# Colorado Department of Transportation
# 2021 Problem Identification Report

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## Report Prepared for:

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## This report is available electronically at:

https://www.colorado.gov/pacific/cdphe/motor-vehicle-safety

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# Report Highlights

Motor vehicle crashes are among the leading causes of death in Colorado. This annual report describes motor vehicle crash characteristics for crashes that occurred in Colorado to identify traffic safety issues to reduce the number and severity of traffic crashes. The Colorado Department of Transportation (CDOT), law enforcement agencies, local government agencies, nonprofit organizations, and health and prevention professionals utilize this document to develop strategies to improve traffic safety in Colorado. In the sections on the core performance measures, this report lists the top five counties with the highest counts and the effective countermeasures to improve performance.

- The total number of motor vehicle **fatalities** in Colorado fell for the second year in a row. There were 596 fatalities in 2019, a decrease of 6% from the previous year, and is the first time motor vehicle fatalities have been below 600 since 2015.

- **Speeding-related fatalities** increased 14% from 2018 and was a factor in 40% of all fatalities in 2019. There were 239 speeding-related motor vehicle fatalities in 2019 compared to 210 in 2018.

- Among the people who died in an occupant motor vehicle crash, 51% were not wearing a **seat belt.** There were 189 **unrestrained motor vehicle occupant fatalities** in 2019, a 13% decrease from 2018.

- **Alcohol-impaired drivers** were involved in 30% of all fatalities. In 2019, an estimated 164 motor vehicle deaths resulted from crashes involving an **alcohol-impaired driver**, a 15% decrease from 2018.

- In 2019, there were 103 **motorcyclist fatalities,** the same number as the previous year. More than half of the motorcyclists (52%) who died in 2019 were not wearing a helmet.

- The number of **fatalities per vehicle miles traveled (VMT)** in Colorado decreased 7% over the past year. Colorado's r fatality rate per 100 million VMT was slightly lower than the United States (1.09 and 1.10, respectively).

- Fatalities in **urban areas** and **rural areas** decreased in 2019 over the past year by 6% and 7%, respectively.

All core performance measures improved in 2019, compared to 2018, except serious injuries and speeding-related fatalities. This report on the core performance measures can inform continued efforts on countermeasures to improve performance measures or support increased efforts, given the increase in licensed drivers.

# Colorado Department of Transportation Problem ID Dashboard

Motor vehicle crash and fatality data for the state, county, and Regional Emergency Medical and Trauma Services Advisory Council region (RETAC) are available on the Problem Identification Motor Vehicle Dashboard. This motor vehicle data dashboard displays the same type of information as the county factsheets previously released publicly with the statewide problem identification report and can be accessed here. This statewide narrative report complements the dashboard by providing more narrative information on motor vehicle crashes and fatalities across Colorado.

**COLORADO**
**Department of Transportation**

### 2021 Colorado Motor Vehicle Problem Identification Dashboard

The purpose of this motor vehicle safety dashboard is to provide a description of motor vehicle crashes within the state of Colorado.

This information is used by the Colorado Department of Transportation along with law enforcement, local agencies, nonprofit organizations, and public health and prevention professionals to identify traffic safety problems and target areas for the development of prevention programs.

Data can be queried at the state level, county level (where crash occurred), and Regional Emergency Medical and Trauma Services Advisory Council (RETAC) regional level (where crash occurred). A Map of RETAC regions can be accessed here: https://cdphe.colorado.gov/emergency-care/engage-with-us/councils-boards-and-task-forces/regional-emergency-medical-and-trauma

The first dashboard displays data and statistics for the State of Colorado.

The second dashboard displays data and statistics for a specific county you choose from the dropdown filter. Some of the charts and tables also show Colorado's data for comparative purposes.

The third dashboard displays data and statistics for a specific RETAC that you choose from the dropdown filter. Some of the charts and tables also show Colorado's data for comparative purposes.

**COLORADO**
**Department of Public Health & Environment**

# Motor Vehicle Crashes and Fatalities Overview

Table 1 presents an overview of motor vehicle crashes across Colorado, including core performance measures for 2015-2019. One-year and five-year percent changes for each measure appear in the last two columns. Green font indicates *improvement,* and red font indicates *undesired change*. The ↑ symbol indicates a percent increase in the number, rate, or percent. The ↓ symbol indicates a percent decrease in the number, rate, or percent.  See the last two pages of this report for the core performance measures of each county.

| Table 1. Colorado traffic information and crash outcomes at a glance, 2015-2019 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2015 | 2016 | 2017 | 2018 | 2019 | 1-year % Δ | 5-year %Δ |
| Total crashes (*n*) | 120,723 | 121,149 | 119,373 | 122,504 | 121,648 | ↓ -0.7% | ↑ 0.8% |
| Colorado population (millions) | 5.46 | 5.54 | 5.60 | 5.70 | 5.76 | ↑ 1.1% | ↑ 5.5% |
| Licensed drivers (millions) | 3.90 | 3.89 | 3.90 | 4.00 | 4.03 | ↑ 0.8% | ↑ 3.3% |
| Seat belt use (%) | 85.2 | 84 | 83.8 | 86.3 | 88.3 | ↑ 2.3% | ↑ 3.6% |
| **Core Performance Measures:** | | | | | | | |
| Fatalities (*n*) | 547 | 608 | 648 | 632 | 596 | ↓ -5.7% | ↑ 9.0% |
| Serious injuries (*n*) | 3,216 | 2,956 | 2,884 | 3,112 | 3,190 | ↑ 2.5% | ↓ -0.8% |
| Fatalities (*n*/100 million vehicle miles traveled) | 1.08 | 1.15 | 1.21 | 1.17 | 1.09 | ↓ -6.8% | ↑ 0.9% |
| Motor vehicle occupant fatalities, unrestrained all seat positions (*n*) | 188 | 186 | 222 | 216 | 189 | ↓ -12.5% | ↑ 0.5% |
| Fatalities in crashes where driver/motorcycle operator has blood alcohol content ≥0.08[+] (*n*) | 151 | 163 | 177 | 192 | 164 | ↓ -14.6% | ↑ 8.6% |
| Speeding-related fatalities (*n*) | 217 | 211 | 230 | 210 | 239 | ↑ 13.8% | ↑ 10.1% |
| Motorcyclist fatalities (*n*) | 106 | 125 | 103 | 103 | 103 | 0.0% | ↓ -2.8% |
| Unhelmeted motorcyclist fatalities (*n*) | 67 | 82 | 72 | 58 | 54 | ↓ -6.9% | ↓ -19.4% |
| Driver 15-20  years old in fatal crashes (*n*) | 67 | 59 | 91 | 81 | 76 | ↓ -6.2% | ↑ 13.4% |
| Pedestrian fatalities (*n*) | 59 | 79 | 92 | 89 | 73 | ↓ -18.0% | ↑ 23.7% |
| Bicyclist fatalities (*n*) | 13 | 16 | 16 | 22 | 20 | ↓ -9.1% | ↑ 53.8% |
| Driver 65+ years old in fatal crashes (*n*) | 100 | 131 | 125 | 129 | 116 | ↓ -10.1% | ↑ 16.0% |
| Distracted drivers involved in a fatal crash | 62 | 67 | 67 | 53 | 35 | ↓ -34.0% | ↓ -43.5% |
| Fatalities involving driver/motorcycle operator testing positive for drugs | 56 | 68 | 93 | 84 | 78 | ↓ -7.1% | ↑ 39.3% |

*Data sources: Traffic crash reports, Colorado Department of Revenue, Division of Motor Vehicles; Fatality Analysis Reporting System (FARS), National Highway Traffic Safety Administration (NHTSA)*
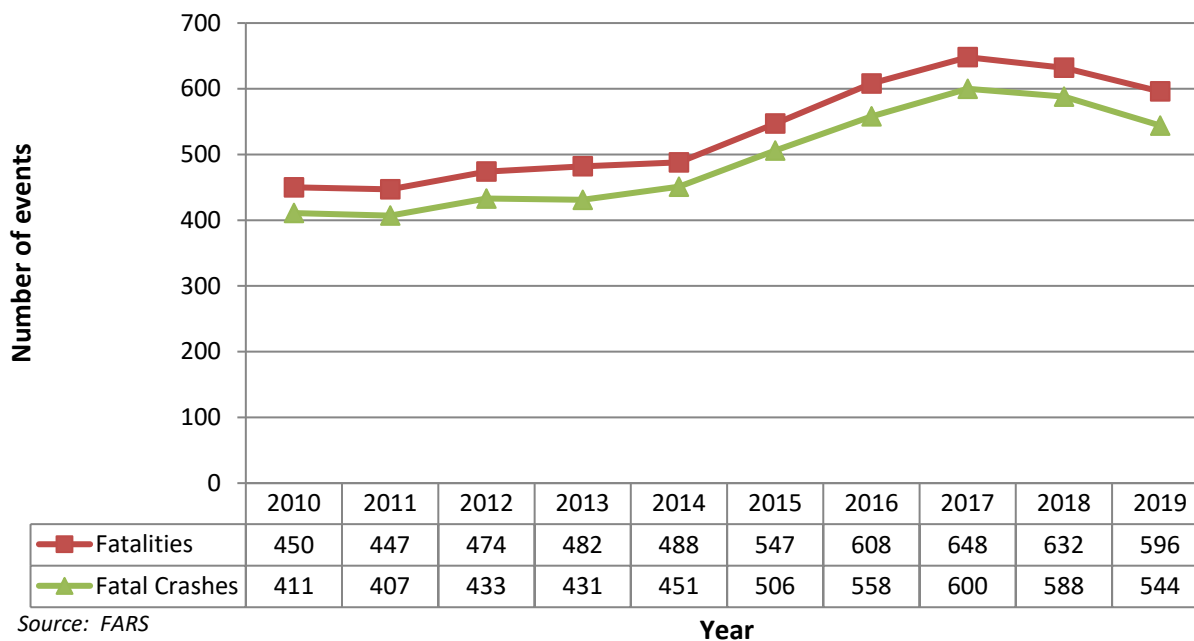
# Fatal Crashes and Fatalities

## Core Performance Measure (C-1): Reduce the number of traffic fatalities.

This section of the report gives an overview of fatalities from motor vehicle crashes in Colorado over time, including demographics and other characteristics. Figure 1 shows the number of fatal crashes and fatalities in Colorado from 2010-2019. Both 2018 and 2019 had decreases in fatalities and fatal crashes after a six-year upward trend from 2011-2017. Between 2018 and 2019, the number of fatal motor vehicle traffic crashes in Colorado decreased by 7.5%, and the number of traffic fatalities decreased by 5.7%. The decrease in fatalities and fatal crashes also occurred across the nation between 2018 and 2019. There was a two percent decrease in both traffic fatalities and fatal crashes nationwide. Specifically, there were 36,835 traffic deaths in the United States in 2018 and 36,096 in 2019. There were 33,919 fatal crashes in 2018 and 33,244 fatal crashes in 2019 .[1] In 2019, 495 (91.0%) of the total 544 fatal crashes in Colorado resulted in one death in each crash; 47 (8.6%) crashes resulted in two deaths per crash; and one crash each (0.2%) resulted in three or four deaths in the crash. As a result, the number of fatalities was greater than the number of fatal crashes.

**Figure 1: Fatal motor vehicle crashes and fatalities in Colorado, 2010-2019**



| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|
| Fatalities | 450 | 447 | 474 | 482 | 488 | 547 | 608 | 648 | 632 | 596 |
| Fatal Crashes | 411 | 407 | 433 | 431 | 451 | 506 | 558 | 600 | 588 | 544 |

*Source: FARS*

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[1] https://www.nhtsa.gov/press-releases/roadway-fatalities-2019-fars  Last accessed February, 2021

Colorado's motor vehicle fatality rate decreased in both 2018 and 2019 after several years of increases. In 2019, 10.3 people per 100,000 Colorado residents died from a motor vehicle crash compared with 11.1 people per 100,000 Colorado residents in 2018. With the exception of the year 2017, the motor vehicle fatality rate in Colorado has been lower than the national average over the past ten years (Figure 2).

**Figure 2: Motor vehicle fatality rate per 100,000 population in Colorado and the United States, 2010-2019**



| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|
| CO Fatality Rate | 8.9 | 8.7 | 9.1 | 9.2 | 9.1 | 10.0 | 11.0 | 11.6 | 11.1 | 10.3 |
| US Fatality Rate | 10.7 | 10.4 | 10.7 | 10.4 | 10.4 | 11.1 | 11.6 | 11.4 | 11.3 | 11.0 |
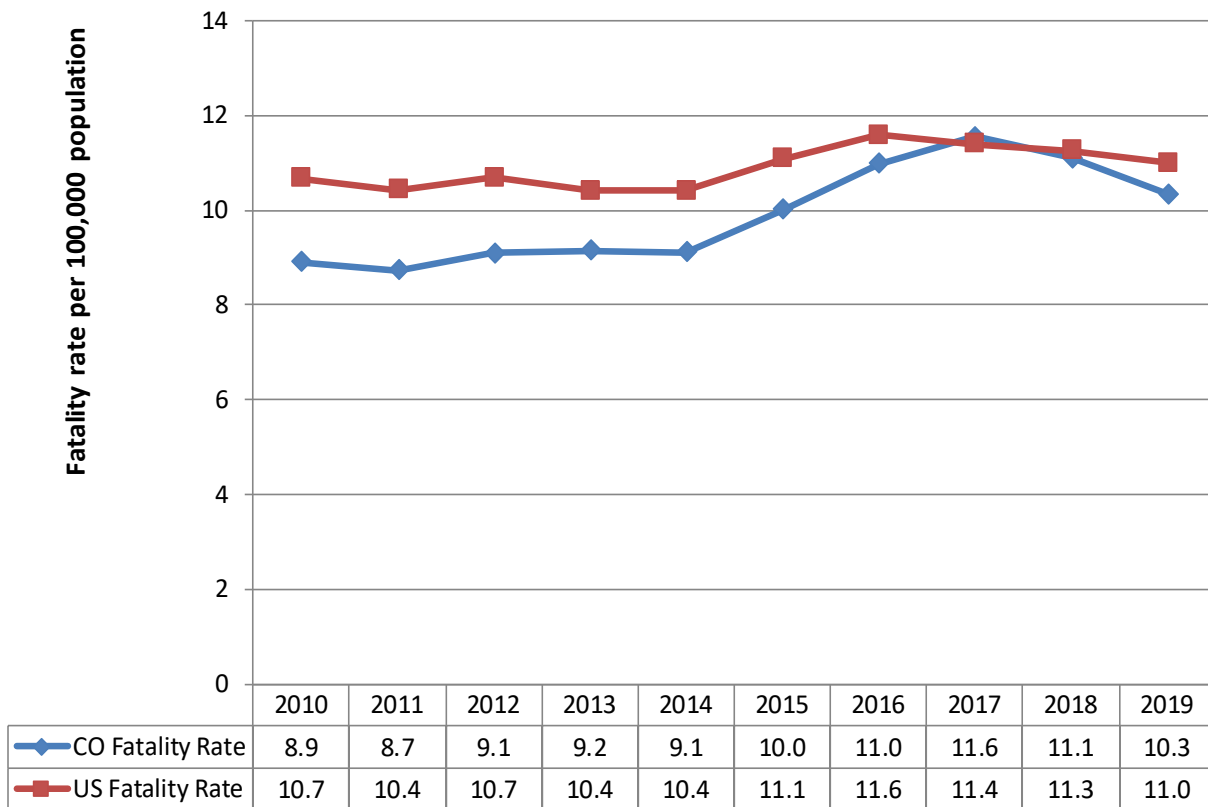
*Source: FARS, DOLA and US Census Bureau*

Figure 3 displays the age and sex of the people who died due to a motor vehicle crash in 2019. The 21-34 age group had the highest number of fatalities in 2019; this represents a shift from the prior year, in which the highest number of fatalities were in the 35-54 age group (data not shown). More males died in motor vehicle crashes than females during 2019 in every age category except youth ages 9-14, where an equal number of males and females died. Table 2 shows the fatality rate by age and sex. The fatality rate also shows males ages 21-34 had the highest death rate among all sex and age groups. Among all age groups combined, males had three times the rate of deaths from motor vehicle crashes than females.

