

## Suicide Deaths and Surrounding Circumstances among First Responders and Last Responders in Colorado, 2004-2020: A Summary from the Colorado Violent Death Reporting System

Prepared by:

*Christine Demont, MPH, Kirk Bol, MSPH*

### Introduction

Suicide continues to be a public health priority and certain occupations may play a role in increasing one's risk for suicide. First and last responders are exposed to traumatic events putting them at higher risk for psychological stress and suicide.<sup>1,2</sup> "First responder" occupations traditionally include firefighters, emergency medical services (EMS), and police/law enforcement occupations, as well as security guards, corrections personnel, and emergency services dispatchers. Another category of interest, "last responders", including coroners, death investigators, medical examiners, pathologists, autopsy assistants, morticians, cremation specialists, embalmers, and funeral directors, also have the potential to suffer the same psychological stress as first responders.<sup>3,4,5,6</sup> Victim advocates can also be considered a first responder or last responder because of their role in responding immediately to scenes of violent death and subsequent work with survivors. The purpose of this report is to share the results of suicide deaths among first and last responders compared to all Colorado suicide deaths for the years 2004 to 2020 and to identify unique characteristics among first and last responder suicide deaths to guide prevention efforts.

### Methods

Data in this report come from the Colorado Violent Death Reporting System (CoVDRS) which is administered by the Colorado Department of Public Health and Environment. The CoVDRS program aims to collect data from death certificates, coroner/medical examiner reports, and law enforcement reports which include a variety of documents including autopsy reports, toxicology reports, investigation summaries and scene descriptions. The results presented in this report include deaths with a manner of suicide (intentional self-harm), and reflect all relevant deaths occurring in Colorado, irrespective of residency, from 2004 to 2020. To identify first and last responders among suicide deaths, staff conducted a manual review of 'Usual Industry' and 'Usual Occupation' text fields on the death certificate for all suicide deaths. These fields are intended to capture the type of job the decedent had for most of their working life. This review was aided by [the National Institute for Occupational Safety and Health \(NIOSH\)](#) Industry and Occupation Computerized Coding System (NIOCCS). This web application is used to translate industry

1 Hayman M, Dill J, Douglas R. The Ruderman White Paper on Mental Health and Suicide of First Responders. Ruderman Family Foundation. April 2018.

2 Flannery RB Jr. Treating psychological trauma in first responders: a multi-modal paradigm. *Psychiatry Q.* 2015;86:261-7.

3 Flannery, R.B., Greenhalgh, T. Coroners and PTSD: Treatment Implications. *Psychiatr Q* 89, 765-770 (2018).

4 Brondolo, E., Eftekharzadeh, P., Clifton, C., Schwartz, J. E., & Delahanty, D. (2018). Work-related trauma, alienation, and posttraumatic and depressive symptoms in medical examiner employees. *Psychological Trauma: Theory, Research, Practice, and Policy*, 10(6), 689-697.

5 Brondolo, E., Wellington, R., Brondolo, E., Brondolo, T. J., & Delahanty, D. (2012). Work-related predictors of psychological distress among medical examiner and coroner personnel. *Academic Forensic Pathology*, 2(1), 80-91.

6 Coleman, J. A., Delahanty, D. L., Schwartz, J., Murani, K., & Brondolo, E. (2016). The moderating impact of interacting with distressed families of decedents on trauma exposure in medical examiner personnel. *Psychological Trauma: Theory, Research, Practice, and Policy*, 8(6), 668-675.



