

2018 Colorado Department of Transportation Problem Identification Report

This *Problem Identification Report* gives an overview of fatalities and injuries from motor vehicle crashes in Colorado over time and highlights known crash characteristics. Policy-makers, community organizations, and individuals should use information from this report to identify where and how to focus prevention efforts. This report provides an executive summary of highlights at the state level, an overview of the latest results and changes over time and the current progress on key state performance measures for motor vehicle safety.



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Executive Summary

Motor vehicle crashes are a leading cause of death in Colorado and the number of deaths continue to rise. Motor vehicle fatalities were on the decline and reached a low of 447 deaths in 2011 but climbed to 608 deaths in 2016.

Most motor vehicle crashes are preventable. More collective action based on known effective strategies or countermeasures can reduce the rising number of fatalities and injuries from motor vehicle crashes. The information provided in this report can help drive efforts at the state and local level to identify modifiable driving behaviors and select effective countermeasures to improve traffic safety.

The Colorado Department of Transportation sets targets in their Integrated Safety Plan (ISP) every year to reduce the number of fatalities and serious injuries from motor vehicle crashes for the state of Colorado. Common characteristics of fatalities from crashes on Colorado public roadways during 2016 were:

- **211 Speeding fatalities (35 percent of all fatalities)**
- **186 Unrestrained fatalities (52 percent of all passenger vehicle occupant fatalities)**
- **161 Alcohol-impaired driver fatalities (26 percent of all fatalities)**
- **125 Motorcyclist fatalities (21 percent of all fatalities)**

In 2016, there were 211 **speeding-related motor vehicle fatalities**, a three percent decrease from the previous year. It was still higher than the 2016 state goal of 150 speeding-related motor vehicle deaths.

In 2016, there were 186 **unrestrained motor vehicle occupant fatalities**, a one percent decrease from last year. It was still higher than the 2016 state goal of 176 unrestrained fatalities.

In 2016, there were 161 motor vehicle deaths due to an **alcohol-impaired driver** was higher than the state target of 136 deaths, and a six percent increase from 2015.

In 2016, there were 125 **motorcyclist fatalities**. Two-thirds of motorcyclists who died were not wearing a helmet, an 18 percent increase from 2015. It was also higher than the state target of 85 motorcyclist fatalities that year.

Fatalities per Vehicle Miles Traveled (VMT) takes into account changes in the population, as well as changes in fuel prices, driving habits and distances driven. Colorado's fatality rate increased to 1.15 fatalities per 100 million VMT in 2016, a six percent increase over the past year, which is similar to the United States fatality rate of 1.16 fatalities per 100 million VMT.

In 2016, there were 342 **motor vehicle fatalities in urban areas**, a 20 percent increase from the past year. There were 266 **fatalities in rural areas**, a two percent increase from 2015.

The traffic safety problems identified in this report guide the Colorado Department of Transportation's Highway Safety Office in the distribution of resources and implementation of prevention programs.

New in 2018: Colorado Motor Vehicle Problem Identification 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 that was in the previous county factsheets released publicly with the statewide problem identification report and can be accessed here:

<https://cohealthviz.dphe.state.co.us/t/PSDVIP-MHPPUBLIC/views/ColoradoMotorVehicleCrashProblemIDReport/ColoradoMotorVehicleDashboard?:iid=1&isGuestRedirectFromVizportal=y&embed=y>



Motor Vehicle Crashes and Fatalities Overview

Table 1 presents an overview of motor vehicle crashes across Colorado, including core performance measures for the years 2012 through 2016. One-year and five-year percent changes for each measure are listed in the last two columns. Green font indicates change in the desired direction and red font indicates undesired change. The ↑ symbol indicates a percent increase in the number, rate, or percent and the ↓ symbol indicates a percent decrease for the number, rate, or percent.

Table 1. Colorado traffic information and crash outcomes at a glance, 2012-2016							
	2012	2013	2014	2015	2016	1-year %Δ	5-year %Δ
Total crashes (n)	101,533	108,238	114,752	122,575	128,009	↑4.4	↑26.1
Colorado population (millions)	5.19	5.26	5.35	5.46	5.54	↑1.5	↑6.7
Licensed drivers (millions)	3.81	3.73	3.79	3.90	3.89	↓0.3	↑2.1
Seat belt use (%)	80.7	82.1	82.4	85.2	84.0	↓1.4	↑4.1
Core Performance Measures:							
Fatalities (n)	474	482	488	547	608	↑11.2	↑28.3
Serious injuries (n)	3,305	3,319	3,224	3,216	2,956	↓8.1	↓10.6
Injuries (n)	12,564	12,324	12,570	12,838	11,786	↓8.2	↓6.2
Fatalities (n/100 million vehicle miles traveled)	1.01	1.02	1.00	1.08	1.15	↑6.5	↑13.9
Motor vehicle occupant fatalities, unrestrained all seat positions (n)	158	177	156	188	186	↓1.1	↑17.7
Fatalities in crashes where driver/motorcycle operator has blood alcohol content ≥0.08+ (n)	134	140	160	152	161	↑5.9	↑20.1
Speeding-related fatalities (n)	164	151	168	217	211	↓2.8	↑28.7
Motorcyclist fatalities (n)	79	87	94	106	125	↑17.9	↑58.2
Unhelmeted motorcyclist fatalities (n)	53	55	61	67	82	↑22.4	↑54.7
Driver 15-20 years old in fatal crashes (n)	66	57	73	67	59	↓11.9	↓10.6
Pedestrian fatalities (n)	76	50	63	59	79	↑33.9	↑3.9
Bicyclist fatalities (n)	13	12	10	13	16	↑23.1	↑23.1
Driver 65+ years old in fatal crashes (n)	74	94	78	100	131	↑31.0	↑77.0
Distracted drivers in fatal crashes (n)	74	82	59	67	77	↑14.9	↑4.1

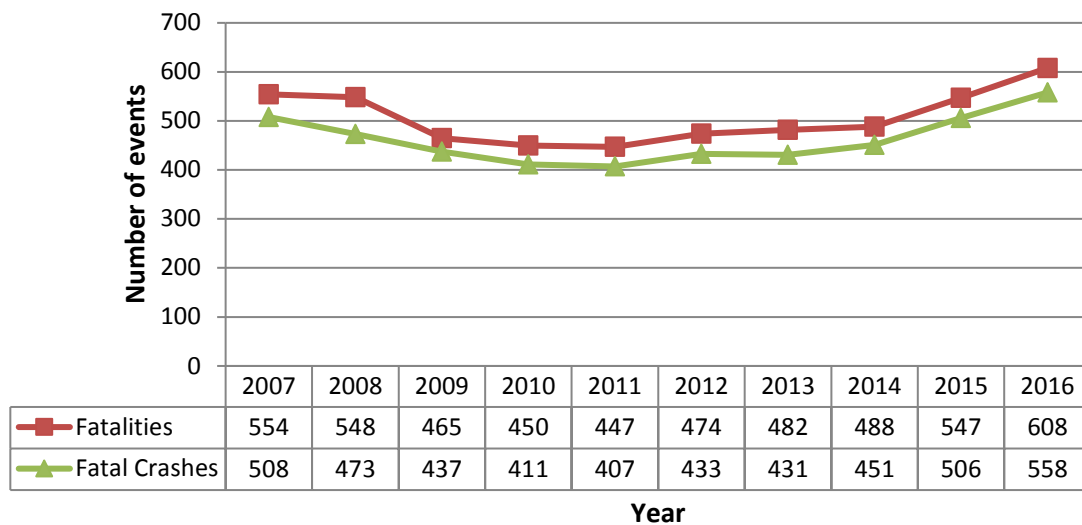
Source: FARS (Fatality Analysis Reporting System); Crash Reports; Colorado Demography Office; Colorado Department of Revenue, Division of Motor Vehicles

Fatal Crashes and Fatalities

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

Between 2015 and 2016, the number of motor vehicle traffic crashes in Colorado involving one or more fatalities occurred increased by 10.3 percent and the number of traffic fatalities increased by 11.2 percent. These increases follow an upward trend for the previous five years, after positive declines in fatalities and fatal crashes between 2004 and 2011. Figure 1 shows the number of fatal crashes and fatalities in Colorado from 2007 through 2016. Fatalities and fatal crashes across the nation also increased between 2015 and 2016. Specifically, there were 35,485 fatalities in United States in 2015 and 37,461 in 2016 (a 5.6 percent increase). Fatal crashes in the United States increased from 32,166 in 2015 to 34,439 in 2016, a 7.1 percent increase in fatal crashes.¹ In Colorado, most fatal crashes had only one death. In 2016, 518 (92.8 percent) of the fatal crashes in Colorado resulted in one death in each crash, 34 (6.1 percent) crashes resulted in two deaths per crash, four (0.7 percent) crashes resulted in three deaths per crash, and two crashes (0.4 percent) resulted in five deaths in each crash. As a result, the number of fatalities were greater than the number of fatal crashes.

Figure 1: Fatal motor vehicle crashes and fatalities in Colorado, 2007-2016

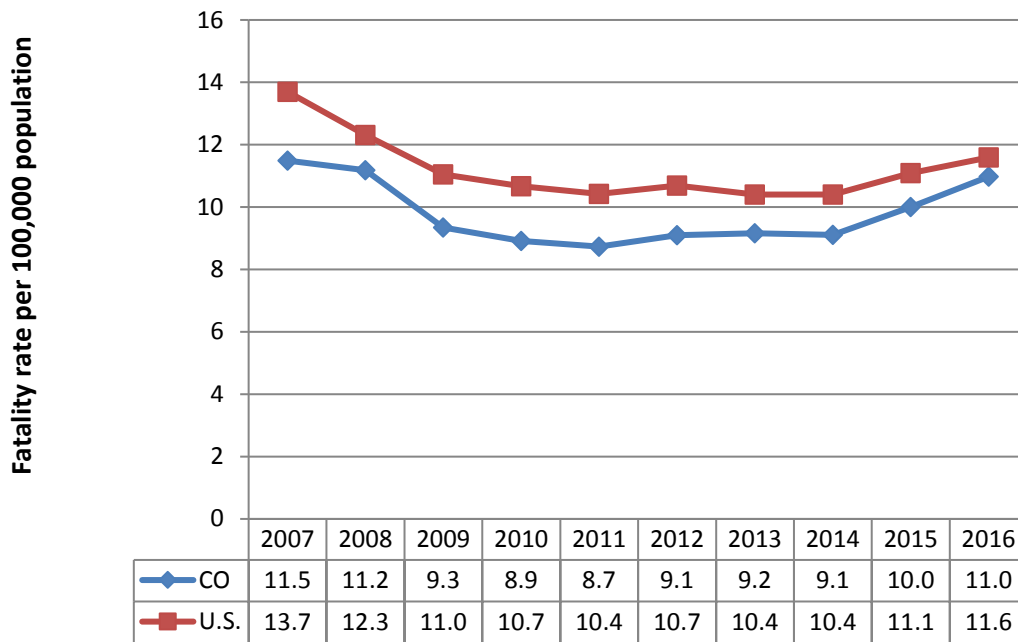


Source: FARS

¹ <http://www-fars.nhtsa.dot.gov/Main/index.aspx> Last accessed January 31, 2018

Colorado’s motor vehicle fatality rate per 100,000 population increased 9.7 percent between 2015 and 2016. In 2016, 11 people per 100,000 Colorado residents died in motor vehicle crashes, compared to 10 people per 100,000 Colorado residents in 2015. Due to higher percentage increases in Colorado compared to the United States, Colorado’s fatality rate is starting to get closer to the United States’ rate (Figure 2).

Figure 2: Motor vehicle fatality rate per 100,000 population in Colorado and the United States, 2007-2016



Source: FARS, Colorado Demography Office, US Census Bureau

Table 2 compares the age and sex of the people who died as a result of a motor vehicle crash during two time periods: 2011-2013 and 2014-2016. In 2014-2016, there was a 17.4 percent increase in traffic fatalities, compared to 2011-2013. The 35-54 year old age group had the highest number of fatalities in the 2011-2013 time period. However, the 21-34 year old the age group had the highest number of fatalities during the 2014-2016 time period. More males than females died from motor vehicle crashes during both time periods. Approximately three males were killed for every one female killed in a motor vehicle crash.