**Figure 3. Number of Individuals Fatally Injured in Motor Vehicle Crashes by Age Group and Sex, 2019**
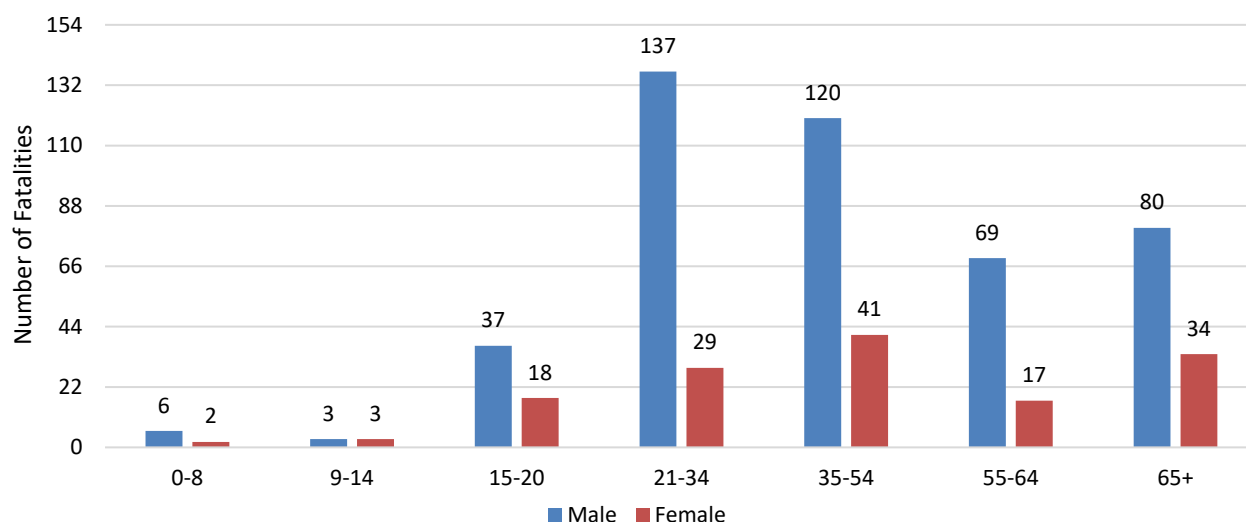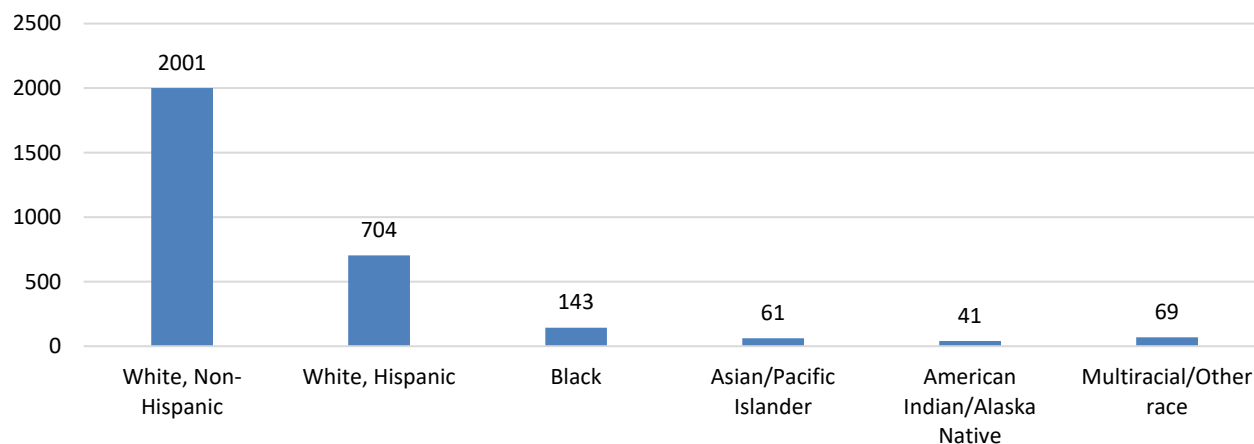


*Source: FARS*

| Table 2. Rate of Fatalities per 100,000 population due to motor vehicle crashes in 2019 in Colorado, by age and sex | | | |
|---|---|---|---|
| *Age Group* | *Male* | *Female* | *Rate for age group\** |
| 0-8 | 2.0 | 0.7 | **1.3** |
| 9-14 | 1.3 | 1.4 | **1.4** |
| 15-20 | 15.5 | 8.1 | **11.9** |
| 21-34 | 22.1 | 5.0 | **13.8** |
| 35-54 | 15.8 | 5.5 | **10.7** |
| 55-64 | 19.7 | 4.6 | **12.0** |
| 65+ | 20.7 | 7.4 | **13.5** |
| **All Ages** | 15.7 | 5.0 | **10.3** |

*Source: FARS*

Not only were there differences in motor vehicle fatalities by age and sex, but there were also differences in motor vehicle fatalities among races and ethnicities. Figure 4 displays the aggregate number of fatalities by race and ethnicity from 2015 to 2019, due to the small counts in some of the race and ethnicity categories. White, non-Hispanic individuals had the highest number of motor vehicle fatalities; however, when factoring in population size of racial and ethnic groups living in Colorado, White, non-Hispanic individuals had a lower rate of motor vehicle deaths compared to White Hispanic, Black, and American Indian/Alaska Native individuals (Table 3). Differences in fatality rates for race/ethnicity groups could reflect external differences in geography, access to emergency medical care, access to safe transportation methods and transportation options other than motor vehicles, the built environment, road use design, weather patterns, and cultural factors.

**Figure 4. Motor Vehicle Fatalities by Race/Ethnicity, 2015-2019**



*Source: FARS*

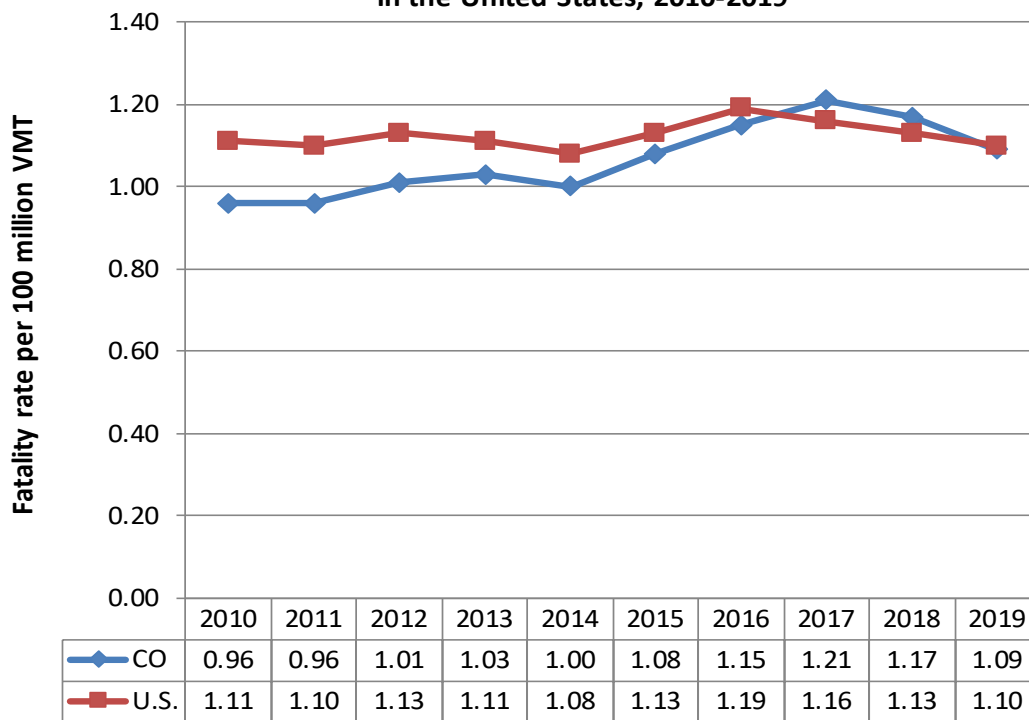| Table 3. Five-year Average Rate of Fatalities per 100,000 population due to motor vehicle crashes by race and ethnicity, Colorado, 2015-2019 | |
|---|---|
| **Race/Ethnicity** | *Rate* |
| White, Non-Hispanic | **10.5** |
| White, Hispanic | **15.7** |
| Black | **12.2** |
| American Indian/Alaska Native | **15.0** |
| Asian/Pacific Islander | **6.5** |
| All other races* | **3.3** |
| **All races and ethnicities** | **10.8** |

*\* Contains other races, including persons who identify with more than one race*
*Source: FARS and US Census Bureau*

# Core Performance Measure (C-3): Reduce the number of fatalities per Vehicle Miles Traveled (VMT)

Dividing the number of motor vehicle fatalities by the number of vehicle miles traveled (VMT) takes into account changes in the population, fuel prices, driving habits, and distances driven. Fatalities per 100 million VMT can be compared over time and between different geographic areas. Figure 5 shows the rate of fatalities per 100 million VMT for Colorado and the United States. Colorado's fatality rate declined in 2018 and again in 2019 after three years of increases. Colorado's fatality rate was higher than the average fatality rate in the United States in 2017 and 2018 but was lower in 2019 (see Figure 5).
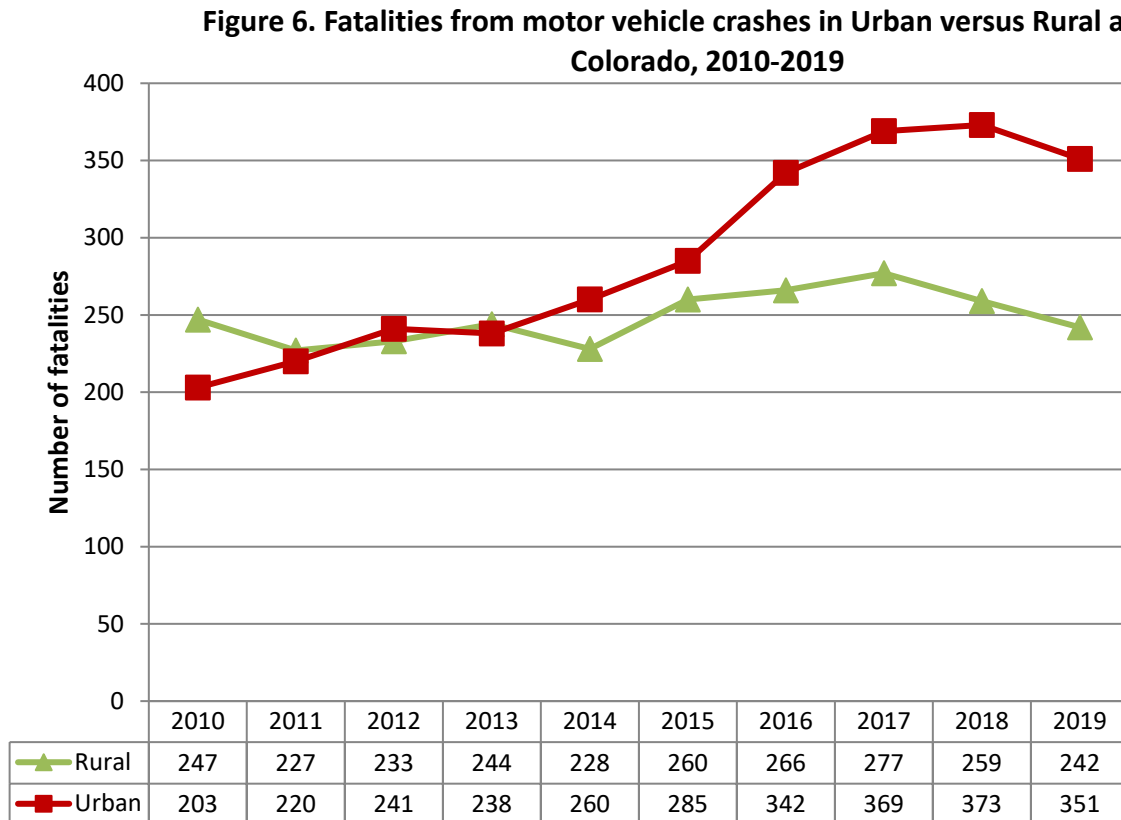
**Figure 5: Fatalities per 100 million vehicle miles traveled (VMT) in Colorado and in the United States, 2010-2019**



| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|
| CO | 0.96 | 0.96 | 1.01 | 1.03 | 1.00 | 1.08 | 1.15 | 1.21 | 1.17 | 1.09 |
| U.S. | 1.11 | 1.10 | 1.13 | 1.11 | 1.08 | 1.13 | 1.19 | 1.16 | 1.13 | 1.10 |

*Source: FARS and USDOT FHWA*

# Urban versus Rural Fatalities

Figure 6 displays the number of motor vehicle fatalities that occurred in urban or rural roadways. The Colorado Department of Transportation defines which roadways are urban or rural in Colorado, and the Federal Highway Administration approves the definitions. While motor vehicle fatalities occurring on rural roadways have remained relatively constant over the last decade, fatalities occurring on urban roadways increased 72.9% between 2010 and 2019.

**Figure 6. Fatalities from motor vehicle crashes in Urban versus Rural areas in Colorado, 2010-2019**

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|
| Rural | 247 | 227 | 233 | 244 | 228 | 260 | 266 | 277 | 259 | 242 |
| Urban | 203 | 220 | 241 | 238 | 260 | 285 | 342 | 369 | 373 | 351 |

*Source: FARS*

# Serious Injuries from Traffic Crashes

## Core Performance Measure (C-2): Reduce the number of serious injuries in traffic crashes

The number of serious injuries resulting from traffic crashes has remained steady over the past five years (Figure 7). In this report, serious injury is defined as "evident incapacitating" on the crash report by the responding law enforcement officer. An incapacitating injury is a type of injury that prevents the person from walking, driving, or continuing the normal activities previously capable of performing prior to being injured.

