Argument preceded violent death	254	40.2	35	40.2
Death precipitated by another crime	198	31.3	21	24.1
First crime in progress	154	24.4	17	19.5
Intimate partner violence	93	14.7	10	11.5
Other substance abuse problem	87	13.8	9	10.3
Death precipitated by a physical fight	85	13.5	13	14.9
Drug involvement	81	12.8	17	19.5
Alcohol problem	76	12	9	10.3
Crisis in last two weeks	62	9.8	7	8.1
Victim of violence in the past 30 days	51	8.1	10	11.5

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

Suicide Toxicology Figure 3 presents documented toxicological results associated with HSR 15 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 (326, or 66.1% of all cases in HSR 15), alcohol (30.1%) was the most frequently identified substance, followed by antidepressant (19.3%), opioid (16.9%), marijuana (11.4%) and benzodiazepine (10.1%).

Figure 3. Suicide deaths by presence of substances, Colorado and HSR 15 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 15. 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).

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