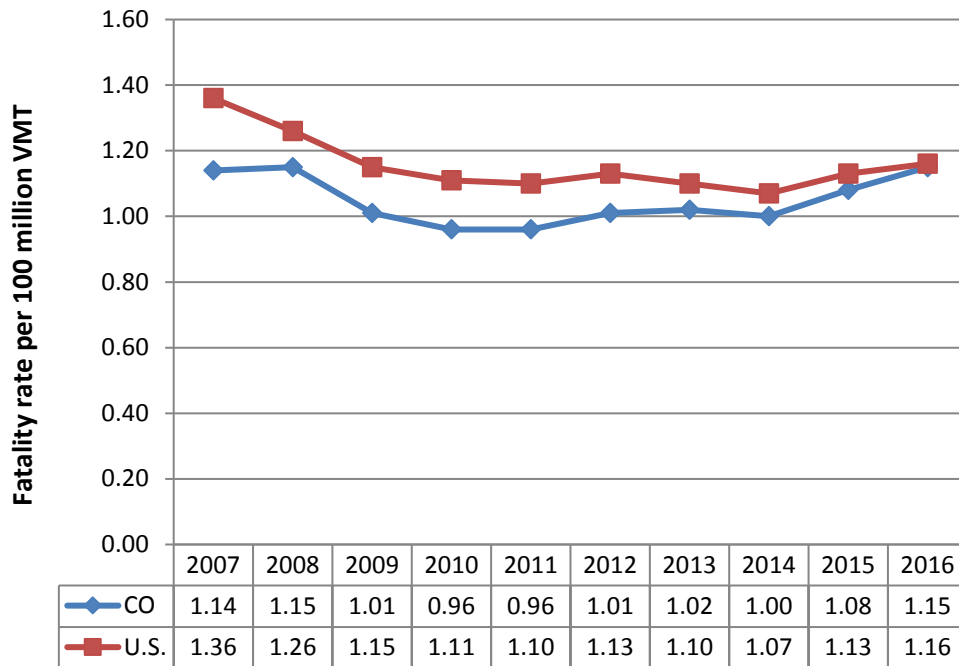
Age Group	2011-2013 Fatalities			2014-2016 Fatalities		
	Male	Female	Total	Male	Female	Total
<5	4	8	12	4	3	7
5-8	7	5	12	5	6	11
9-15	20	6	26	15	9	24
16-20	101	46	147	106	47	153
21-34	277	94	371	362	125	487
35-54	311	97	408	349	88	437
55-64	166	45	211	175	76	251
65+	132	81	213	179	94	273
All Ages	1018	382	1400	1195	448	1643

Source: FARS

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

The observed number of fatalities can increase due to increases in population and miles driven. It is helpful to look changes in the rate of motor vehicle fatalities per 100 million vehicle miles traveled (VMT), which is calculated by dividing of the number of fatalities by the number of VMT. This approach takes into account changes in the population, as well as changes in fuel prices, driving habits and distances driven. As a result, fatalities per 100 million VMT can be compared fairly across time periods and different geographic areas. Colorado’s 2017 Integrated Safety Plan goal is to reduce the fatality rate per VMT to 0.99 per 100 million in 2017. Figure 3 shows the rate of fatalities per 100 million VMT for Colorado and the United States. Although the fatality rate per 100 million VMT in Colorado fell below 1.0 in 2010 and 2011, the rate increased over the past four years and reached an almost identical rate to the United States in 2016.

Figure 3: Fatalities per 100 million vehicle miles traveled (VMT) in Colorado and in the United States, 2007-2016



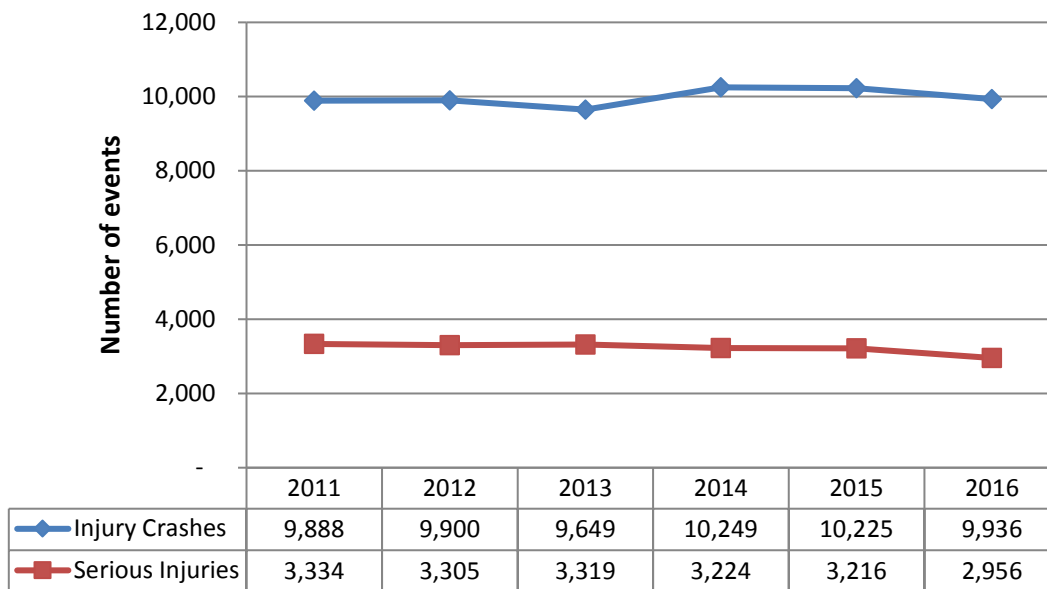
Source: FARS and U.S. Department of Transportation

Injury Crashes and Injuries

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

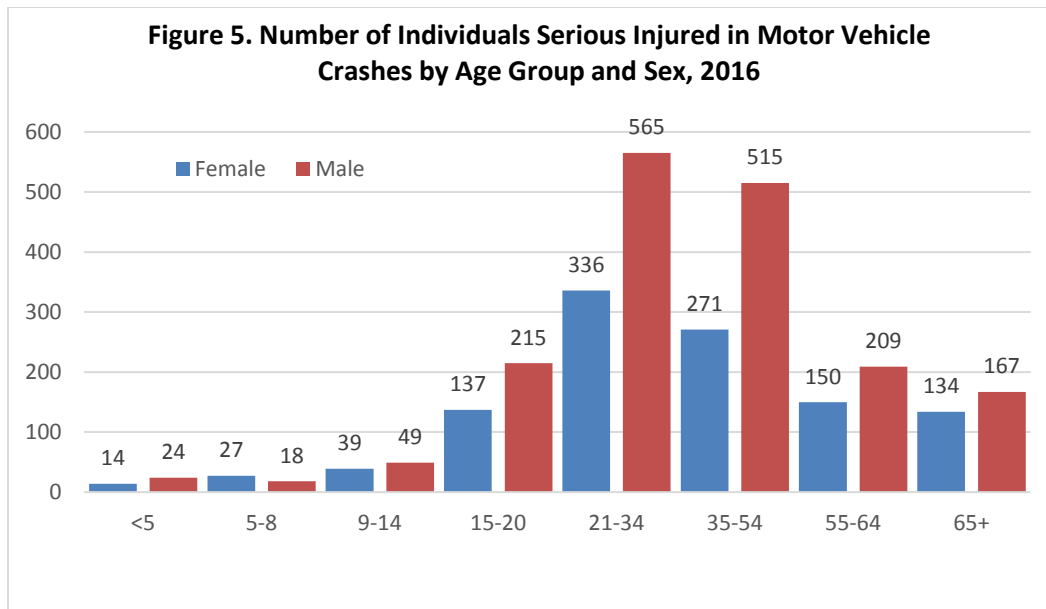
The number of crashes resulting in injuries (injury crashes) remained high over the past five years (Figure 4). In this report, injury includes two types of injuries: “evident non-incapacitating” or “evident incapacitating”. “Evident incapacitating injury” is also called “serious injury” and includes any injury, other than a fatal injury, that prevents the injured person from walking, driving, or normally continuing the activities previously capable of performing prior to being injured. Approximately, one quarter of injured people sustained a serious injury. The proportion of seriously injured people remained relatively stable during 2011-2016. As of this report publication, not all law enforcement agencies entered crash reports for 2016 into the Department of Revenue reporting system. Therefore, trends should be viewed with caution.

Figure 4: Motor vehicle injury crashes and serious injuries in Colorado, 2011-2016



Source: Crash Reports

Figure 5 shows the number of people seriously injured in motor vehicle crashes in Colorado during 2016, including the number of males and females within each age group. Across all age groups, a greater percentage of males than females sustained a serious injury with the exception of the 5-8 year age group. Almost two-thirds of people seriously injured in 2016 crashes were male. The 21-34 and 35-54 age groups had the greatest numbers of people seriously injured.



Source: Crash reports

Total does not add up to 2,956 serious injuries due to age and sex missing on some crash reports.

A different picture appears when the number of serious injuries is adjusted for population size of each age and/or gender group. Table 3 shows the serious injury rate per 100,000 population by age group and sex. Based on the Colorado population distribution, the age group with the highest rate of serious injuries were among the 15-20 year age group. Males aged 21-34 had the highest rates of serious injuries from motor vehicle crashes for every 100,000 persons, compared to the other groups.

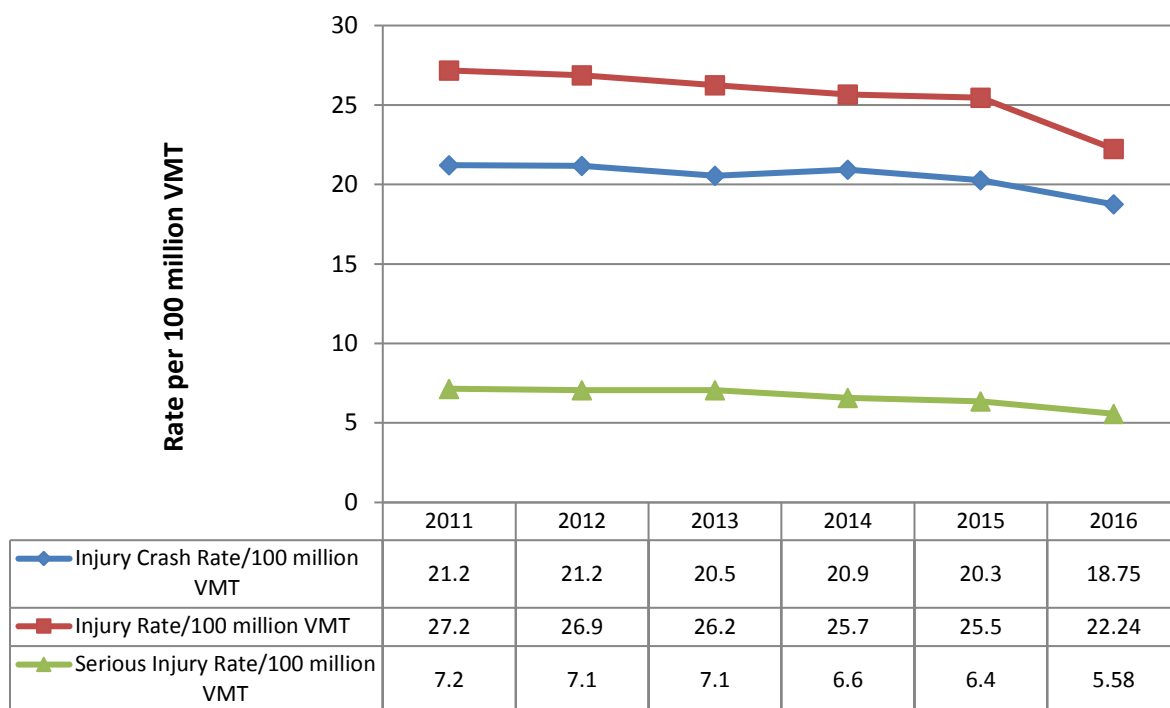
Age Group	Male	Female	Rate for age group*
<5	14.7	8.2	17.7
5-8	13.3	19.1	16.6
9-14	21.8	18.1	20.0
15-20	93.8	63.8	82.0
21-34	101.4	57.2	80.0
35-54	71.5	36.7	55.1
55-64	58.7	44.1	53.0
65+	41.3	39.4	41.3
All Ages	63.7	40.0	53.3

Source: Crash reports

*Includes those with unknown sex

Preliminary crash report data indicate the injury crash rate, injury rate, and serious injury rate per 100 million VMT in Colorado decreased from 2011 to 2016 (Figure 6). However, the data may change once the final crash reports are finalized and included in the analyses.

Figure 6: Motor vehicle injury crash rate and injury rate per 100 million vehicle miles traveled (VMT) in Colorado, 2011-2016*



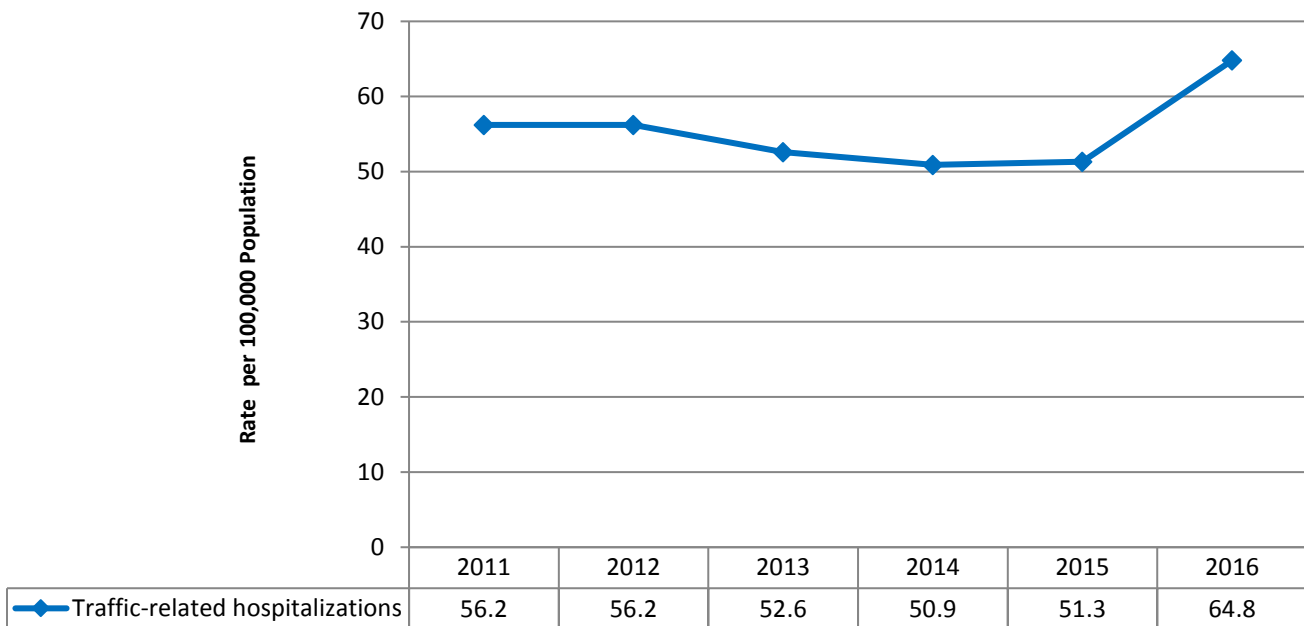
Source: Crash Reports

*2016 data are preliminary and subject to change

Injury Hospitalizations

The Colorado Hospital Association compiles hospital claims data from member hospitals. Figure 7 shows the number of hospitalizations where Colorado residents sustained injuries in traffic-related motor vehicle crashes and were hospitalized in Colorado at non-federal, acute care hospitals. The age-adjusted rates of hospitalizations for Colorado residents injured in motor vehicle crashes increased by 15 percent from 2011 to 2016 (Figure 7). Due to a shift in hospital coding in October 2015, the rates for 2015 and 2016 should be viewed with caution. 2015 was calculated using the last quarter of 2014 and the first three quarters of 2015 in order to use the same coding system. In 2016, the rates were calculated using the new coding of hospitalizations.