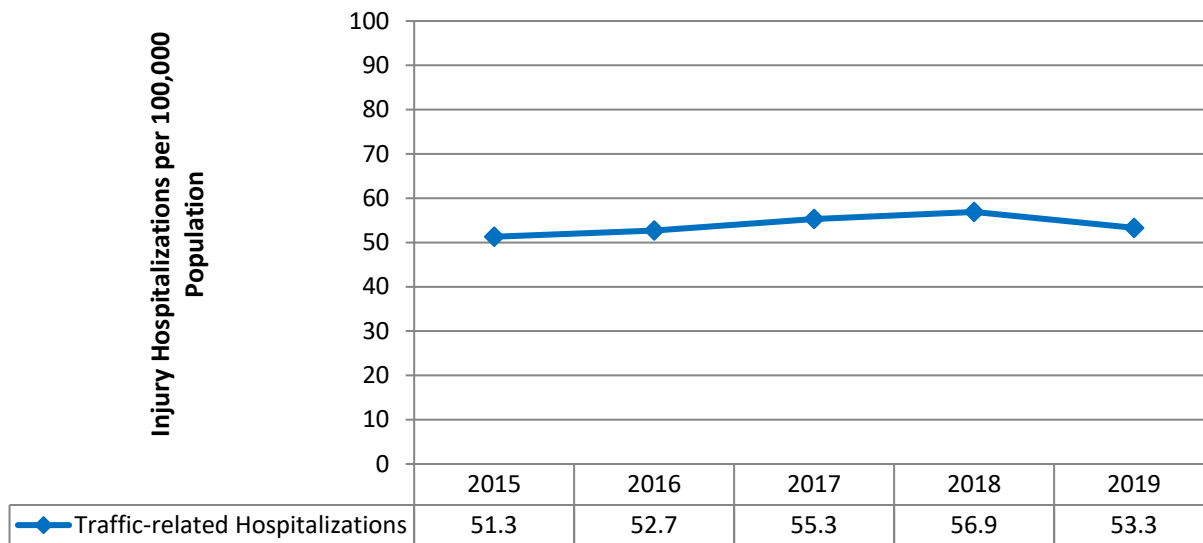**Figure 7: Serious injuries from traffic crashes in Colorado, 2015-2019**

| | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Serious Injuries | 3,202 | 2,959 | 2,881 | 3,205 | 3,190 |
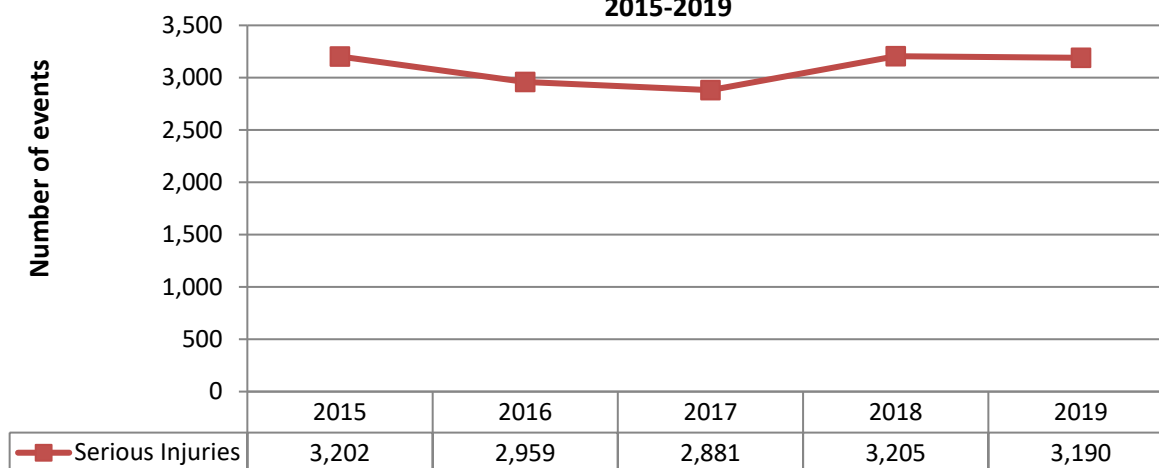
*Source: Crash Reports, DOR*

# Injury Hospitalizations

The age-adjusted rate of hospitalizations for Colorado residents injured in motor vehicle crashes increased by 3.9% from 2015 to 2019 (Figure 8); however, the hospitalization rate decreased 6.3% from 2018 to 2019. The motor vehicle crashes occurred in traffic or on public roadways, and the hospitalizations occurred in non-federal, acute care hospitals in Colorado.

**Figure 8.**
**Motor vehicle injury hospitalization rates over five years among Colorado residents, 2015-2019**

| | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Traffic-related Hospitalizations | 51.3 | 52.7 | 55.3 | 56.9 | 53.3 |

Y-axis: Injury Hospitalizations per 100,000 Population

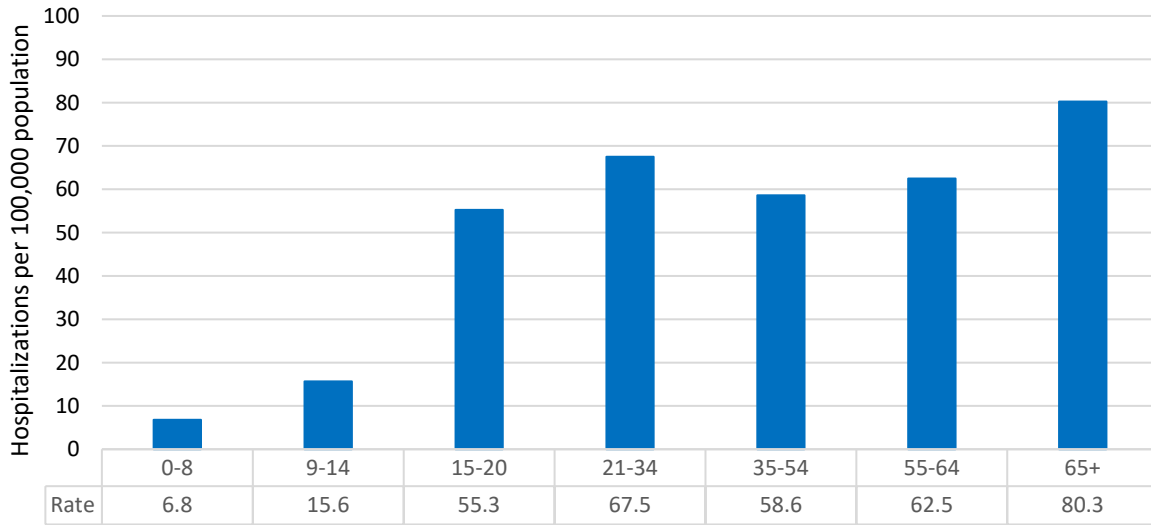*Source: Colorado Hospital Association, Hospital Discharge*
*Note: View the rates with caution. Nationally and in Colorado, the coding of hospitalizations changed beginning October 1, 2015.
2015 was calculated using the last quarter of 2014 and the first three quarters of 2015 in order to use the same coding system. For the years 2016 to 2018, the rates were being calculated using the new coding of hospitalizations.

In 2019, there were 3,128 hospitalizations among Colorado residents injured from motor vehicle crashes in traffic or on public roads (Figure 9). The age-specific hospitalization rate for Colorado residents sustaining injuries in motor vehicle crashes varied by age group. Adults aged 65 years and older had the highest hospitalization rates related to motor vehicle injuries.

**Figure 9. Motor vehicle injury hospitalizations among Colorado residents by age group, 2019**

| | 0-8 | 9-14 | 15-20 | 21-34 | 35-54 | 55-64 | 65+ |
|---|---|---|---|---|---|---|---|
| Rate | 6.8 | 15.6 | 55.3 | 67.5 | 58.6 | 62.5 | 80.3 |

*Source: Colorado Hospital Association, Hospital Discharge*

Figure 10 shows the number of individuals hospitalized from motor vehicle crashes in Colorado during 2019, including the number of males and females within each age group. The 21-34 and 35-54 year age groups had the highest numbers of people hospitalized from motor vehicle crashes. Males accounted for almost two-thirds of those hospitalized from crashes during 2019.

**Figure 10. Number of Individuals Hospitalized from Motor Vehicle Crashes by age group and sex, 2019**
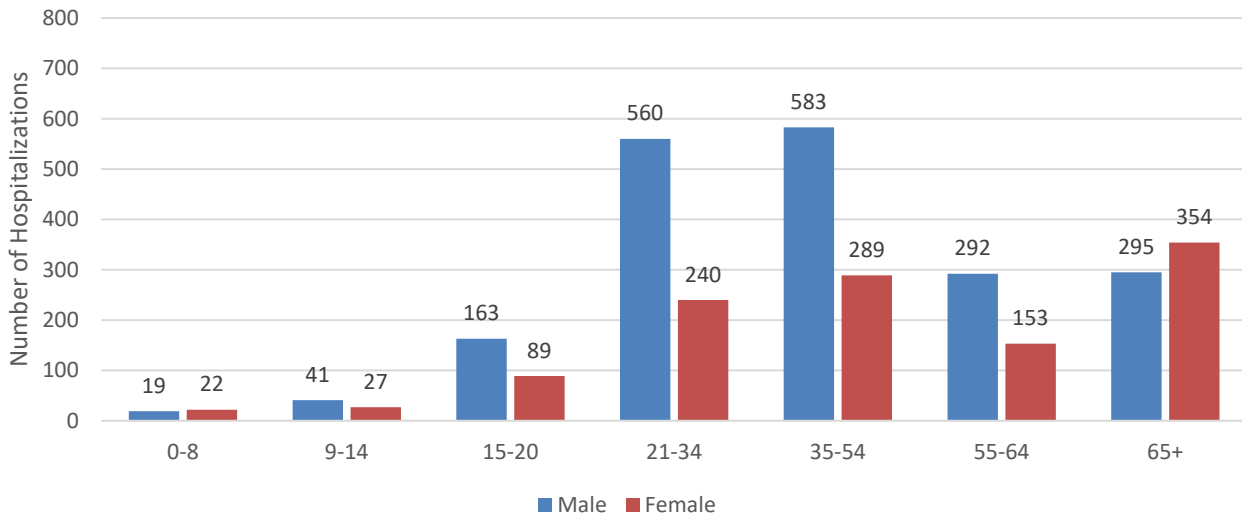
*Source: Colorado Hospital Association, Hospital Discharge*

Table 4 shows the hospitalization rate per 100,000 population by age group and sex. The 65 and older age group had the highest hospitalization rate. Males aged 55-64 had the highest hospitalizations rate from motor vehicle crashes for every 100,000 persons, compared to the other age and sex groups.

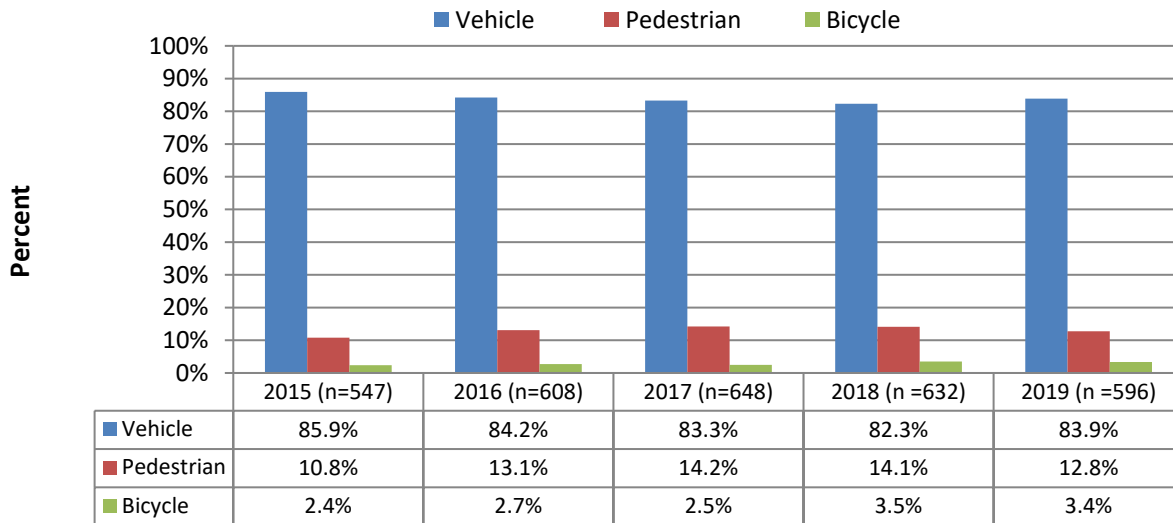| Table 4. Crude rate of hospitalizations per 100,000 population due to motor vehicle crashes in 2019 in Colorado, by age and sex | | | |
|---|---|---|---|
| Age Group | Male | Female | Crude Rate for age group |
| 0-8 | 6.2 | 6.5 | 6.3 |
| 9-14 | 12.9 | 12.2 | 12.6 |
| 15-20 | 71.6 | 51.4 | 61.9 |
| 21-34 | 90.8 | 47.6 | 69.9 |
| 35-54 | 82.7 | 43.0 | 63.0 |
| 55-64 | 92.4 | 47.5 | 69.4 |
| 65+ | 87.7 | 73.3 | 79.9 |
| All Ages | 71.8 | 43.9 | 57.9 |

*Source: Colorado Hospital Association, Hospital Discharge data*

# Mode of Transportation

Individuals driving or riding motorized vehicles made up an average of 84% of the motor vehicle-related fatalities in Colorado between 2015 and 2019 (Figure 11). Pedestrians accounted for 13% of fatalities in motor vehicle crashes, while bicyclists averaged 3% over the five years. The percentage of pedestrian fatalities declined in 2019, after increasing over the prior four years.
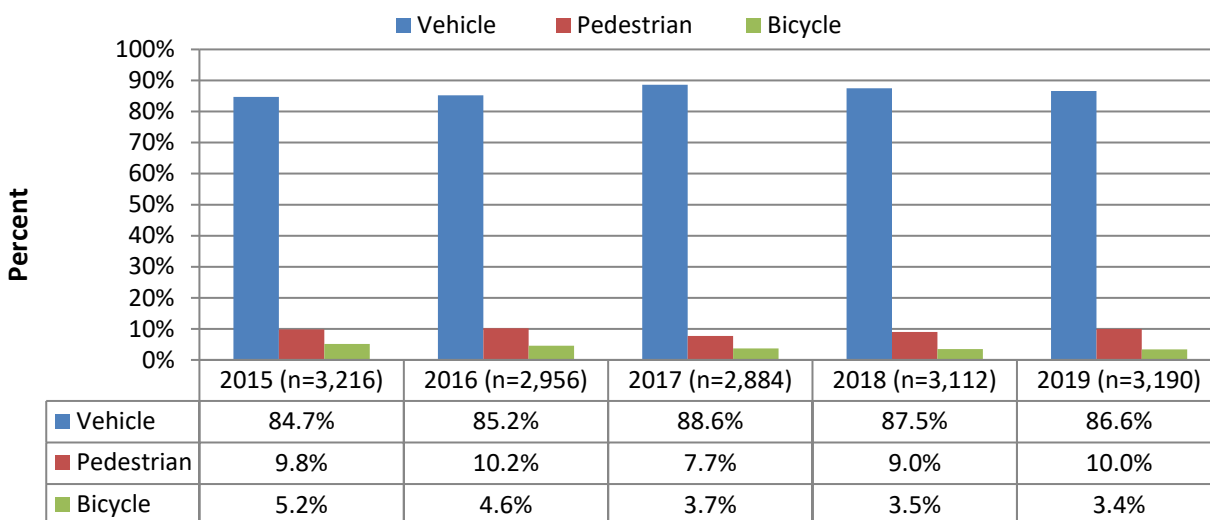
**Figure 11: Motor vehicle fatalities by mode of transportation in Colorado, 2015-2019**



| | 2015 (n=547) | 2016 (n=608) | 2017 (n=648) | 2018 (n =632) | 2019 (n =596) |
|---|---|---|---|---|---|
| Vehicle | 85.9% | 84.2% | 83.3% | 82.3% | 83.9% |
| Pedestrian | 10.8% | 13.1% | 14.2% | 14.1% | 12.8% |
| Bicycle | 2.4% | 2.7% | 2.5% | 3.5% | 3.4% |

*Source: FARS*

Figure 12 displays the mode of transportation among persons seriously injured from a motor vehicle crash. Most people seriously injured from a motor vehicle crash were riding in a vehicle (86%), pedestrians comprised approximately 10%, and bicyclists ranged from three to five percent over the past five years.