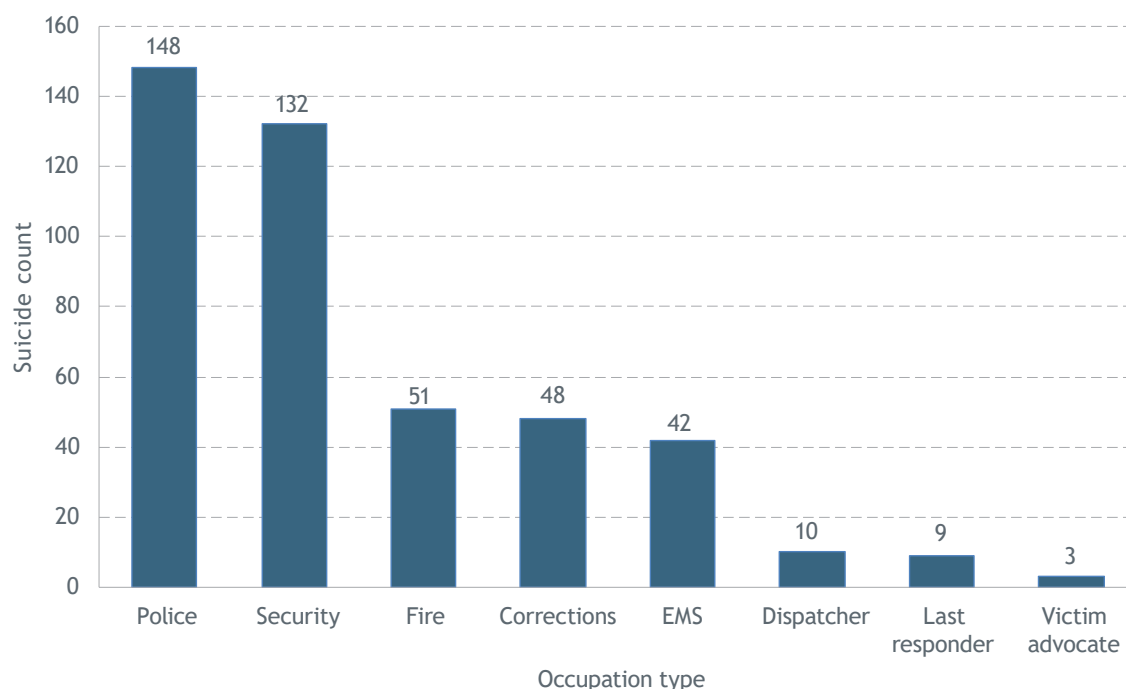
and occupation text found in data such as death certificates into standardized industry and occupation codes to provide consistent and meaningful data analysis. The comparison group included all suicide deaths occurring in Colorado from 2004 to 2020.

Data in this report are presented as counts and percentages of the total Colorado deaths captured by the CoVDRS system. Data are further presented by demographic categories, contributing circumstances, substances present at death, and trends over time.

## Results

There were a total of 17,357 suicide death occurrences in Colorado from 2004 to 2020. Among these total death occurrences, there were a total of 443 suicide deaths identified as a first or last responder. Figure 1 presents the number of suicide deaths among first and last responders by specific occupations. The last responder category combined all last responder occupations due to small counts in individual occupations, and included the following: coroners, death investigators, medical examiners, pathologists, autopsy assistants, morticians, cremation specialists, embalmers, and funeral directors. The occupation with the highest number of suicide deaths among first and last responder occupations included police (n=148) followed by security (n=132).

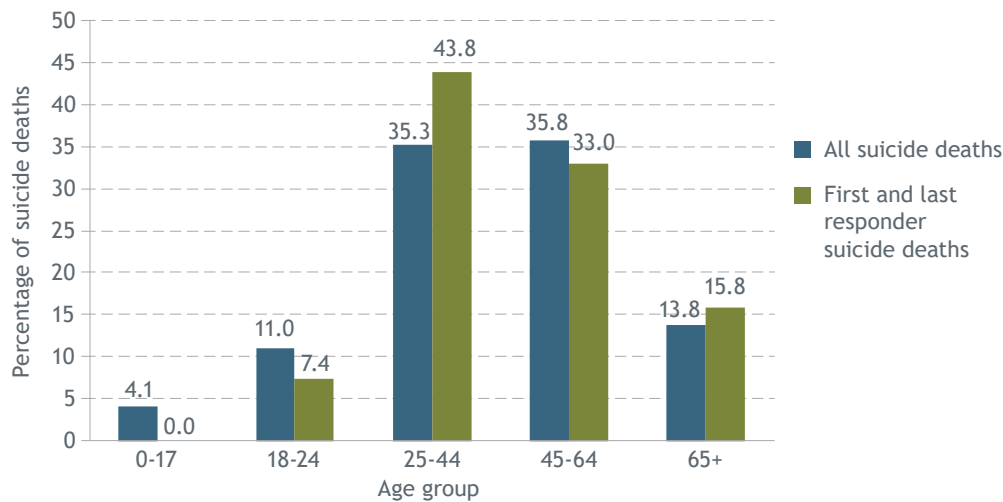
Figure 1. Suicide deaths among first and last responders by included occupation, Colorado occurrences, 2004-2020.



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

There were differences in suicide deaths by age group among first and last responders compared to all Colorado suicide deaths (Figure 2). The age group that had the highest percentage of suicide deaths among first and last responder suicide deaths was the 25-44 year age group; whereas the 45-64 age group had the highest percentage of all suicide deaths. There were no first or last responder suicide deaths in the 0-17 age group which is likely due to the association of age and education and training required to become a first or last responder.

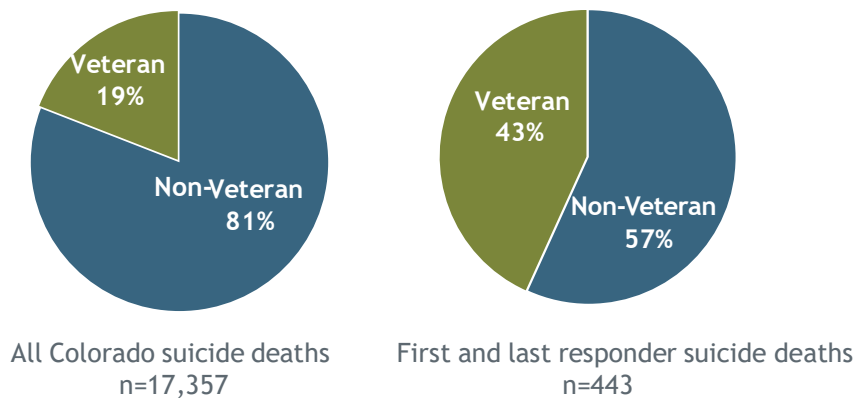
Figure 2. Colorado first and last responder suicide deaths by age group, Colorado occurrences, 2004-2020.



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

A higher percentage of first and last responder suicide deaths had been a veteran of the armed forces compared to all suicide deaths. This may be because of the nature of the job, ability to transfer their training, and the skills and discipline from military to become a first or last responder are similar. Forty-three percent of first and last responders had been a veteran of the armed forces compared to 19% of all Colorado suicide deaths.

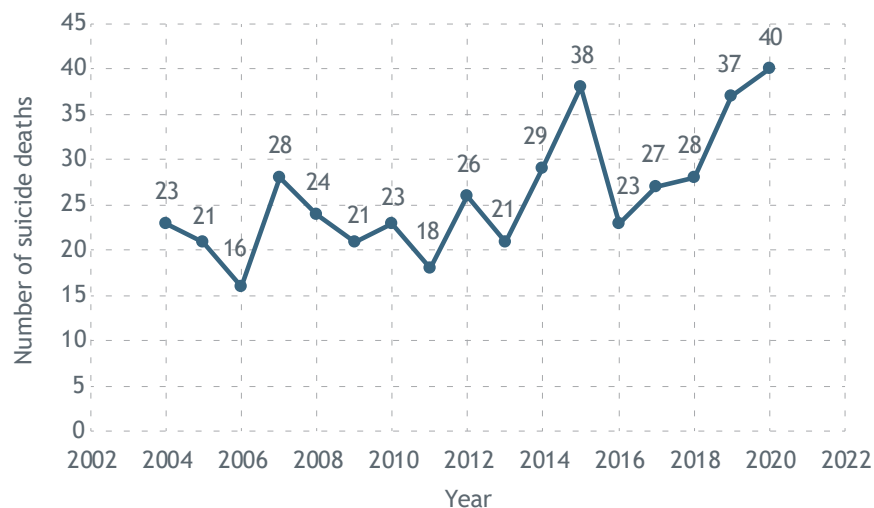
Figure 3. First and last responder suicide deaths by veteran status, Colorado occurrences, 2004-2020.



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

Figure 4 shows the number of suicide deaths among first and last responders on an annual basis from 2004 to 2020. The trend of first and last responder suicide deaths appears to be increasing over time, however, Colorado’s overall suicide deaths have also increased over time, as has Colorado’s overall population. The percentage of all suicide deaths in Colorado that were identified as a first or last responder has not changed over time. In 2004, 2.8% of all Colorado suicide deaths were a first or last responder (23 out of 818) and in 2020, 3.0% of all Colorado suicide deaths were a first or last responder (40 out of 1,316).

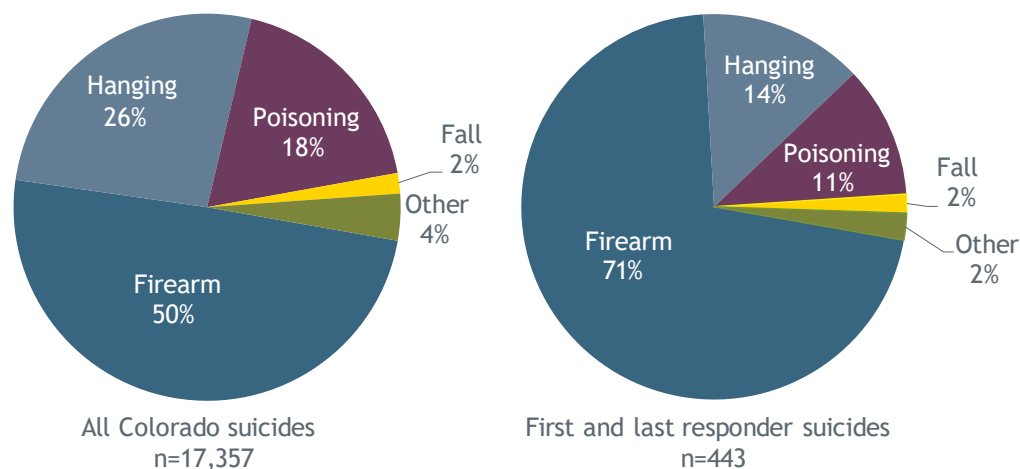
Figure 4. Yearly suicide deaths of first and last responders, Colorado occurrences, 2004-2020.



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

Figure 5 displays the method used to inflict the fatal injury for suicide deaths among first and last responders, compared to all Colorado suicide deaths. Firearms were used as the method of injury in a much higher percentage of first and last responder suicide deaths (71%) compared to all Colorado suicide deaths (50%). Many first or last responder occupations are associated with increased access to firearms, along with greater familiarity with firearms and training in their use, which may have contributed to the higher percentage of first and last responders using firearm as the method of injury.

Figure 5. First and last responder suicide deaths by method of injury, Colorado occurrences, 2004-2020.



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

## Suicide circumstances

The CoVDRS collects circumstances related to all violent deaths, including suicide deaths. Table 1 shows selected circumstances in first and last responder suicide deaths compared to all Colorado suicide deaths. The percentage is based on suicide deaths where there is at least one known circumstance. First and last

responders were more likely to leave a suicide note, have had an intimate partner problem, experienced a crisis in the last two weeks, and had a problem with their job compared to all Colorado suicide deaths. First and last responders were less likely to have had a problem with substances other than alcohol, to have previously disclosed suicidal thoughts or plans, or to have previously attempted suicide.

**Table 1. First and last responder suicide deaths by select circumstances and substance use, Colorado occurrences, 2004-2020.**

	All suicide deaths		First and last responder suicide deaths	
	N	Percent of suicides with known circumstances	N	Percent of suicides with known circumstances
Left a suicide note	6,255	38.0	176	42.3
Intimate partner problem	6,200	37.7	187	45.0
Crisis in last two weeks	5,889	35.8	175	42.1
Problem with alcohol	4,747	28.9	109	26.2
Problem with other substance	3,190	19.4	42	10.1
History of suicidal thoughts or plans	4,551	27.7	104	25.0
History of previous suicide attempts	4,464	27.1	84	20.2
Job problem	3,268	19.9	115	27.6

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

Table 2 displays mental health conditions that are collected in the CoVDRS. First and last responders were less likely to have been treated or diagnosed for a mental health condition with the exception of post-traumatic stress disorder (PTSD). Seven percent of first and last responders were diagnosed with PTSD compared with only three percent of all suicide deaths. Current depressed mood was observed in similar proportions among both groups, noting this could have been reported by anyone and does not necessarily reflect a diagnosis of depression by a trained mental health professional (the latter being included as a separate category).

**Table 2. First and last responder suicide deaths by mental health conditions, Colorado occurrences, 2004-2020.**

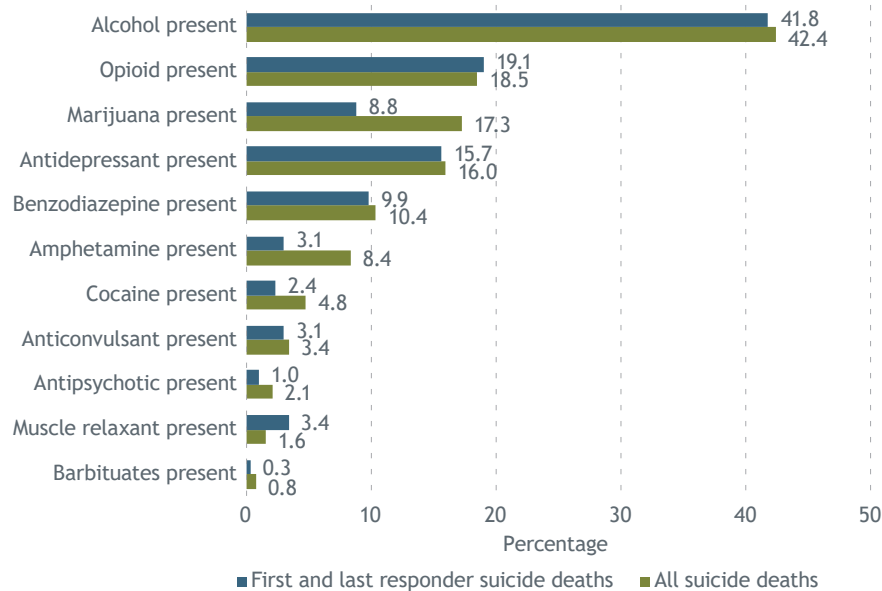
	All suicide deaths		First and last responder suicide deaths	
	N	Percent of suicides with known circumstances	N	Percent of suicides with known circumstances
Current depressed mood	9,234	56.1	237	57.0
Ever treated for mental health problem	6,796	41.3	147	35.3
Current mental health problem	7,821	47.5	174	41.8
Diagnosis of depression	5,749	34.9	124	29.8
Diagnosis of bipolar disorder	1,349	8.2	21	5.1
Diagnosis of anxiety	1,340	8.1	28	6.7
Diagnosis of post-traumatic stress disorder	491	3.0	29	7.0
Diagnosis of schizophrenia	327	2.0	4	1.0
Other mental health diagnosis	611	3.7	10	2.4

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

Post-mortem toxicology results are also collected with the CoVDRS data. Figure 6 shows that alcohol and prescription drug presence in post-mortem toxicology were similar among first and last responder suicide deaths compared to all Colorado suicide deaths. However, presence of illicit drugs and marijuana (which was

legalized for retail/recreational use in 2012 in Colorado), was lower among first and last responder suicide deaths. This may be due in part to the job requirements, including prohibition of any drug use, and drug testing required for employment in first and last responder occupations.

**Figure 6. First and last responder suicide deaths by toxicology at death, Colorado occurrences, 2004-2020.**



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

## Changes in circumstances over time

Table 3 shows circumstances associated with suicide deaths among first and last responders across three different time periods, 2004-2008, 2009-2014, and 2015-2020. First and last responders had an increase in intimate partner problems, mental health conditions and treatment, and problem with alcohol over time. In addition, post-mortem toxicology results showed an increase in alcohol, marijuana, and opioids over time (data not shown). Of consideration is that an increase in diagnoses and treatment of mental health problems may reflect changes for the better in health care seeking behaviors among those who were involved in these professions.

**Table 3. Changes in circumstances over time among first and last responder suicide deaths by time period, 2004-2020.**

	2004-2008	2009-2014	2015-2020
Circumstance	Percent of suicides with known circumstance		
Intimate partner problem	42.6	41.9	48.4
Ever treated for mental health problem	28.7	38.7	37.0
Current mental health problem	31.5	41.9	47.8
Diagnosis of Depression	20.4	33.9	32.6
Diagnosis of Post-Traumatic Stress Disorder	0.9	4.8	12.0
Diagnosis of Anxiety	4.6	5.7	8.7
Diagnosis of Bipolar Disorder	2.8	4.8	6.5
Other Mental Health Diagnosis	2.8	2.4	2.2
Problem with alcohol	23.2	24.2	29.4

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

## Discussion

The data in this report provide additional information about suicide deaths among first and last responders. First and last responders were more likely to have been a veteran, use a firearm as the method of fatal injury, and have an intimate partner or job problem prior to their death compared to all Colorado suicide deaths. First and last responders were less likely to have been treated or diagnosed with a mental health condition compared to all Colorado suicide deaths, with the exception of post-traumatic stress disorder. Encouragingly, when analyzing trends over time, first and last responders had an increase in the percent who were diagnosed and treated for mental health problems with each successive time period. These findings will help partners with their suicide prevention efforts. There are many suicide prevention efforts being implemented by CDPHE and can be found on this website: <https://cdphe.colorado.gov/office-of-suicide-prevention>.

## Acknowledgements

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