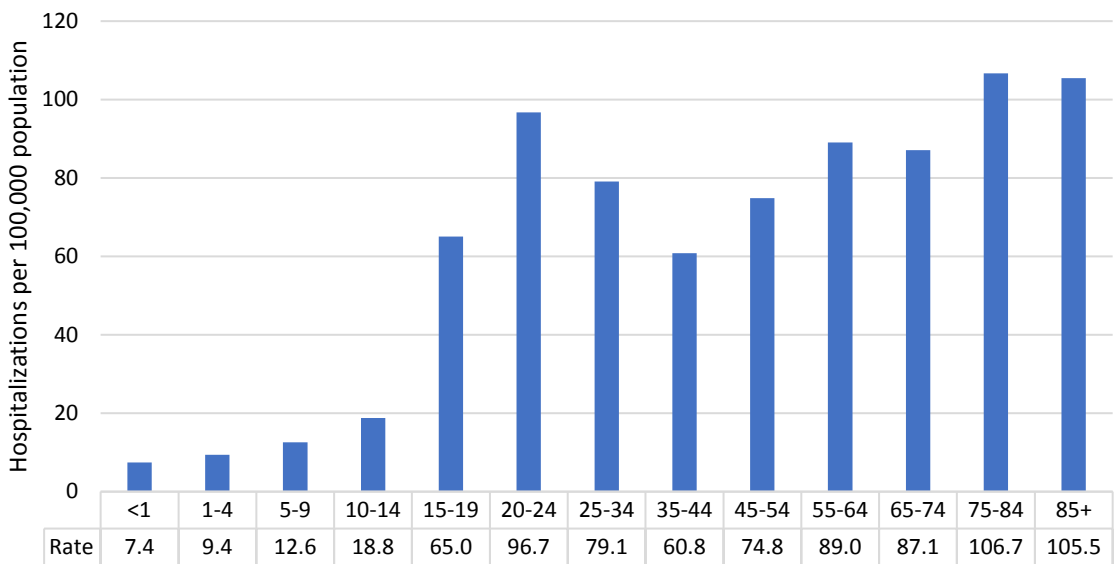
**Figure 7. Traffic related hospitalization rate among Colorado residents, 2011-2016
(N=18,041)**



Source: Colorado Hospital Association, Hospital Discharge

In 2016, there were 3,729 hospitalizations among Colorado residents injured from motor vehicles crashes in traffic or on public roads (Figure 8). The age-specific motor vehicle motor vehicle hospitalization rate for Colorado residents varied by age. People ages 20 to 24 years and adults 75 years and older exhibited the highest hospitalization rates related to motor vehicle injuries.

Figure 8. Motor vehicle injury hospitalization rates among Colorado residents by age group, 2016 (N=3,729)

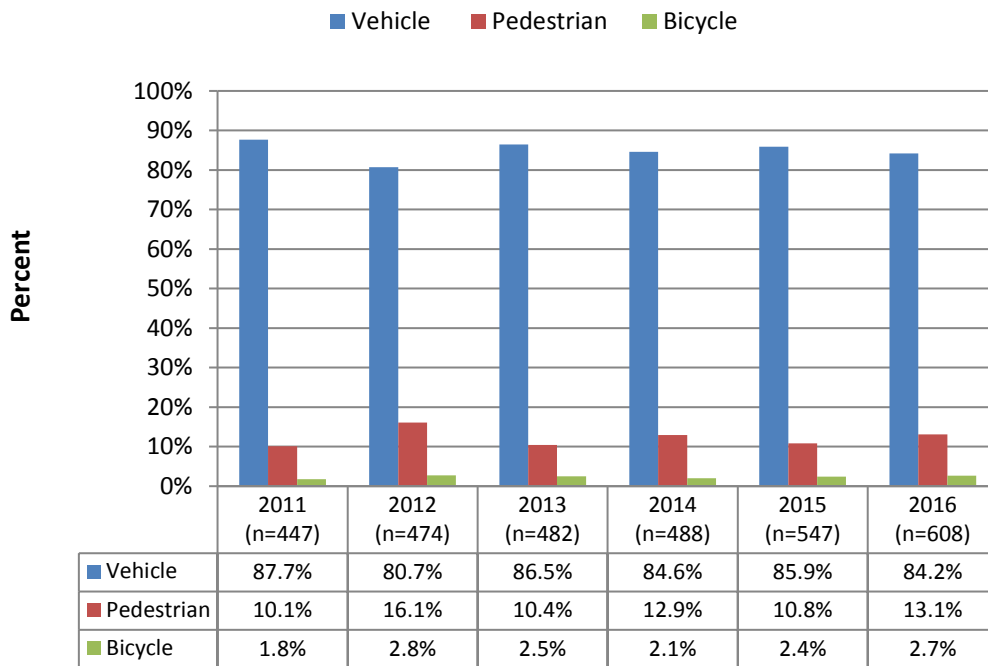


Source: Colorado Hospital Association, Hospital Discharge

Mode of Transportation

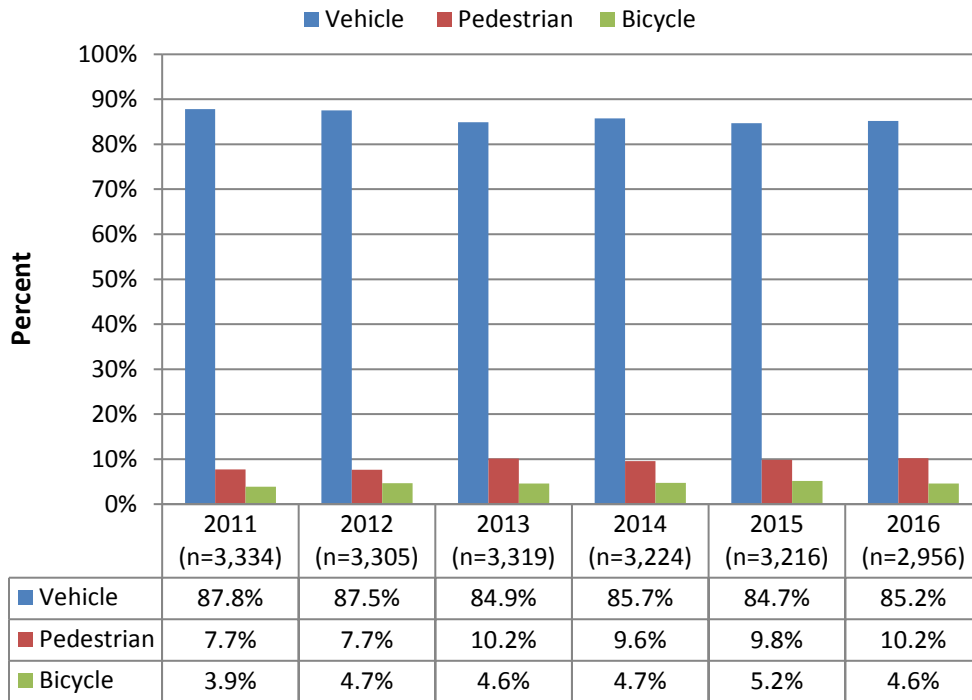
In Colorado, persons riding motorized vehicles made up 84 percent of the motor vehicle-related fatalities between 2011 and 2016 (Figure 9). Pedestrians accounted for 13 percent of motor vehicle fatalities, while bicyclists comprised almost three percent. The percentage of pedestrian and bicyclists fatalities increased from 2015 to 2016.

Figure 9: Motor vehicle fatalities by mode of transportation in Colorado, 2011-2016



Source: FARS

Figure 10: Motor vehicle serious injuries by mode of transportation, Colorado, 2011-2016

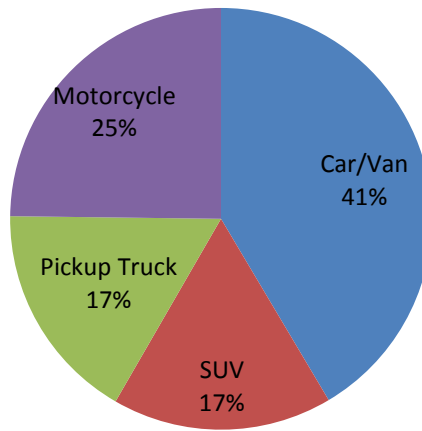


Source: FARS and Crash Reports

The mode of transportation when serious motor vehicle injuries occurred remained relatively stable during 2011-2016 (Figure 10). On average, 86 percent of people who were seriously injured in a motor vehicle crash were riding motorized vehicle. Ten percent were pedestrians and almost five percent were bicyclists.

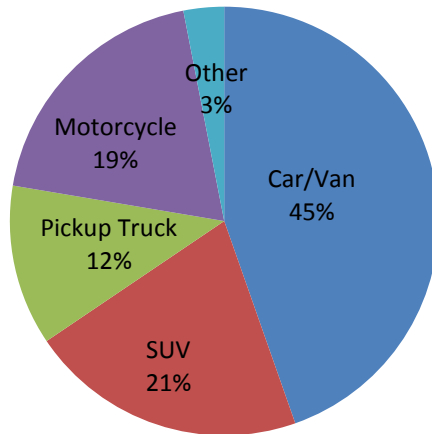
As shown in Figure 9 and 10 above, persons riding motorized vehicles accounted for the majority of motor vehicle-related fatalities and serious injuries. A motor vehicle can be a car/van, motorcycle, pickup truck, SUV, or other type of vehicle (i.e. large truck, motor home, bus, all-terrain vehicle, snowmobile, and farm or construction equipment other than truck). Figure 11 shows the type of motor vehicle individuals were using when fatally injured.. Of those who died, 41 percent were riding in a car/van and 25 percent were riding a motorcycle. Of those who were seriously injured, almost half (45 percent) were riding in a car/van, 21 percent riding in an SUV and 19 percent riding a motorcycle (Figure 12).

Figure 11: Type of motor vehicle individuals were riding in when fatally injured, Colorado, 2016



Source: FARS

Figure 12: Type of motor vehicle used by individuals when seriously injured, Colorado, 2016

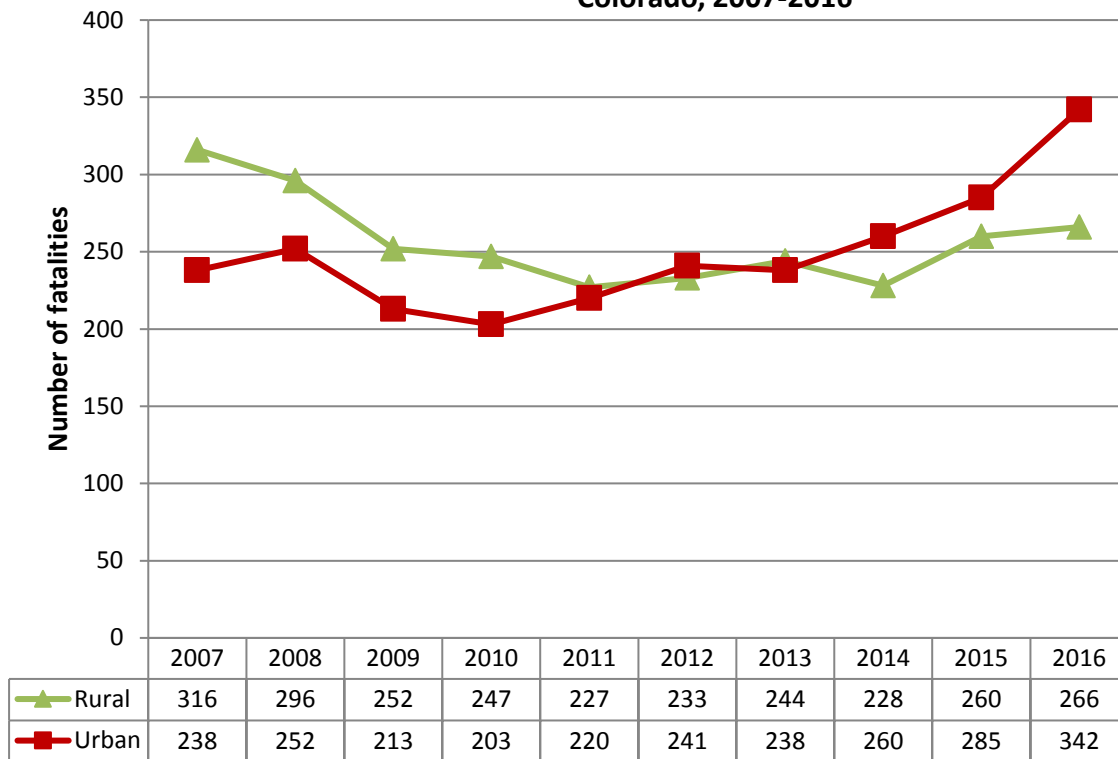


Source: Crash reports

Urban and Rural Fatalities and Injuries

Figure 13 displays the number of motor vehicle fatalities that occurred in urban or rural areas. Between 2006 and 2010 time, more people were dying in crashes in rural areas. While more motor vehicle fatalities occurred in rural areas between 2007 and 2011, more fatalities occurred in urban areas starting in 2014.