**Figure 12: Motor vehicle serious injuries by mode of transportation, Colorado, 2015-2019**



| | 2015 (n=3,216) | 2016 (n=2,956) | 2017 (n=2,884) | 2018 (n=3,112) | 2019 (n=3,190) |
|---|---|---|---|---|---|
| Vehicle | 84.7% | 85.2% | 88.6% | 87.5% | 86.6% |
| Pedestrian | 9.8% | 10.2% | 7.7% | 9.0% | 10.0% |
| Bicycle | 5.2% | 4.6% | 3.7% | 3.5% | 3.4% |

*Source: Crash reports, DOR*

As shown in Figure 11 and Figure 12, persons riding motorized vehicles comprised the majority of motor vehicle-related fatalities and serious injuries. A motorized vehicle can be a car/van, motorcycle, pickup truck, SUV, other vehicle type, or unknown vehicle type (such as can occur in a hit-and-run crash). Other vehicle types include a large truck, motor home, bus, or these vehicle types when used on a public road: all-terrain vehicle, snowmobile, and farm or construction equipment.  Figure 13 below shows the type of motor vehicle individuals were using when fatally injured. Among the fatally injured, over a third (36%) of the individuals fatally injured were riding in a car/van, 19% were in a SUV, 19% were in a pickup truck, and 21% were riding a motorcycle. Of those who were seriously injured, 40% were riding in a car/van, 25% were in an SUV, and 19% riding a motorcycle (Figure 14).

**Figure 13: Type of motor vehicle individuals were riding in when fatally injured, Colorado, 2019**
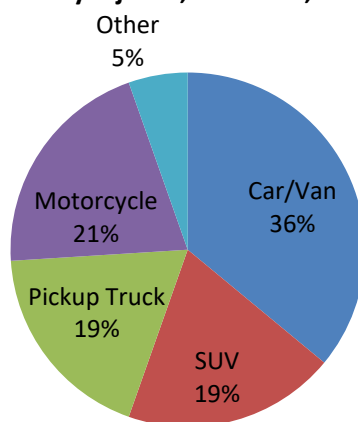


*Source:  FARS*

**Figure 14: Type of motor vehicle individuals were riding in when seriously injured, Colorado, 2019**
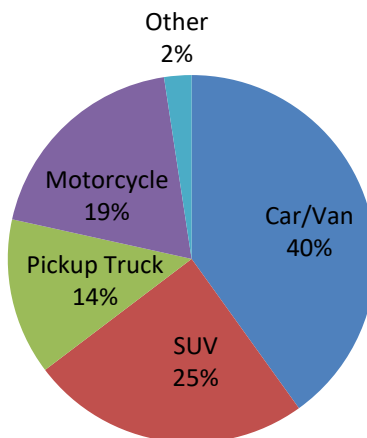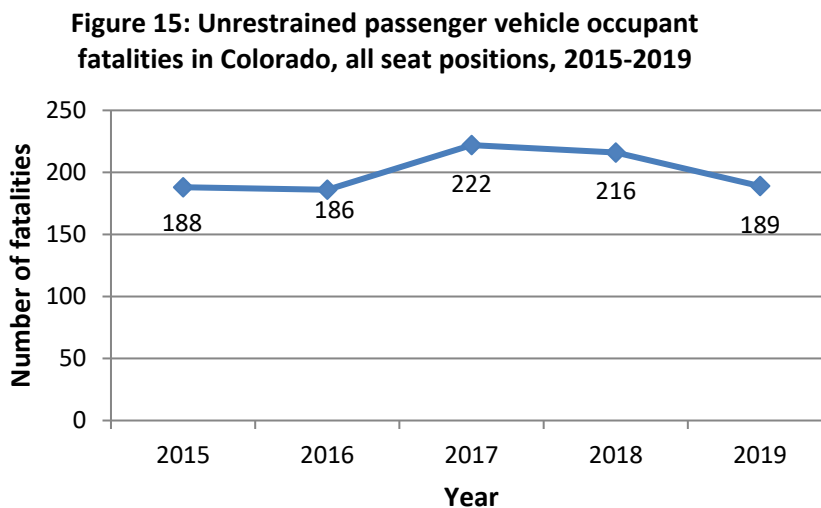


*Source:  Crash reports, DOR*

# Occupant Protection

**Core Performance Measure (C-4): Reduce the number of unrestrained passenger vehicle occupant fatalities, all seat positions.**

In 2019, there were 189 unrestrained passenger vehicle occupant fatalities, a 13% decrease from 2018 (Figure 15). After rising sharply from 2016 to 2017, unrestrained passenger fatalities have declined to a similar number as 2015 and 2016. In 2019, these 189 fatalities of unrestrained occupants represented 51% of the 370 passenger vehicle occupant fatalities (Table 5).

**Figure 15: Unrestrained passenger vehicle occupant fatalities in Colorado, all seat positions, 2015-2019**



*Source:  FARS*



**Countermeasures that Work**
Increase seat belt use:

**Targeting Adults:**
Seat Belt Use Laws
- State primary enforcement seat belt use laws
- Local primary enforcement seat belt use laws
- Increased seat belt use law penalties

Seat Belt Law Enforcement
- Short term high-visibility belt law enforcement
- Integrated nighttime seat belt enforcement
- Sustained enforcement

Communications & Outreach
- Supporting enforcement
- Strategies for low-belt-use groups

**Targeting Youth:**
Child/Youth Occupant Restraint Laws
- Strengthening child/youth occupant restraint laws

Child Restraint/Booster Seat Belt Law Enforcement
- Short term high-visibility CR law enforcement

Communications & Outreach
- Strategies for older children
- Strategies for child restraint and booster seat use

https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/812478_v5_countermeasures-that-work-a-highway-safety-countermeasures-guide-9thedition-2017.pdf

*Listed have a 3-5 star effectiveness rating. For all countermeasures, visit*

Table 5 shows the number of unrestrained fatalities in Colorado by age and sex for 2018 and 2019. Of 370 total fatalities among motor vehicle occupants in 2019, 189 occupants (51.1%) were unrestrained. The number and percentage of unrestrained fatalities were slightly lower in 2019 than in 2018. For both 2018 and 2019, of total occupant fatalities in motor vehicle crashes, the 15-20 age group had the highest percentage of occupants who were unrestrained. In 2019, for all ages combined, more than twice as many males were unrestrained than females.

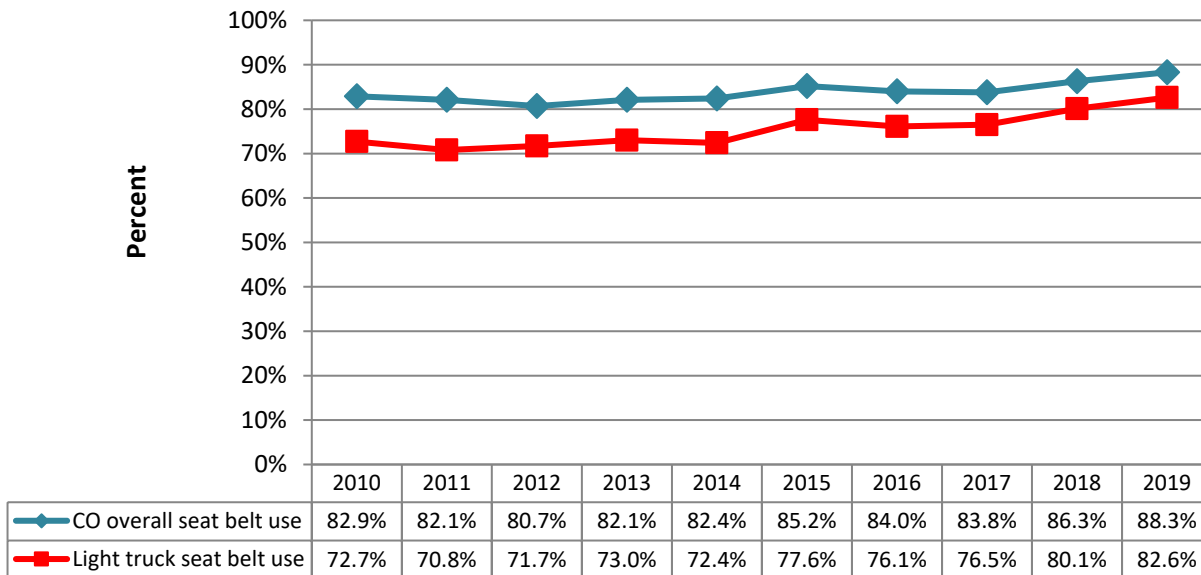| Table 5. Unrestrained motor vehicle occupant fatalities by age and sex, Colorado, 2018 & 2019 | | | |
|---|---|---|---|
| Age Group | Sex | 2018 | 2019 |
| 0-4 | Male | 0 | 0 |
| | Female | 1 | 1 |
| | **Total** | **1/9 (11.1%)** | **1/4 (25.0%)** |
| 5-8 | Male | 3 | 0 |
| | Female | 2 | 0 |
| | **Total** | **5/9 (55.6%)** | **0/2 (0.0%)** |
| 9-14 | Male | 0 | 1 |
| | Female | 2 | 1 |
| | **Total** | **2/5 (40.0%)** | **2/3 (66.7%)** |
| 15-20 | Male | 19 | 26 |
| | Female | 12 | 13 |
| | **Total** | **31/45 (68.9%)** | **39/50 (78.0%)** |
| 21-34 | Male | 42 | 48 |
| | Female | 27 | 15 |
| | **Total** | **69/108(63.9%)** | **63/103 (61.2%)** |
| 35-54 | Male | 44 | 23 |
| | Female | 18 | 11 |
| | **Total** | **62/99 (62.6%)** | **34/80 (42.5%)** |
| 55-64 | Male | 17 | 16 |
| | Female | 7 | 6 |
| | **Total** | **21/41 (51.1%)** | **22/49 (44.9%)** |
| 65+ | Male | 14 | 18 |
| | Female | 8 | 10 |
| | **Total** | **26/78 (27.5%)** | **28/79 (35.4%)** |
| All Ages | Male | 139 | 132 |
| | Female | 77 | 57 |
| | **%crashes** | **216/402 (53.7%)** | **189/370 (51.1%)** |

*Source: FARS*

# Seat Belt Compliance

## Behavioral Performance Measure (B-1):
## Increase the observed seat belt use for passenger vehicles.

Increasing seat belt use is a major initiative of the Office of Transportation Safety (OTS). Each year, OTS funds an observational survey of occupant protection use statewide. Figure 16 shows the steady increase in seat belt use from 2010-2019. In 2019, Colorado's seat belt use rate was 88% which remained lower than the national rate of 90%.

**Figure 16. Statewide overall and light truck seat belt use in Colorado, 2010-2019**



| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|
| CO overall seat belt use | 82.9% | 82.1% | 80.7% | 82.1% | 82.4% | 85.2% | 84.0% | 83.8% | 86.3% | 88.3% |
| Light truck seat belt use | 72.7% | 70.8% | 71.7% | 73.0% | 72.4% | 77.6% | 76.1% | 76.5% | 80.1% | 82.6% |

*Source: Atelior, Division of Transportation in partnership with Colorado Department of Transportation*

Historically, fewer occupants in light trucks wear seat belts compared to occupants in other passenger vehicles. In 2010, 73% of light truck occupants wore seat belts. Over the past 10 years, this increased to 83%. Despite this improvement, seat belt use among light truck occupants was still lower than other motor vehicle occupants (88% overall seat belt use).

# Impaired Driving

**Core Performance Measure (C-5): Reduce the number of fatalities in crashes involving a driver or motorcycle operator with Blood Alcohol Content (BAC) of ≥0.08.**

Information regarding driving while impaired in Colorado is complex. In fatal crashes, the standard procedure is to test the person who died for alcohol and/or drugs. The law requires an arrested driver to take a chemical test of their breath or blood if the law enforcement officer has probable cause to believe that the driver's impairment is from alcohol or another impairing substance. Drivers who refuse to comply with testing face consequences to their driving privileges. Despite the best efforts of law enforcement, some crash records lack driver's BAC test results. To remedy missing test results on BAC, the National Highway Traffic Safety Administration (NHTSA) uses methods to impute missing BAC values for drivers involved in a crash where a fatality occurred. Imputation is a process of replacing missing data with a probable value based on other available data. The alcohol-related performance measure in Figure 17 is NHTSA's imputed measure. The number of fatalities involving an alcohol-impaired driver increased each year from 2015 to 2018 but decreased 15% in the past year.

