CHILD FATALITY PREVENTION SYSTEM: STATEWIDE DATA OVERVIEW, 2016 - 2020

COLORADO
Department of Public Health & Environment

Introduction

The Child Fatality Prevention System (CFPS) is a statewide network that focuses on preventing child deaths. Housed at the Colorado Department of Public Health and Environment (CDPHE), CFPS consists of local review teams, a State Review Team, and the CFPS state support team at CDPHE. Local teams and the CFPS State Review Team include community members and field experts. These teams complete case reviews of infant, child, and youth deaths in Colorado to describe trends and patterns and create strategies to prevent future deaths. As part of the case review process, CFPS partners develop and share out recommendations for how to prevent child deaths annually.

The system reviews all deaths that occur in Colorado among infants, children, and youth under age 18. CFPS does not review deaths of Colorado residents that occur out of state. This is different from other reports of child death data and other Colorado government data sources. As a result, the data presented in this data brief might not match other statistics reported at both the state and national levels.

This data brief provides an overview of the state-level data from CFPS. Additional CFPS data are available at: www.cochildfatalityprevention.com/p/reports.html.

For purposes of this brief, ***inequities*** are defined as systemic, avoidable, and unjust factors that prevent people from reaching their highest level of health. ***Disparities*** are differences in health outcomes between people related to social or demographic factors such as race, ethnicity, gender, sexual orientation, or geographic region. Measuring disparities helps measure our progress toward achieving equity.[1,2]

The impact of policies and systems on child deaths

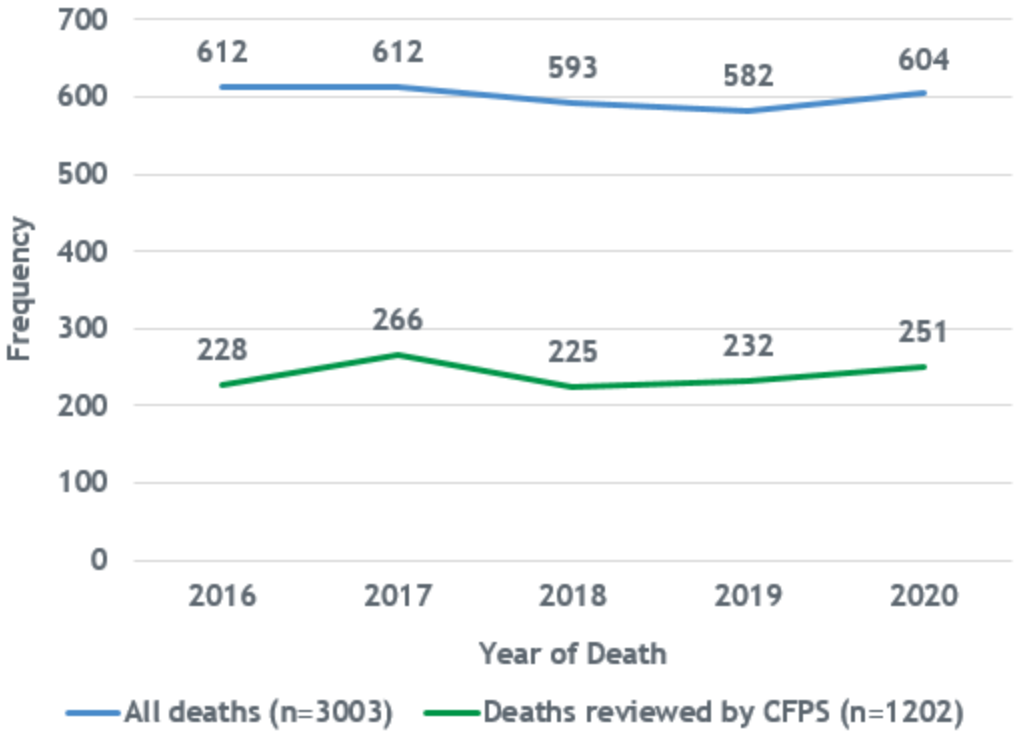
Generations of social, economic, and environmental inequities contribute to the deaths of infants, children, and youth.[3] People exposed to these factors (outlined in the table below) experience additional harm, resulting in higher rates of death. When interpreting the data, it is critical to not lose sight of these systemic, avoidable, and unjust factors. Researchers work towards understanding how geography, race, ethnicity, sexual orientation, and gender identity correlate with health. It is critical that data systems like CFPS identify and understand the life-long inequities that persist across groups in order to eliminate them. When limitations in the data system exist due to how data are collected, or because data are not collected, CFPS strives to provide additional context and research about how inequities impact child deaths. By changing policies and systems that create and perpetuate inequities, CFPS can reduce the number of child deaths that occur in Colorado. Examples of these inequities include, but are not limited to:

RURAL AND FRONTIER GEOGRAPHY	RACE AND ETHNICITY	SEXUAL ORIENTATION AND GENDER IDENTITY
Limited access to Level 1 trauma centers and mental and behavioral health services.[4] Increased stigma associated with mental illness and seeking help.[5] Longer response times by emergency medical services.[6] **→ These and other factors contribute to higher death rates in rural areas, including suicide[7] and passenger vehicle deaths.[8]**	Racism, discrimination, and historical trauma.[9,10] Limited access to high-quality education,[11] employment opportunities,[12] healthy foods,[13] culturally traditional foods,[14] and health care.[15] Chronic stress.[16] **→ These factors result in lasting health impacts for people of color that include infant mortality,[17] high rates of homicide and gun violence,[18] and increased motor vehicle deaths.[19]**	Discrimination, stigma, and bias.[20] Rejection from family, friends, and community.[21] Non-inclusive school curricula and anti-harassment policies.[22] Insufficient access to LGBTQ+-informed health care.[23] **→ This chronic social stress that LGBTQ+ children and youth experience influences health across the lifespan, including higher rates of suicide[24] and substance use.[25]**

Overview of CFPS Data from 2016-2020

CFPS uses death certificates provided by the Vital Statistics Program within the Center for Health and Environmental Data at CDPHE to identify deaths among those under age 18 in Colorado. Of the 3,003 deaths from 2016 through 2020, 1,202 met the statutory criteria for CFPS child death review and received a thorough case review during the 2017 through 2021 calendar years. Figure 1 demonstrates the number of deaths in Colorado among those under age 18 from 2016 through 2020 and the number of deaths CFPS reviewed during this time period. Child deaths during this five-year period ranged from 582 in 2019 to 612 in 2016 and 2017, and averaged about 601 deaths per year. On average, 240 deaths per year met CFPS criteria and received a full review. In 2016, 228 deaths met the CFPS criteria for review, while 251 deaths met the criteria in 2020. The overall number of deaths among infants, children, and youth remained stable throughout the five-year period; however, the proportion of those deaths reviewed by CFPS increased between 2016 (37.2%) and 2020 (41.6%).

Figure 1. Total number of deaths and deaths reviewed by CFPS occurring among those under age 18 in Colorado by year, 2016-2020



The overall rate of deaths reviewed by CFPS for the period was 17.9 per 100,000 Colorado residents. This rate combines all causes of death reviewed by CFPS and is interpreted as overall rates of death among Colorado residents under age 18 due to injury, violence, and undetermined causes. The overall rate ranged from 16.7 per 100,000 population in 2016 to 19.3 per 100,000 population in 2020. While the upward trend in the rate across the period was not statistically significant, CFPS monitors this trend closely.

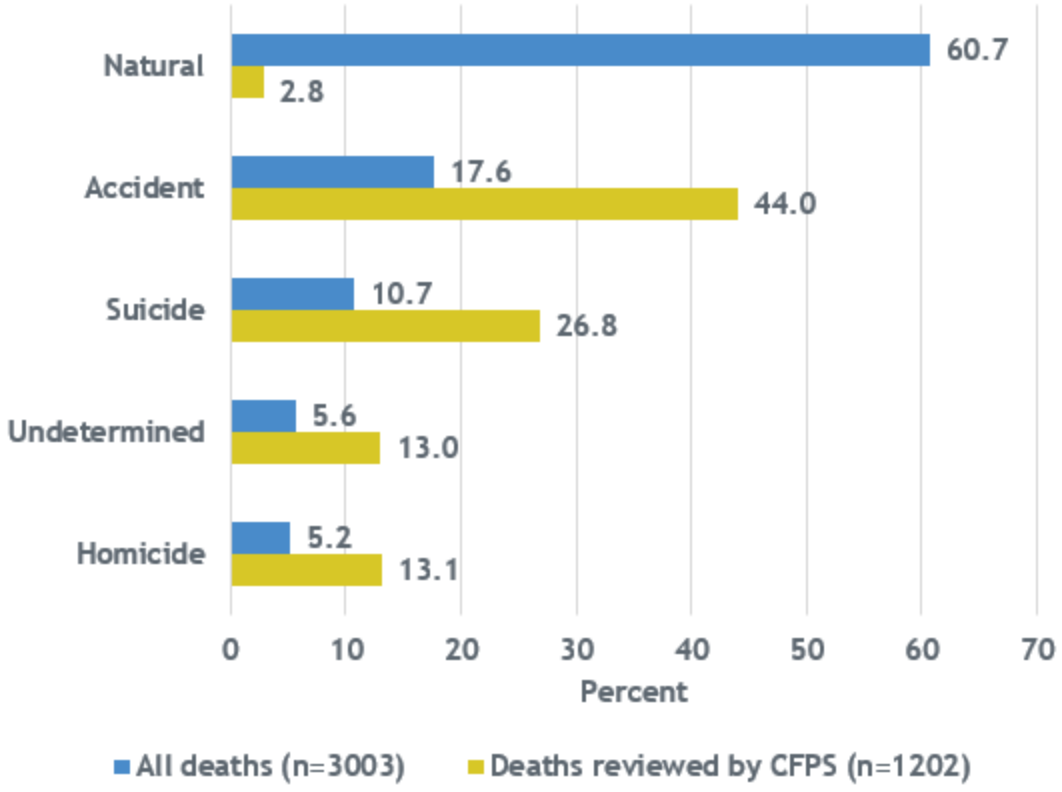
When the overall rate of death is examined by race and ethnicity, age, sex, and geography, significant disparities emerge. For instance, non-Hispanic Black infants, children, and youth (34.6 per 100,000 population) die by injury and violence at over twice the rate of non-Hispanic white infants, children, and youth (14.8 per 100,000 population). Racial disparities in deaths by injury and violence result from systemic inequities facilitated by racism and discrimination.[26] Infants, children, and youth who live in a frontier county (27.4 per 100,000 population) die by injury and violence at 1.6 times the rate of those who live in an urban county (17.4 per 100,000 population). Geographic disparities are often the result of extreme geographic and social isolation as well as limited access to services.[27] Please see cause-specific data briefs for more information on the systemic and social factors that contribute to these disparities (www.cochildfatalityprevention.com/p/reports.html). To learn even more about these inequities, view the CFPS report "*The Role of Policies and Systems in Child Deaths in Colorado*."

Manner of Death

The Colorado death certificate includes five manners of death: natural, accident, suicide, homicide, and undetermined. A coroner or medical examiner classifies the manner of death, typically following a review of the circumstances surrounding the death and a thorough investigation. CFPS reviews approximately four of every ten deaths, which includes all of the deaths determined to be accidents, suicides, homicides, and due to undetermined causes. The remaining natural deaths are preliminarily reviewed by the CFPS state support team to determine if there is a need to initiate a full CFPS team review.

Figure 2 demonstrates that the majority of all deaths among those under age 18 in Colorado during the period were determined to be natural (60.7%, n=1822), accident (17.6%, n=529), suicide (10.7%, n=322), undetermined (5.6%, n=168), and homicide (5.2%, n=157). By contrast, for deaths reviewed by CFPS the most frequent manners of death were accident (44.0%, n=529), suicide (26.8%, n=322), undetermined (13.0%, n=156), homicide (13.1%, n=157), and natural (2.8%, n=34).

Figure 2. All deaths and all deaths reviewed by CFPS occurring among those under age 18 in Colorado by manner of death, 2016-2020



Cause of Death

Colorado coroners also determine cause of death, which is a specific injury or disease that resulted in the death (e.g., drowning, poisoning, motor vehicle crash). The leading causes of death occurring among those under age 18 in Colorado for the years 2016-2020 are perinatal conditions (27.2%, n=818), congenital malformations (15.5%, n=464), and suicide (10.7%, n=322).

For CFPS data analysis purposes, coroners may assign a death to one or more of the major cause of death categories. For example, in the case of a child or youth known to be experiencing a mental health crisis who subsequently dies by suicide, the death may be coded as a death by suicide and a firearm death (depending on the means of death). This death may also be counted as a child maltreatment death if the professional opinion of the local review team identified child neglect where access to lethal means were not restricted.

Figure 3 shows the leading causes of death among infants, children, and youth under age 18 reviewed by CFPS for the years 2016-2020. Among these, the most frequent cause of death over the five-year period was suicide (n=322) followed by child maltreatment (n=249) and sudden unexpected infant death (SUID) (n=243). Other leading causes of death included motor vehicle and other transportation deaths (n=242), consisting primarily of passenger vehicle deaths (n=175) and pedestrian deaths (n=39); firearm (n=219); homicide not due to child maltreatment (n=74); drowning (n=62); and poisoning and overdose deaths (n=52). More details about the leading causes of death are available in cause-specific data briefs located at: www.cochildfatalityprevention.com/p/reports.html.

Figure 3. Leading causes of death for deaths occurring among those under age 18 in Colorado and reviewed by CFPS, 2016-2020 (n=1202)

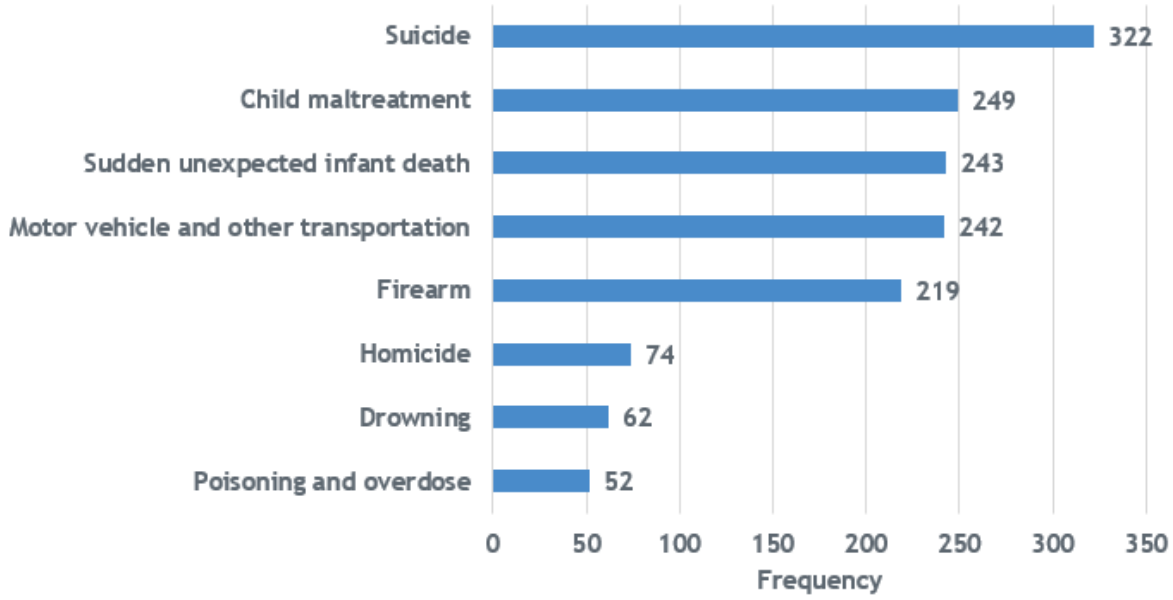
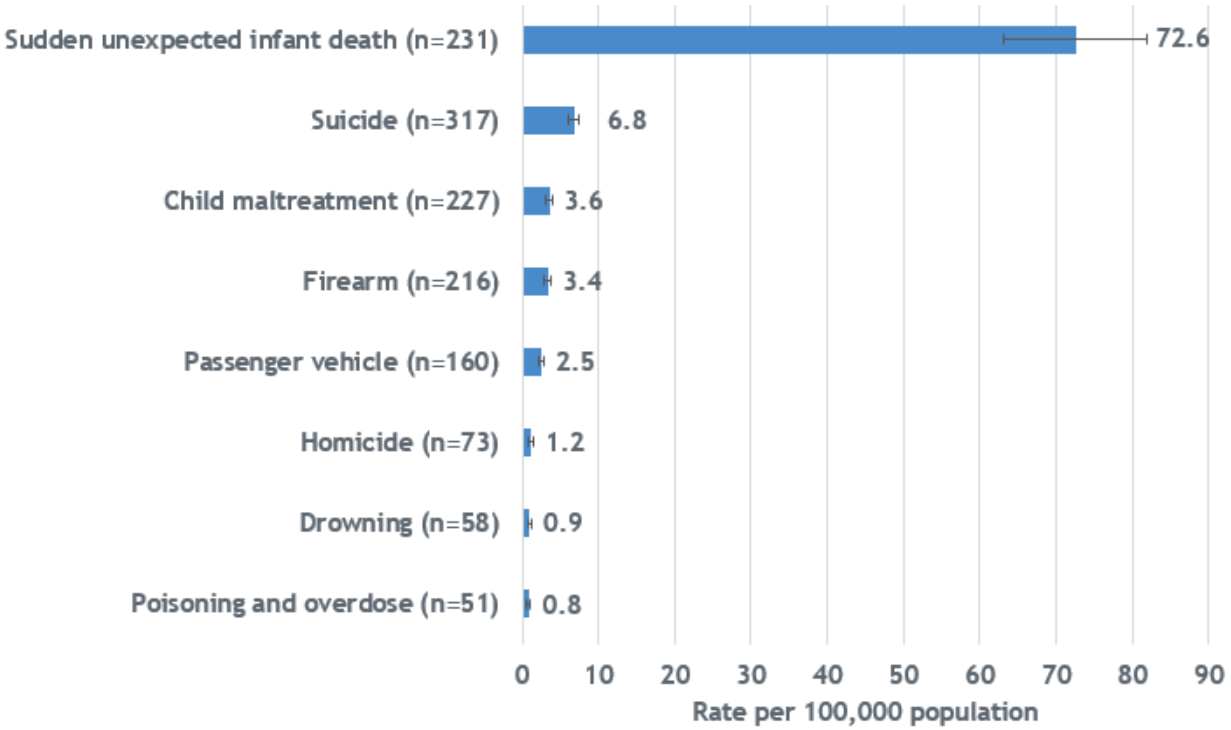


Figure 4 demonstrates the rates of death among Colorado residents for the leading causes of death identified by CFPS from 2016-2020. The highest rate of death was SUID, at 72.6 deaths per 100,000 live births in Colorado. This rate was more than ten times the rate of any other cause of death reviewed by CFPS. Suicide among children and youth ages 5-17 was the second highest rate at 6.8 deaths per 100,000 population, followed by child maltreatment at 3.6 per 100,000 population. These rates varied by age group. The rate of child maltreatment was highest among infants under age 1 (25.3 per 100,000 population, n=82) and the rate of suicide was highest among youth ages 15-17 (19.9 per 100,000 population, n=219).

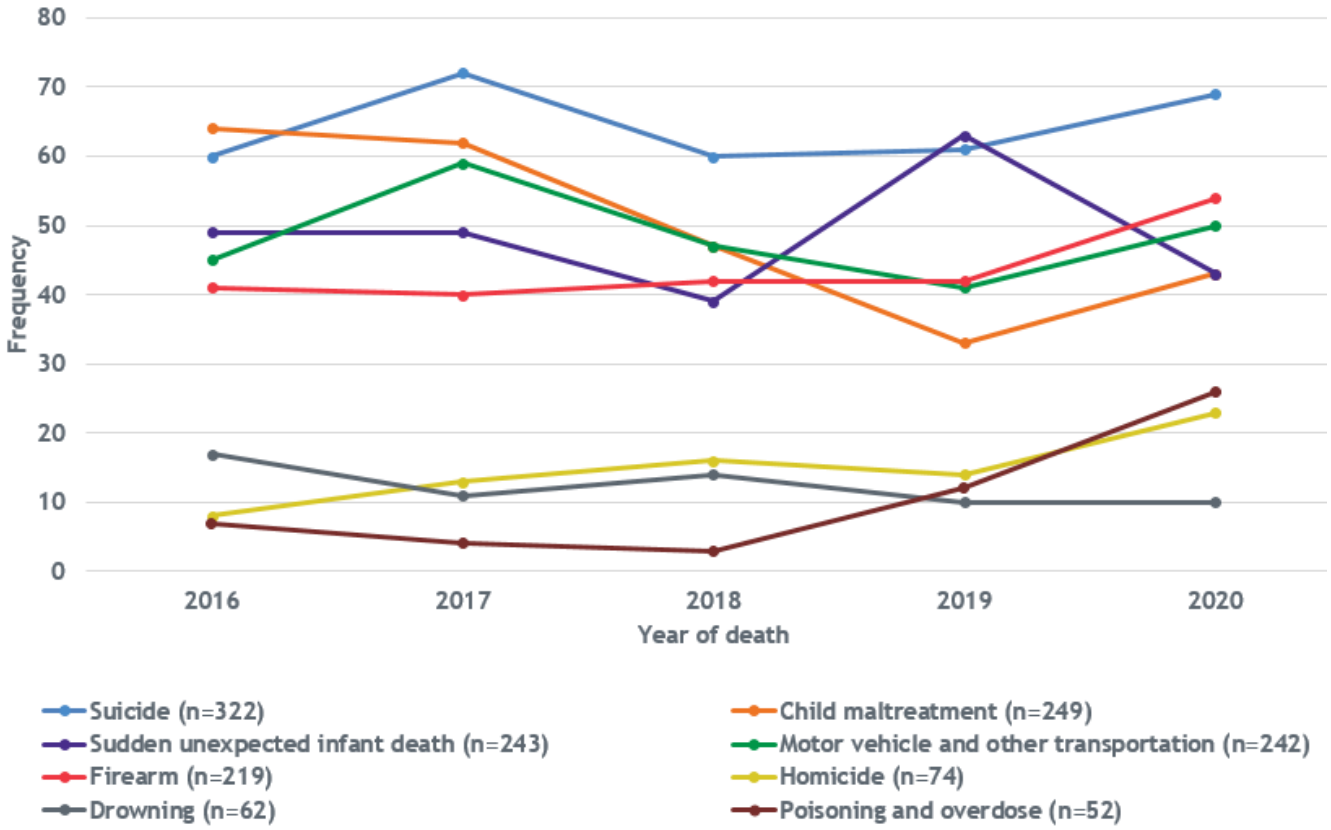
Figure 4. Rates of death occurring in Colorado among Colorado residents under age 18 and reviewed by CFPS, 2016-2020



*Error bars represent 95% confidence limits for rates.

Figure 5 shows the leading causes of death by year of death. All leading causes of death, with the exception of sudden unexpected infant death (SUID) and drowning, observed an increase between 2019 and 2020. CFPS will monitor these trends in coming years. More details about trends over time are available in cause-specific data briefs located at: www.cochildfatalityprevention.com/p/reports.html.

Figure 5. Leading causes of death occurring among those under age 18 in Colorado and reviewed by CFPS by year, 2016-2020 (n=1202)



Leading causes of death differ by age group. Table 1 displays the leading causes of death from 2016-2020 for deaths reviewed by CFPS occurring among those under age 18 in Colorado by age group.

Table 1. Leading causes of death occurring among those under age 18 in Colorado and reviewed by CFPS by age group, 2016-2020*

	n	Percent			n	Percent
All (n =1202)				**Ages 5 - 9 (n = 96)**		
Suicide	322	26.8		Motor vehicle and other transportation	42	43.8
Child maltreatment	249	20.7		Child maltreatment	36	37.5
Sudden unexpected infant death	243	20.2		Drowning	11	11.5
Motor vehicle and other transportation	242	20.1		Firearm	7	7.3
Firearm	219	18.2		Asphyxia	6	6.3
Age < 1 (n = 305)				**Ages 10 - 14 (n = 190)**		
Sudden unexpected infant death	243	79.7		Suicide	97	51.1
Child maltreatment	88	28.9		Firearm	50	26.3
Drowning	10	3.3		Motor vehicle and other transportation	45	23.7
Motor vehicle and other transportation	6	2.0		Child maltreatment	41	21.6
Other**	5	1.6		Homicide	9	4.7
Ages 1 - 4 (n = 134)				**Ages 15 - 17 (n=477)**		
Child maltreatment	54	40.3		Suicide	223	46.8
Motor vehicle and other transportation	30	22.4		Firearm	155	32.5
Drowning	21	15.7		Motor vehicle and other transportation	119	25.0
Asphyxia	9	6.7		Homicide	61	12.8
Firearm	7	5.2		Poisoning and overdose	39	8.2

Data Source: Child Fatality Prevention System, Colorado Department of Public Health and Environment.

*Cause of death categories are not mutually exclusive. Totals may sum beyond 100%.

**Most 'Other' deaths are due to other undetermined causes.

The impact of the COVID-19 pandemic on child deaths.
Due to the changes that the COVID-19 pandemic brought to communities, child death review teams were asked to consider how the pandemic may have been a factor in deaths occurring after March 1, 2020. Teams considered questions including:

- Was this death an indirect result of the outbreak?;
- Did mandated or voluntary closures (i.e., schools, places of business, community centers, courts, social services) affect the outcome of this case?; and
- Was risk increased in this case due to social isolation of the child or the caregiver(s)?

CFPS teams ultimately determined that the COVID-19 pandemic indirectly contributed to 19.6% (n=41) of deaths reviewed by CFPS that occurred between March 1, 2020 and December 31, 2020. When separated by cause of death, teams determined that COVID-19 indirectly contributed to 60.7% (n=34) of suicide deaths, 38.3% (n=18) of firearm deaths, and 15.8% (n=3) of homicide deaths. CFPS teams will continue to answer these questions about the impact of the pandemic on child deaths for cases reviewed in 2021 and beyond.

Conclusion

From 2016 to 2020, 40.0% of deaths occurring in Colorado among those under age 18 were due to injury and violence. That is nearly 5 deaths every week. Upstream prevention strategies that address social and structural inequities can reduce deaths among infants, children, and youth due to injury and violence. To learn more about the prevention strategies recommended by CFPS, view the 2022 Legislative Report (www.cochildfatalityprevention.com/p/reports.html).

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