Figure 13. Fatalities from motor vehicle crashes in Urban versus Rural areas in Colorado, 2007-2016



Source: FARS

Table 4 shows the number and percentage of motor vehicle fatalities in rural areas, urban areas, and Colorado overall by the type of motor vehicle occupied in the year 2016. In urban areas, the greatest proportion of fatalities occur in cars and vans followed by motorcycles. In rural areas, the highest percentage of fatalities occurred more often in cars/vans and pickup trucks.

Table 4: Frequency (%) of type of motor vehicle occupied when fatally injured in Colorado, 2016			
Type of Motor Vehicle	Rural n=139	Urban n=367	Colorado n=506
Car/Van	52 (37.4%)	157 (42.8%)	209 (41.3%)
SUV	26 (18.7%)	59 (16.1%)	85 (16.8%)
Pickup Truck	29 (20.9%)	37 (10.1%)	66 (13.0%)
Motorcycle	19 (13.7%)	106 (28.9%)	125 (24.7%)
Other*	13 (9.4%)	8 (2.2%)	21 (4.2%)

Source: FARS

*Other category includes: motorized bicycle, farm equipment, motor home, unknown hit and run vehicle, bus or light rail.

Table 5 displays the number and percentage of serious injuries by type of motor vehicle occupied for the year 2016 by rural and urban areas and Colorado. In urban and rural areas, the greatest proportion of serious injuries occurred in cars and vans, representing almost half of all serious injuries. In rural areas, about a third of serious injuries were from cars/vans followed by pickup trucks and SUVs.

Table 5: Frequency (%) of type of motor vehicle occupied when seriously injured in Colorado, 2016			
Type of Motor Vehicle	Rural n=486	Urban n=2,329	Colorado n=2,815
Car/Van	148 (32.0%)	973 (47.4%)	1,121 (44.6%)
SUV	103 (22.3%)	423 (20.6%)	526 (20.9%)
Pickup Truck	108 (23.4%)	197 (9.6%)	305 (12.1%)
Motorcycle	77 (16.7%)	408 (19.9%)	485 (19.3%)
Other*	26 (5.6%)	51 (2.5%)	77 (3.1%)

Source: Crash reports

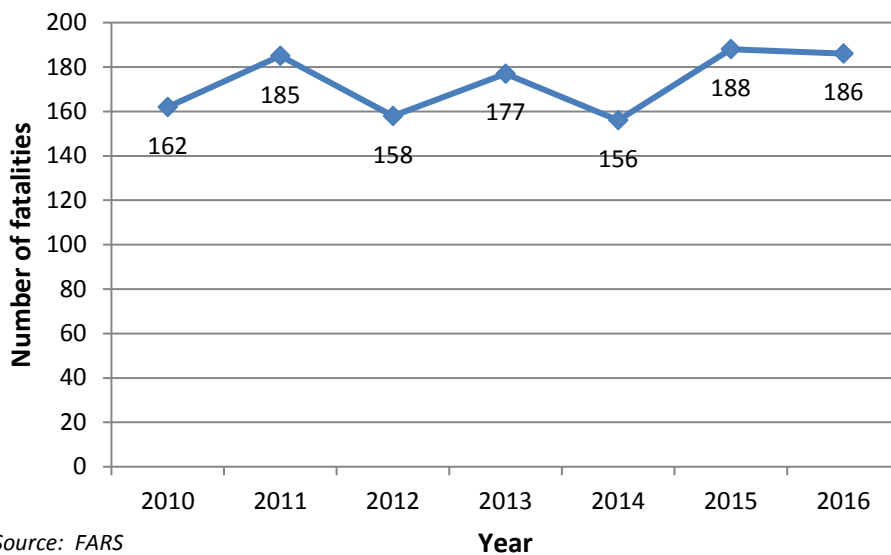
* Other vehicle includes: motorized bicycle, farm equipment, motor home, unknown hit and run vehicle, bus or light rail.

Occupant Protection

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

In 2016, there were 186 unrestrained passenger vehicle occupant fatalities, a one percent decrease from the 188 unrestrained fatalities the previous year (Figure 14). Between 2011 and 2016, the trend in the number of unrestrained fatalities fluctuated from year to year. In 2016, these 186 unrestrained fatalities represented 52 percent of the 362 passenger vehicle occupant fatalities. In contrast, 28 percent of motor vehicle occupants seriously injured in a crash were not using restraints.

Figure 14: Unrestrained passenger vehicle occupant fatalities in Colorado, all seat positions, 2010-2016



Source: FARS

Table 6 shows the number of unrestrained fatalities and person seriously injured in Colorado by age and sex for all the years 2010-2016 combined. Over half of the motor vehicle occupant fatalities were unrestrained (54%) compared to less than one-third of those seriously injured were unrestrained (27%). The 21-34 year old age group had the highest number unrestrained serious injuries and fatalities. In addition, more males died or were seriously injured while unrestrained after they reached driving age (15+) compared to females of driving age.

Table 6. Unrestrained motor vehicle occupant fatalities and serious injuries by age and sex, Colorado

		2010-2016	
Age Group	Sex	Unrestrained Fatalities	Unrestrained Serious Injuries
<5	Male	2	22
	Female	3	26
	Unrestrained/Total	5/21 (23.8%)	48/227 (21.1%)
5-8	Male	2	37
	Female	5	22
	Unrestrained/Total	7/19 (36.8%)	59/224 (26.3%)
9-14	Male	18	87
	Female	9	96
	Unrestrained/Total	27/44 (61.4%)	183/535(34.2%)
15-20	Male	115	417
	Female	61	340
	Unrestrained/Total	176/290 (60.7%)	757/2,080 (36.4%)
21-34	Male	328	1,020
	Female	131	636
	Unrestrained/Total	459/670 (68.5%)	1,656/4,911 (33.7%)
35-54	Male	211	546
	Female	89	370
	Unrestrained/Total	300/531 (56.5%)	916/4,101 (22.3%)
55-64	Male	79	170
	Female	34	102
	Unrestrained/Total	113/264 (42.8%)	272/1,637 (16.6%)
65+	Male	84	105
	Female	39	85
	Unrestrained/Total	123/389 (31.6%)	190/1,534 (12.4%)
All Ages	Male	839	2,448
	Female	371	1,687
	Unrestrained/Total	1,210/2,228 (54.3%)	4,135/15,628 (26.5%)

Source: FARS and Crash Reports, Department of Revenue
 Numbers may not total to 100% due to missing information on age or sex.

Seat Belt Compliance

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

A major initiative of the Office of Transportation Safety (OTS) at the Colorado Department of Transportation is to increase seat belt use. Each year, OTS funds an observational survey of occupant protection use statewide. Figure 15 shows the steady increase in seat belt use from 2007 to 2016. Beginning in 2012, the survey methodology changed to include observation of seat belt use in commercial vehicles 10,000 pounds and under. In 2016, Colorado’s seat belt use rate was 84 percent, a slight drop from the previous year (85%), and still below the nationwide use of 87 percent.

Historically, fewer occupants in light trucks wear seat belts compared to occupants in other passenger vehicles. In 2007, 70 percent of light truck occupants wore seat belts. Over the past 10 years, this increased to roughly 76 percent. Despite this improvement, light truck occupants still lag behind other motor vehicle occupants (84 percent overall seat belt use).

Countermeasures that Work
Increase seat belt use:

Targeting Adults:
Seat Belt Use Laws

- State primary enforcement belt use laws
- Local primary enforcement belt use laws
- Increased belt use law penalties

Seat Belt Law Enforcement

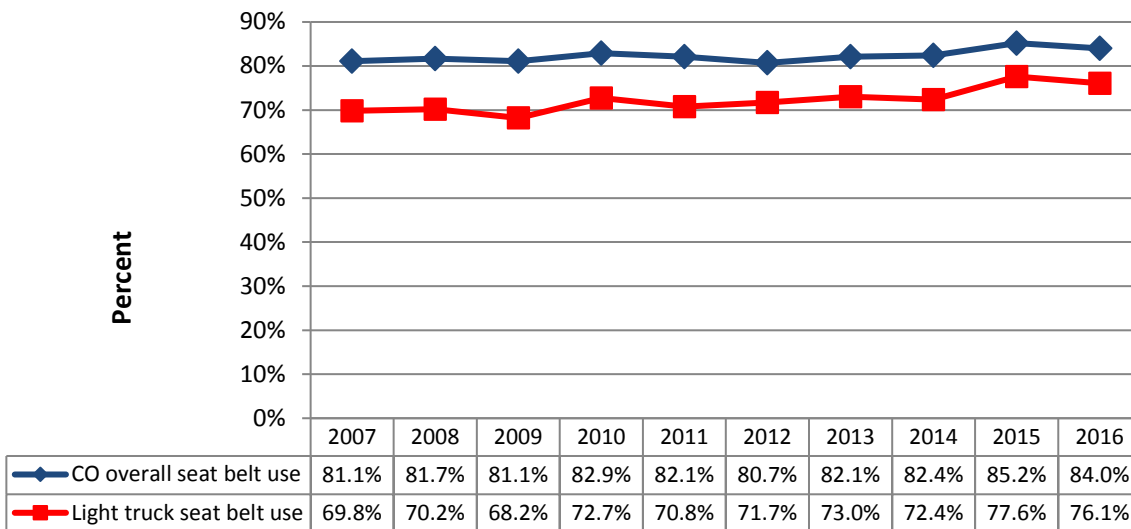
- Short high-visibility belt law enforcement
- Combined enforcement, nighttime
- Sustained enforcement

Communications & Outreach

- Supporting enforcement
- Strategies for low-belt-use groups

Listed have a 3-5 star effectiveness rating. For all countermeasures, visit <http://www.nhtsa.gov/staticfiles/nti/pdf/812202-CountermeasuresThatWork8th.pdf>

Figure 15. Statewide overall and light truck seat belt use in Colorado, 2007-2016



Source: Institute of Transportation Management at CSU

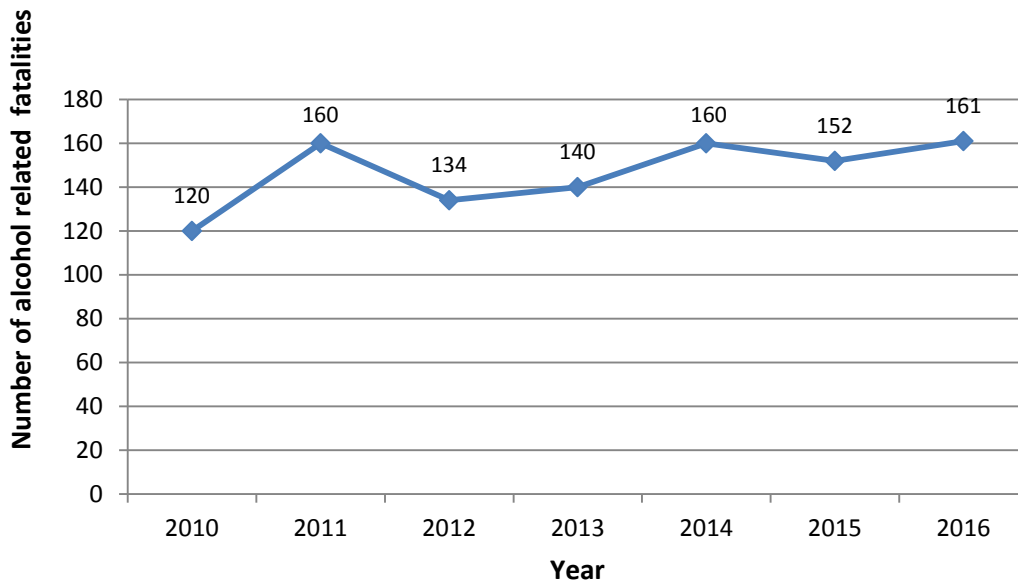
Impaired Driving

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 .

Alcohol Impaired Driving

Information regarding driving while impaired in Colorado is complex. In fatal crashes, people who die are tested for alcohol and/or drugs. An arrested driver is required 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. Though arrested drivers are required to be tested, they can refuse and have driver's license consequences for refusal. Despite best efforts, test results are often missing in the electronic crash report used for this analysis. In non-fatal crashes, the law enforcement officer's opinion of alcohol/drug involvement is the only data available on crash reports. To remedy missing test results on BAC, the National Highway Traffic Safety Administration (NHTSA) uses methods to impute missing BAC values. Imputation is a process of replacing missing data with a probable value based on other available data. The alcohol-related performance measure in Figure 16 is displayed using the imputed method by NHTSA. The number of fatalities involving an alcohol-impaired driver (including motorcycle operators) increased in 2011 and remained relatively high during the years 2012 through 2016, compared to 2010 (Figure 16).

Figure 16: Fatalities in Colorado motor vehicle crashes involving a driver or motorcycle operator with a BAC ≥ 0.08 , 2010-2016



Source: FARS

During 2010-2016, there were 4,798 drivers involved in a fatal crash in Colorado (Table 7). The highest percentage of alcohol intoxicated drivers, defined as a BAC of 0.08 or higher, involved in a fatal crash were between the ages of 21 and 34 and more male drivers than female drivers were found to have a BAC of .08 or higher.

For crashes resulting in a serious injury, the alcohol results are based on the law enforcement officer's opinion at time of crash, not lab values. As seen with fatalities, the age group of 21-34 year olds had the highest percentage of suspected of alcohol impairment in serious injury crashes compared to the other age groups.



Countermeasures that Work

To reduce alcohol- and drug-impaired driving:

Deterrence

1) Laws

- Administrative license revocation/suspension
- Open containers
- 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

<http://www.nhtsa.gov/staticfiles/nti/pdf/812202-CountermeasuresThatWork8th.pdf>

Table 7: Drivers with a blood alcohol content ≥ 0.08 in fatal crashes and drivers where investigating officer suspects alcohol in serious injury crashes in Colorado, by impaired driver age and sex, 2010-2016

		2010-2016	
Age Group	Sex	Number of drivers in fatal crashes (n= 4,798)	Number of Drivers in Crashes resulting in Serious injury (n=14,482)
Driver		BAC ≥ 0.08	Suspected Alcohol
9-14	Male	0	3
	Female	0	0
	Total	0/3 (0%)	3/132(2.3%)
15-20	Male	52	150
	Female	17	50
	Total	69/447 (15.4%)	150/1,365 (11.0%)
21-34	Male	293	788
	Female	59	245
	Total	352/1,474 (23.4%)	1,033/4,581 (22.5%)
35-54	Male	234	540
	Female	31	156
	Total	265/1,505 (17.6%)	696/4,729 (14.7%)
55-64	Male	57	142
	Female	9	21
	Total	66/705 (9.4%)	163/1,959(8.3%)
65+	Male	18	32
	Female	3	5
	Total	21/603 (3.5%)	37/1,398 (2.6%)
All Ages	Male	654	1,520
	Female	119	421
	Total (%)	773/4,798 (16.1%)	1,941/14,482 (13.4%)

Source: FARS and Crash Reports

Core Performance Measure (C-14): Reduce the number of fatalities in crashes involving a driver or motorcycle operator testing positive for drugs.

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. National Highway Traffic Safety Administration (NHTSA) studies² have shown marijuana impairs crucial abilities needed to drive safely, including:

- Slowed reaction time
- Difficulties in road tracking and ability 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 of both

According to the report, “Monitoring Health Concerns Related to Marijuana in Colorado: 2016”, marijuana use increases the risk for getting into a motor vehicle crash.³ In addition, the combination of alcohol and marijuana increases the crash risk more than using either substance by itself. Recommendations from the report include: waiting at least six hours after smoking marijuana and waiting at least 8 hours after eating or drinking marijuana products before driving to resolve the impairment effects.

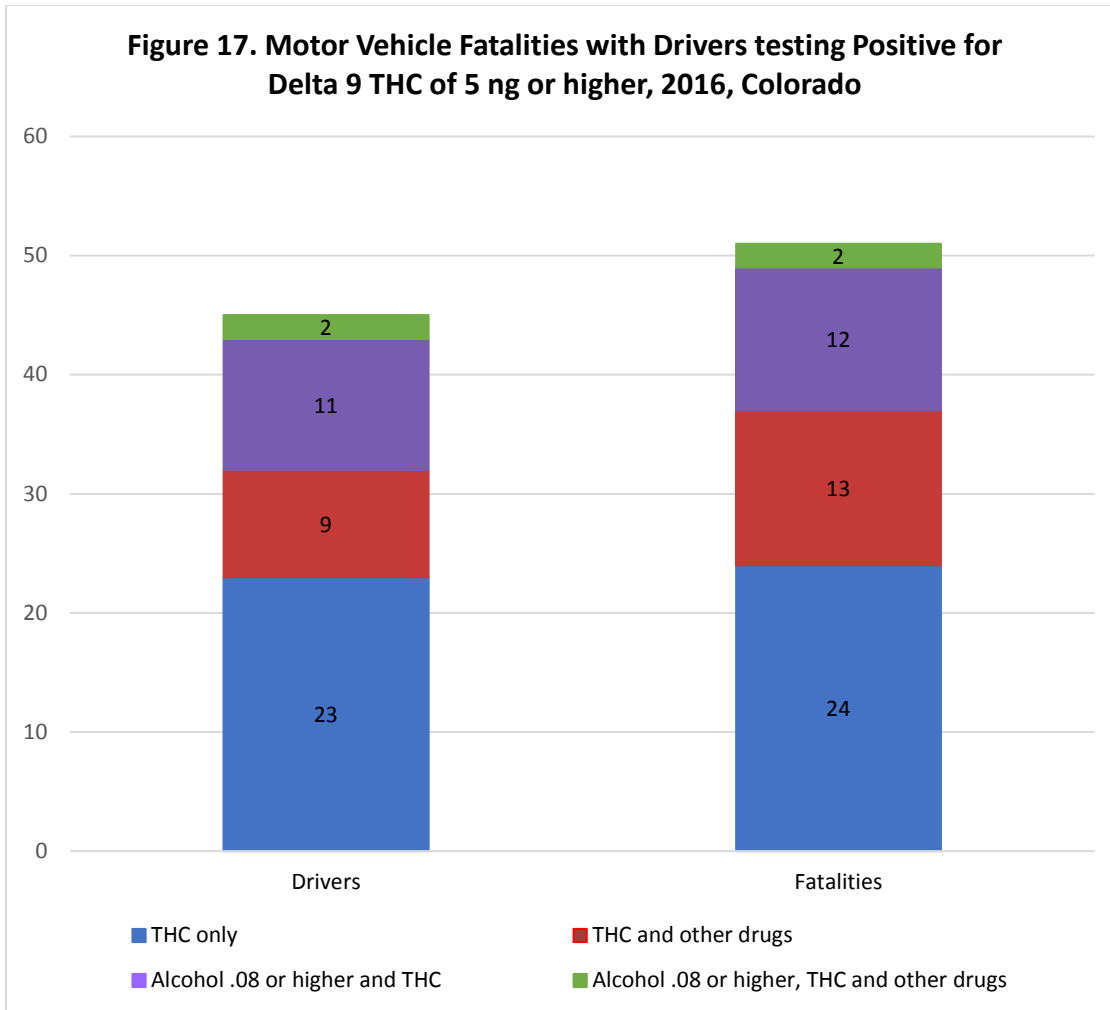
Under Colorado law, drivers with five nanograms of active Delta 9 THC in their blood creates a permissible inference that the driver is under the influence of one or more drugs.⁴ However, because there is no roadside device to detect THC, law enforcement officers may transfer the driver to a location where blood can be drawn for further toxicology screening. Because the active Delta 9 THC component of marijuana decreases rapidly within the first hour of use, roadside devices are being created and tested to improve testing results. In addition law enforcement officers receive training in Advanced Roadside Impaired Driving Enforcement (ARIDE) and many are trained as drug recognition experts (DREs) to aid in the detection of impairment.

Figure 17 displays the number of motor vehicle fatalities and drivers involved in the crash for whom there is a permissible inference of impairment by marijuana (tested positive with 5 nanograms or greater of Delta 9 THC, which is the active component in marijuana). The data is broken out by those who tested positive for THC and if any other substances were present. Among the 45 drivers who tested positive for THC in a fatal crash, half of drivers (n=23) had only THC in their system while the remaining had substances in addition to THC in their system.

² Compton, R. (2017, July). Marijuana-Impaired Driving - A Report to Congress. (DOT HS 812 440). Washington, DC: National Highway Traffic Safety Administration.

³ Monitoring Health Concerns Related to Marijuana in Colorado: 2016. Colorado Department of Public Health and Environment. Available at: <https://www.colorado.gov/pacific/cdphe/marijuana-health-report>

⁴ Marijuana Legalization in Colorado: Early Findings. A Report Pursuant to Senate Bill 13-283. March 2016. Colorado Department of Public Safety. Available at : <https://cdpsdocs.state.co.us/ors/docs/reports/2016-SB13-283-Rpt.pdf>



Source: FARS

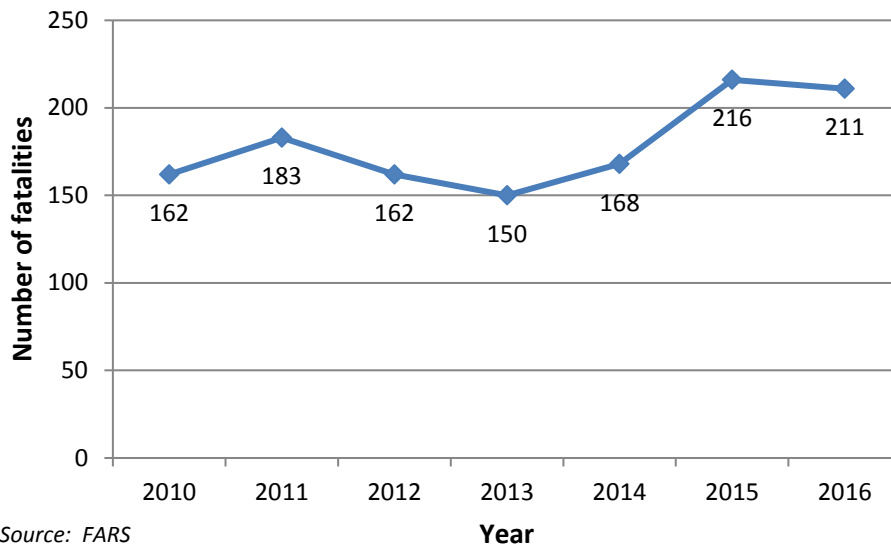
1. Only active forms of THC (tetrahydrocannabinol), such as Delta 9, can cause impairment.
2. In Colorado, there is a "permissible inference" that a person is under the influence of a) cannabis - if their blood contains 5 Nano grams or more of Delta 9-THC per milliliter in whole blood or b) alcohol - if their blood contains .08 grams or more of alcohol per 100 grams in the whole blood.
3. Prior to 2016, data collection on Delta 9 THC was incomplete.
4. C.R.S. 42-4-1301(6)(a)(IV)

Speed Enforcement

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

Speeding-related motor vehicle fatalities have increased over the past seven years but remained relatively steady between 2015 and 2016 (Figure 18). Speeding contributed to 35 percent of all fatalities in 2016.

Figure 18: Speeding-Related Fatalities in Colorado, 2010-2016



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 <http://www.nhtsa.gov/staticfiles/nti/pdf/812202-CountermeasuresThatWork8th.pdf>

Table 8 compares the number of drivers issued a citation for speeding (exceeding the safe or posted speed) in fatal crashes compared to serious injury crashes during 2010 to 2016. Law enforcement officers indicated that speeding was the driver action, or specific law violation, leading to a crash in 33 percent of all fatal crashes and almost nine percent of serious injury crashes in 2016. Disparities by age and sex are consistent across years and crash types. Drivers aged 21 to 54 years and males contributed the most for speeding-related fatalities. In contrast, youth drivers ages 15 to 20 had the highest percentage of speeding-related serious injury crashes compared to all other age groups.

Table 8: Drivers in fatal crashes and drivers in serious injury crashes that were speed-related in Colorado, by age and sex of driver			
		2010-2016	
Age Group	Sex	Speeding Drivers	
		Drivers in Fatal Crashes (n=4,798)	Drivers in Serious injury Crashes (n=14,482)
9-14	Male	1	5
	Female	0	0
	Total	1/3 (33.3%)	5/132(3.8%)
15-20	Male	133	108
	Female	59	61
	Total	192/447 (43.0%)	169/1,365 (12.4%)
21-34	Male	476	328
	Female	124	99
	Total	600/1,474 (40.7%)	427/4,581 (9.3%)
35-54	Male	383	277
	Female	94	102
	Total	477/1,505 (31.7%)	379/4,729 (8.0%)
55-64	Male	131	105
	Female	34	38
	Total	165/705 (23.4%)	143/1,959(7.3%)
65+	Male	91	61
	Female	40	22
	Total	131/603 (21.7%)	83/1,398 (5.9%)
All Ages	Male	1215	895
	Female	351	326
	Total (%)	1,576/4,798 (32.8%)	1,227/14,482 (8.5%)

Source: FARS and Crash Reports

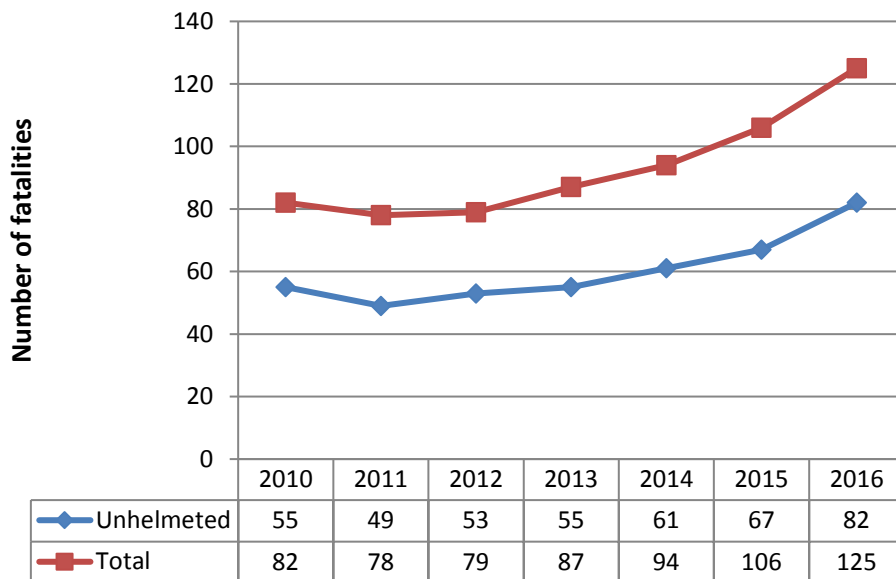
NOTE: Numbers may not total 100% due to missing data on age and sex

Motorcycle Safety

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

Motorcyclist fatalities increased by more than 50 percent over the past seven years. In 2010, there were 82 fatalities and in 2016 there were 125 (Figure 19). The 125 motorcyclist fatalities in 2016 accounted for 21 percent of the total motor vehicle fatalities.

Figure 19: Motorcyclist fatalities in Colorado, 2010-2016



Source: FARS

Countermeasures that Work

Improve motorcycle safety:

Motorcycle Helmets

- Universal coverage State motorcycle helmet use laws

Alcohol Impairment

- Alcohol impairment: detection, enforcement, & sanctions

Listed have a 3-5 star effectiveness rating. For all countermeasures, visit <http://www.nhtsa.gov/staticfiles/nti/pdf/812202-CountermeasuresThatWork8th.pdf>

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

Of the 125 motorcyclist fatalities in 2016, 82 motorcyclists or two-thirds (66%) were not wearing helmets (Figure 19). Between 2010 and 2016, the percent of motorcyclists who died each year and were not wearing helmets ranged between 63 and 67 percent.



Table 9 compares the number of motorcyclists (operators and/or passengers) killed or seriously injured in a motorcycle crash by age, sex, and helmet status for the years 2010 to 2016. The age group who experienced the most motorcyclist fatalities and serious injuries was the 35 to 54 age group. Almost two-thirds of the people who died were not wearing a helmet and a less than half (47%) of those seriously injured were not wearing a helmet at the time of the crash.

Table 9: Motorcyclist fatalities and serious injuries in Colorado, by age and sex					
		2010-2016			
		Motorcyclist Fatalities		Motorcyclist Serious injuries	
Age group	Sex	No Helmet	Total	No Helmet	Total
<5	Male	0	0	1	2
	Female	0	0	0	0
	Total	0 (0.0%)	0	1/2 (50.0%)	2
5-8	Male	0	0	1	1
	Female	0	0	1	1
	Total	0 (0.0%)	0	2/2 (100.0%)	2
9-14	Male	2	2	4	17
	Female	0	0	1	6
	Total	2/2 (100.0%)	2	5/24 (20.8%)	24
15-20	Male	15	23	49	115
	Female	3	5	16	31
	Total	18/28 (64.3%)	28	65/146 (44.5%)	146
21-34	Male	85	163	369	846
	Female	6	14	77	153
	Total	91/177 (51.4%)	177	446/1,010 (44.2%)	1,010
35-54	Male	163	216	678	1,230
	Female	21	30	161	301
	Total	184/246 (74.8%)	246	839/1,541 (54.4%)	1,541
55-64	Male	77	119	264	579
	Female	5	18	31	96
	Total	82/137 (59.9%)	137	295/680 (43.4%)	680
65+	Male	30	59	73	232
	Female	2	2	6	23
	Total	32/62 (51.6%)	62	79/255 (31.0%)	255
All Ages	Male	372	582	1,450	3,041
	Female	37	69	295	613
	Total (%)	409/651 (62.8%)	651	1,745/3,688 (47.2%)	3,688

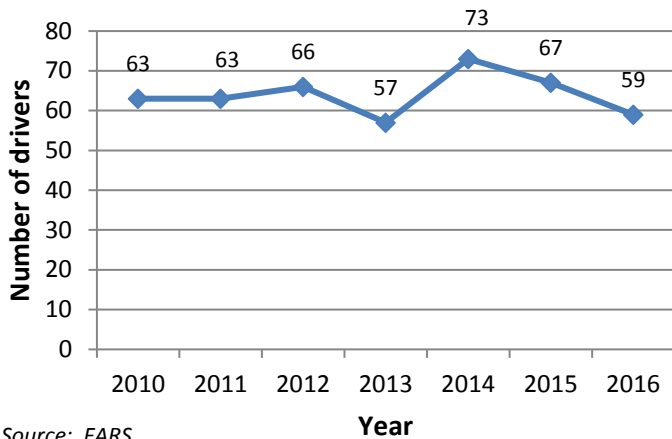
Source: FARS and Crash Reports
Numbers may not total 100% due to missing data on age and sex

Young Drivers

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

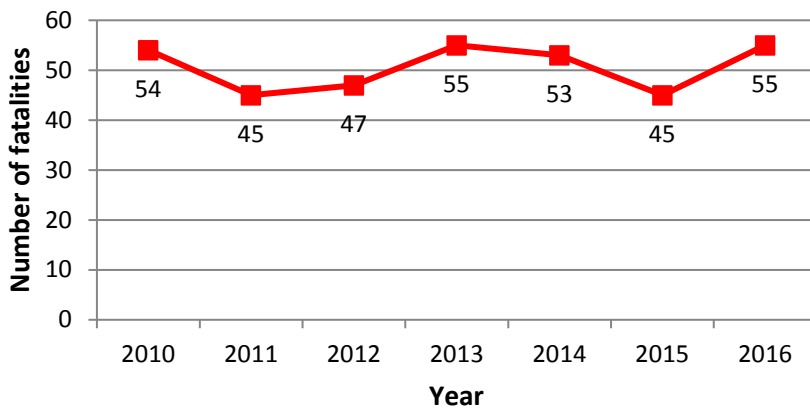
The number of drivers aged 15-20 years old involved in a fatal motor vehicle crash decreased by 12 percent from 2015 to 2016 (Figure 20). However, from 2015 to 2016 the number of motor vehicle fatalities among people aged 15-20 years old, regardless of the age of the driver, increased by 22 percent (Figure 21).

Figure 20: Number of drivers aged 15-20 years old involved in a fatal motor vehicle crash, Colorado, 2010-2016



Source: FARS

Figure 21: Motor vehicle fatalities in Colorado among persons aged 15-20 years old, 2010-2016



Source: FARS

Countermeasures that Work
Improve young-driver safety:

Graduated Driver Licensing (GDL)

- 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

<http://www.nhtsa.gov/staticfiles/nti/pdf/812202-CountermeasuresThatWork8th.pdf>

Table 10 compares the number of drivers aged 15-20 years in a fatal crash to a serious injury crash during the years 2010 to 2016. Drivers aged 15 to 20 accounted for less than ten percent of all fatal crashes and serious injury crashes. The majority of young drivers in fatal and serious injury crashes were in the 18-20 year old age group. More males than females were involved in fatal and serious injury crashes.

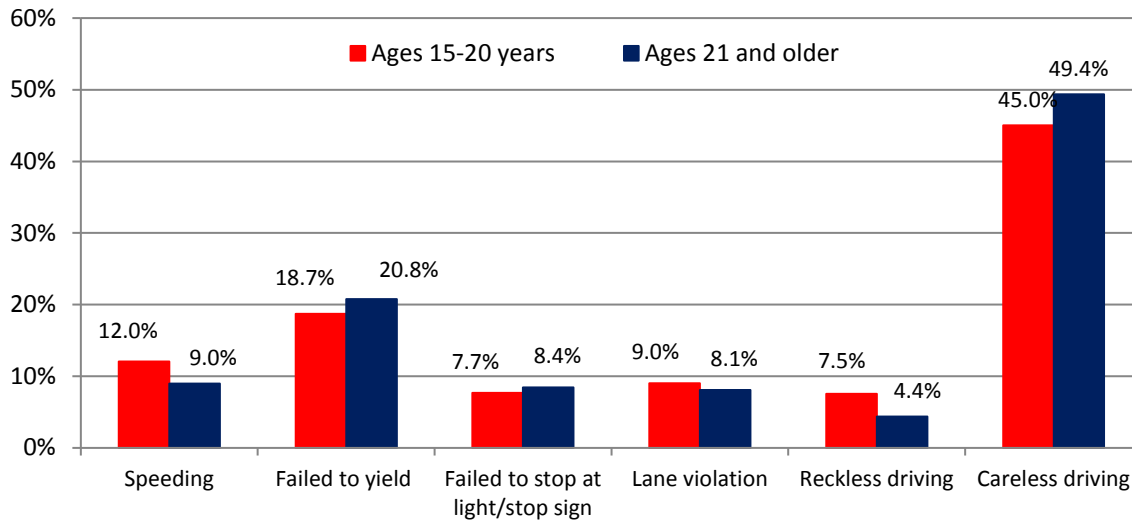
Table 10: Young drivers involved fatal crashes and serious injury crashes, by age and sex of driver			
		2010-2016	
Age Group	Sex	Drivers in fatal crashes <i>n</i> = 4,798	Drivers in serious injury crashes <i>n</i> = 14,482
15	Male	3	26
	Female	5	11
	Total (%)	8/447 (1.8%)	37/1,402 (2.6%)
16-17	Male	80	213
	Female	39	138
	Total (%)	119/447 (26.6%)	351/1,402 (25.0%)
18-20	Male	218	614
	Female	102	400
	Total (%)	320/447 (71.6%)	1,014/1,402 (72.3%)
Total: 15-20	Male	301	853
	Female	146	549
	Total (%)	447/4,798 (9.3%)	1,402/14,482 (9.7%)

Source: FARS and Crash Reports

Numbers may not total 100% due to missing data on age and sex

Figure 22 shows the top driver actions that led to an injury or fatal crash by young drivers (ages 15-20) compared to drivers aged 21 and older in Colorado in 2016. Young drivers had a higher percentage of speeding, lane violations, and reckless driving compared to those drivers aged 21 or older when involved in an injury or fatal crash. Careless driving is operating a motor vehicle but not deliberately attempting to drive dangerously, whereas reckless driving is a more serious offense because the officer believes that the driver is driving with a willful disregard for the safety of people and property.

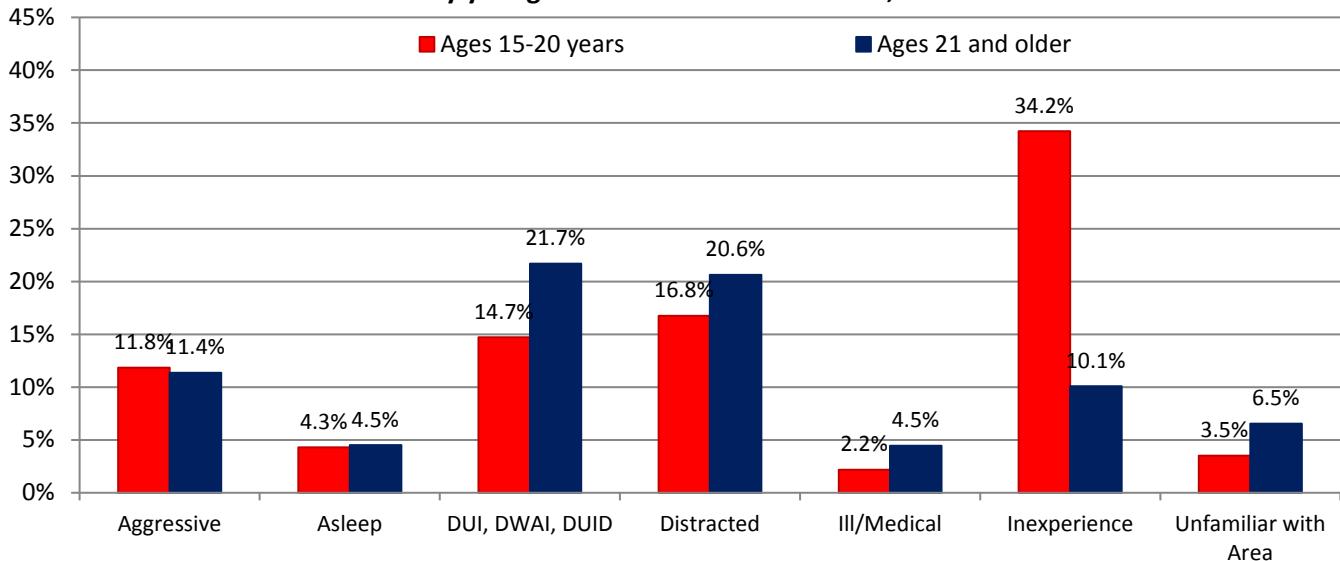
Figure 22. Top driver actions associated with the cause of a crash in injury and fatal crashes by young drivers versus other drivers, Colorado 2016



Source: Crash reports

Contributing factors are also recorded in motor vehicle crashes. Figure 23 shows contributing factors among injury and fatal crashes by young drivers compared to drivers age 21 or older in 2016. Inexperience was the leading contributing factor in injury/fatal crashes among young drivers.

Figure 23. Contributing factors associated with the cause of a crash in injury and fatal crashes by young drivers versus other drivers, Colorado 2016



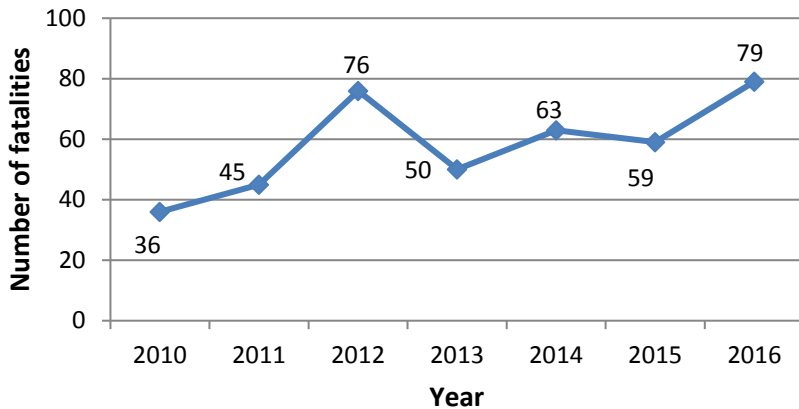
Source: Crash reports, Colorado Department of Revenue
 Distracted = passenger, cell phone, radio, food object, pet, etc.

Pedestrian Safety

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

In 2016, there were 657 motor vehicle crashes involving a pedestrian resulting in 79 deaths and 302 pedestrians seriously injured. The 79 pedestrian fatalities in 2016 accounted for 13 percent of all motor vehicle fatalities. The pedestrian fatalities increased by 34 percent between 2015 and 2016 (Figure 24).

Figure 24: Pedestrian fatalities in Colorado, 2010-2016



Source: FARS



Countermeasures that Work

Improve pedestrian and bicycle safety:

Pedestrian

School-aged Children

- Elementary-age child pedestrian training

All Pedestrians

- Pedestrian safety zones
- Reduce and enforce speed limits
- Conspicuity enhancement
- Targeted enforcement

Bicycle

Children

- Bicycle helmet laws for children

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

<http://www.nhtsa.gov/staticfiles/nti/pdf/812202-CountermeasuresThatWork&th.pdf>

Table 11 shows pedestrian fatalities and serious injuries due to crashes for each age and sex group during the 2010-2016 time period. A “Total” row within each age group shows the total number of fatalities or serious injuries in that age group and as a percentage of the total pedestrians for all ages (shown in the last row). Most pedestrian fatalities and injuries occurred in the 21-34 and 35-54 year old age groups and among more males than females.

Table 11: Pedestrian fatalities and serious injuries in Colorado, by age and sex			
		2010-2016	
Age group	Sex	Fatalities	Serious Injuries
<5	Male	3	27
	Female	1	12
	Total	4 (0.9%)	39 (1.9%)
5-8	Male	4	43
	Female	1	16
	Total	5 (1.2%)	60 (2.9%)
9-14	Male	7	102
	Female	1	74
	Total	8 (2.0%)	177 (8.6%)
15-20	Male	25	125
	Female	6	78
	Total	31 (7.6%)	205 (10.0%)
21-34	Male	74	290
	Female	23	176
	Total	97 (23.8%)	468 (22.9%)
35-54	Male	103	371
	Female	27	198
	Total	130 (31.9%)	570 (27.8%)
55-64	Male	48	164
	Female	18	87
	Total	66 (16.2%)	251 (12.3%)
65+	Male	40	92
	Female	27	82
	Total	67 (16.4%)	175 (8.5%)
All Ages	Male	304	1,238
	Female	104	740
	Total	408	2,047

Source: FARS and Crash Reports

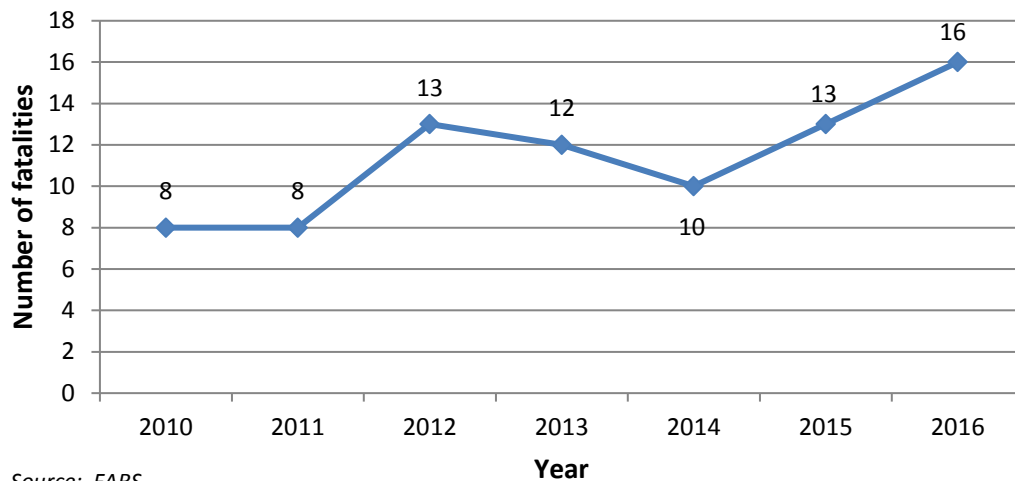
*Numbers may not total 100% due to missing data on age and sex

Bicyclist Safety

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

In 2016, there were 479 crashes involving a bicyclist resulting in 16 deaths and 135 bicyclists seriously injured. Bicyclist fatalities increased 23 percent between 2015 and 2016 (Figure 25) and have doubled over the past seven years.

Figure 25: Bicyclist fatalities in Colorado, 2010-2016



Source: FARS

Table 12 displays bicyclist fatalities and serious injuries due to motor vehicle crashes for each age and sex group for the years 2010 to 2016. Most bicyclist fatalities occurred in the 35-54 and 55-64 age groups. In contrast, serious injuries among bicyclists occurred among the 21-34 and 35-54 age groups. More males suffered fatalities and serious injuries than females.

Table 12: Bicyclist fatalities and serious injuries in Colorado, by age and sex			
		2010-2016	
Age group	Sex	Fatalities	Serious Injuries
<5	Male	0	5
	Female	0	5
	Total	0 (0.0%)	10 (1.0%)
5-8	Male	0	20
	Female	2	6
	Total	2 (2.5%)	26 (2.6%)
9-14	Male	0	81
	Female	1	18
	Total	1 (1.2%)	100 (9.9%)
15-20	Male	1	62
	Female	1	20
	Total	2 (2.5%)	82 (8.1%)
21-34	Male	12	210
	Female	2	84
	Total	14 (17.5%)	294 (29.0%)
35-54	Male	30	222
	Female	1	65
	Total	31 (38.8%)	289 (28.5%)
55-64	Male	18	97
	Female	2	22
	Total	20 (25.0%)	119 (11.7%)
65+	Male	8	36
	Female	2	7
	Total	10 (12.5%)	43 (4.2%)
All Ages	Male	69	751
	Female	11	231
	Total	80	1,013

Source: FARS and Crash Reports

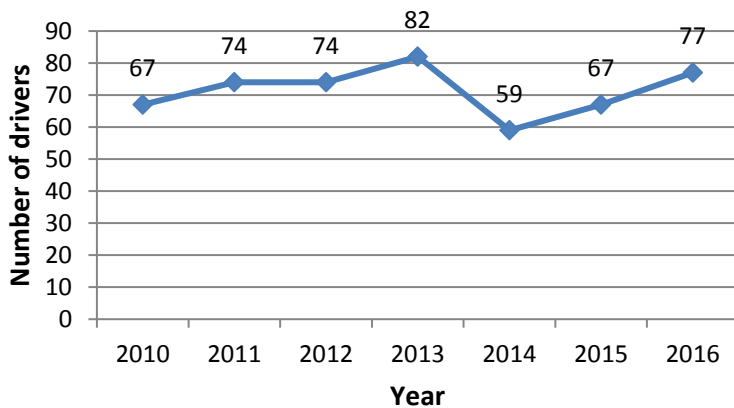
*Numbers may not total 100% due to missing data on age and sex

Distracted Driving

Core Performance Measure (C-12): Reduce the number of distracted drivers involved in fatal crashes

There were 128,009 crashes in 2016 involving 230,544 drivers. In 2016, law enforcement officers reported a human contributing factor in 29 percent of drivers involved in non-injury crashes and 48 percent of injury and fatal crashes. Distracted driving is defined by the National Highway Traffic Safety Administration (NHTSA) when a driver diverts their attention from the driving task to some other activity. Examples include being distracted by smoking, daydreaming, passenger, cell phone, radio, or other object in the car such as food or an animal. Distracted drivers who were involved in a fatal crash fluctuated from year to year (Figure 26).

Figure 26: Colorado distracted drivers involved in a fatal crash, 2010-2016



Source: FARS

Figure 27 shows the top contributing factors that law enforcement officers noted in a motor vehicle crash by injury crash type. Picking one contributing factor is a challenge because: 1) a driver may fall into one or more categories; 2) the law enforcement officer may mark 'Other Factor' and describe this selection in the narrative; and 3) a driver may not fully reveal their behavior at the time of the crash. The 'distracted' factor includes being distracted by a passenger, cell phone, radio, food, objects, pets, etc. DUI, DWAI, DUID factors were most prevalent in injury and fatal crashes compared to property damage only crashes. Being 'distracted' occurred in a higher percentage of property damage only crashes (non-injury) compared to injury or fatal crashes. Among crashes where a distraction was reported, 12 percent of non-injury crashes and 15 percent in injury/fatal crashes were attributed to being distracted by a cell phone.

Countermeasures that Work

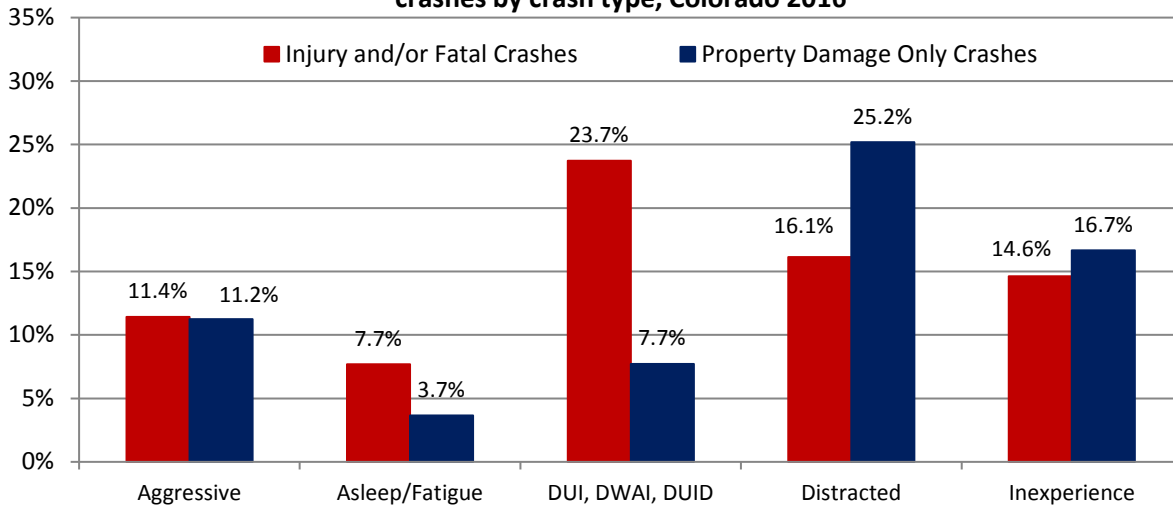
Reduce distracted and drowsy driving:

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 <http://www.nhtsa.gov/staticfiles/nti/pdf/812202-CountermeasuresThatWork8th.pdf>

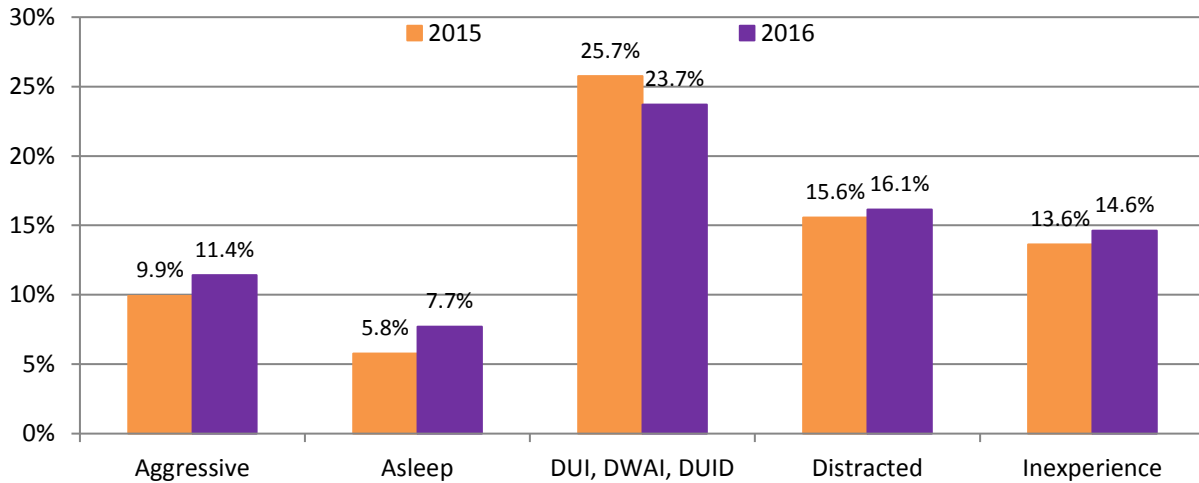
Figure 27. Top contributing factors associated with cause of motor vehicle crashes by crash type, Colorado 2016



Source: Crash reports

Figure 28 compares the top five types of driver factors noted in injury/fatal crashes in 2015 compared to 2016. The percent of drivers associated with a DUI, DWAI, or DUID in an injury and fatal crash was lower in 2016 compared to 2015.

Figure 28. Comparison of driver factors associated with a motor vehicle crash by year of crash: injury and fatal crashes, Colorado 2015 and 2016



Source: Crash reports

Table 13 shows the number of distracted drivers in all crashes by age and sex of the driver between 2013-2014 and 2015-2016. Overall, the number of distracted drivers increased eight percent between the two time periods. The age group with the largest increase in distracted drivers was the 21-34 year old age group at 13 percent.

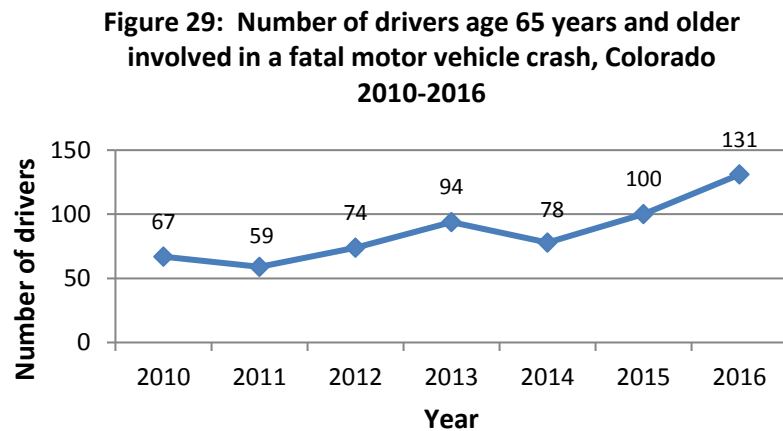
Table 13. The number of distracted drivers by driver sex and age group, all types of motor vehicle crashes in Colorado, 2013-2014 vs 2015-2016				
Age Group	Sex	2013-2014	2015-2016	%Δ between time periods
15- 20	Male	2,340	2,468	
	Female	1,908	2,047	
	Total	4,248	4,515	6.3% increase
21 - 34	Male	5,647	6,662	
	Female	4,785	5,169	
	Total	10,432	11,831	13.4% increase
35 - 54	Male	4,419	4,722	
	Female	3,381	3,533	
	Total	7,800	8,255	5.8% increase
55 - 64	Male	1,581	1,592	
	Female	1,176	1,165	
	Total	2,757	2,757	0 % change
65+	Male	1,171	1,153	
	Female	974	1,080	
	Total	2,145	2,233	4.1% increase
All	Male	15,158	16,597	
	Female	12,224	12,994	
	Total	27,382	29,591	8.1% increase

Source: Crash reports

Older Drivers

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

Between 2010 and 2016, the number of drivers age 65 years or older involved in a fatal motor vehicle crash increased over time (Figure 29). These older drivers were not necessarily at fault for the crash. There were 131 drivers age 65 years or older involved in a fatal motor vehicle crash in 2016, almost double the 67 drivers in 2010. The population of Coloradans aged 65 and older has also increased over time. The number of Coloradans aged 65 and older increased 34 percent from 554,336 in 2010 to 743,165 in 2016.



Source: FARS

Countermeasures that Work Improve older driver safety:

Licensing

- License screening & testing
- Referring older drivers to DMVs

License restrictions

Traffic Law Enforcement

- Law enforcement roles

Listed have a 3-5 star effectiveness rating. For all countermeasures, visit <http://www.nhtsa.gov/staticfiles/nti/pdf/812202-CountermeasuresThatWork8th.pdf>

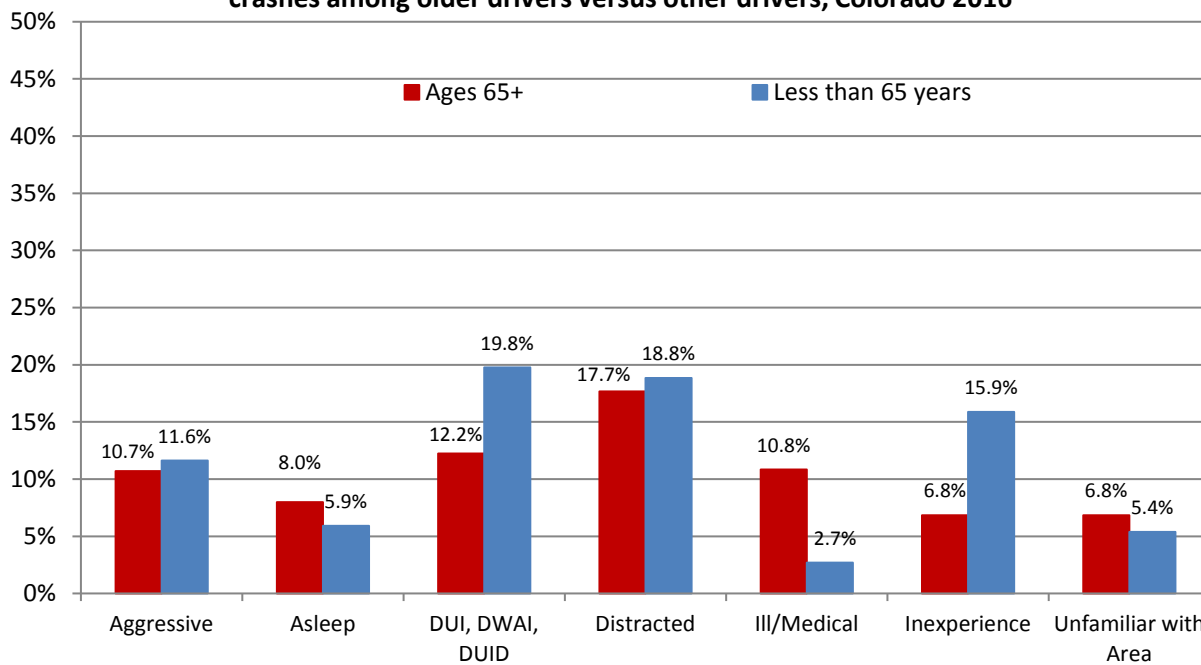
Thirteen percent of drivers involved in a fatal motor vehicle crash were age 65 or older during 2010 to 2016. Table 14 shows the age breakdown of older drivers in fatal motor vehicle crashes and the percent at fault in those fatal crashes. Overall, 72 percent of older drivers were at fault in the fatal crash. A higher percentage of drivers aged 85 and older were at fault in a fatal crash compared to drivers younger than 85 years.

Age of driver	Number of drivers	Percent at fault
65-69	204	65.2% (133)
70-74	138	72.5% (100)
75-79	117	71.8% (84)
80-84	71	74.6% (53)
85-89	55	83.6% (46)
90+	18	88.9% (16)
Total Older drivers	603	71.6% (432)

Source: FARS

Figure 30 shows the contributing factors associated in an injury or fatal crash among older drivers compared to drivers younger than 65 years. A higher percentage of older drivers had ill/medical factors, fell asleep while driving, and were unfamiliar with the area that contributed to the crash compared to drivers younger than 65 years. A higher percentage of drivers younger than 65 had a DUI, DWAI, or DUID compared to drivers 65 years or older.

Figure 30. Factors associated with the cause of a crash in injury and fatal crashes among older drivers versus other drivers, Colorado 2016



Source: Crash Reports

Distracted = Passenger, Cell Phone, Radio, Food, Objects, Pet, Etc.

Data Sources and Acknowledgements

Data Sources for the FY 2018 Problem Identification Report

Colorado Performance Measures and Statewide Goals for 2018

This information comes from the 2018 Colorado Integrated Safety Plan by the Colorado Department of Transportation. The 2018 Colorado Integrated Safety Plan includes performance targets that are set for the year 2018.

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*, Eighth Edition, published in 2015 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 data of 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 first six 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 Data” in figures in this report.

Population Estimates

State and county population estimates come either from the Colorado Department of Local Affairs (DOLA) through its website or through 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 the Institute of Transportation Management at Colorado State University 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.

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State Performance Measures by County

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	Motorcyclist fatalities	Unhelmeted motorcyclist fatalities	Driver under 21 years old in fatal crashes	Pedestrian fatalities
Colorado ISP Target	481	3,292	176	136	150	85	50	57	50
Colorado	608	2,956	186	161	211	125	82	59	79
Adams	60	339	20	12	19	13	9	5	13
Alamosa	5	7	2	0	1	0	0	0	1
Arapahoe	46	388	11	14	19	11	6	5	8
Archuleta	3	13	3	1	2	0	0	0	0
Baca	0	2	0	0	0	0	0	0	0
Bent	0	5	0	0	0	0	0	0	0
Boulder	24	202	1	3	4	4	1	5	4
Broomfield	4	5	1	2	4	2	2	0	0
Chaffee	4	20	2	2	2	1	1	1	0
Cheyenne	0	1	0	0	0	0	0	0	0
Clear Creek	3	19	2	1	0	0	0	0	0
Conejos	0	7	0	0	0	0	0	0	0
Costilla	4	10	1	0	1	0	0	0	0
Crowley	0	1	0	0	0	0	0	0	0
Custer	1	5	0	0	1	0	0	0	0
Delta	3	20	2	1	2	0	0	0	0
Denver	54	486	9	22	22	14	10	3	19
Dolores	2	1	0	1	1	0	0	0	0
Douglas	24	112	8	4	8	10	5	5	2
Eagle	5	32	2	0	0	0	0	1	1
El Paso	48	157	16	20	22	10	7	5	5
Elbert	2	8	1	1	1	1	1	1	0
Fremont	10	30	4	2	3	0	0	0	0
Garfield	10	27	5	7	6	0	0	2	1
Gilpin	1	8	0	0	0	0	0	0	0
Grand	1	11	0	0	0	0	0	0	0
Gunnison	2	25	0	0	1	2	0	0	0
Hinsdale	0	2	0	0	0	0	0	0	0
Huerfano	4	6	4	1	1	0	0	2	0
Jackson	1	3	0	0	0	1	1	0	0
Jefferson	48	203	12	10	20	15	9	5	5
Kiowa	1	4	0	1	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	Motorcyclist fatalities	Unhelmeted motorcyclist fatalities	Driver under 21 years old in fatal crashes	Pedestrian fatalities
Colorado ISP Target	481	3,292	176	136	150	85	50	57	50
Kit Carson	4	2	2	0	0	0	0	0	0
La Plata	10	34	3	5	4	3	2	0	0
Lake	2	11	0	0	0	0	0	0	0
Larimer	44	170	12	14	15	11	6	2	6
Las Animas	8	10	1	2	1	2	2	0	0
Lincoln	1	4	0	0	0	0	0	0	0
Logan	8	14	5	1	1	0	0	1	1
Mesa	17	82	5	4	9	3	3	2	2
Mineral	2	6	0	0	1	1	1	0	0
Moffat	6	7	3	3	2	1	1	1	0
Montezuma	4	15	1	1	2	1	1	0	1
Montrose	3	23	0	0	0	0	0	0	2
Morgan	3	20	2	0	1	0	0	0	0
Otero	3	15	1	1	0	0	0	0	0
Ouray	2	7	0	0	0	1	1	0	0
Park	8	32	5	1	0	0	0	1	1
Phillips	0	0	0	0	0	0	0	0	0
Pitkin	1	10	1	0	1	0	0	0	0
Prowers	2	5	0	0	0	0	0	0	0
Pueblo	20	59	6	1	4	6	5	2	2
Rio Blanco	2	9	1	0	1	1	0	0	0
Rio Grande	2	16	0	0	2	1	1	0	0
Routt	5	11	2	3	3	1	1	0	0
Saguache	6	7	4	1	2	1	1	1	1
San Juan	1	2	0	0	1	1	1	0	0
San Miguel	3	8	0	1	2	1	0	0	0
Sedgwick	0	1	0	0	0	0	0	0	0
Summit	8	21	2	0	5	0	0	1	0
Teller	3	12	1	1	1	0	0	0	0
Washington	1	6	1	0	0	0	0	1	0
Weld	55	168	20	14	11	6	4	7	4
Yuma	4	4	2	1	2	0	0	0	0