**Figure 17: Fatalities in Colorado motor vehicle crashes involving a driver or motorcycle operator with a BAC ≥ 0.08, 2015-2019**
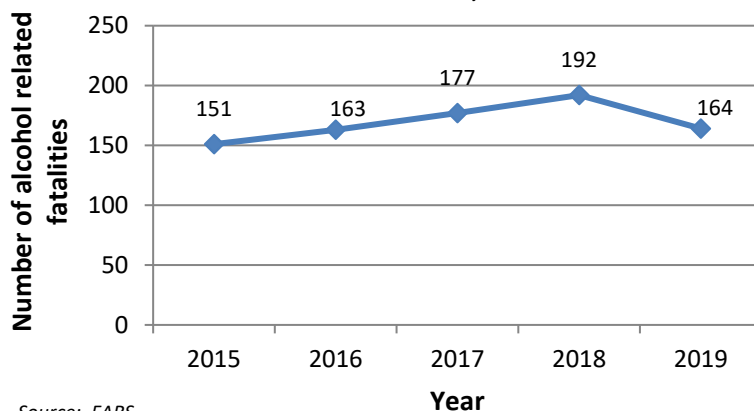


Source: FARS

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**C-5 Top Counties**
Denver – 16 fatalities
Adams & Arapahoe– 14 fatalities
El Paso -13 fatalities
Boulder, Larimer, and Weld – 7 fatalities

**Countermeasures that Work**
To reduce alcohol- and drug-impaired driving:

Deterrence
1) Laws
- Administrative license revocation/suspension
- Open container
- High-BAC sanctions
- BAC test refusal penalties
- Alcohol-impaired driving law review

2) Enforcement
- Publicized sobriety checkpoints
- High visibility saturation patrols
- Preliminary breath test devices
- Passive alcohol sensors
- Integrated enforcement

3) Prosecution and Adjudication
- DWI Courts
- Limits on diversion and plea agreements
- Court monitoring

4) DWI offender treatment, monitoring, control
- Alcohol problem assessment, treatment
- Alcohol ignition interlocks
- Vehicle and license plate sanctions
- DWI offender monitoring
- Lower BAC limit for repeat offenders

Prevention, intervention, communications & outreach
- Alcohol screening and brief intervention
- Mass-media campaigns

Underage drinking & alcohol-impaired driving
- Minimum drinking age 21 laws
- Zero-tolerance law enforcement
- Alcohol vendor compliance checks
- Other minimum legal drinking age 21 law enforcement

Drugged Driving
- Enforcement of drug-impaired driving

*Listed have a 3-5 star effectiveness rating. For all countermeasures, visit*
*https://www.nhtsa.gov/sites/nhtsa.dot.gov/*

A blood alcohol content (BAC) of 0.08 grams of alcohol per deciliter of blood increases crash risk exponentially and therefore is the state and federal standard for legal intoxication. It is important to look at the drivers who were involved in a fatal crash, not just the person who was fatally injured, to help inform prevention efforts. Table 6 shows the number of drivers with a blood alcohol content greater than or equal to 0.08 involved in a fatal crash in 2018 and 2019. Males aged 21-34 had the highest number of drivers with a BAC at or above legal intoxication involved in a fatal crash. During 2019, there were 865 drivers involved in a fatal crash in Colorado, 14% of whom were intoxicated. The percentage of alcohol-intoxicated drivers involved in a fatal crash decreased from 16% in 2018 to 14% in 2019.

| Table 6: Drivers with a blood alcohol content ≥ 0.08 in fatal crashes in Colorado, by impaired driver age and sex | | | |
|---|---|---|---|
| **Age Group** | **Sex** | **2018** | **2019** |
| **Driver** | | | |
| 15-20 | Male | 7 | 6 |
| | Female | 2 | 4 |
| | **Total** | **9/81 (11.1%)** | **10/76 (13.2%)** |
| 21-34 | Male | 57 | 50 |
| | Female | 14 | 14 |
| | **Total** | **71/266 (26.7%)** | **64/288 (22.2%)** |
| 35-54 | Male | 45 | 31 |
| | Female | 8 | 6 |
| | **Total** | **53/285 (18.6%)** | **37/263 (14.1%)** |
| 55-64 | Male | 4 | 10 |
| | Female | 3 | 1 |
| | **Total** | **7/111 (6.3%)** | **11/108 (10.2%)** |
| 65+ | Male | 3 | 1 |
| | Female | 0 | 1 |
| | **Total** | **3/129 (2.3%)** | **2/116 (1.7%)** |
| **All Ages** | Male | 116 | 98 |
| | Female | 27 | 26 |
| | **%crashes** | **143/890 (16.1%)** | **124/865 (14.3%)** |

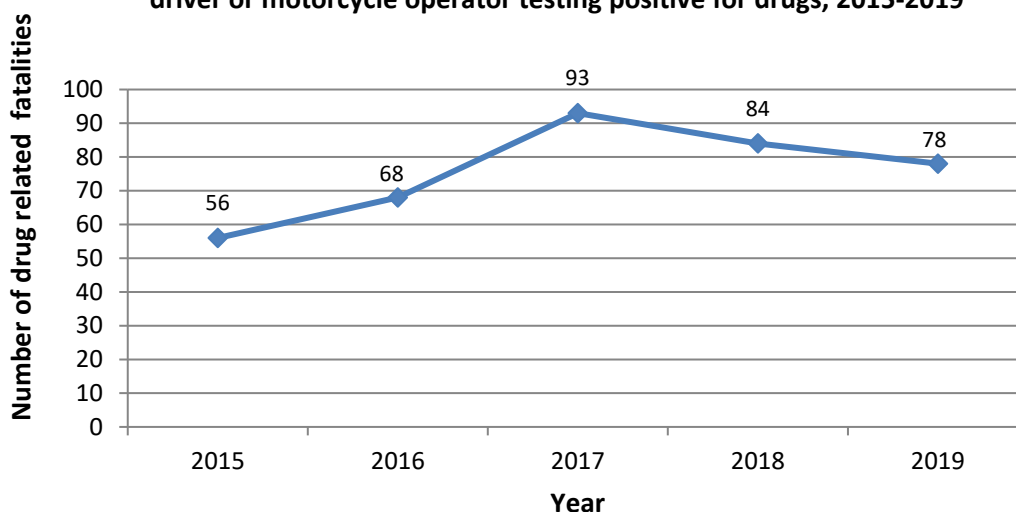*Source: FARS*
*Totals include drivers of unknown age*

**Core Performance Measure (C-14): Reduce the number of drivers or motorcycle operators involved in fatal crashes testing positive for drugs.**

| C-14 Top Five Counties |
| --- |
| Weld – 14 fatalities |
| Jefferson – 9 fatalities |
| Denver – 8 fatalities |
| Pueblo – 7 fatalities |
| Adams – 6 fatalities |

Prescription drugs, over-the-counter drugs, and illegal drugs can affect a person's ability to drive. Taking legal drugs or illegal drugs, alone or in combination with alcohol, can cause impairment. An impaired driver puts the driver, passengers, and other road users at risk. [2] Figure 18 shows the trend of motor vehicle fatalities involving a driver under the influence of drugs. After a three-year increase, the number of fatalities involving a driver under the influence of drugs decreased in 2018, and continued to decrease in 2019.

**Figure 18: Fatalities in Colorado motor vehicle crashes involving a driver or motorcycle operator testing positive for drugs, 2015-2019**



*Source: FARS*



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[2] Berning, A., Compton, R., & Wochinger, K. (2015, February). Results of the 2013–2014 National Roadside Survey of alcohol and drug use by drivers. (Traffic Safety Facts Research Note. Report No. DOT HS 812 118). Washington, DC: National Highway Traffic Safety Administration.

Table 7 describes drivers who tested positive for drugs and were involved in fatal motor vehicle crashes in 2018 and 2019. The percentage of drivers involved in fatal crashes who were impaired by drugs remained relatively the same from 2018 to 2019. Males in the 15-20 age group had the highest number of drug-impaired drivers in both years.

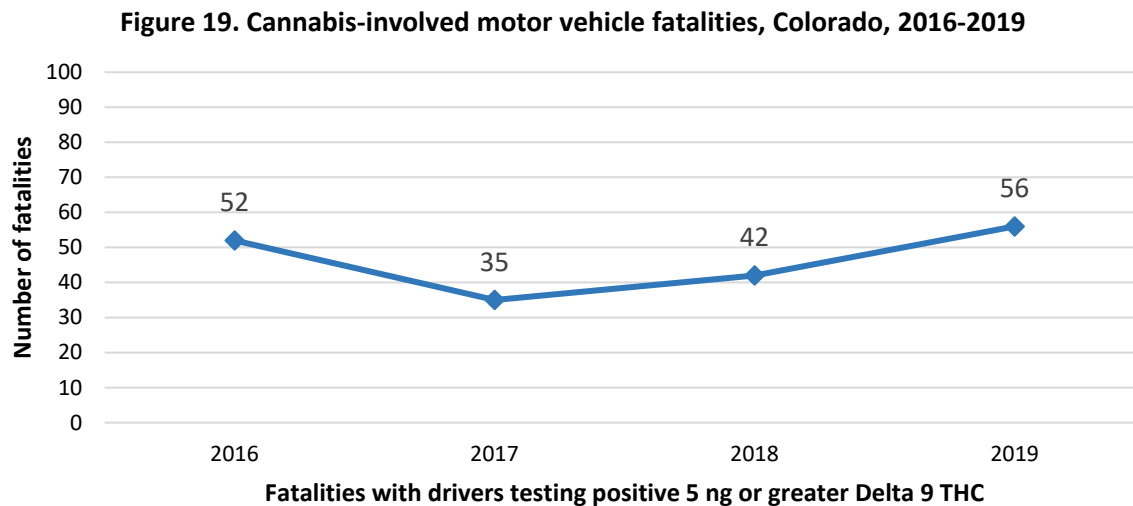| Table 7: Drivers testing positive for drugs in fatal crashes in Colorado, by impaired driver age and sex | | | |
|---|---|---|---|
| Age Group | Sex | 2018 | 2019 |
| Driver | | | |
| 15-20 | Male | 10 | 13 |
| | Female | 3 | 2 |
| | Total | 13/81 (16.0%) | 15/76 (19.7%) |
| 21-34 | Male | 25 | 32 |
| | Female | 10 | 6 |
| | Total | 35/266 (13.2%) | 38/288 (13.2%) |
| 35-54 | Male | 22 | 20 |
| | Female | 10 | 6 |
| | Total | 32/285 (11.2%) | 26/263 (9.9%) |
| 55-64 | Male | 15 | 5 |
| | Female | 1 | 5 |
| | Total | 16/111 (14.4%) | 10/108 (9.3%) |
| 65+ | Male | 3 | 8 |
| | Female | 2 | 0 |
| | Total | 5/129 (3.9%) | 8/116 (6.9%) |
| All Ages | Male | 75 | 78 |
| | Female | 26 | 19 |
| | %crashes | 101/890 (11.3%) | 97/865 (11.2%) |

*Source: FARS*
*Totals include drivers of unknown age*

# Marijuana Impaired Driving

Like alcohol, marijuana has measurable physiological effects that may impair the ability of a person to drive and react quickly in critical situations.[3, 4] National Highway Traffic Safety Administration (NHTSA) studies have shown marijuana impairs crucial abilities needed to drive safely.[5] Impairments include:

- Slowed reaction time
- Difficulties in road tracking and lane-position variability (inability to stay in the driving lane).
- Decreased divided attention
- Impaired cognitive performance
- Impaired executive functions, including route planning, decision-making and risk-taking or a combination

Colorado law allows the prosecution of drivers that show signs of impairment from marijuana. Five nanograms of active tetrahydrocannabinol (THC) in their blood creates a permissible inference that the driver is under the influence of cannabis. However, there is no roadside device in Colorado to detect THC, so law enforcement officers, including those trained as drug recognition experts (DREs), base arrests on observed impairment. Under Colorado law, officers can arrest someone who uses marijuana for medicinal purposes for driving under the influence (DUI) if an officer observes impairment. Figure 19 displays the number of fatalities from motor vehicle crashes where the driver tested positive with five nanograms or higher of Delta 9 THC (the active component in marijuana). Prior to 2016, data collection on Delta 9 was not complete. Fatalities from a cannabis-involved driver increased 33% from 2018 to 2019.

**Figure 19. Cannabis-involved motor vehicle fatalities, Colorado, 2016-2019**



Number of fatalities: 2016: 52, 2017: 35, 2018: 42, 2019: 56

Fatalities with drivers testing positive 5 ng or greater Delta 9 THC

*Source: Toxicology results, Colorado Department of Transportation*
1. Data includes fatalities where alcohol or other drugs may also be present.
2. In Colorado, there is a "permissible inference" that a person is under the influence of a) cannabis - if their blood contains 5 nanograms or more of Delta 9-THC per milliliter in whole blood or b) alcohol - if their blood contains .08 grams or more of alcohol per 100 grams in the whole blood.

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[3] National Academies of Sciences, Engineering, and Medicine. 2017. *The health effects of cannabis and cannabinoids: Current state of evidence and recommendations for research.* Washington, DC: The National Academies Press.

[4] Monitoring Health Concerns Related to Marijuana in Colorado: 2018 Summary. Colorado Department of Public Health and Environment.

[5] Compton, R. (2017, July). Marijuana-Impaired Driving - A Report to Congress. (DOT HS 812 440). Washington, DC: National Highway Traffic Safety Administration.
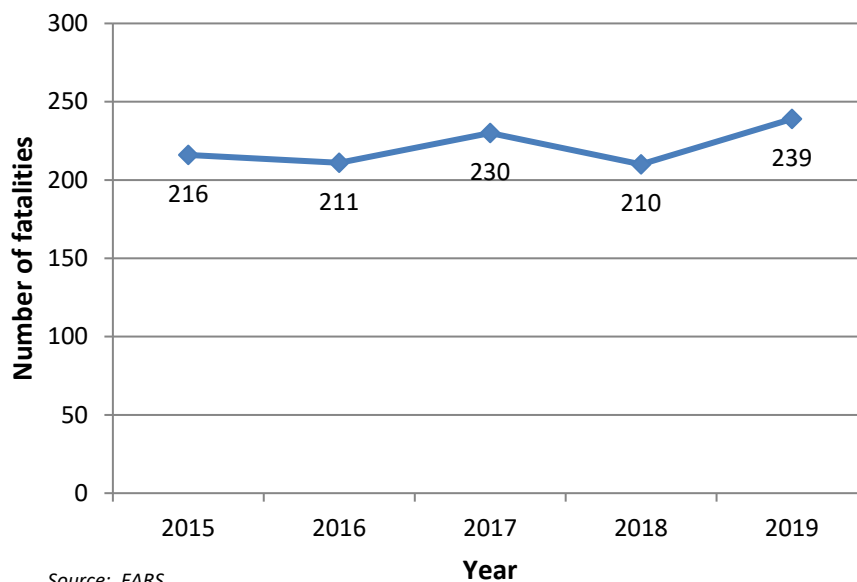
# Speed Enforcement

## Core Performance Measure (C-6): Reduce the number of speeding related fatalities.

Speeding-related motor vehicle fatalities increased by 13.8% between 2018 and 2019 (Figure 20). Speeding contributed to 40% of all fatalities in 2019.

**Figure 20: Speeding Related Fatalities in Colorado, 2015-2019**



Source: FARS

**Countermeasures that Work**
Reduce aggressive driving & speeding:

Laws
- Speed Limits

Enforcement
- Automated enforcement

Communications & Outreach
- Public information supporting enforcement

*Listed have a 3-5 star effectiveness rating. For all countermeasures, visit* https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/812478_v5_countermeasures-that-work-a-highway-safety-countermeasures-guide-9thedition-2017.pdf

Table 8 describes drivers who were cited to be speeding or exceeding the safe or posted speed in crashes in which a fatality occurred in 2018 and 2019. Law enforcement officers indicated that speeding was the driver action, or specific law violation, among 22% of all drivers in a fatal crash in 2019, compared with 21% in 2018. The pattern by age and sex was similar for 2018 and 2019. Males ages 21-34 had the highest number of drivers speeding among the total number of drivers in crashes involving fatalities in 2018 and 2019. This age group represented the greatest percentage of speeding drivers in fatal crashes in both years.

| Table 8: Drivers who were speeding in fatal crashes in Colorado, by driver age and sex | | | |
|---|---|---|---|
| **Age Group** | **Sex** | **2018** | **2019** |
| **Driver** | | | |
| 15-20 | Male | 21 | 21 |
| | Female | 2 | 1 |
| | **Total** | **23/81 (28.4%)** | **22/76 (28.9%)** |
| 21-34 | Male | 65 | 86 |
| | Female | 13 | 6 |
| | **Total** | **78/290 (29.3%)** | **92/288 (31.9%)** |
| 35-54 | Male | 47 | 46 |
| | Female | 8 | 5 |
| | **Total** | **55/285 (19.3%)** | **51/263 (19.4%)** |
| 55-64 | Male | 15 | 17 |
| | Female | 2 | 0 |
| | **Total** | **17/111 (15.3%)** | **17/108 (15.7%)** |
| 65+ | Male | 13 | 12 |
| | Female | 3 | 0 |
| | **Total** | **16/129 (12.4%)** | **12/116 (10.3%)** |
| **All Ages** | Male | 161 | 182 |
| | Female | 28 | 12 |
| | **%crashes** | **189/890 (21.2%)** | **194/865 (22.4%)** |

*Source: FARS*

*Totals include drivers of unknown age*

# Motorcycle Safety

## Core Performance Measure (C-7): Reduce the number of motorcyclist fatalities.

Motorcyclist fatalities decreased by three percent from 2015 to 2019; however, the number of motorcyclist fatalities remained the same for the past three years at 103 fatalities (Figure 21). The number of unhelmeted motorcyclists decreased for the fourth straight year from 82 in 2016 to 54 in 2019 but still represented 52% of all motorcyclist fatalities. While motorcycle registrations represented only three percent of all vehicle registrations in 2019, motorcyclist fatalities accounted for 17% of the total motor vehicle fatalities.

**Figure 21: Motorcyclist fatalities in Colorado, 2015-2019**



| | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Unhelmeted | 67 | 82 | 72 | 58 | 54 |
| Total | 106 | 125 | 103 | 103 | 103 |
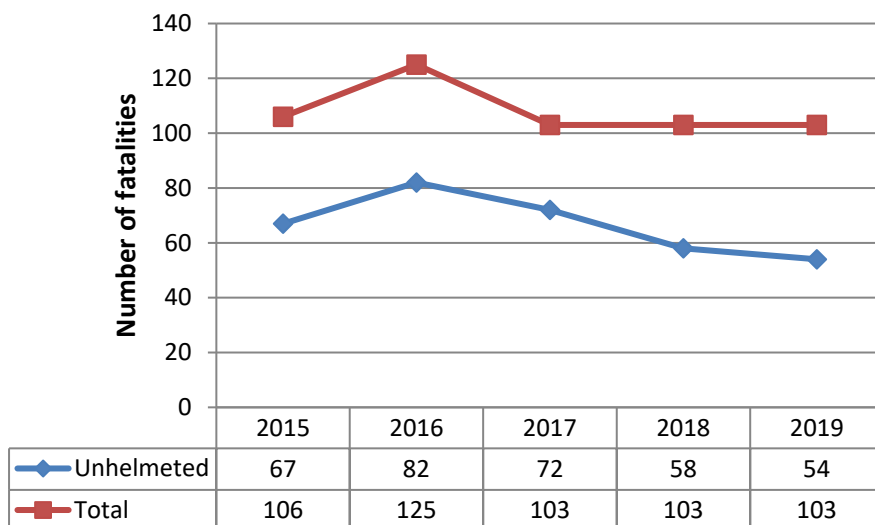
*Source: FARS*

**Countermeasures that Work**
Improve motorcycle safety:

Motorcycle Helmets
- Universal coverage state motorcycle helmet use laws

Alcohol Impairment
- Alcohol-impaired motorcyclists: detection, enforcement, & sanctions

*Listed have a 3-5 star effectiveness rating. For all countermeasures, visit* https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/812478_v5_countermeasures-that-work-a-highway-safety-countermeasures-guide-9thedition-2017.pdf

# Core Performance Measure (C-8): Reduce the number of unhelmeted motorcyclist fatalities.

There were 103 motorcyclist fatalities in 2018 and 2019.In 2019, 52% of the motorcyclists who died were not wearing helmets, compared to 56% in 2018 (Figure 21).

Table 9 shows the number of motorcyclists (operators and/or passengers) who died in a motorcycle crash by age, sex, and

| C-8 Top Five Counties |
|:---:|
| El Paso – 11 fatalities |
| Jefferson – 7 fatalities |
| Denver – 6 fatalities |
| Adams, Larimer, Weld – 5 fatalities |

helmet status in 2018 and 2019. In 2019, most motorcyclist fatalities were male (91 of 103 riders). Of these fatalities, 48 (52%) did not wear a helmet; this represents a slight decrease from the 55% of male motorcyclists in 2018 who were not wearing a helmet at the time of their crash. The 35-54 age group had the most motorcyclist fatalities and the largest percentage (70%) of unhelmeted motorcyclist fatalities in 2019.

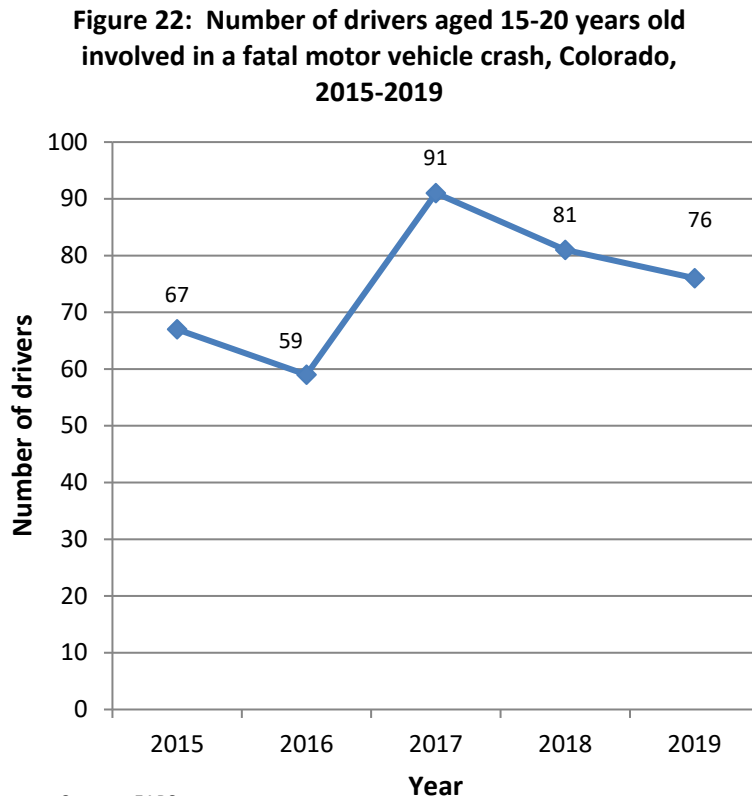| Table 9: Motorcyclist fatalities and serious injuries in Colorado, by age and sex | | | | | |
|---|---|---|---|---|---|
| | | **2018** | | **2019** | |
| | | **Motorcyclist Fatalities** | | **Motorcyclist Fatalities** | |
| **Age group** | **Sex** | **No Helmet** | **Total** | **No Helmet** | **Total** |
| 15-20 | Male | 0 | 4 | 1 | 0 |
| | Female | 0 | 0 | 1 | 1 |
| | **Total** | **0/4 (0.0%)** | **4** | **2/1 (00.0%)** | **1** |
| 21-34 | Male | 15 | 29 | 13 | 30 |
| | Female | 1 | 1 | 1 | 3 |
| | **Total** | **16/30 (53.3%)** | **30** | **14/33 (42.4%)** | **33** |
| 35-54 | Male | 26 | 35 | 24 | 34 |
| | Female | 4 | 5 | 4 | 6 |
| | **Total** | **30/40(75.0%)** | **40** | **28/40 (70.0%)** | **40** |
| 55-64 | Male | 8 | 13 | 8 | 16 |
| | Female | 1 | 3 | 0 | 1 |
| | **Total** | **9/16 (56.3%)** | **16** | **8/17 (47.1%)** | **17** |
| 65+ | Male | 3 | 13 | 2 | 9 |
| | Female | 0 | 0 | 0 | 1 |
| | **Total** | **3/16 (18.8%)** | **13** | **2/10 (20.0%)** | **10** |
| **All Ages** | Male | 52 | 94 | 48 | 91 |
| | Female | 6 | 9 | 6 | 12 |
| | **Total** | **58/103 (56.3%)** | **103** | **54/103 (52.4%)** | **103** |

*Source: FARS*

*Note: Motorcyclists include riders and passengers*

# Young Drivers

## Core Performance Measure (C-9): Reduce the number of drivers age 20 or younger involved in fatal crashes.

The number of drivers ages 15-20 involved in a fatal motor vehicle crash increased from 2015 to 2017 but decreased in 2018 and again in 2019. Overall, the number of young drivers who died increased 13% from 2015 to 2019 (Figure 22). The population of persons aged 15 to 20 in Colorado increased only four percent during the same time frame, indicating that population alone did not drive the increase in young drivers involved in a fatal crash.



**Figure 22: Number of drivers aged 15-20 years old involved in a fatal motor vehicle crash, Colorado, 2015-2019**

*Source: FARS*

**Countermeasures that Work**
Improve young-driver safety:

Graduated Driver Licensing (GDL)
- Graduated driver licensing
- Learner's permit length, supervised hours
- Intermediate-nighttime restrictions
- Intermediate- passenger restrictions

Traffic Law Enforcement
- Enforcement of GDL & zero-tolerance laws

*Listed have a 3-5 star effectiveness rating. For all countermeasures, visit* https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/812478_v5_countermeasures-that-work-a-highway-safety-countermeasures-guide-9thedition-2017.pdf

Table 10 compares the number of drivers ages 15-20 involved in a fatal crash in 2018 and 2019. Young drivers ages 15-20 accounted for nine percent of the drivers involved in fatal crashes in 2018 and 2019. More than twice as many young males died while driving in 2019 than young females.

| Table 10: Young drivers involved fatal crashes by age and sex of driver | | | |
|---|---|---|---|
| | | **2018** | **2019** |
| **Age Group** | **Sex** | **Drivers in fatal crashes** | **Drivers in fatal crashes** |
| 15-16 | Male | 5 | 6 |
| | Female | 4 | 3 |
| | **Total** | **9** | **9** |
| 17-18 | Male | 19 | 23 |
| | Female | 8 | 7 |
| | **Total** | **27** | **30** |
| 19-20 | Male | 26 | 25 |
| | Female | 19 | 12 |
| | **Total** | **45** | **37** |
| **Total: 15-20** | Male | 50 | 54 |
| | Female | 31 | 22 |
| | **Total** | **81** | **76** |

*Source: FARS*

Table 11 displays the type of driver's license the driver aged 15 to 20 possessed at the time of the fatal crash. A learner's permit is the first stage of a tiered licensing process.[6] A person with a learner's permit can drive if they are accompanied by an adult 21 years of age or older seated next to the driver and in possession of a valid Colorado license. Intermediate driver's license is the second stage toward obtaining a full driver's license, which eliminates the supervision requirement but still includes driving restrictions, including nighttime restrictions and a limit on the number of passengers allowed in the vehicle. A full driver's license is a license with unlimited driving privileges. A temporary license is any non-permanent license that may be issued while the permanent license is being processed by the Department of Motor Vehicles or is issued to drive in an area different from where the permanent driver's license was issued (i.e. foreign country). In 2019, the majority of young drivers in a fatal crash had an intermediate driver's license (n=37), thirteen drivers did not have a driver's license, and six had a learner's permit.
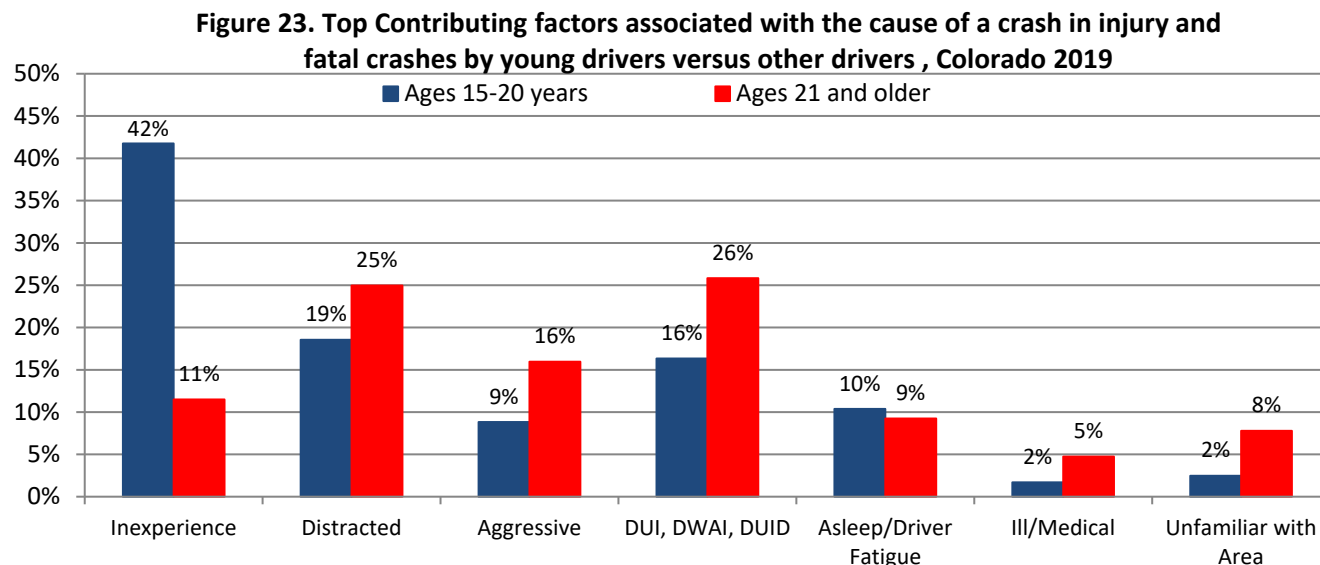
| Table 11: Young drivers involved fatal crashes by type of driver's license, Colorado, 2019 | | | | | |
|---|---|---|---|---|---|
| Age Group | Not Licensed | Learner's Permit | Intermediate Driver's License | Full Driver's License | Temporary License |
| 15-16 | 1 | 1 | 7 | 0 | 0 |
| 17-18 | 4 | 5 | 15 | 4 | 2 |
| 19-20 | 8 | 0 | 15 | 4 | 10 |
| Total: 15-20 | 13 | 6 | 37 | 8 | 12 |

*Source: FARS*



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[6] Colorado Driver Handbook, Colorado Department of Revenue. Accessible at
https://www.colorado.gov/pacific/sites/default/files/DR2337.pdf

Law enforcement officers investigating the crash also record the most apparent human factor that contributed to the crash. Figure 23 shows the top contributing factors associated with injury and fatal crashes among young drivers, ages 15 to 20, compared to drivers age 21 or older in 2019. Inexperience was the leading contributing factor in injury/fatal crashes among young drivers followed by being distracted.

**Figure 23. Top Contributing factors associated with the cause of a crash in injury and fatal crashes by young drivers versus other drivers , Colorado 2019**



*Source: Crash reports, Colorado Department of Revenue*
*Distracted = passenger, cell phone, radio, food, object, animal, etc.*

Motor vehicle fatalities among people ages 15-20 (all motor vehicle occupant, pedestrian, and bicyclist fatalities) increased by 22% from 2015 to 2019 (Figure 24).  Though not shown here, more passengers than drivers aged 15-20 were killed in a motor vehicle crash in 2019 (28 passengers versus 25 drivers). There was only one bicyclist and one pedestrian aged 15-20 killed in a motor vehicle crash in 2019.

**Figure 24: Motor vehicle fatalities in Colorado among persons aged 15-20 years old, 2015-2019**
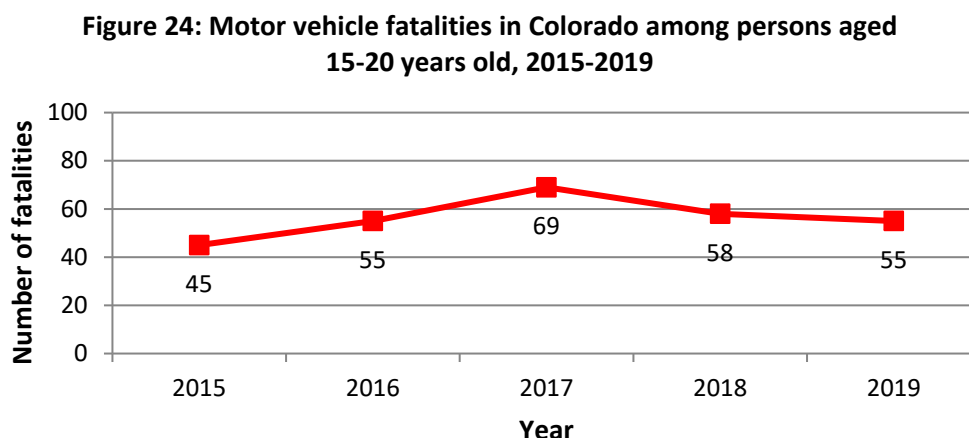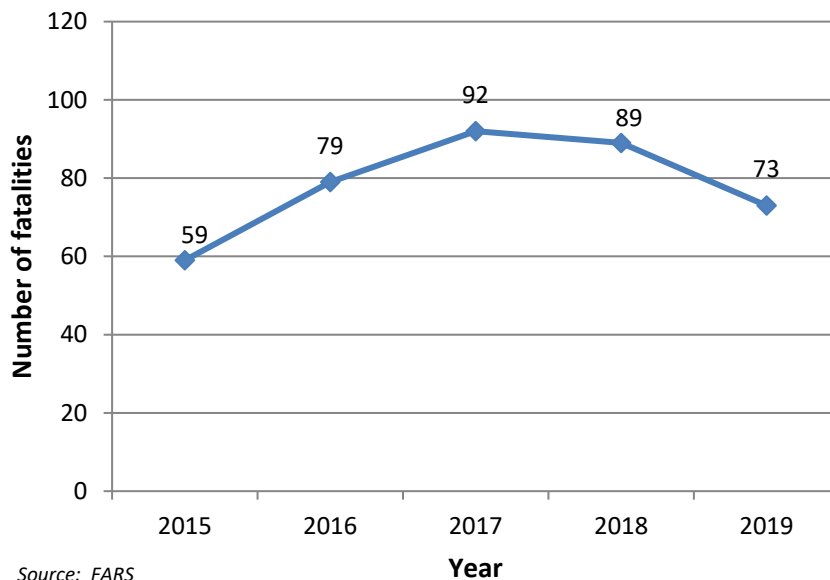


*Source: FARS*

# Pedestrian Safety

## Core Performance Measure (C-10): Reduce the number of pedestrian fatalities.

In 2019, 73 pedestrians died from a motor vehicle collision. These pedestrian fatalities accounted for 12% of all 596 motor vehicle fatalities in 2019. Pedestrian fatalities increased by 24% from 2015-2019 (Figure 25).



**C-10 Top Five Counties**
Denver – 16 fatalities
Adams – 14 fatalities
Jefferson – 10 fatalities
Arapahoe – 9 fatalities
El Paso – 8 fatalities

**Figure 25: Pedestrian fatalities in Colorado, 2015-2019**

Source: FARS

**Countermeasures that Work**
Improve pedestrian and bicycle safety:

**Pedestrian**
School-aged Children
- Elementary-age child pedestrian training
- Safe routes to school

All Pedestrians
- Pedestrian safety zones
- Reduce and enforce speed limits
- Conspicuity enhancement
- Enforcement strategies

**Bicycle**
Children
- Bicycle helmet laws for children
- Safe routes to school

Adult Bicyclists
- Bicycle helmet laws for adults

All Bicyclists
- Active lighting and rider conspicuity

*Listed have a 3-5 star effectiveness rating. For all countermeasures, visit* https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/812478_v5_countermeasures-that-work-a-highway-safety-countermeasures-guide-9thedition-2017.pdf

Table 12 shows pedestrian fatalities from motor vehicle crashes for each age and sex group in 2018 and 2019. The "Total" row within each age group shows the total number of fatalities in that age group. The last row in Table 12 shows pedestrian fatalities as a percentage of all motor vehicle fatalities (of all ages). Most pedestrian fatalities in 2019 occurred in the 21-34, 35-54 and 55-64 age groups and among more males than females. In 2019, 78% of the 73 pedestrian fatalities were male.

| Table 12. Pedestrian fatalities by age and sex, Colorado, 2018 & 2019 | | | |
|---|---|---|---|
| **Age Group** | **Sex** | **2018** | **2019** |
| 0-4 | Male | 0 | 1 |
| | Female | 0 | 0 |
| | **Total** | **0** | **1** |
| 5-8 | Male | 0 | 1 |
| | Female | 0 | 0 |
| | **Total** | **0** | **1** |
| 9-14 | Male | 1 | 0 |
| | Female | 0 | 2 |
| | **Total** | **1** | **2** |
| 15-20 | Male | 4 | 1 |
| | Female | 4 | 0 |
| | **Total** | **8** | **1** |
| 21-34 | Male | 9 | 15 |
| | Female | 3 | 0 |
| | **Total** | **12** | **15** |
| 35-54 | Male | 21 | 16 |
| | Female | 9 | 9 |
| | **Total** | **30** | **25** |
| 55-64 | Male | 21 | 12 |
| | Female | 4 | 2 |
| | **Total** | **25** | **14** |
| 65+ | Male | 9 | 11 |
| | Female | 4 | 3 |
| | **Total** | **13** | **14** |
| **All Ages** | Male | 65 | 57 |
| | Female | 24 | 16 |
| | **Total** | **89/632 (14.1%)** | **73/596 (12.2%)** |

*Source: FARS*

# Bicyclist Safety

## Core Performance Measure (C-11): Reduce the number of bicyclist fatalities

In 2019, 20 bicyclists died from a motor vehicle crash (Figure 26), a 9% decrease from 2018. The number of bicycle fatalities increased by 54% over the past five years (2015-2019).

**Figure 26: Bicyclist fatalities in Colorado, 2015-2019**
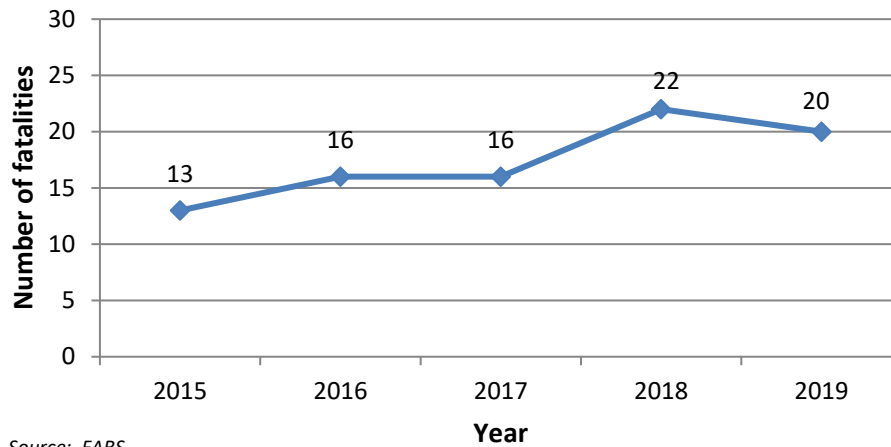


*Source: FARS*

Table 13 shows the number of bicyclist fatalities due to a motor vehicle crash for each age group and sex in 2018 and 2019. Most bicyclist fatalities were distributed roughly evenly among age groups over 21, with a single teen fatality in 2019. All but one bicyclist fatalities were male.

| Table 13. Bicyclist fatalities by age and sex, Colorado, 2018 & 2019 | | | |
|---|---|---|---|
| **Age Group** | **Sex** | **2018** | **2019** |
| 0-4 | Male | 0 | 0 |
| | Female | 0 | 0 |
| | **Total** | **0** | **0** |
| 5-8 | Male | 1 | 0 |
| | Female | 0 | 0 |
| | **Total** | **1** | **0** |
| 9-14 | Male | 0 | 0 |
| | Female | 0 | 0 |
| | **Total** | **0** | **0** |
| 15-20 | Male | 0 | 1 |
| | Female | 0 | 0 |
| | **Total** | **0** | **1** |
| 21-34 | Male | 2 | 6 |
| | Female | 2 | 0 |
| | **Total** | **4** | **6** |
| 35-54 | Male | 10 | 2 |
| | Female | 0 | 1 |
| | **Total** | **10** | **3** |
| 55-64 | Male | 3 | 4 |
| | Female | 0 | 0 |
| | **Total** | **3** | **4** |
| 65+ | Male | 4 | 6 |
| | Female | 0 | 0 |
| | **Total** | **4** | **6** |
| **All Ages** | Male | 20 | 19 |
| | Female | 2 | 1 |
| | **Total** | **22/632 (3.5%)** | **20/596 (3.4%)** |

*Source: FARS*

# Distracted Driving

## Core Performance Measure (C-12): Reduce the number of Distracted Drivers involved in a fatal crash

In this report, "distracted" means a passenger, animal, cell phone, radio, food, or other objects in the motor vehicle diverted the driver's attention from the road. There were 35 drivers involved in a distracted driving crash, which resulted in 39 fatalities. Figure 27 displays the number of distracted drivers involved in a fatal crash during the past five years. The number of distracted drivers decreased by 44% over the past five years.

**C-12 Top Counties**
Adams, El Paso– 6 drivers
Larimer – 3 drivers
Arapahoe, Garfield, Rio Blanco, Weld – 2 drivers

**Figure 27. Colorado distracted drivers involved in a fatal crash, 2015-2019**
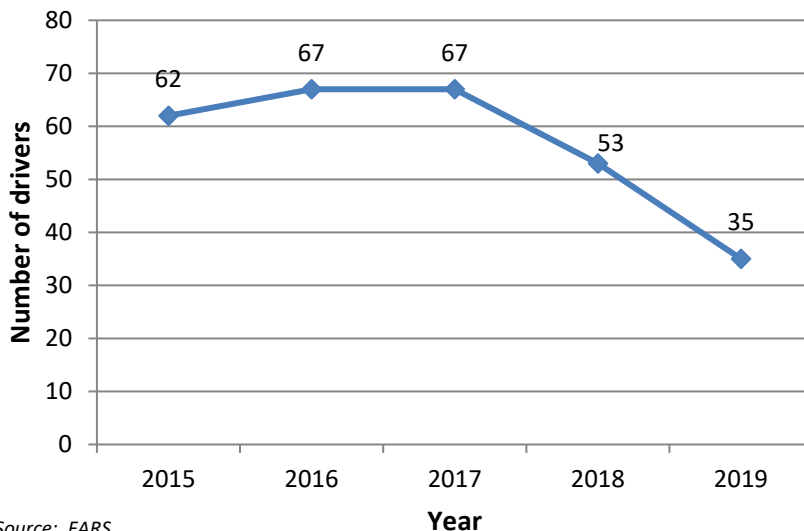


*Source: FARS*
*Distracted = passenger, cell phone, radio,*

**Countermeasures that Work**
Reduce distracted and drowsy driving:

Laws and Enforcement
- GDL requirements for beginning drivers
- High visibility cell phone/text messaging enforcement

*Listed have a 3-5 star effectiveness rating. For all countermeasures, visit* https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/812478_v5_countermeasures-that-work-a-highway-safety-countermeasures-guide-9thedition-2017.pdf

Table 14 displays the number and percent of distracted drivers involved in fatal crashes for 2018 and 2019. Overall, 35 (4%) of 865 drivers in a crash involving a fatality were distracted in 2019. Seventeen percent of the 81 drivers ages 15-20 and in a fatal crash were distracted in 2019, the highest percentage of distracted drivers for any age group of drivers in a fatal crash.

| Table 14: Distracted Drivers in fatal crashes in Colorado, by driver age and sex | | | |
|---|---|---|---|
| Age Group | Sex | 2018 | 2019 |
| **Driver** | | | |
| 15-20 | Male | 5 | 2 |
| | Female | 9 | 1 |
| | **Total** | **14/81 (17.3%)** | **14/81 (17.3%)** |
| 21-34 | Male | 8 | 7 |
| | Female | 6 | 4 |
| | **Total** | **14/266 (5.3%)** | **14/266 (5.3%)** |
| 35-54 | Male | 7 | 8 |
| | Female | 4 | 2 |
| | **Total** | **11/285 (3.9%)** | **11/285 (3.9%)** |
| 55-64 | Male | 5 | 3 |
| | Female | 1 | 4 |
| | **Total** | **6/111 (5.4%)** | **6/111 (5.4%)** |
| 65+ | Male | 3 | 4 |
| | Female | 5 | 0 |
| | **Total** | **8/129 (6.2%)** | **8/129 (6.2%)** |
| **All Ages** | Male | 28 | 24 |
| | Female | 25 | 11 |
| | **%crashes** | **53/890 (6.0%)** | **35/865 (4.0%)** |

*Source: FARS*

1) *Totals include drivers of unknown age*
2) *While all crashes depicted involved fatalities, the driver may or may not have been fatally injured.*

Figure 28 shows the type of distraction among drivers involved in a fatal distracted driving crash in Colorado in 2019. Over half of the drivers who were distracted (57%) had no details known about the type of distraction. Inattention to driving was the source of distraction for 17% of distracted drivers. A cellular phone, either talking/listening or other phone use, was the source of distraction for 15% of distracted drivers. Another occupant in the vehicle distracted the driver in 11% of the crashes where distracted driving was involved.

**Figure 28. Distracted Drivers in Fatal Crashes by Type of Distraction, Colorado, 2019**



*Source: FARS*
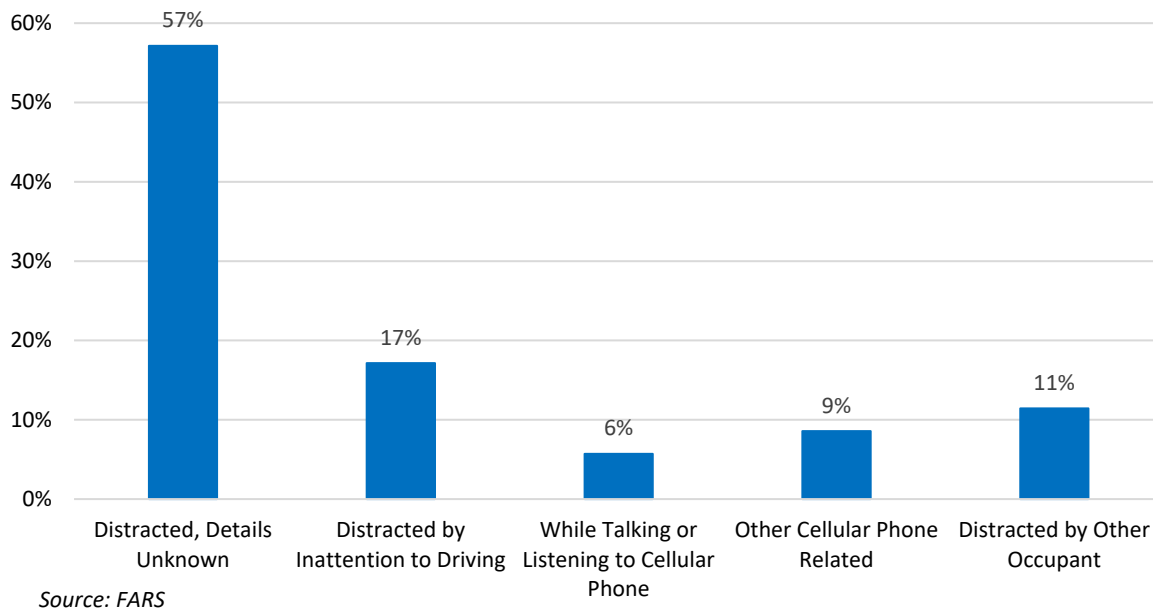
## Human Contributing Factors in All Traffic Crashes

Figure 29 shows the top human contributing factors that law enforcement officers noted in motor vehicle crashes in 2019. Selecting one contributing factor poses a challenge because a driver's circumstance and contributing factor may fall into one or more categories, and a driver may not fully reveal their behavior and the circumstances at the time of the crash. The top human contributing factor in all crashes in 2019 was 'distracted'. The definition 'distracted' includes a driver being distracted by a passenger, cell phone, radio, food, pet or other object diverting the driver's attention from the road and from the traffic.
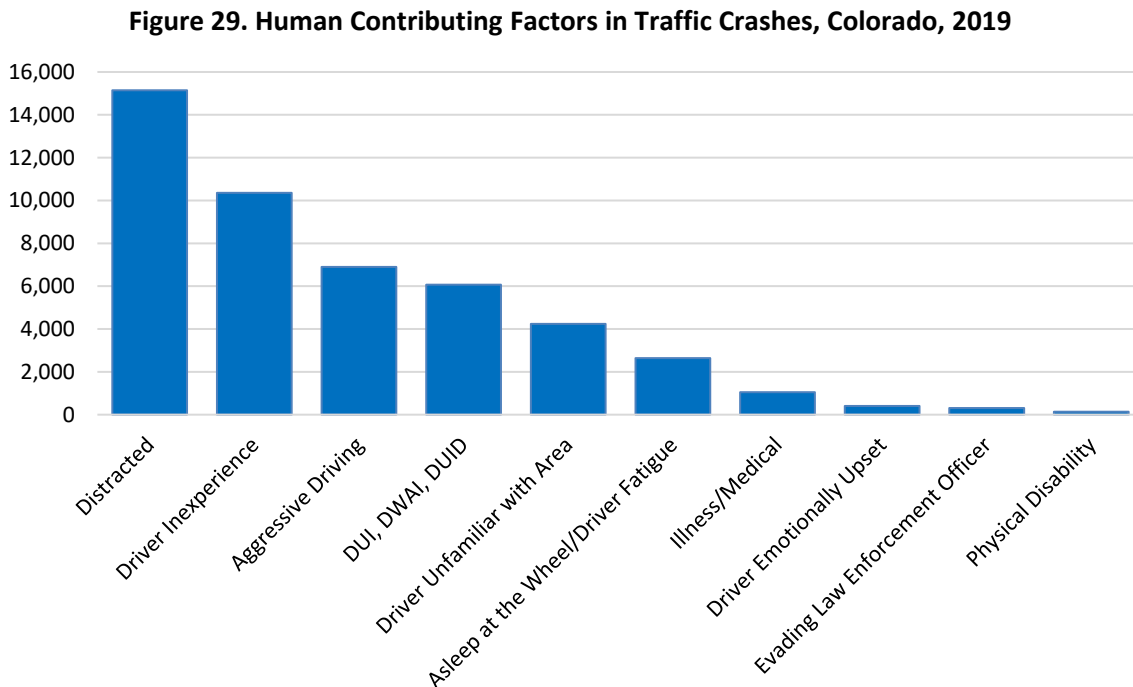
**Figure 29. Human Contributing Factors in Traffic Crashes, Colorado, 2019**



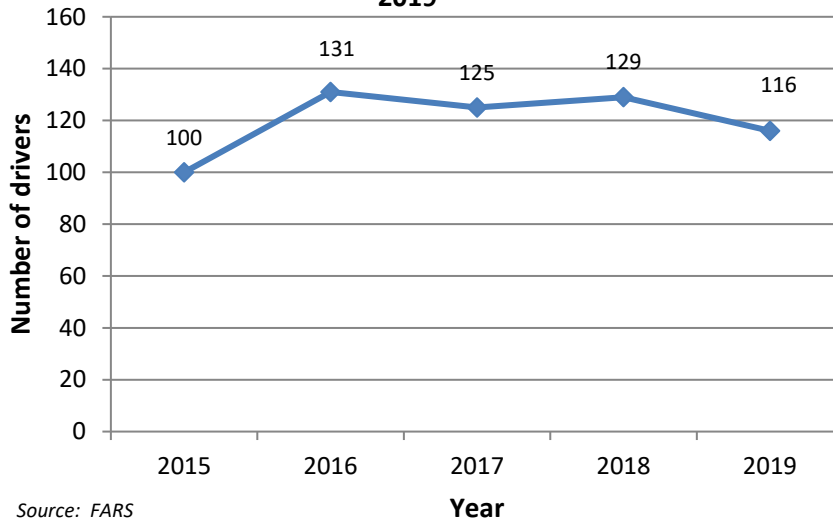*Source: Crash reports, Colorado Department of Revenue*
*Distracted = passenger, cell phone, radio, food, object, animal, etc.*

# Older Drivers

## Core Performance Measure (C-13):  Reduce the number of drivers age 65 and older involved in fatal crashes

Between 2015 and 2019, the number of drivers age 65 years or older who died in a motor vehicle crash, whether or not at fault for the crash, increased 16% (Figure 30). During this same period, the number of Coloradans aged 65 and older increased by 19% from 709,182 persons in 2015 to 843,612 persons in 2019. In 2019, there were 116 drivers ages 65 or older involved in a fatal motor vehicle crash, a 10% decrease from the 129 older drivers involved in fatal crashes in 2018.

**Countermeasures that Work**
Improve older driver safety:

Licensing
- License screening & testing
- Referring older drivers to licensing agencies
- License restrictions

Traffic Law Enforcement
- Law enforcement roles

*Listed have a 3-5 star effectiveness rating. For all countermeasures, visit https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/812478_v5_countermeasures-that-work-a-highway-safety-countermeasures-guide-9thedition-2017.pdf*

**Figure 30:  Number of drivers age 65 years and older involved in a fatal motor vehicle crash, Colorado 2015-2019**



Source:  FARS

# Conclusion

Efforts are still needed to reduce fatalities and serious injuries from motor vehicle crashes. The information provided in this report, including the county results below, can help traffic safety and injury prevention professionals at the state and local levels to address modifiable driving behaviors to improve traffic safety. Policy-makers, community organizations, and individuals should use information from this report to identify where and how to focus prevention efforts.

# Data Sources and Acknowledgements
## Data Sources for the FY 2021 Problem Identification Report

**Colorado Performance Measures and Statewide Goals for 2019**

This information comes from the 2019 Colorado Integrated Safety Plan by the Colorado Department of Transportation. The 2019 Colorado Integrated Safety Plan includes performance targets that are set for the year 2019.

**Countermeasures That Work**

For select performance measures of CDOT, this report summarizes countermeasures that have a 3-5 star effectiveness rating from *Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices*, Ninth Edition, published in 2017 and available on the website of the Governors Highway Safety Association.

**Crash Reports (Colorado DRIVES)**

Colorado Driver License, Record, Identification and Vehicle Enterprise Solution (Colorado DRIVES) provides crash data, defined as an incident where at least one motor vehicle in motion on a traffic way (public road) resulted in an injury or unintentional property damage. This data tracking system originates from the Colorado Department of Revenue.

**Fatality Analysis Reporting System (FARS)**

FARS provides detailed data about persons who died within 30 days of the crash, including motorcyclists, motor vehicle drivers, motor vehicle passengers, pedestrians, and bicyclists involved in fatal motor vehicle crashes. FARS SAS data files are obtained from the National Highway Traffic Safety Administration website.

**Hospital Discharge Data**

Hospital discharge data provides data where injury was mentioned as a discharge diagnosis in one of the thirty diagnoses and the mechanism of injury was motor vehicle, traffic for Colorado residents treated in non-federal, acute care hospitals as reported to the Colorado Hospital Association (CHA). National hospital coding rules defines motor vehicle, traffic" " as events involving a motor vehicle that occur entirely or partially on public streets, roadways, and highways. This data source is referenced as CHA Discharge Datain figures in this report. The Colorado Department of Public Health and Environment analyzed the CHA Discharge Data in compliance with the data use agreement. CHA was not involved in the analysis or production of this report.

**Population Estimates**

The Colorado Department of Local Affairs (DOLA) estimates state and county population in Colorado. This report uses that DOLA population estimates accessed from the DOLA website or the Colorado Health Information Dataset website. This data is referenced as DOLA data in the figures of this report. Population estimates for the United States were obtained from the U.S. Census website.

**Restraint Use**

The prevalence of seat belt use, car seat use, and booster seat use come from observational surveys conducted by Atelior, Division of Transportation in partnership with Colorado Department of Transportation and posted on the Colorado Department of Transportation website.

**Vehicle Miles Traveled (VMT)**

VMT data come from the Office of Highway Policy Information, Highway Statistics Series at the U.S. Department of Transportation (USDOT) Federal Highway Administration (FHA) and are referenced as "USDOT FHA" in figures in this report.

## Acknowledgements

*Data sources: Traffic crash reports, Colorado Department of Revenue, Division of Motor Vehicles; Fatality Analysis Reporting System (FARS), National Highway Traffic Safety Administration (NHTSA)*

**Colorado state performance measures by county, 2019**

| Performance Measures | Fatalities | Serious injuries | Occupant fatalities, unrestrained all seat positions | Fatalities in crashes where driver/ motorcycle operator has BAC ≥ 0.08 | Speeding-related fatalities | Unhelmeted motorcyclist fatalities | Motorcyclist fatalities | Driver under 21 years old in fatal crashes | Pedestrian fatalities |
|---|---|---|---|---|---|---|---|---|---|
| Colorado ISP Target | 644 | 2,909 | 200 | 170 | 230 | 82 | 125 | 75 | 90 |
| | | | | | | | | | |
| Colorado | 596 | 3,190 | 189 | 164 | 239 | 54 | 103 | 76 | 73 |
| Adams | 69 | 301 | 25 | 14 | 24 | 5 | 10 | 10 | 14 |
| Alamosa | 1 | 7 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| Arapahoe | 36 | 360 | 14 | 14 | 12 | 2 | 2 | 10 | 9 |
| Archuleta | 2 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Baca | 1 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bent | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Boulder | 26 | 207 | 10 | 7 | 9 | 2 | 4 | 2 | 3 |
| Broomfield | 5 | 9 | 0 | 2 | 1 | 1 | 2 | 0 | 1 |
| Chaffee | 6 | 15 | 0 | 3 | 1 | 1 | 4 | 0 | 0 |
| Cheyenne | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Clear Creek | 2 | 13 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
| Conejos | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Costilla | 7 | 14 | 2 | 0 | 2 | 0 | 0 | 1 | 0 |
| Crowley | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Custer | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delta | 3 | 25 | 3 | 1 | 2 | 0 | 0 | 1 | 0 |
| Denver | 61 | 502 | 13 | 16 | 34 | 6 | 15 | 8 | 16 |
| Dolores | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Douglas | 13 | 89 | 4 | 3 | 6 | 0 | 3 | 6 | 2 |
| Eagle | 4 | 53 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| El Paso | 66 | 281 | 15 | 13 | 28 | 11 | 19 | 4 | 8 |
| Elbert | 4 | 11 | 3 | 0 | 2 | 0 | 0 | 1 | 0 |
| Fremont | 3 | 23 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Garfield | 10 | 40 | 3 | 5 | 4 | 1 | 2 | 1 | 0 |
| Gilpin | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand | 10 | 22 | 3 | 1 | 2 | 0 | 1 | 2 | 1 |
| Gunnison | 5 | 22 | 1 | 0 | 2 | 0 | 1 | 0 | 0 |
| Hinsdale | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Huerfano | 1 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Jackson | 3 | 8 | 2 | 1 | 2 | 0 | 0 | 0 | 0 |
| Jefferson | 51 | 236 | 9 | 3 | 21 | 7 | 13 | 8 | 10 |
| Kiowa | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Performance Measures | Fatalities | Serious injuries | Occupant fatalities, unrestrained all seat positions | Fatalities in crashes where driver/ motorcycle operator has BAC ≥ 0.08 | Speeding-related fatalities | Unhelmeted motorcyclist fatalities | Motorcyclist fatalities | Driver under 21 years old in fatal crashes | Pedestrian fatalities |
|---|---|---|---|---|---|---|---|---|---|
| **Colorado ISP Target** | **644** | **2,909** | **200** | **170** | **230** | **82** | **125** | **75** | **90** |
| | | | | | | | | | |
| Kit Carson | 4 | 4 | 4 | 2 | 3 | 0 | 0 | 1 | 0 |
| La Plata | 8 | 41 | 3 | 1 | 3 | 0 | 0 | 2 | 0 |
| Lake | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Larimer | 26 | 145 | 7 | 7 | 12 | 5 | 8 | 3 | 2 |
| Las Animas | 5 | 15 | 3 | 0 | 2 | 0 | 0 | 0 | 0 |
| Lincoln | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Logan | 3 | 10 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| Mesa | 13 | 82 | 5 | 3 | 8 | 1 | 2 | 1 | 1 |
| Mineral | 2 | 6 | 2 | 1 | 2 | 0 | 0 | 0 | 0 |
| Moffat | 3 | 15 | 0 | 1 | 2 | 1 | 1 | 0 | 0 |
| Montezuma | 5 | 16 | 2 | 2 | 2 | 0 | 0 | 0 | 0 |
| Montrose | 6 | 25 | 4 | 2 | 4 | 0 | 0 | 2 | 0 |
| Morgan | 4 | 14 | 2 | 2 | 2 | 0 | 0 | 0 | 0 |
| Otero | 2 | 20 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Ouray | 1 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Park | 7 | 39 | 1 | 2 | 4 | 0 | 0 | 0 | 0 |
| Phillips | 2 | 4 | 1 | 0 | 2 | 0 | 0 | 1 | 0 |
| Pitkin | 3 | 9 | 0 | 1 | 3 | 2 | 2 | 0 | 0 |
| Prowers | 3 | 3 | 2 | 1 | 1 | 0 | 0 | 0 | 0 |
| Pueblo | 25 | 104 | 9 | 5 | 7 | 4 | 4 | 2 | 4 |
| Rio Blanco | 2 | 2 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Rio Grande | 3 | 5 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| Routt | 2 | 12 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
| Saguache | 4 | 11 | 2 | 0 | 1 | 0 | 0 | 0 | 0 |
| San Juan | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| San Miguel | 1 | 6 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Sedgwick | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Summit | 6 | 40 | 2 | 2 | 1 | 0 | 0 | 0 | 0 |
| Teller | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Washington | 6 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 |
| Weld | 52 | 204 | 22 | 7 | 18 | 5 | 5 | 8 | 1 |
| Yuma | 2 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |