




MOVING TOWARDS
ZERO
DEATHS

COLORADO STRATEGIC HIGHWAY SAFETY PLAN

prepared for
Colorado Department of Transportation

October 2014



Prepared for:
Colorado Department of Transportation

October 2014

Prepared by:
Cambridge Systematics, Inc

With
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Shailen P. Bhatt
Executive Director
Colorado Department of Transportation



Dear Fellow Coloradans & Visitors,

Whether we are traveling for business between the rural communities of our Eastern Plains, commuting on the urban corridors of the Front Range or exploring the dramatic panoramas of the Rockies and Western Slope, we recognize that a safe and efficient transportation network is central to our quality of life and enjoyment of our State's diverse resource treasures.

I am pleased to present the 2015 update of Colorado's Strategic Highway Safety Plan or SHSP. This document reflects a year-long, cooperative planning effort by a multi-disciplinary partnership of public agencies and private sector organizations and advocacy groups representing transportation interests statewide. Through collaborative discussion, data-driven analysis and contribution of time and expertise, the individuals of this partnership identified traffic emphasis areas, strategies, achievable yet challenging and pertinent goals, and our Colorado vision. Invested commitment to these goals and strategies over the next five years will most effectively improve safety on Colorado's roadways.

The SHSP embodies the state's new safety initiative: "*Moving Towards Zero Deaths*". We recognize that every life on our transportation system counts and together we can move Colorado toward zero deaths. Further, this bold vision for the future aligns Colorado with the national highway safety movement to eliminate traffic fatalities. I encourage transportation organizations to become familiar with this initiative and participate as a "Towards Zero Deaths" safety partner. CDOT's safety webpage at <https://www.codot.gov/safety> provides more information about this groundbreaking effort.

Thank you to the many safety stakeholders across Colorado who participated in developing this updated Strategic Highway Safety Plan. To achieve our vision of significant reductions in traffic-related fatalities to move toward zero deaths will take a multi-faceted approach involving: Education, Engineering, Enforcement, Emergency response and *Everyone*. This vision will need *Everyone's* commitment, including you as a user of the transportation system, to work together Moving Towards Zero Deaths. Please join us and our safety partners to support and implement the SHSP to reduce motor vehicle, pedestrian, and bicycle-involved crashes and save lives on our roadways.

Sincerely,

Shailen P. Bhatt
Executive Director,
Colorado Department of Transportation





Colorado Strategic Highway Safety Plan (SHSP) 2015



Partner Pledge

Colorado's Strategic Highway Safety Plan or SHSP represents a shared vision to significantly reduce serious injuries and fatalities on the state's transportation network. The emphasis areas, strategies and action steps outlined in the plan are the product of a data-driven, collaborative effort by numerous traffic safety professionals and stakeholders statewide.

As safety partners determined to ensure Colorado's transportation network is as safe as possible, we are stating our support of the goals and safety strategies in the 2015 SHSP and Colorado's safety initiative - "Moving Towards Zero Deaths". We believe zero fatalities can be achieved because it is already the personal goal for virtually everyone who wants to get to and from their destination safely without incident. Implementation of the SHSP will help these road users keep that personal goal of staying safe while driving, walking or riding in our state.

We recognize it takes more than words to improve safety. Colorado has made tremendous progress in reducing the number of traffic fatalities and serious injuries in the last decade. We will do our part to make sure that the safety trend continues in the future and pledge to do the following:

- Help lead strategies and action steps that relate to our agency or organization;
- Participate in SHSP-related events, meetings and campaigns;
- Provide support and resources, when able, to implement portions of the SHSP and
- Function as safety champions by promoting the SHSP and its goals whenever possible.

Signed by _____

Shailen Bhatt, Executive Director
Colorado Department of Transportation

Colonel Scott Hernandez, Chief
Colorado State Patrol

Barbara Brohl, Executive Director
Colorado Department of Revenue

Larry Wolk, MD, MSPH, Executive Director
and Chief Medical Officer, Colorado
Department of Public Health & Environment

John Cater, Colorado Division Administrator
Federal Highway Administration

Bill Watada, Regional Administrator
National Highway Transportation Safety
Administration, Region 8

Table of Contents

- Executive Summary 1**
 - SHSP Executive Committee 3
 - SHSP Steering Committee 4
 - Thank You to Highway Safety Partners 5
- Introduction 1**
- Vision, Mission, and Goal 3**
 - Vision 3
 - Mission 3
 - Goal 4
- Emphasis Areas 7**
 - Aging Road Users 9
 - Bicyclists and Pedestrians 11
 - Impaired Driving 13
 - Infrastructure - Rural and Urban 15
 - Motorcyclists 19
 - Occupant Protection 21
 - Young Drivers 23
 - Data 25
 - Distracted Driving Task Force 26
- SHSP Implementation and Evaluation 27**
- Appendix 29**
 - Glossary of Abbreviations 29
 - 2013 Update Process 31
 - Executive and Steering Committee Meetings 32
 - Coordination with Other Plans 35
 - Outreach, Regional Meetings, and Statewide Webinar 36
 - Emphasis Area Team Meetings 39
- Emphasis Area Action Plans 41**
 - Aging Road Users 42
 - Bicyclists and Pedestrians 46
 - Data 52
 - Impaired Driving 54
 - Infrastructure - Rural and Urban 60
 - Motorcyclists 71
 - Occupant Protection 76
 - Young Drivers 80
 - Next Steps 86



Image courtesy of Dave Hattan, FHU.



EXECUTIVE SUMMARY

Colorado has made tremendous progress in reducing the deaths and preventable injuries caused by traffic crashes. In the last 10 years (2002 to 2012), traffic-related fatalities in Colorado dropped 36 percent and serious injuries declined 35 percent. This is a remarkable achievement considering the continued growth in the state with new residents, businesses, and visitors joining the millions that travel Colorado roads and highways each year to enjoy our beautiful surroundings.

Hundreds of safety professionals from every corner of the state collaborated to develop a Strategic Highway Safety Plan (SHSP) to keep Colorado moving – Towards Zero Deaths. Colorado is ready to meet this challenge.

Towards Zero Deaths, or TZD, is not just a slogan – it is a realistic movement that recognizes the objective for every individual, every family and every community should be zero deaths on Colorado’s transportation network. Roadway users, motorists and non-motorists alike, expect that they are going to arrive at their destination safely. Nobody expects to be involved in a crash, for example, when they get in their car, walk, or bike to work. This document represents our collective aspiration to make travel in Colorado as safe as possible by reducing crashes, injuries, and *Moving Colorado Towards Zero Deaths*.

Colorado’s updated SHSP builds on the success of the past and the state’s previous Strategic Plan for Improving Roadway Safety (SPIRS) adopted on October 1, 2006. This SHSP provides innovative, data-driven approaches to address issues that can impact traffic safety including emerging issues such as the change in Colorado’s marijuana laws. This SHSP draws on the experience, knowledge, and expertise of a multidisciplinary group of government agencies and private sector organizations committed to the TZD goal, and relies on their continued commitment and tireless efforts to achieve our collective goal, *Moving Towards Zero Deaths*.

Executive Summary

The SHSP provides the direction to guide Colorado's traffic investments, policies, programs and decisions for the next five years (2015 to 2019) in eight key "emphasis areas"-

- Aging Road Users (65+);
- Bicyclists and Pedestrians;
- Data;
- Impaired Driving;
- Infrastructure - Rural and Urban;
- Motorcyclists;
- Occupant Protection;
- Young Drivers (15-20); and
- Distracted Driving Task Force.

Since Colorado does not currently have sufficient data on distracted driving, a Task Force was formed to develop a definition for distracted driving and conduct research to identify effective countermeasures.

Through the SHSP update process, Colorado developed a bold vision for transportation safety in the State: *"The future for Colorado is zero deaths so all travelers, whether they drive, walk, ride, or bike, arrive at their destinations safely."* A supporting mission statement was adopted to achieve this vision: *"Colorado will promote a safety culture to save lives and reduce the human, social, and economic costs of crashes through the outreach and collective action of engineering, education, enforcement, and emergency medical services as outlined in the Strategic Highway Safety Plan (SHSP)."*

To demonstrate and measure progress, realistic interim goals were established for fatalities, serious injuries, fatality rate, and serious injury rate. These goals are to reduce fatalities from 548 in 2008 to 416 in 2019; reduce serious injuries from 3,580 in 2008 to 2,578 in 2019; reduce the fatality rate from 1.15 in 2007 to 0.88 in 2019; and reduce the serious injury rate from 7.5 in 2008 to 5.5 in 2019.

A great deal of time and hard work went into developing the strategies and action steps for the SHSP because safety stakeholders recognize it can no longer be business as usual. **For Colorado to achieve realistic reductions in traffic-related fatalities and serious injuries, everyone - whether they drive, walk, ride, or bike - must keep the TZD goal foremost in their mind every trip, every time.**

We invite you to read how Colorado will continue our traffic safety progress over the next five years and join us in staying safe on the roads and *Moving Colorado Towards Zero Deaths*.

SHSP EXECUTIVE COMMITTEE

Members of the SHSP Executive Committee oversee the SHSP update and implementation process. A complete description of their roles appears in Appendix under Update Process.

Commissioner Kathy Connell

Colorado Transportation Commission

Scot Cuthbertson

Deputy Executive Director

Colorado Department of Transportation

Shaun Cutting

Program Delivery Team Leader

Federal Highway Administration

Mike Dixon

Senior Director

Division of Motor Vehicles

Colorado Department of Revenue

Tim Harris

Chief Engineer

Colorado Department of Transportation

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Chief

Colorado State Patrol

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Office of Transportation Safety

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Acting Chief Engineer

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Management & Operations

Colorado Department of Transportation

ADVISORY MEMBERS

John Cater

Division Administrator

Federal Highway Administration

Dahir Egal

Safety/Traffic Engineer

Federal Highway Administration

Bill Watada

Region Administrator

National Highway Traffic Safety Administration

SHSP STEERING COMMITTEE

Members of the SHSP Steering Committee provide day-to-day guidance for the SHSP. A complete description of their roles and responsibilities appears in the Appendix under Update Process.

Alisa Babler

Safety and Traffic Engineering

Colorado Department of Transportation

Steve Cook

Denver Regional Council of Governments

Ted Trujillo

Division of Motor Vehicles

Colorado Department of Revenue

Kim English

Office of Research and Statistics

Colorado Department of Public Safety

Priscilla “Pete” Fraser

South Central Council of Governments

Dan Grunig

Bicycle Colorado

Ernest House, Jr.

Colorado Commission on Indian Affairs

Sandi Kohrs

Division of Transportation Development

Colorado Department of Transportation

Darrell Lingk

Office of Transportation Safety

Colorado Department of Transportation

Lt. Colonel Kevin Eldridge

Colorado State Patrol

Charles Meyer

Safety and Traffic Engineering

Colorado Department of Transportation

Lindsey Myers

Colorado Department of Public Health and

Environment

Mark Peterson

Colorado Association of Road Supervisors and

Engineers

Mark Radtke

Colorado Municipal League

Renee Railsback

Colorado Local Technical Assistance Program

Molly Sausaman

Rocky Mountain Insurance Information Association

Zane Znamenacek

Region 3

Colorado Department of Transportation

ADVISORY MEMBERS

Dahir Egal

Federal Highway Administration

Leslie Nelson-Taullie

National Highway Traffic Safety Administration

THANK YOU TO HIGHWAY SAFETY PARTNERS

The update of the Strategic Highway Safety Plan (SHSP) was possible due to the hard work and dedication of hundreds of safety stakeholders from every region of Colorado. These stakeholders devoted their time and energy to provide their ideas and establish implementable action plans that will continue the positive trend of reducing fatal, major, and all other crashes in the state. Each of the agencies and organizations listed here work diligently every day to improve safety on Colorado's roads and highways. We thank them for their ongoing support and willingness to continue working together to take the SHSP to the next level in implementation. A special thanks goes to the members of the Executive Committee and Steering Committee who provided the critical leadership and oversight to the update process.

AAA	Colorado Local Technical Assistance Program (LTAP)
AARP	Colorado Municipal League
Adams County Transportation Department	Colorado Springs Police Department
Aging Well Jefferson County	Colorado State Patrol
Amelie Company	Colorado State University Police Department
Arapahoe County	Colorado Teen Driving Alliance
Arapahoe County Sheriff's Office	Colorado Transportation Commission
Avon Police Department	Conservation Innovation Grants
Bicycle Colorado	Crossroads Turning Points, Inc.
Bike Clear Creek County	Delta County Public Health
Bike Fort Collins	Denver Regional Council of Governments
Bike Jeffco	Department of Public Health and Environment
Broomfield Police Department	Department of Public Safety, Office of Research and Statistics
Brain Injury Alliance of Colorado	Department of Revenue, Division of Motor Vehicles
Broomfield LCC	Department of Transportation
Central Front Range Transportation Planning Region	CDOT Regions
City of Aspen	Division of Operations
City of Aurora	Division of Transportation Development
City of Boulder	DTD Bicycle/Pedestrian Maintenance
City of Colorado Springs	Office of Transportation Safety
City of Canon City	Safety and Traffic Engineering Branch
City of Delta	Development Construction Services
City of Durango	Donor Alliance
City of Fort Collins	Douglas County
City of Grand Junction	Drive Smart Colorado
City of Lafayette	Drive Smart Evergreen
City of La Junta	Drive Smart Weld County
City of Lone Tree	DUID Victim Voices
City of Loveland	Durango Development
City of Montrose	Durango Wheel Club
City of Pueblo	East High School Student Council
City of Steamboat Springs	Eastern Transportation Planning Region
Colorado Association of Road Supervisors and Engineers	Encana Oil & Gas, Inc.
Colorado Center for Law and Policy	Federal Highway Administration
Colorado Commission on Indian Affairs	Foothills Regional Emergency Medical and Trauma Advisory Councils
Colorado Cross-Disability Coalition, Atlantis Community	Grand Junction Police Department
Colorado Driving Institute	Grand Valley Bikes
Colorado Health Information Dataset	Grand Valley Metropolitan Planning Organization
Colorado Judicial Branch, State Court Administrator's Office	Grand Valley Regional Transportation Committee
Colorado Lifesaver	Gunnison Valley Transportation Planning Region

Executive Summary

Hinsdale County Sheriff's Office
Hispanidad
Intermountain Transportation Planning Region
Jefferson County Public Health
Jefferson County LCC
LaPlata County
La Plata County Sheriff's Office
Larimer County
MADD Colorado
Master Drive
Memorial Hospital
Mesa County
National Highway Traffic Safety Administration
North Front Range Metropolitan Planning Organization
Northwest Transportation Planning Region
Office of Congressman Scott Tipton
Office of Mesa County Commissioner Steve Acquafresca
Otero County
PACE
Penrose St. Francis Hospital
Pikes Peak Area Council of Governments
Pitkin County
Pueblo Active Community Environment
Pueblo Area Council of Governments
Pueblo School District 60
Saguache County Road and Bridge/CARSE
Regional Transportation District
Roaring Fork Transportation Authority
Rocky Mountain Insurance Information Association
SAFEKids Colorado
San Juan Basin Health Department
San Luis Valley Transportation Planning Region
Share the Road Initiative
South Central Council of Governments
South Central Transportation Planning Region
Southeast Transportation Planning Region
Southern Ute Indian Tribe
Southern Ute Community Action Programs
Southwest Center for Independence
Southwest Transportation Planning Region
Speak Now Colorado
Statewide Traffic Records Coordinating Committee (STRAC)
Statewide Transportation Advisory Committee (STAC)
Summit County
Swedish Medical Center
The Children's Hospital
Town of Castle Rock
Town of Parker
Town of Castle Rock
UCHealth/Safe Kids Larimer County
University of Colorado, Denver
Upper Front Range Transportation Planning Region
Urban Trails Committee
U.S. Defenders, Coalition of Independent Riders (COIR), COC
U.S. Forest Service, USDA
Ute Water
Walk Denver
Western Regional EMS Council, Inc.
White River National Forest
WPX Energy
911 Driving School

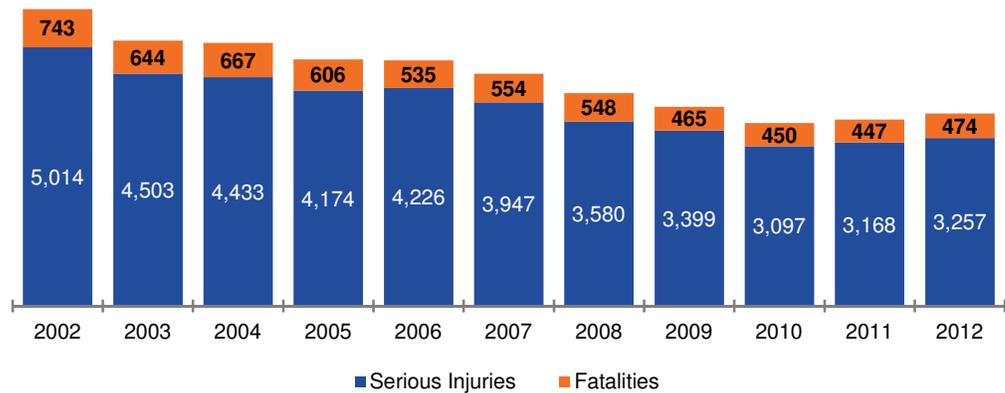
This is not a plan written to sit on the shelf. It is a plan of action that will carry the safety message forward for the next five years. The ability to put the plan into action requires participation from all safety stakeholders. State and local agencies, municipalities, counties, private sector non-profits and organizations, corporations and businesses, and individual residents all benefit from a safe highway transportation system. We invite everyone interested in traffic safety to get involved by sending a message to dot_shsp@state.co.us.



INTRODUCTION

Colorado has made tremendous progress in reducing the deaths and preventable injuries caused by traffic crashes. In the last decade (2002 to 2012), traffic-related fatalities in Colorado dropped 36 percent and serious injuries declined 35 percent as shown in Figure 1.

Figure 1. Fatalities and Serious Injuries
2002 to 2012



There are however, warning signs of possible increases in traffic crashes in the future. Colorado is meeting this challenge through the updated Strategic Highway Safety Plan (SHSP) that builds on the success of the past and the state's previous Strategic Plan for Improving Roadway Safety (SPIRS) adopted on October 1, 2006. The update, which is required by the Federal Moving Ahead for Progress in the 21st Century (MAP-21) law, provided an opportunity to assess progress and reconsider the state's traffic safety priorities. The final result is the SHSP, a coordinated plan to guide investments and decisions that integrate national, state, and regional safety plans and performance targets. The SHSP:

Introduction

- Employs a data-driven and evidence-based process;
- Focuses on key priorities and emphasis areas;
- Seeks ideas and input from public and private stakeholders;
- Develops strategies, actions, and implementation plans with safety partners; and
- Establishes performance targets, strategies, and action steps.

A major part of the update process was a review of pertinent data to identify the state's most serious traffic safety problems. Based on their review, members of the SHSP Executive and Steering Committees selected the following emphasis areas for the plan:

- Aging Road Users (65+);
- Bicyclists and Pedestrians;
- Data;
- Impaired Driving;
- Infrastructure – Rural and Urban;
- Motorcyclists;
- Occupant Protection;
- Young Drivers (15–20); and
- Distracted Driving Task Force.

The Steering Committee discussed distracted driving to determine if it should be an emphasis area. The state does not currently have sufficient data on distracted driving to create a separate emphasis area, mainly because it is difficult to prove a driver was distracted at the time of a crash. However, given the importance of the issue, the Steering Committee decided to form a Distracted Driving Task Force to develop a definition for distracted driving and conduct research to identify effective countermeasures.



VISION, MISSION, AND GOAL

To guide the SHSP, leadership from the Executive and Steering Committees reaffirmed a vision of a state where no one would die in traffic-related crashes along with a mission statement detailing how this vision will be accomplished. Stakeholders who participated in regional meetings or a statewide webinar confirmed this approach. A vision statement provides the inspiration and framework for the plan, and the mission statement details the purpose. Both Committees felt strongly that Toward Zero Deaths (TZD) should be the ultimate aspirational vision for the plan, and that realistic and achievable steps should be set for Colorado to move closer to zero deaths.

VISION

The future for Colorado is zero deaths so all travelers, whether they drive, walk, ride, or bike, arrive at their destinations safely.

MISSION

Colorado will promote a safety culture to save lives and reduce the human, social, and economic costs of crashes through the outreach and collective action of engineering, education, enforcement, and emergency medical services as outlined in the Strategic Highway Safety Plan (SHSP).

GOAL

Hundreds of safety professionals from every corner of the state combined their collective wisdom to develop the SHSP and establish the direction to keep Colorado *Moving Towards Zero Deaths*. Towards Zero Deaths or TZD is not just a slogan, it is a realistic movement that recognizes the goal for every roadway user is zero deaths. Whether driving, riding, walking or biking on Colorado's transportation network, all travelers expect that they, their family members, and their friends are going to get to their destination safely!

The TZD vision is a perfect match for Coloradans who are justifiably proud of the quality of life they enjoy. To underscore its importance and highlight how all Colorado travelers can help



achieve this vision, the SHSP team designed this logo and slogan that leaves no doubt where the state is heading.

The Federal law, Moving Ahead for Progress in the 21st Century Act, or MAP-21, requires states to establish four overall performance targets – the number and rate for both traffic fatalities and serious injuries. In Colorado, a serious injury is defined as an evident incapacitating injury. This is any injury other than a fatal injury which prevents the injured person from walking, driving, or normally continuing the activities he/she was capable of performing before the injury occurred. Incapacitating injuries include severe lacerations, broken or distorted limbs, and internal injuries, as well as an injured party transported to a hospital because of the severity of their injuries.

The SHSP leadership team used the *Moving Towards Zero Deaths* vision to direct the selection of specific fatality and serious injury goals. After considerable consideration of Federal Highway Administration (FHWA), National Highway Traffic Safety Administration (NHTSA), and American Association of State Highway and Transportation Officials (AASHTO) guidance and leadership on goal setting, the Executive Committee and Steering Committee chose the following visionary goals for this plan to continue to move Colorado Towards Zero Deaths.

Nationally, TZD is defined as reducing traffic-related deaths and serious injuries by one-half by 2030. **For Colorado, this means saving an average of one life per month or reducing fatalities from 548 in 2008 to 416 by 2019.** Figure 2 shows the actual reductions in traffic-related fatalities from 2008 to 2013 and the projected reduction goals if the five-year SHSP is tracked on a yearly basis. Recognizing fluctuations will occur, the average reduction in fatalities is 12 per year, or approximately 2.5 percent per year during the life of the plan (2014 to 2019).

Figure 2. Fatalities

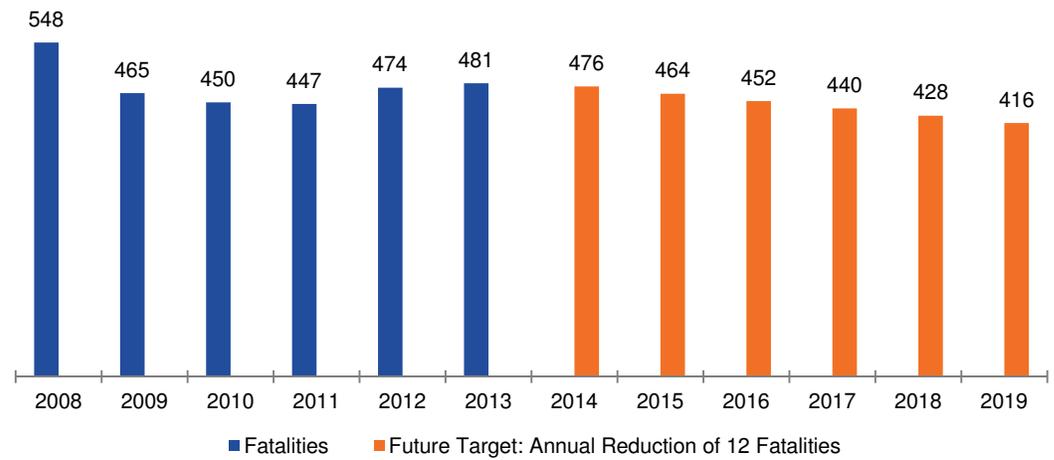
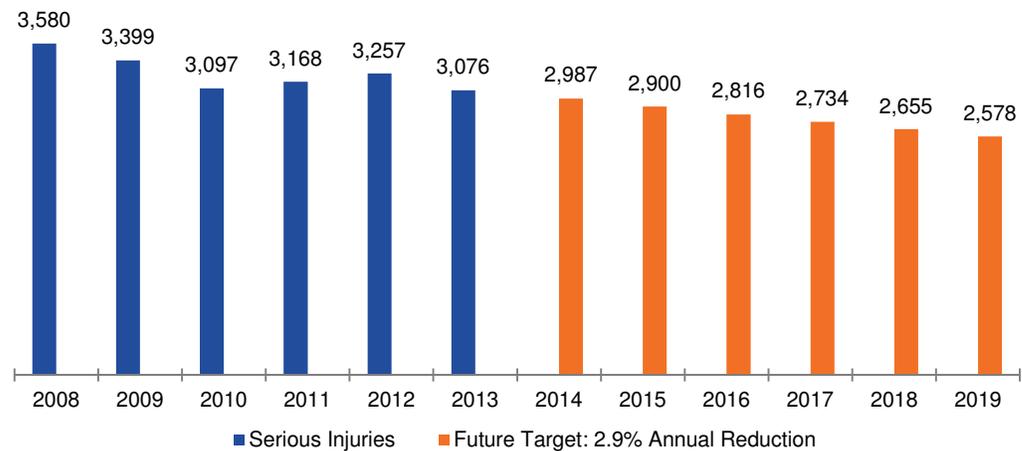


Figure 3 shows the annual serious injury reductions from 2008 to 2013 and the projected reduction goals based on a 2.9 percent per year decrease, again recognizing there will be fluctuations during the five-year life of the plan. This compliments the overall Toward Zero Deaths vision supported by a number of Federal agencies and national traffic safety associations and organizations.

Figure 3. Serious Injuries



MAP-21 also requires states to have rate performance targets, which are based on vehicle miles traveled. Figure 4 shows the Colorado reduction goals in fatality rates based on the 2.5 percent per year reduction which would mean a drop from a 1.02 fatality rate in 2013 to .88 in 2019.

Figure 4. Fatality Rate

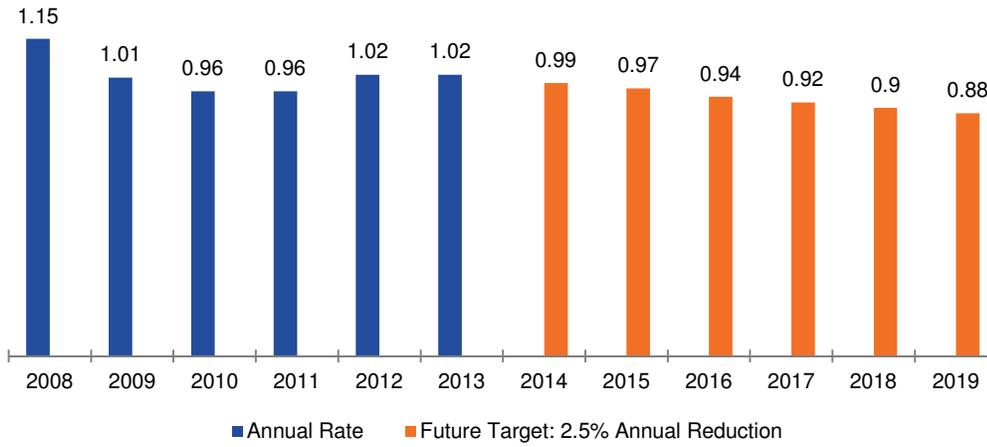
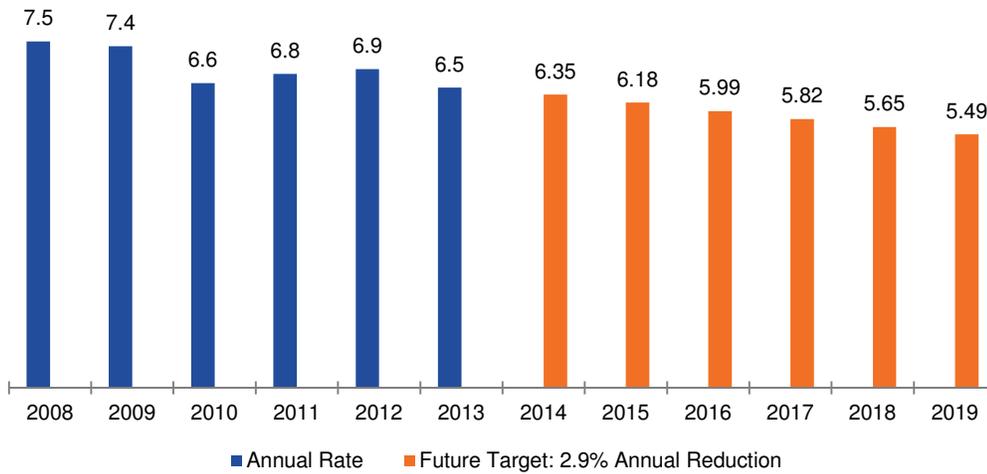


Figure 5 shows the rate reduction goals for serious injuries based on a 2.9 percent per year reduction which translates into a rate reduction from 6.5 in 2013 to 5.49 in 2019.

Figure 5. Serious Injury Rate





EMPHASIS AREAS

Emphasis areas are a required component of all Strategic Highway Safety Plans and are determined through data analysis and broad stakeholder input. Emphasis areas help direct the state’s resources, and organize stakeholders into teams which concentrate on a strategic problem area and produce an achievable action plan. The emphasis area action plans focus the SHSP implementation efforts on achieving the established goals. The Federal Highway Administration (FHWA) guidance suggests that emphasis areas should reflect “the greatest potential for reducing fatalities and injuries”. In practice, states have identified areas based on a number of factors, including crash reduction potential, stakeholder support, and implementation progress. Common approaches include comprehensively addressing all crash issues; creating a tiered structure based on priority; and grouping related issues within broad categories to help narrow focus.

Colorado used data analysis and stakeholder input to select emphasis areas in the SHSP which include the following:

- Aging Road Users (65+);
- Bicyclists and Pedestrians;
- Data;
- Impaired Driving;
- Infrastructure – Rural and Urban;
- Motorcyclists;
- Occupant Protection;
- Young Drivers (15-20); and
- Distracted Driving Task Force.

Emphasis Areas

If an issue is not listed as an emphasis area it does not mean it will not be addressed either through a strategy or action step in the SHSP or as part of another transportation safety plan. The intent of the SHSP is to focus action where there is the greatest potential for crash reduction.

The emphasis area action plans can be found later in this document. Action plans focus the state's resources where they are most needed and keep the plan alive during the implementation phase. Developed by each emphasis area team, the action plans identify the strategies and action steps that will be implemented to achieve the goals and later evaluated to determine progress. Detailed action plans, which also include action step leaders and timelines for implementation, can be found in a separate SHSP Implementation Plan document. These more detailed plans are "living, breathing" documents which are revised by the teams during implementation as actions are completed and adjusted as needed to achieve the established goals.

Emphasis area goals are not included in the SHSP document. Emphasis area teams will meet once the plan is launched with subject matter experts to review the strategies and action steps in the plan and identify fatality and serious injury targets that reflect the planned approach and effectiveness of crash mitigation. The fatality and serious injury goals along with other outcome and output performance measures will be evaluated annually as a part of the SHSP Evaluation Plan, and coordinated with the SHSP goals.

Following is a brief synopsis of each of the emphasis areas which includes information on the extent of the problem over the last five years, and the strategies in the plan. The total for fatalities and for serious injuries does not add up to 100 percent because traffic fatalities are rarely caused by a single factor, and a fatality and serious injury may be counted in multiple emphasis areas. For instance, a fatality may result when someone speeds through an intersection or runs off the road because they were impaired. An intersection fatality that involves impairment would be counted in both emphasis areas.

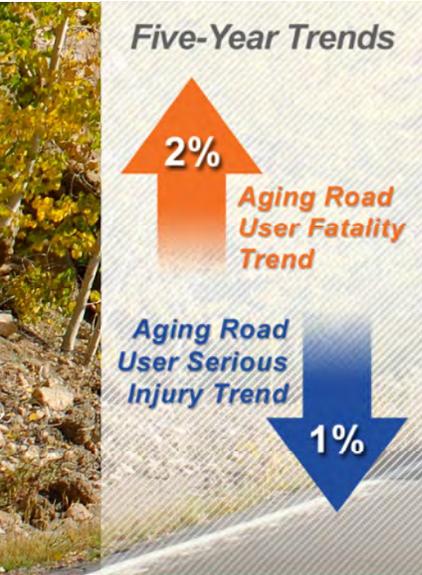


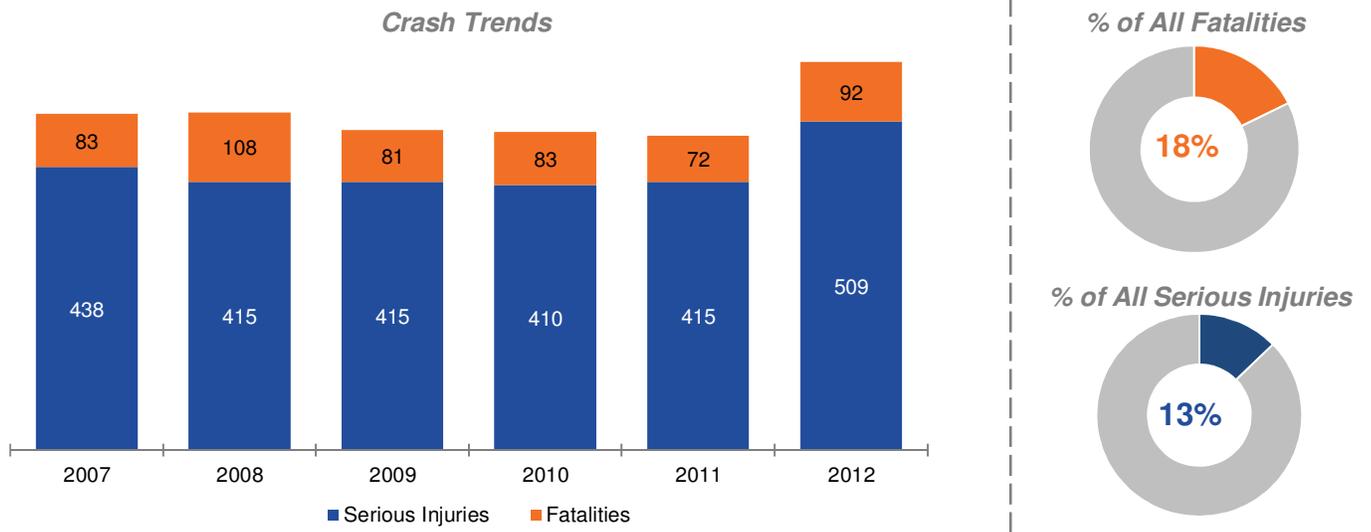
Image courtesy of Dave Hattan, FHU.

AGING ROAD USERS

Note: For all emphasis areas, the trend arrows compare changes which occurred between two five-year periods: 2003-2007 and 2008-2012.

The Census Bureau estimates the number of people age 65 or older in the U.S. will double by 2030. According to the U.S. Census Bureau, 12.3 percent of the Colorado’s population in 2013 is age 65 or older. According to the FHWA, in 2012 individuals age 65 and over make up over 14 percent of all licensed drivers in the state. Research indicates the current and future population of aging road users will drive more and longer than any generation in history, which will impact the overall transportation system. Aging does have an effect on driving ability. As people age eyesight, flexibility, reaction time, etc., are affected. The key to ensuring the safety of the aging road user population is to develop a program that enables them to travel as long as it is possible to do so safely. In comparison to the 2003 to 2007 timeframe, fatalities involving one or more drivers age 65 or older increased nearly 2 percent (1.9 percent) and serious injuries decreased over 1 percent (1.4 percent) in the most recent five-year period (2008-2012).

Figure 6. Aging Road User Involved Fatalities and Serious Injuries
2007 to 2012



On an annual basis, fatalities resulting from crashes involving one or more drivers age 65 or older increased from 83 in 2007 to 92 in 2012 and represent 18 percent of all fatalities. Serious injuries increased from 438 in 2007 to 509 in 2012 and account for 13 percent of all serious injuries as shown in Figure 6.

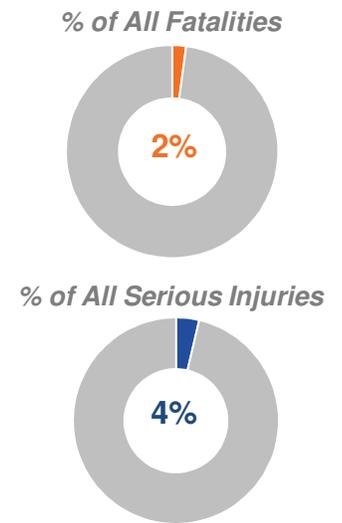
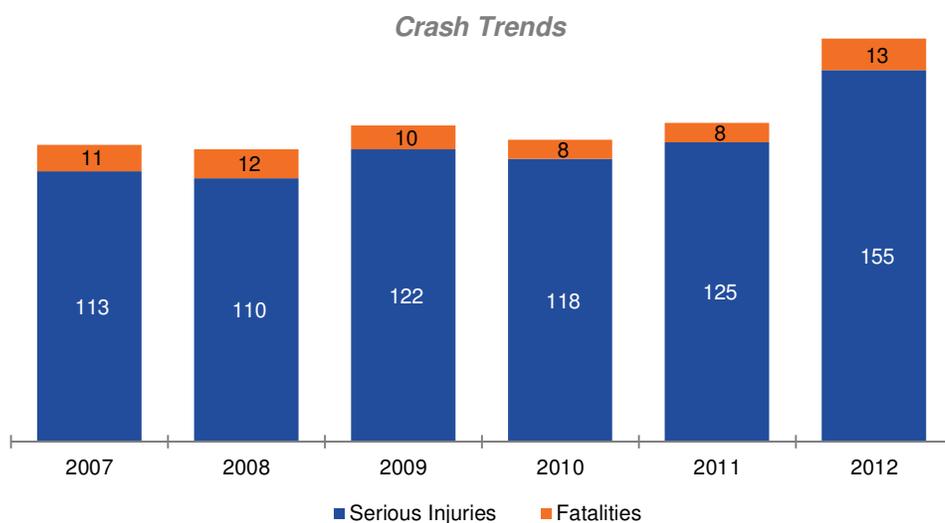
STRATEGIES

1. Provide education about aging and driving issues and communicate on how to help aging road users stay on the road for as long as they can safely do so.
2. Develop and promote aging road user licensing policies and practices.
3. Improve the safety of the roadway and built environment for aging road users.
4. Identify and promote opportunities for alternative transportation.
5. Establish and maintain partnerships for aging road user safety.



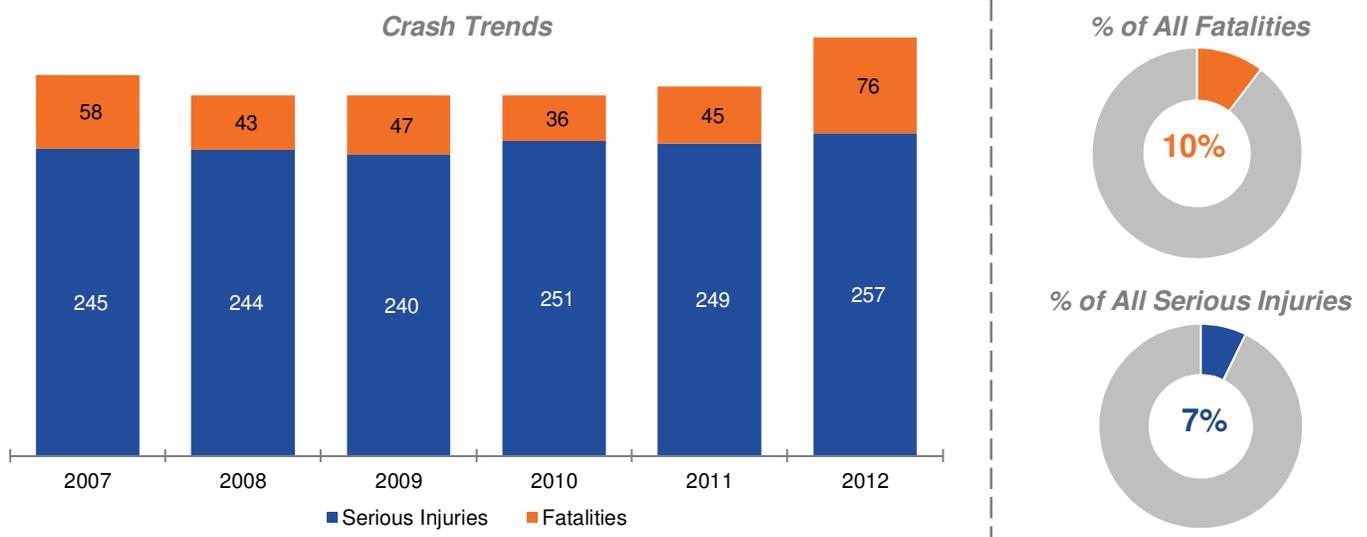
Colorado's roadways must be shared by a variety of users, including cars, trucks, semitrailers, buses, and bicyclists and pedestrians who are more susceptible to injury when crashes occur. Between 2008 and 2012, bicyclist fatalities were almost 4 percent (3.5 percent) higher than in the 2003 to 2007 time period. Serious injuries increased more than 5 percent (5.3 percent). For pedestrians, fatalities decreased over 3 percent (3.2 percent) and serious injuries increased over 1 percent (1.01 percent).

Figure 7. Bicyclist Fatalities and Serious Injuries 2007 to 2012



Bicyclist fatalities have increased from eight in 2011 to 13 in 2012 and serious injuries have gone up from 125 to 155 for the same two-year period. Bicyclist fatalities account for two percent of all fatalities statewide and bicyclist serious injuries are 4 percent of the total, as shown in Figure 7. Pedestrian fatalities increased from 45 in 2011 to 76 in 2012 and serious injuries increased from 249 to 257 for the same two years. Pedestrian fatalities are 10 percent of all fatalities and 7 percent of all serious injuries as shown in Figure 8.

Figure 8. Pedestrian Fatalities and Serious Injuries
2007 to 2012



STRATEGIES

1. Investigate and research the effectiveness of technology, countermeasures or design which impact bicyclist and pedestrian crashes.
2. Improve quality (timeliness, completeness, accuracy, accessibility, uniformity, and integration) of bicyclist- and pedestrian-related data.
3. Reduce motor vehicle speeds through use of new and proven countermeasures, technology and design to provide safer bicycling and safer access for walking where appropriate.
4. Improve bicyclist and pedestrian safety at high crash locations through implementation of new and proven technology, design, and countermeasures.
5. Continue to support and develop new outreach and communication campaigns aimed at motorists, pedestrians, and bicyclists.



Image courtesy of the Colorado State Patrol.

IMPAIRED DRIVING

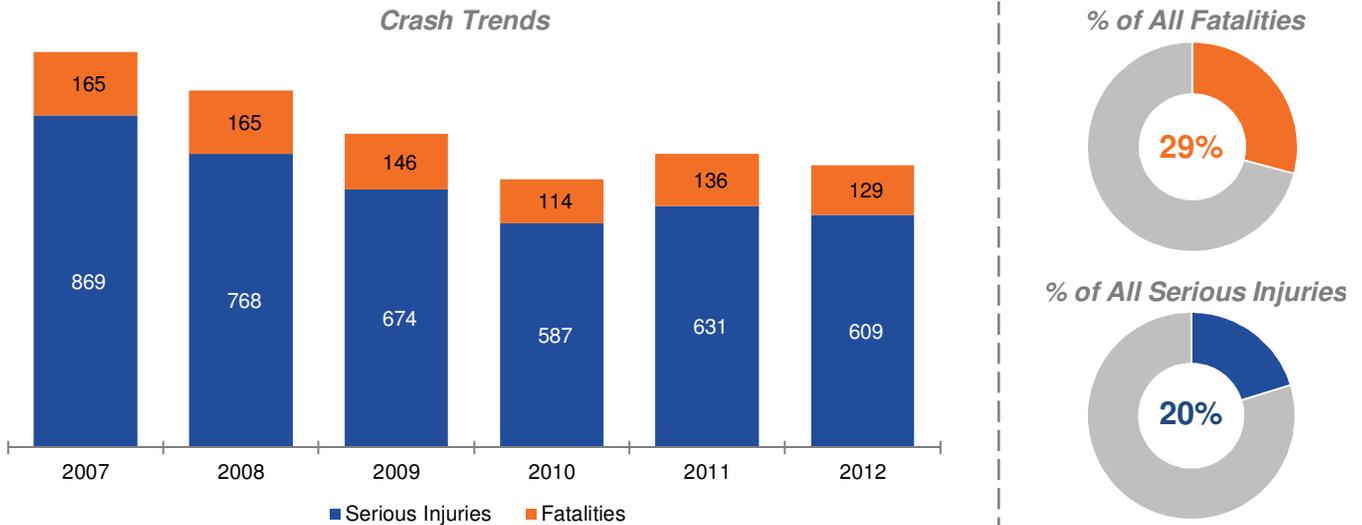
Alcohol-related fatalities represent about one-third of all motor vehicle traffic deaths in the U.S. As the blood alcohol concentration (BAC) level goes up in the human body, the physiological effects range from loss of judgment and altered mood to reduced muscle control and deteriorating reaction times. Legal and illegal drugs, including many over-the-counter drugs, also can negatively impact driving. Due to the recent changes in Colorado law, the state is now the testing ground to determine how legalizing marijuana use will affect traffic safety. The law does prohibit driving while under the influence of marijuana, but given expected growth in marijuana use, increases in impaired driving incidents are expected.

Regardless of which impairing substance a driver is using, the repercussions of impaired driving are a decline in visual functions and multitasking, reduced concentration, impaired perception, and an inability to respond quickly to emergencies. In Colorado, driving under the influence (DUI) is when the driver's Blood Alcohol Content (BAC) is 0.08 or higher or five nanograms or more of delta 9- tetrahydrocannabinol (THC) per milliliter in whole blood (for marijuana).

The number of fatalities from impaired driving crashes was almost 5 percent (4.7 percent) lower in the 2008 to 2012 timeframe, as compared to the prior five-year period (2003 to 2007). Serious injuries also declined around 5 percent (4.8 percent).

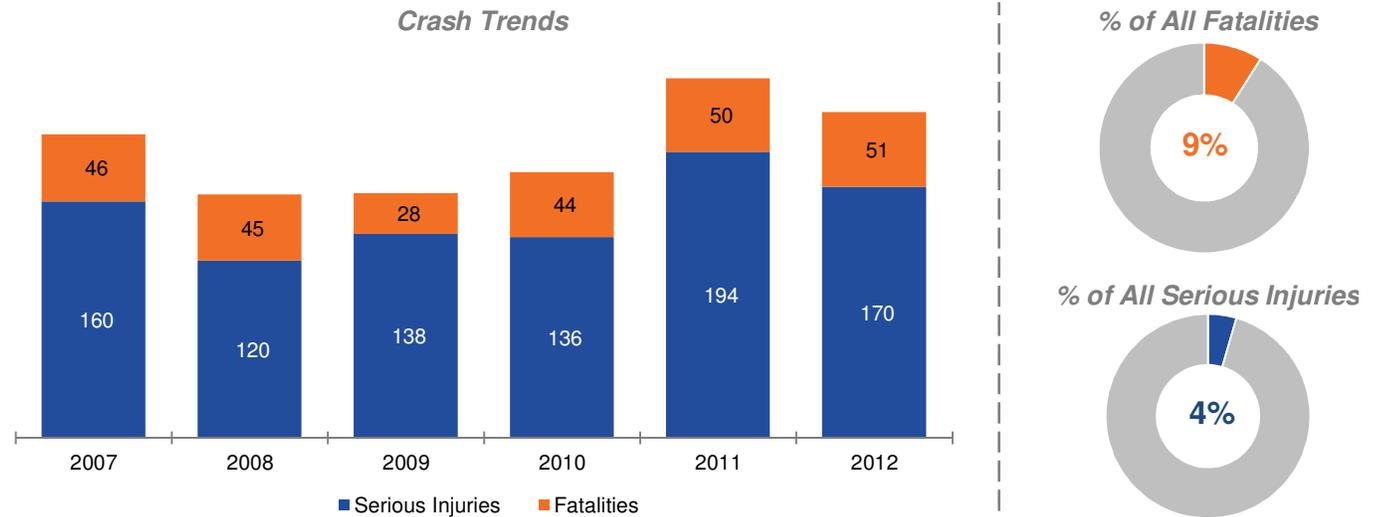
Alcohol-related fatal crashes decreased from 165 in 2007 to 129 in 2012 and represent 29 percent of all fatalities. Serious injury crashes decreased from 869 in 2007 to 609 in 2012 and represent 20 percent of serious injuries (Figure 9).

Figure 9. Alcohol-Related Fatalities and Serious Injuries
2007 to 2012



The presence of drugs in crashes increased from 46 in 2007 to 51 in 2012, representing nine percent of all fatalities. The presence of drugs in serious injury crashes increased from 160 in 2007 to 170 in 2012 which is four percent of all serious injuries (Figure 10).

Figure 10. Drug-Related Fatalities and Serious Injuries
2007 to 2012



STRATEGIES

1. Ensure greater awareness of the dangers of drug-impaired driving.
2. Improve the collection and analysis of data that informs enforcement, education, and prosecution/adjudication of impaired driving efforts.
3. Continue to support and improve existing and new impaired driving messaging and awareness.
4. Continue to support and improve existing and new impaired driving enforcement programs and activities.
5. Continue and increase Colorado’s strong prosecution and adjudication programs.



The infrastructure emphasis area involves fatalities and serious injuries that happen mainly at intersections or involve roadway departures along urban and rural roadways. In developing the action plan for this emphasis area, Colorado created two separate teams – an urban infrastructure team and a rural one. The definition of rural used for the SHSP is based on the Office of Management and Budget’s classification of urban and rural counties, and is consistent with the definition used by the Colorado Department of Public Health and Environment and the Colorado Rural Health Center. The rural portion of the plan is intended to focus on the specific risks associated with rural roads. The two plans created by these teams were combined resulting in the current infrastructure emphasis area plan.

Under MAP-21, states are required to monitor fatality rates on rural roadways and obligate a specified amount of funding on high risk rural roads if the fatality rate increases over the most recent two years of data. High risk rural roads (HRRR) are defined in Colorado as roadways with crash rates for fatalities and incapacitating injuries exceeding the statewide average on rural major or minor collectors, or rural local roads, or roadways likely to have increases in traffic volume which are likely to create a crash rate above the statewide average for the respective roadway functional classes. Roadway departure crashes involve vehicles leaving the travel lane, encroaching into the opposite lanes, or onto the shoulder and roadside environment. The result of this maneuver is the vehicle hits an oncoming vehicle, is involved in a rollover crash, or hits fixed objects such as bridge walls, poles, embankments, guardrails, parked vehicles, or trees. Intersections create opportunities for conflict when vehicles and pedestrians turn left, turn right, or cross paths. These actions require road users to utilize the same space, which may result in crashes if they arrive at the same time.

While the data shown for the Rural and Urban Infrastructure shows intersections and roadway departure, infrastructure involves other crashes such as work zones, wildlife, rock falls, sideswipes, head on collisions, work zones, etc. All of these issues were considered by the emphasis area teams and included in several of the action plans that appear in the appendix of this document. For instance, work zones are specifically referenced in the Infrastructure Action Plan in two of the action steps under strategy 1.

Intersection-related fatalities decreased by over 5 percent (5.3 percent) and serious injuries decreased by over 4 percent (4.3 percent) in the 2008 to 2012 timeframe compared to the previous five-year period (2003 to 2007). Using the same comparison, roadway departure fatalities decreased by over 4 percent (4.4 percent) and serious injuries by over 6 percent (6.3 percent).

Intersection-related fatalities decreased from 156 in 2007 to 121 in 2012 and account for 25 percent of all fatalities. Serious injuries declined from 1,621 in 2007 to 1,378 in 2012 and represent 41 percent of serious injuries (Figure 11). Roadway departure fatalities decreased from 233 in 2007 to 195 in 2012 and account for 44 percent of all fatalities. Serious injuries declined from 1,331 in 2007 to 987 in 2012 and represent 32 percent of all serious injuries (Figure 12).

Figure 11. Intersection-Related Fatalities and Serious Injuries
2007 to 2012

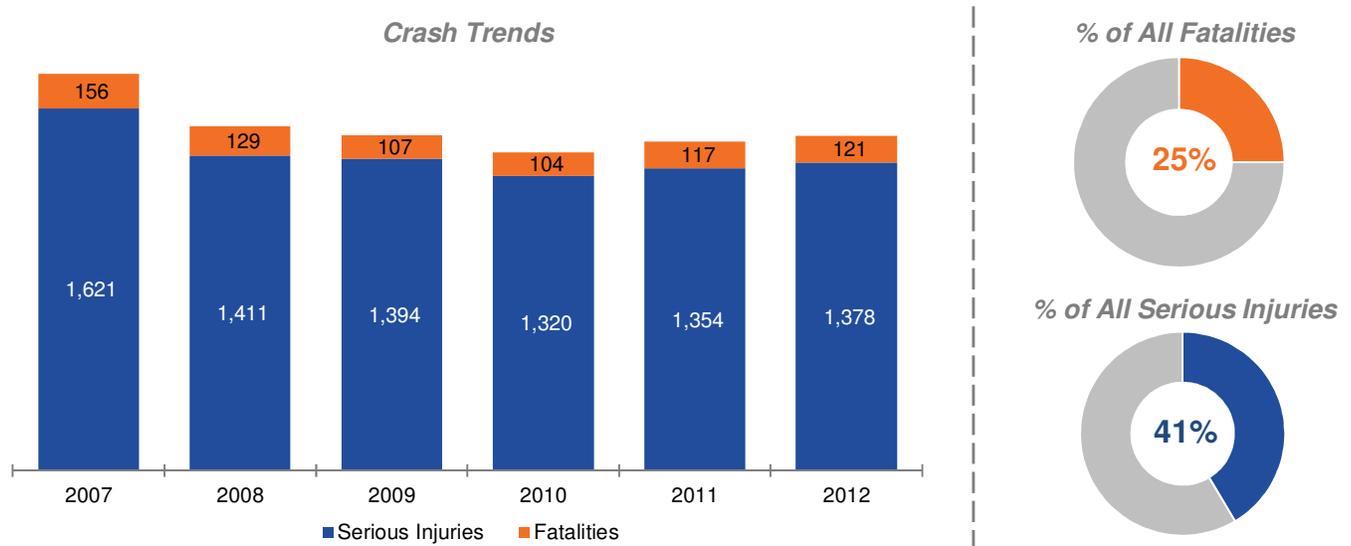
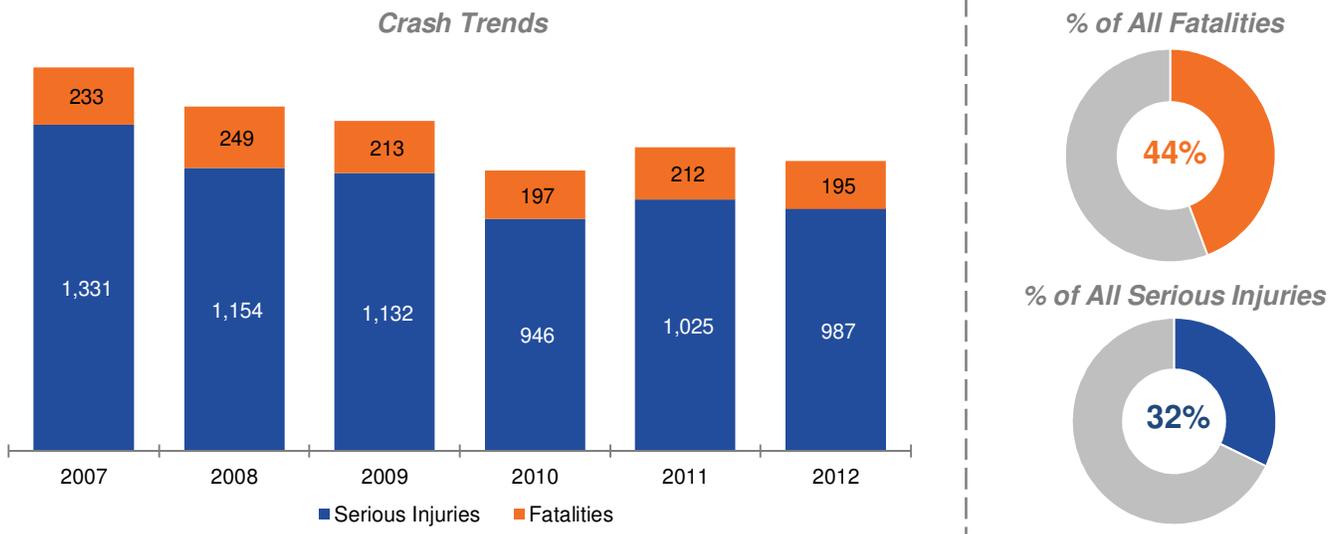
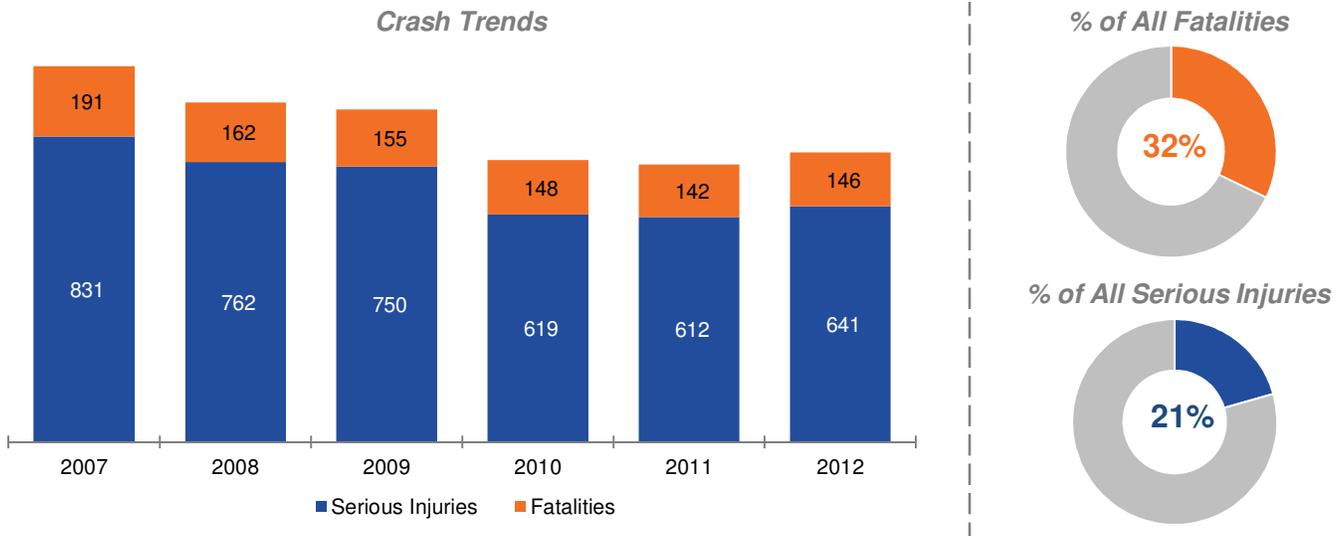


Figure 12. Roadway Departure Fatalities and Serious Injuries
2007 to 2012



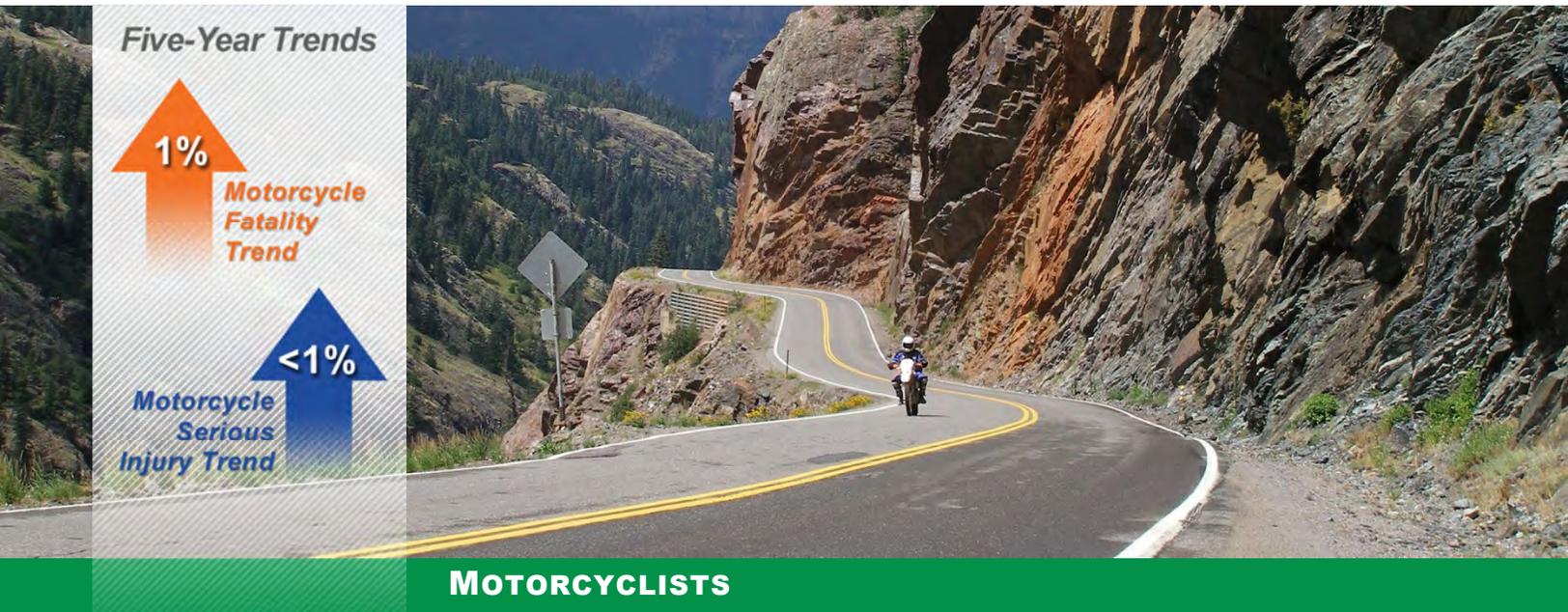
Between 2007 and 2012, rural fatalities decreased from 191 to 146 and account for 32 percent of all fatalities. Rural serious injuries declined from 831 in 2007 to 641 in 2012 and account for 21 percent of serious injuries as shown in Figure 13.

Figure 13. Rural Fatalities and Serious Injuries
2007 to 2012



STRATEGIES

1. Identify and prioritize local road safety problems on all roadways using data-driven processes and implement infrastructure, operations, and policy improvements to reduce roadway crashes.
2. Use proven behavioral countermeasures to reduce crashes for all roadway users.
3. Increase safe driving behaviors on rural roadways.
4. Improve collection and accessibility of data on all roads.
5. Implement countermeasures, technology, or design to reduce crashes on all roadways.
6. Provide training and outreach to state and local safety stakeholders and the public (e.g., on roadway safety best practices, processes, issues, new methodologies, and partnership strategies).



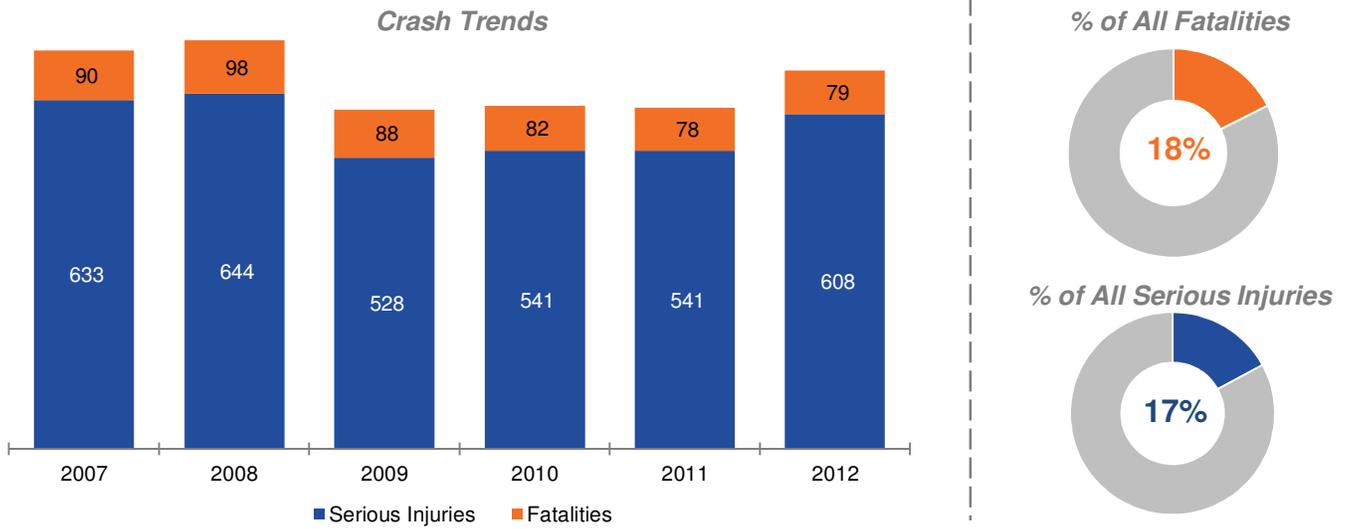
MOTORCYCLISTS

Motorcycles have become an increasingly popular mode of transportation which can lead to fatalities and serious injuries involving motorcycle riders and passengers (collectively referred to as motorcyclists). Motorcyclists have all the same rights, privileges, and responsibilities as any motor vehicle driver on the roadway. However, like other vulnerable road users (bicyclists and pedestrians), their size relative to passenger vehicles makes the likelihood of a fatality or serious injury in the event of a crash much greater.

In Colorado, motorcyclist fatalities increased over 1 percent (1.1 percent) and serious injuries increased slightly (0.1 percent) in the 2008 to 2012 period compared to the 2003 to 2007 timeframe.

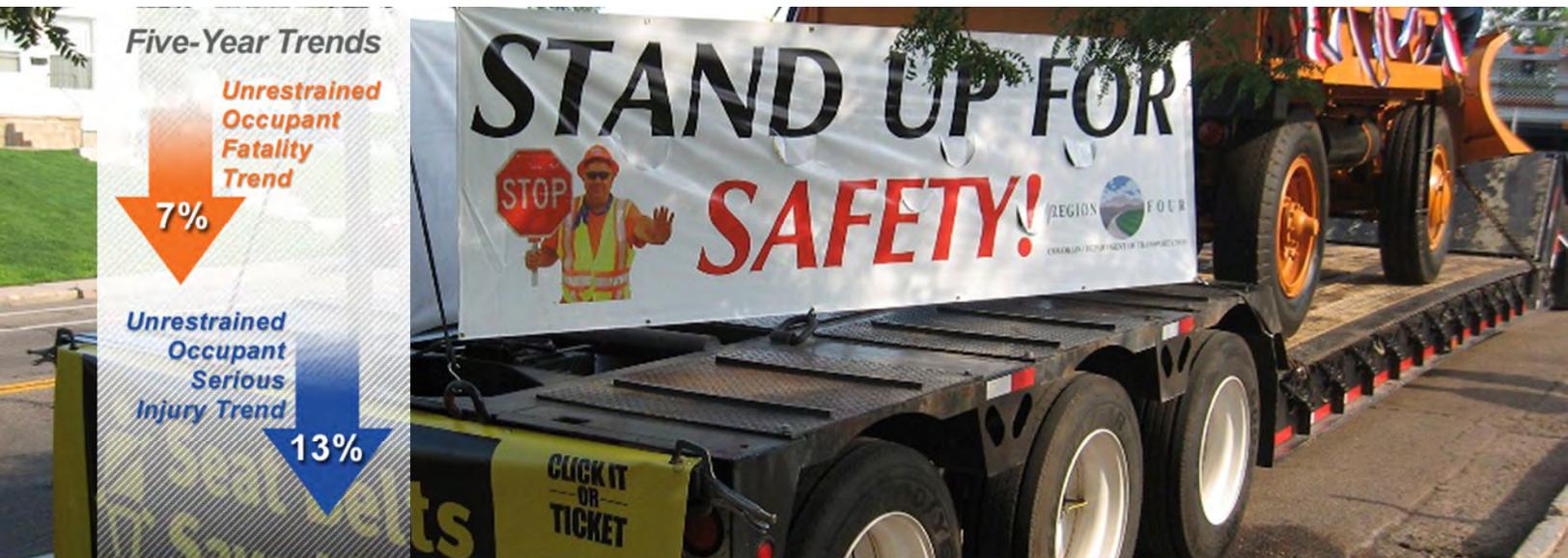
Motorcyclist fatalities decreased from a high of 98 in 2008 to 79 in 2012 and represent 18 percent of all fatalities. Serious injuries increased from a low of 528 in 2009 to 608 in 2012 and account for 17 percent of all serious injuries (Figure 14).

Figure 14. Motorcyclist Fatalities and Serious Injuries
2007 to 2012



STRATEGIES

1. Develop and implement programs to train motorcyclists on skills related to crash avoidance.
2. Continue communications and outreach programs to promote motorcyclist safety.
3. Develop a motorcycle crash awareness course for uniformed law enforcement officers to improve their understanding of motorcycle crash dynamics and general motorcycle safety issues.
4. Limit the length of each motorcycle permit and the number of lifetime permit renewals.
5. Increase awareness among state and local personnel regarding motorcycle roadway safety.
6. Support policies that promote helmet use.



OCCUPANT PROTECTION

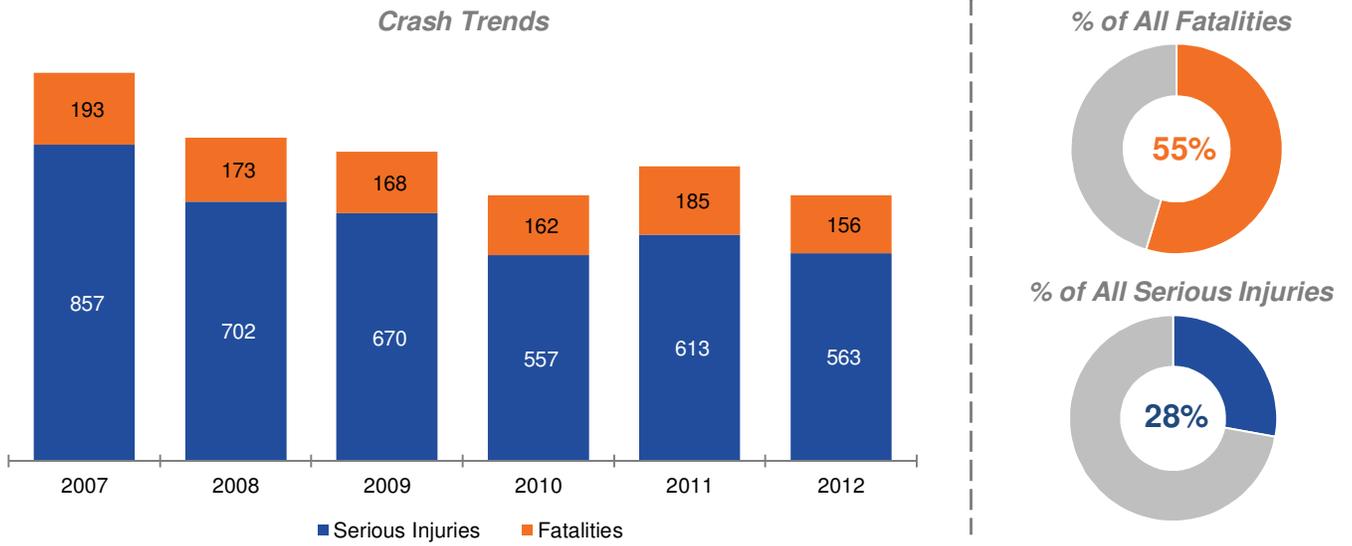
A safety belt, when worn properly, is the single most effective way to save lives and reduce injuries in crashes. Safety belts keep motorists in their seats during a crash and spread the crash forces across the stronger parts of the upper body. These restraints also can prevent injuries in a secondary collision inside the vehicle and prevent ejection from the vehicle. Occupant protection also includes child passenger safety and restraints, including child safety seats and booster seats that have proven to be highly effective in preventing child deaths and injuries in traffic-related crashes.

High-visibility enforcement campaigns, higher fines for safety belt violations, and primary safety belt laws have all contributed to the increase in safety belt use in the U.S.

In comparison to the 2003 to 2007 period, unrestrained occupant fatalities decreased over 7 percent (7.4 percent) in the 2008 to 2012 period, and serious injuries declined nearly 13 percent (12.9 percent).

Unrestrained occupant fatalities decreased from 193 in 2007 to 156 in 2012 and represent 55 percent of total passenger vehicle occupant fatalities. Unrestrained serious injuries decreased from 857 in 2007 to 563 in 2012 and account for 28 percent of total passenger vehicle occupant serious injuries, as shown in Figure 15.

Figure 15. Unrestrained Occupant Fatalities and Serious Injuries
2007 to 2012



STRATEGIES

1. Support policies and activities that promote seat belt use such as a primary seat belt law.
2. Increase awareness of the risks associated with non-seat belt use.
3. Support and expand Colorado’s high visibility seat belt enforcement initiatives.



YOUNG DRIVERS

Motor vehicle crashes remain a leading cause of death for young drivers between the ages of 15 and 20, according to the National Center for Health Statistics. Young drivers, defined in Colorado as drivers age 15 to 20, lack driving experience which may result in poor decision-making and risky driving behaviors such as speeding, which directly result in motor vehicle crashes. Stronger enforcement of the Graduated Driver’s License (GDL) law has contributed to declines in young driver involved fatalities and serious injuries. The emphasis area plan for the SHSP was developed by the Colorado Teen Driving Alliance (CTDA), which will oversee implementation as the plan moves forward.

In Colorado, the number of people who were killed in crashes that involved a young driver decreased 10 percent in the 2008 to 2012 time period as compared to 2003 to 2007. Serious injuries dropped nearly 9 percent (8.7 percent).

Figure 16. Young Driver Involved Fatalities and Serious Injuries
2007 to 2012

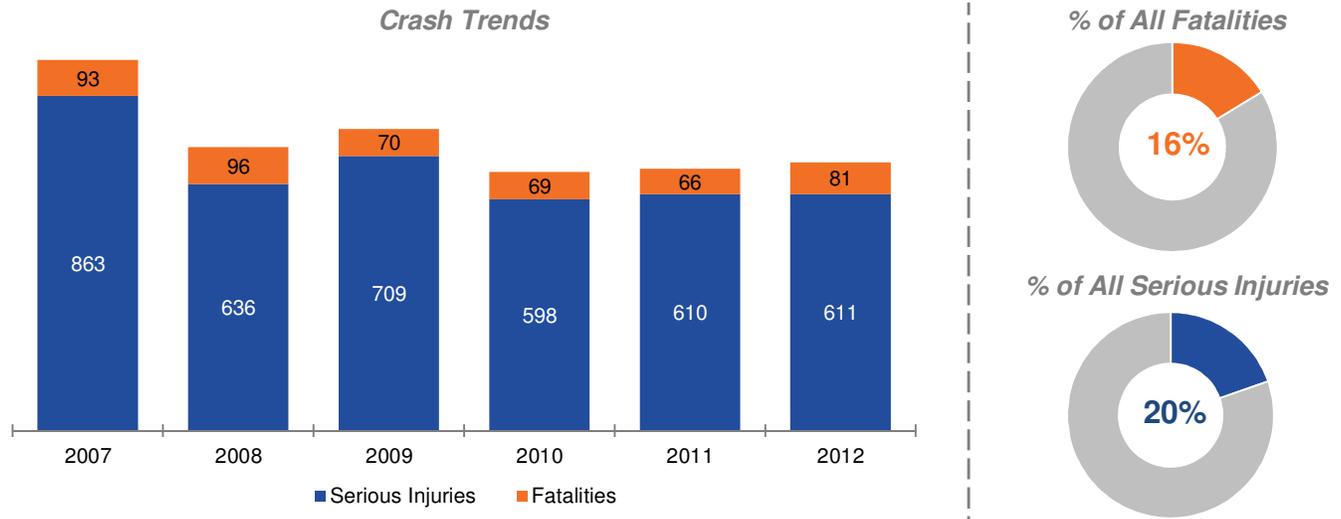


Figure 16 shows fatalities involving young drivers decreased from 93 in 2007 to 81 in 2012 and account for 16 percent of all fatalities. Young driver involved serious injuries decreased from 863 in 2007 to 611 in 2012 and represent 20 percent of all serious injuries.

STRATEGIES

1. Increase coordination, collaboration, and mission alignment among state-level motor vehicle partners in Colorado related to evidence-based practices that reduce motor vehicle occupant injuries among youth ages 15 to 20.
2. Increase the number of teen motor vehicle safety programs funded by state agencies that are implementing evidence-based programs by providing resources and technical assistance.
3. Increase seat belt use among teens.
4. Increase the percentage of law enforcement officers who report enforcing the Graduated Driver’s License law.
5. Educate parents about the existing Graduated Driver’s License law.
6. Decrease the number and rate of impaired driving-related crashes among young drivers.



DATA

Data are the foundation of the SHSP. Given the importance of data to the overall effort, a decision was made to add data as a specific emphasis area. Data drives decisions to target resources at Colorado's most serious traffic safety problems and will be used to determine whether the SHSP achieved that goal. As each of the SHSP emphasis areas seeks to improve highway safety, complete and accurate safety data will be required. The Data emphasis area team has developed strategies and action steps that will improve data collection and analysis for all the SHSP emphasis areas. They will work closely with STRAC to report progress and gain input into the Data emphasis area plan, which does not involve reductions in fatalities and serious injuries and therefore does not have measurable objectives. The team will however, develop several performance measures which will be tracked as the plan moves forward.

STRATEGIES

1. Identify and support efforts which maintain and/or improve the timeliness, completeness, accuracy, uniformity, accessibility, and integration of individual agency traffic information system databases.
2. Identify and document traffic safety databases and pathways of information throughout Colorado, and redundancy, needs, and gaps in current traffic safety.
3. Revise DR 2447 (Colorado's Crash Report Form) to reflect current and emerging data needs.
4. Develop processes to integrate the crash, EMS/injury surveillance, citation, and roadway databases.



DISTRACTED DRIVING TASK FORCE

Since Colorado does not currently have sufficient data on distracted driving, a Task Force was formed to develop a definition for distracted driving and conduct research to identify effective countermeasures. The Distracted Driving Task Force met to develop an action plan that will help them provide recommendations to the SHSP Steering and Executive Committees on how to address this issue. Following are some of the actions the Task Force has completed and others they will be working on in future meetings:

- Developed a recommended definition for distracted driving, which is: *Distracted driving is any activity that could divert a person's attention away from the primary task of driving.*
- Identified current laws and distracted driving programs in the state.
- Identified employer policies on distracted driving which will form the basis of a recommended policy for all state employees.
- Schedule a meeting with the Colorado Association of Police Chiefs and the County Sheriffs of Colorado to obtain input on developing a system to collect better distracted driving data.
- Provide recommendations on successful programs and activities conducted in other states that may be useful in Colorado. Some of the programs include partnering with insurance companies and the Rocky Mountain Insurance Information Association on education and program sponsorships targeted at distracted driving; expansion of current Aurora Police Department program; development of a specific tag line for a distracted driving campaign; distracted driving education for novice drivers; and more specific lists of distractions on police report forms.



SHSP IMPLEMENTATION AND EVALUATION

Colorado's updated SHSP provides a roadmap to achieve the plan's vision, mission, and goals through effective implementation of the proposed strategies and action steps. The Executive and Steering Committees, comprised of key safety stakeholders, will oversee and supervise the SHSP implementation and evaluation process by doing the following:

- Tracking implementation progress in each of the emphasis areas;
- Identifying barriers or problems to implementation;
- Providing regular updates on SHSP-related campaigns, training, or other programs;
- Providing guidance on future programs, activities, etc.;
- Determining the need and design of future SHSP updates; and
- Working with the Statewide Traffic Records Advisory Committee (STRAC) on data improvements.

Emphasis area teams also will meet regularly to:

- Develop emphasis area performance targets;
- Discuss action step implementation progress and coordinate next steps;
- Identify problems or barriers and report to the Steering Committee;
- Modify action steps as required; and
- Continually track and report progress.

Evaluation is a critical part of the implementation process. The overall plan and each emphasis area have developed specific goals to reduce traffic-related fatalities and serious injuries. Each of those goals will be tracked on a yearly basis to ensure specific targets are met. Each emphasis area team also will identify other performance measures that will be evaluated as the plan moves forward. These performance measures may include results from direct observations (e.g., safety belt usage or graduated driver licensing violations); survey data measuring awareness, driver attitudes and behaviors; and activity measures, such as number of citations issued during high-visibility enforcement campaigns or the installation of proven engineering countermeasures, such as median cable barriers or rumble strips. This information along with a report on the implementation progress for each action step will be reported annually to the SHSP Executive and Steering Committees and other designated agencies, organizations, and individuals. Throughout the implementation process, the SHSP will be a dynamic document that stakeholders continuously review and improve. This ongoing evaluation will enable Colorado to keep up-to-date with the latest research and tools making appropriate adjustments as necessary.



Image courtesy of Dave Hattan, FHU

APPENDIX

GLOSSARY OF ABBREVIATIONS

- AARP - American Association of Retired People
- AASHTO - American Association of State Highway Transportation Officials
- ADA - Americans with Disabilities Act
- BAC - Blood/breathe alcohol test
- CCI - Colorado Counties, Inc. (association for county commissioners)
- CDOT - Colorado Department of Transportation
- CML - Colorado Municipal League (mayors and council members)
- CTDA - Colorado Teen Driving Alliance
- DDACTS - Data Driven Approaches to Crime and Traffic Safety
- DMV - Department/Division of Motor Vehicles
- DOR - Department of Revenue
- DR 2447 - Colorado's Crash Report Form
- DR 3447 - Next version of Colorado's Crash Report Form
- DRMAC - Denver Regional Mobility and Access Council
- DRE - Drug Recognition Expert
- DUI - Driving Under Impairment
- EMS - Emergency Medical Services
- EMTS - Emergency Medical and Trauma Services
- FHWA - Federal Highway Administration
- FMCSA - Federal Motor Carrier Administration
- GDL - Graduated Driver Licensing (law for teen drivers)
- HAWK - High Intensity Activated Crosswalk (pedestrian signal)

ITN - Independent Transportation Network
LED - Light-Emitting Diode
LEL - Law Enforcement Liaison
LTAP - Local Technical Assistance Program
MADD - Mothers Against Drunk Driving
MAP-21 - Moving Ahead for Progress in the 21st Century Act (Federal act funding surface transportation projects and initiatives)
MCH - Maternal and Child Health
MIRE - Model Inventory of Roadway Elements
MMUCC - Model Minimum Uniform Crash Criteria
MPO - Metropolitan Planning Organization
MVMT - Million Vehicle Miles Traveled
NHTSA - National Highway Traffic Safety Administration
NYSDMV - New York State Department of Motor Vehicles
OTS - Office of Transportation Safety (Colorado's highway safety office located in CDOT)
PPACG - Pikes Peak Area Council of Governments
RFA - Request For Application
RIC - Research Implementation Council (in CDOT)
SHSP - Strategic Highway Safety Plan
SPIRS - Strategic Plan for Improving Roadway Safety (Colorado's first SHSP, 2006)
STAC - Statewide Transportation Advisory Committee
STRAC - Statewide Traffic Records Advisory Committee
TPR - Transportation Planning Region
TZD - Toward Zero Deaths

2013 UPDATE PROCESS

Significant progress has been made since the adoption of Colorado’s first strategic plan, known as the Strategic Plan for Improving Roadway Safety or SPIRS, both in terms of total fatalities and serious injuries, along with an increased travel on Colorado’s roadways. Since 2007, fatalities have declined by 14 percent and serious injuries dropped by 17 percent (Figure 17). During the same time period, the fatal crash rate (fatal crashes per million vehicle miles traveled or MVMT) declined by 10.9 percent from 1.04 to 0.93 (Figure 18), an indication that the fatality and serious injury reductions were due to factors beyond traffic volume alone.

Figure 17. Fatalities and Series Injuries
2002 to 2012

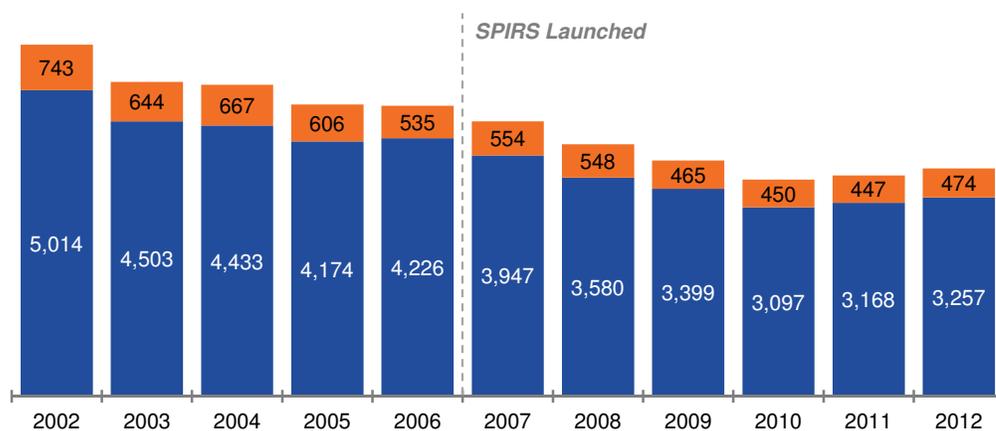
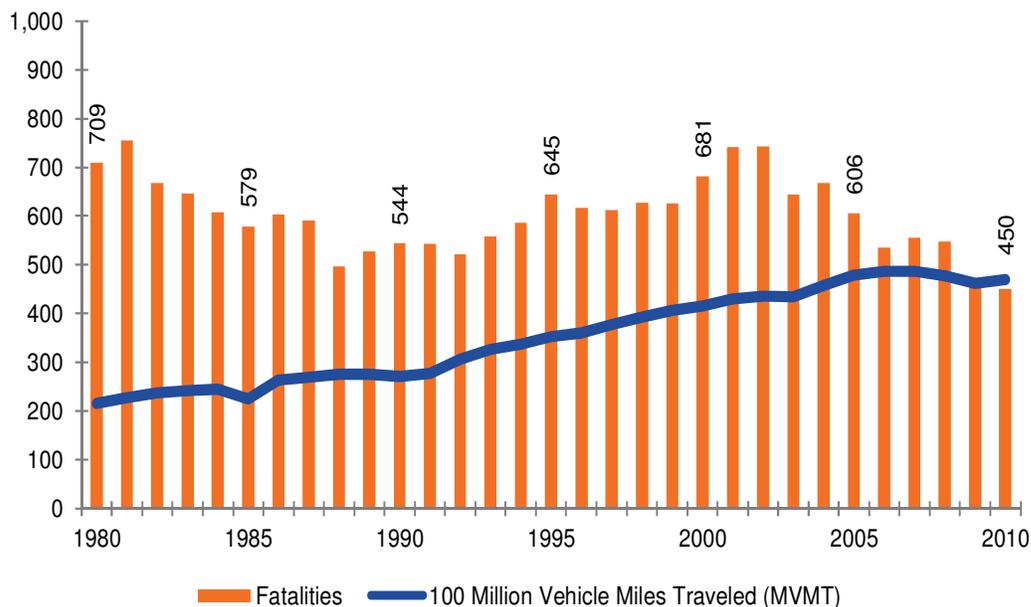


Figure 18. Fatalities and VMT
1980 to 2010



EXECUTIVE AND STEERING COMMITTEE MEETINGS

To ensure this progress continues members of the SHSP Executive Committee and Steering Committee met to oversee the update process and provide ideas and guidance. Both Committees reflect the major Federal, state, regional and local government agencies and private sector organizations that are involved in traffic safety. Not all agencies actively participated but all were contacted and urged to be a part of the effort. The role of the SHSP Executive Committee is to:

- Oversee SHSP update and implementation;
- Identify organizational resources;
- Approve the vision, mission, goals and emphasis areas, and the final 2014 SHSP;
- Establish agency implementation policies;
- Review progress annually, provides guidance, and addresses challenges;
- Promote the SHSP internally and externally; and
- Align agency/organization goals and objectives with the 2014 SHSP.

The SHSP Steering Committee's role is to:

- Provide recommendations on:
 - Vision, mission, and goals; and
 - Emphasis areas and stakeholders.
- Serve as emphasis area team leaders and members;
- Identify and help overcome barriers and mobilize resources;
- Review plan content; and
- Provide recommendations on future actions.

Leadership meetings were held:

Executive Committee:

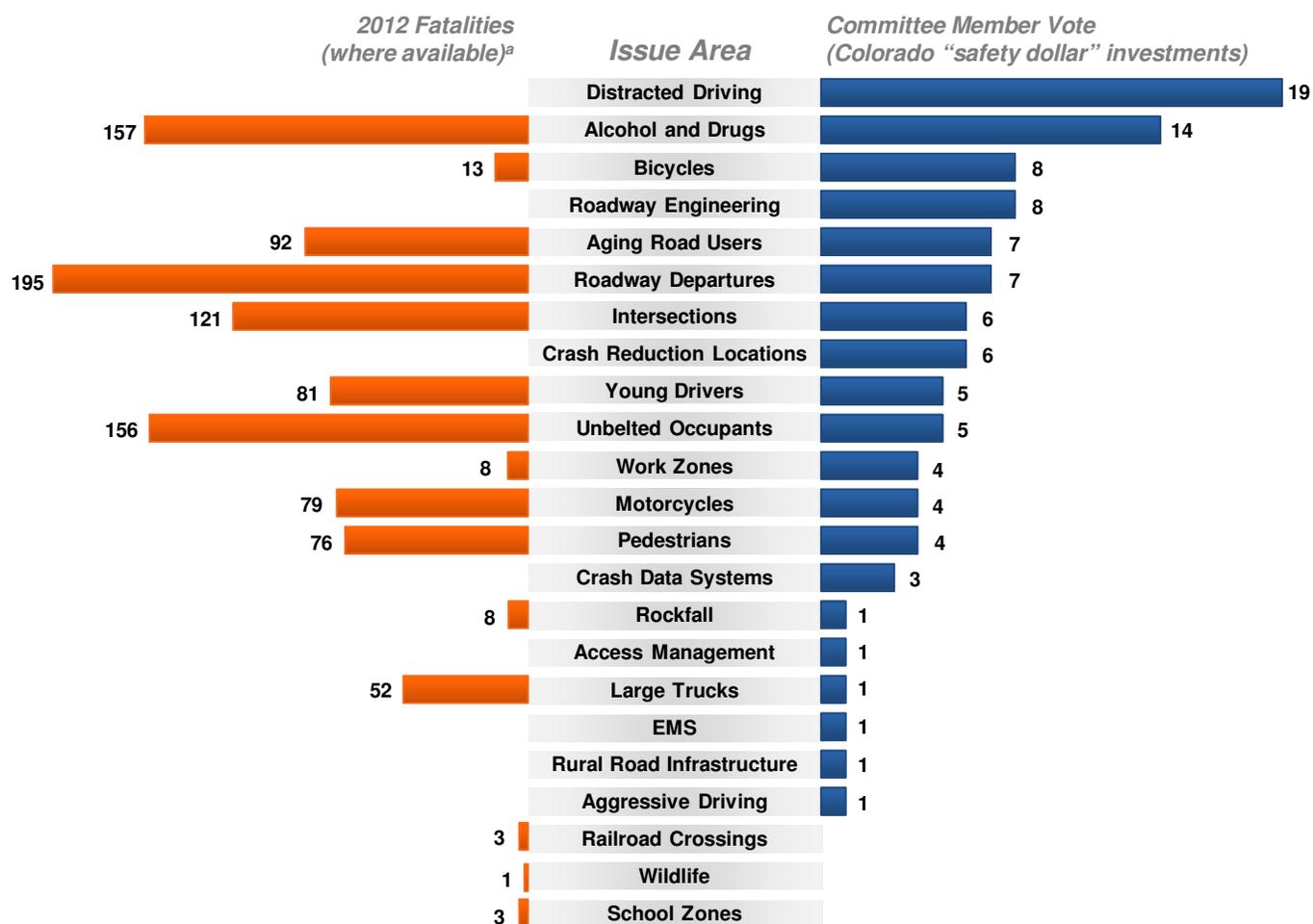
- December 6, 2013
- February 19, 2014
- June 12, 2014

Steering Committee:

- October 31, 2013
- March 11, 2014
- June 2, 2014

The 2006 Colorado SPIRS included a comprehensive listing of 18 emphasis areas. Steering Committee members at their October meeting were asked to 'invest' safety dollars into these issues and other emerging concerns. This prioritization activity identified several clear priorities among the Committee and highlighted the importance of considering other contributing crash factors and supporting systems within Colorado's SHSP. The results of this exercise are reported in Figure 19.

Figure 19. Emphasis Area Selection



^a Crash factors are not mutually exclusive and fatalities indicated will not sum to total fatalities for 2012.

Results of this exercise were shared with safety stakeholders from around the state and additional analysis and discussion was conducted to identify emphasis areas. The analysis included an investigation of the total number of fatalities and serious injuries within each potential emphasis area; the trend within each emphasis area; the potential for reduction of fatalities and serious injuries; the overlap among emphasis areas; and emerging issues and trends, such as the recent legalization of marijuana. After discussions with the Executive and Steering Committees, a final list of emphasis area for the updated plan was agreed upon.

The selected emphasis areas include:

- Aging Road Users (65+);
- Bicyclists and Pedestrians;
- Data;
- Impaired Driving;
- Infrastructure – Rural and Urban;
- Motorcyclists;
- Occupant Protection;
- Young Drivers (15-20); and
- Distracted Driving Task Force.

For the Data, Impaired Driving, and Young Driver emphasis area teams, the SHSP worked closely with established coalitions. For Data, the Statewide Traffic Records Coordinating Committee (STRAC) served primarily as the emphasis area team. The same is true for Young Drivers which is led by the Colorado Teen Driving Alliance (CTDA). Members of the Alliance adapted their existing plan for the SHSP emphasis area. In the future, the Impaired Driving Emphasis Area team will work closely with the Colorado Interagency Task Force on Drunk and Impaired Driving to ensure there is coordinated and consistent approach to reducing impaired driving throughout the state.

If an issue is not listed as an emphasis area, it does not mean it will not be addressed either through strategies and action steps in the SHSP or through other transportation plans. Work zones, for instance, represent 1.9 percent of all fatalities and less than one percent (.08 percent) of all serious injuries. This is one of the reasons it was not included as a separate emphasis area. Work zone issues are addressed through several action steps in the Rural and Urban Infrastructure Plan. The same is true for speeding which is addressed through a number of strategies and action steps in the plan. Other issues such as rock falls and wildlife also are addressed through individual action steps.

The Steering Committee discussed the issue of distracted driving to determine whether it should be an emphasis area. The state does not have sufficient data on distracted driving, mainly because it is difficult to prove a driver was distracted. However, given the importance of the issue, the Steering Committee voted to form a Distracted Driving Task Force, which will develop a definition for distracted driving and conduct research to identify effective countermeasures. The Task Force already has met three times and has put together a plan of action to enable Colorado to begin developing effective approaches to this problem.

COORDINATION WITH OTHER PLANS

Several other transportation plans, including the Highway Safety Improvement Program (HSIP), Highway Safety Plan (HSP), Commercial Vehicle Safety Plan (CVSP), and the Traffic Records Strategic Plan, were considered during the development of the updated SHSP. In Colorado the HSIP and the HSP are combined into the Integrated Safety Plan (ISP). Subject matter experts for the HSIP and HSP actively participated on the emphasis areas teams and in the development of the engineering- and behavioral-related strategies. In fact, many of the engineering-related strategies and action steps relate to the projects identified in the HSIP and many behavioral strategies and action steps reflect the current programs and priorities in the HSP. For instance, high-visibility enforcement is part of the HSP and part of the emphasis area plans for impaired driving and occupant protection.

For the CVSP, the impaired driving action step to deploy enforcement where impaired driving crashes, fatalities, and serious injuries are highest reflects what is contained in the SHSP. The CVSP includes strategies to encourage seat belt use and ensure the safety of young drivers as does the SHSP. In addition, the Infrastructure emphasis area action plan includes action items that relate to the CVSP including:

- Analyzing data to determine the effect on safety from heavy traffic and large vehicles on rural roadways and partnering with heavy commercial vehicle industries to develop and implement education and outreach program on data-driven safety problems;
- Establishing and monitoring programs, projects, and guidelines to address safety concerns for all modes of transportation;
- Implementing programs and initiatives to increase seat belt use, and reduce crashes involving impaired driving, speeding/aggressive driving, distracted driving and younger drivers; and
- Providing information to novice drivers on the unique characteristics of rural roadways.

The Data emphasis area team was led by the Statewide Traffic Records Advisory Committee (STRAC) chairman and included several members of the Committee. Data are critical to the success of the SHSP as evidenced by the first strategy in the Data emphasis area action plan which is to identify and support efforts which maintain and/or improve the timeliness, completeness, accuracy, uniformity, accessibility, and integration of individual agency traffic information system databases. This strategy also links directly to the STRAC mission and plan.

Members of the Executive Committee reviewed other transportation plans, including the Colorado State Patrol plan and DOT's 2035 Statewide Transportation Plan. In addition to these plans, the Impaired Driving and Young Driver Emphasis Area Teams also reviewed the Interagency Task Force on Drunk and Impaired Driving Plan and the Colorado Teen Driving Alliance (CTDA) strategic plan to ensure they are consistent with the SHSP. In fact, the Young Driver emphasis area plan is taken from the CTDA strategic plan with several additional strategies added to emphasize traffic safety.

OUTREACH, REGIONAL MEETINGS, AND STATEWIDE WEBINAR

Considerable outreach was conducted during the update process. A special effort was made to contact and gain input from the Statewide Transportation Advisory Committee (STAC) which includes all the MPOs in the state and materials were distributed to a majority of the Transportation Planning Region (TPR) through their meetings. Presentations on the SHSP were made by CDOT staff at the following meetings:

STAC, Statewide MPO meeting – January 10, 2014

STAC, Statewide MPO meeting – March 14, 2014

Pikes Peak Area Council of Governments (PPACG) – May 14, 2014

Materials were distributed at the following TPR meetings:

Eastern TPR – January 20, 2014

Gunnison Valley TPR – January 22, 2014

Southeast TPR – January 22, 2014

Northwest TPR – January 23, 2014

San Luis Valley TPR – January 23, 2014

Southwest TRP – January 24, 2014

Central Front Range TPR – January 27, 2014

South Central TPR – January 30, 2014

Intermountain TPR – February 28, 2014

A key requirement for the update process was the active involvement of a broad-based group of safety stakeholders from throughout the state. Nearly 1,000 safety stakeholders were contacted and nearly 200 people from all parts of Colorado joined the Colorado Department of Transportation at the following five regional meetings and one statewide webinar to offer input and ideas on the update of the Strategic Highway Safety Plan (SHSP):

Northeastern Colorado (Loveland) – January 22, 2014

Southeastern Colorado (Pueblo) – January 24, 2014

Northwestern Colorado (Grand Junction) – January 28, 2014

Southwestern Colorado (Durango) – January 30, 2014

Metro Denver (Denver) – February 6, 2014

Statewide Webinar - March 6, 2014

The participants represented each of the 4 Es of Safety: engineers, educators, enforcement, and emergency medical services. Many of these individuals signed up to be members of emphasis area teams further strengthening the multidisciplinary nature of the SHSP.

At each meeting participants offered their views and ideas on how to improve traffic safety in Colorado particularly in the identified emphasis areas. During the discussion, some common themes emerged, including the following:

- **Distracted Driving.** Stakeholders felt distracted driving should be an emphasis area and indicated it is a bigger issue than the reported data suggest. Currently, the distracted driving data is dependent on drivers self-reporting following a crash, which complicates the ability of law enforcement to cite a driver for a distracted driving offense. National and statewide research also is lacking on effective countermeasures.
- **Drugged Driving.** Stakeholders indicated that drugged driving should be a focus given the new law in Colorado. The groups felt the lack of drugged driving data, and the importance of collecting this information to get a more accurate picture of the problem needed to be addressed.
- **Urban/Rural.** A number of differences exist in urban/rural safety issues. Rural communities indicated that their safety concerns may be ignored in favor of more urban/suburban communities on the Front Range. Given the high number of fatalities in rural areas, a specific focus was developed on rural safety issues within each emphasis area and as specific subcommittees within the infrastructure and operations emphasis area.
- **Bicyclist and Pedestrian Safety.** Colorado's outdoor lifestyle encourages a large number of people to bike and walk whenever possible. Some of the issues cited by regional stakeholders are the lack of shoulders and connectivity particularly in rural areas and incidents that occur on trails and non-roadway locations. Persons using motorized or regular wheelchairs and other devices to aid mobility also should be addressed within the plan.
- **Data.** Concerns were raised over the availability and accuracy of safety data to aid in decision-making. The need to ensure data are readily available to local jurisdictions and to link crash data to other data sources such as hospital data and dispatch data was also discussed.

- **Diversity.** Colorado's diverse population creates unique demands on traffic safety programs. Age, language barriers, and geography must be taken into account when designing and implementing safety strategies.
- **Occupant Protection.** Stakeholders felt Colorado should pass a primary seat belt law. The ability for local jurisdictions to pass and enforce their own primary enforcement statues should be considered.
- **Best Practices.** Stakeholders recommended that CDOT review the previous SHSP to learn what worked and what did not. Others suggested examining experiences in other states and other countries for best practices that could be used in Colorado. This information can be shared and used to make decisions about existing and new programs.

Over 225 ideas for the plan were documented at these meetings and distributed to emphasis area teams for use in developing their respective action plans. The teams then met in March and April 2014 to finalize their portions of the SHSP.

EMPHASIS AREA TEAM MEETINGS

The multidisciplinary members of each emphasis area team were selected from information on commitment cards that were distributed to meeting participants at each of the regional meetings. Each of these teams met three times over a two- month period to develop emphasis area action plans as shown in the following schedule.

Monday, March 17	Tuesday, March 18	Wednesday, March 19	Thursday, March 20	Friday, March 21
Impaired Driving			STRAC Meeting	
Occupant Protection	Infrastructure Urban	Bicyclist and Pedestrian Safety		Motorcyclist Safety
Infrastructure Rural	Aging Road Users	Distracted Driving		
Monday, March 31	Tuesday, April 1	Wednesday, April 2	Thursday, April 3	Friday, April 4
Infrastructure Rural	Impaired Driving	Aging Road Users		
		Infrastructure Urban	Younger Drivers	
	Occupant Protection			
Distracted Driving	Motorcyclist Safety		Bicyclist and Pedestrian Safety	
Monday, April 7	Tuesday, April 8	Wednesday, April 9	Thursday, April 10	Friday, April 11
		Data		
Monday, April 14	Tuesday, April 15	Wednesday, April 16	Thursday, April 17	Friday, April 18
Infrastructure Rural	Impaired Driving			
Aging Road Users				
Infrastructure Urban	Occupant Protection	Younger Drivers	Bicyclist and Pedestrian Safety	
Distracted Driving	Motorcyclist Safety			
Monday, April 21				
Data				

Note: The Younger Driver action plan was discussed at the Colorado Teen Driving Alliance Meeting on May 3, 2014. After the first STRAC meeting interested members formed the Data emphasis area team which included some additional individuals identified from the commitment cards.

During the meetings the emphasis area teams:

- Reviewed the membership list and determined who else needed to be a member of the team.
- Reviewed data related to the emphasis area's problems and key issues.
- Determined if sufficient data were available to select appropriate strategies and action steps and, if not, identified what additional data were needed.
- Identified the strategies and action steps through a four step process:

Appendix

- Reviewed the data;
- Reviewed the research on proven countermeasures;
- Reviewed the recommendations from the regional meetings; and
- Applied the strategy test.

The strategy test asked the following questions to verify each strategy was appropriate for inclusion in the SHSP:

- Is the strategy feasible;
- Can the strategy be measured;
- Are there political or policy barriers;
- Will it impact fatalities and serious injuries; and
- Can it be accomplished within the five-year life of the plan?

The emphasis area action plans provide a roadmap for SHSP implementation. A summary of the data, strategies, and action steps for each emphasis area team action plan follows in Section 6.

Emphasis area goals are not included in this SHSP document. The emphasis area teams will meet once the plan is launched with subject matter experts to review the strategies and action steps in the plan and identify fatality and serious injury targets that reflect the planned approach. The fatality and serious injury goals, along with other outcome and output performance measures, will be evaluated annually as a part of the SHSP Evaluation Plan, and coordinated with the SHSP goals. Detailed action plans, which include the goals, performance measures, strategy leader and action step implementation dates will be provided in a supplementary document and updated annually by the emphasis area teams. These detailed action plans focus the state's resources where they are most needed, and keep the SHSP alive throughout the implementation phase.



6

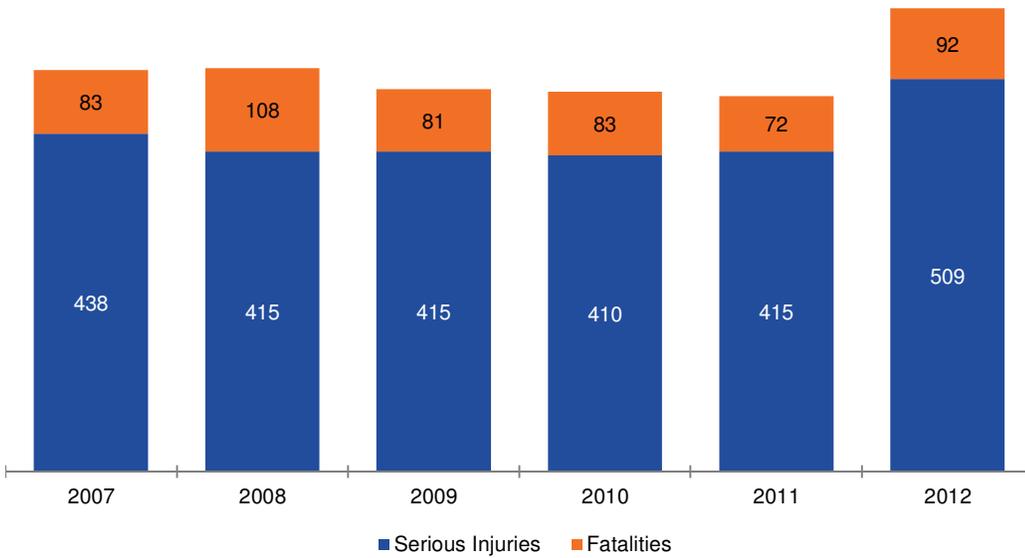
EMPHASIS AREA ACTION PLANS

Emphasis area action plans are the foundation of the SHSP. These action plans focus the state’s resources where they are most needed and keep the plan alive during the implementation phase. Developed by each emphasis area team, the following action plans identify the strategies and action steps that will be implemented to achieve the goals and later evaluated to determine progress. Detailed action plans, which also include action step leaders and timelines for implementation, can be found in a separate SHSP Implementation Plan document. These more detailed plans are “living, breathing” documents which are revised by the teams during implementation as actions are completed and adjusted as needed to achieve the established goals.

AGING ROAD USERS

Aging road users are defined as drivers 65 years of age or older. Crashes involving these drivers between 2007 and 2012 resulted in 519 fatalities and 2,602 serious injuries as shown in Figure 20.

Figure 20. Aging Road User Involved Fatalities and Serious Injuries
2007 to 2012



The majority of aging road user involved fatal and serious injury crashes occur in warm weather (June through August) as shown in Figure 21. Seventy-three percent of aging road user fatal and serious injury crashes occur during daytime (9 a.m. to 6 p.m.) hours as shown in Figure 22.

Figure 21. Aging Road User Involved Fatalities and Serious Injuries by Month
2007 to 2012

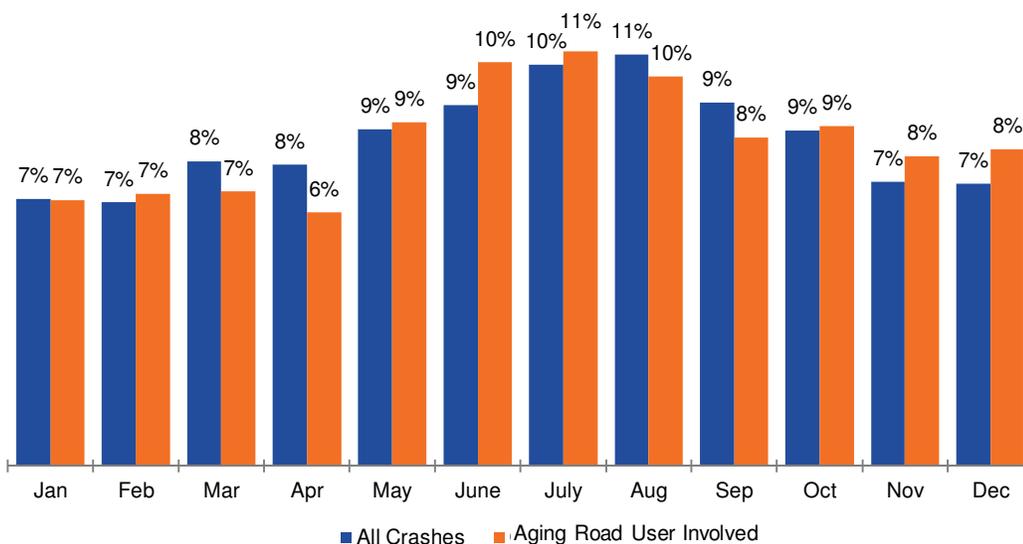


Figure 22. Aging Road User Involved Fatalities and Serious Injuries by Time of Day 2007 to 2012

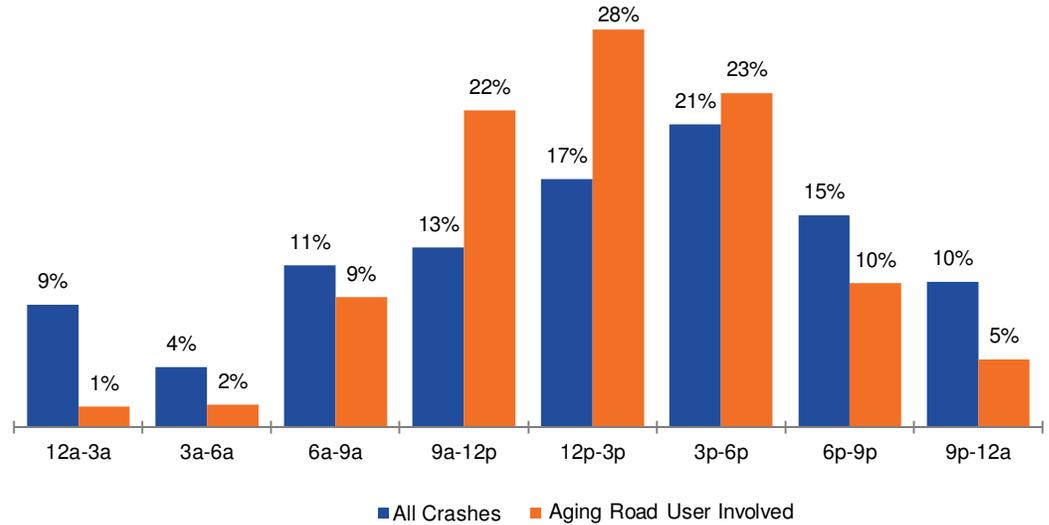
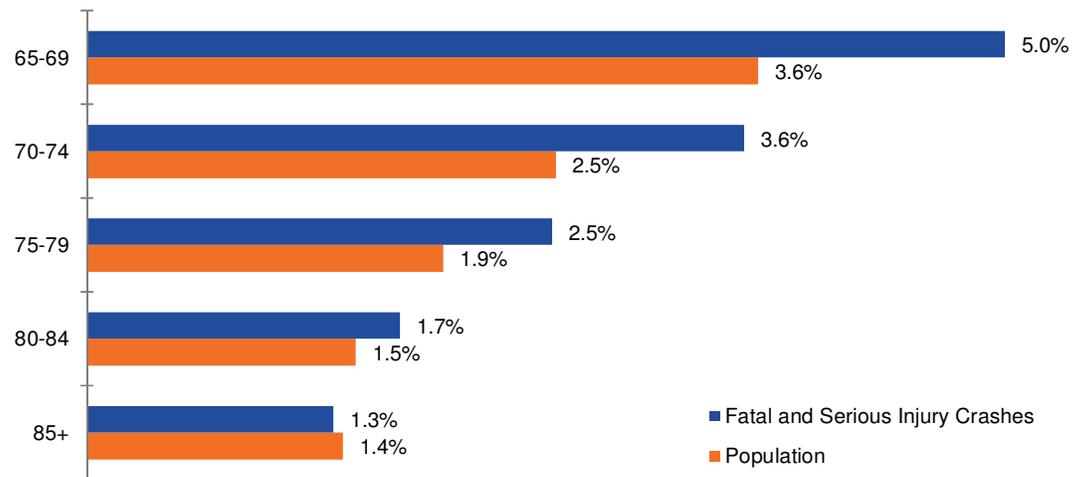


Figure 23 shows that individuals age 65 to 69 years old account for the highest percentage of fatal and serious injury crashes involving an aging road user. With the exception of the 85+ age group, all aging road user age groups are over represented in crashes with these injury crash outcomes. Sixty-two percent of all aging road user crashes involve male drivers age 65 or older.

Figure 23. Aging Road User Involved Fatalities and Serious Injuries by Age 2007 to 2012



AGING ROAD USER ACTION PLAN

Strategy 1: Provide education about aging and driving issues and communicate on how to help aging road user stay on the road for as long as they can safely do so.

- | | |
|--------|---|
| AS 1.1 | Form an Aging Road User Coalition. |
| AS 1.2 | Conduct an Aging Road User Policy Summit to engage in a dialogue with traffic safety stakeholders to discuss potential action steps and possible legislation. |
| AS 1.3 | Educate families and caregivers on how to communicate with aging road users and utilize existing resources, i.e., AARP’s “We Need to Talk,” other resources such as the pilot test in El Paso & Teller Counties. |
| AS 1.4 | Educate aging road users, families, caregivers, and health care providers about proactive and preventive driver review, assessment, and rehabilitation programs that help aging road users drive safely, i.e., assessments by occupational therapists, the CarFit program, etc., and encourage health insurance companies to cover such assessments. |
| AS 1.5 | Educate aging road users through community publications, senior centers, church newsletters, etc., on how to safely use new infrastructure improvements such as flashing yellow turns, roundabouts, etc., along with suggestions for minimizing dangers of left turns, i.e., make three right turns; use two-lane roadways rather than six-lane roads; distribute through emphasis area team; department promotion. Ensure education on the improvement is part of the infrastructure approval process. |
| AS 1.6 | Conduct a pilot test to develop and disseminate community newsletters that include information on aging road user issues, i.e., infrastructure improvements, warning signs, etc. |
| AS 1.7 | Identify ways to improve integration of services among physicians, occupational therapists, mobility specialists, social workers, community workers, etc. through publications, web sites, and other avenues. |

Strategy 2: Develop and promote aging road user licensing policies and practices.

- | | |
|--------|---|
| AS 2.1 | Review national best practices for licensing; determine gaps in Colorado’s laws, regulations, and practices, i.e., mandatory vision test at age 70 (Florida), and Medical Advisory Board; and make recommendations to Department of Revenue (DOR) for improvements. |
| AS 2.2 | Compile data on current automobile insurance requirements regarding aging road users 65+ and leverage information as part of an education campaign. |
| AS 2.3 | Determine how restricted licenses that limit the driving for someone who has increasing challenges behind the wheel are used in Colorado and whether there should be changes in the program. |

Strategy 3: Improve the safety of the roadway and built environment for aging road users.

- AS 3.1 Implement infrastructure improvements that are aging road user and Americans with Disabilities Act (ADA) guideline friendly where possible, i.e., advance street name and warning signs, signal timing, larger lettering on signs, lighting in areas where aging road user crashes are a problem, increase retroreflectivity on signs and pavement markings.
-
- AS 3.2 Investigate, and when possible, install left turn improvements such as signal upgrades, i.e., lanes, permissive flashing yellow and protected left turns, and work with local and regional organizations to enhance coordination between cities, counties, and state agencies.
-
- AS 3.3 Identify hot spots in the top counties with the highest number of aging road user involved fatal and serious injury crashes (currently Denver, Arapahoe, El Paso, and Jefferson); determine the causes of those crashes, and provide recommendations on mitigation strategies.

Strategy 4: Identify and promote opportunities for alternative transportation.

- AS 4.1 Pilot test the possibility of establishing mobility specialists at public transit agencies to conduct training for aging road users on how to access and use the transit system, and how using transit can meet their mobility needs.
-
- AS 4.2 Publicize the availability of the Denver Regional Mobility and Access Council (DRMAC) “Getting There Guide,” published for the Denver metro senior centers, health care providers, families, and caregivers. Use the guide as a best practice example and encourage other areas of the state to publish similar information.
-
- AS 4.3 Identify opportunities for alternative transportation in rural communities through the pilot test in El Paso and Teller county, i.e., churches, volunteer (private) programs, Independent Transportation Network® (ITN)¹, etc., publicize that information to aging road users, and explore options for incentives to individuals that provide these services.

Strategy 5: Establish and maintain partnerships for aging road user safety.

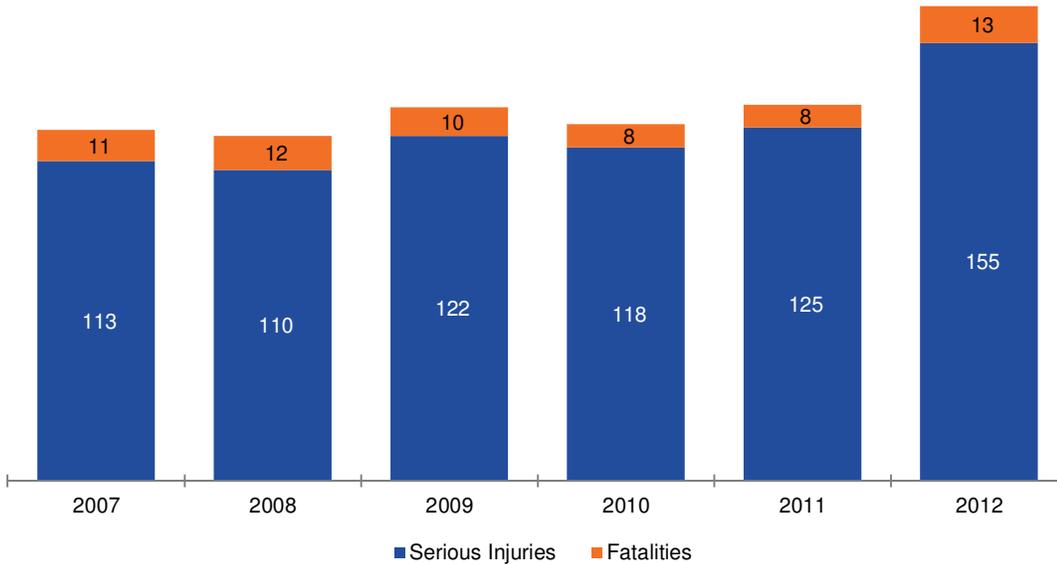
- AS 5.1 Engage law enforcement by delivering the NHTSA training program on how law enforcement officers should work with aging road users and refer them to DMV, and recommend agencies have trained officers on staff.

¹ Independent Transportation Network® is a volunteer transportation service designed to replicate the comfort and convenience of private automobile ownership. Seniors who use the service become dues-paying members of the organization at a nominal fee and open personal transportation accounts to pay for their rides.

BICYCLISTS AND PEDESTRIANS

Between 2007 and 2012, 62 bicyclists died and 743 were seriously injured as shown in Figure 24.

Figure 24. Bicyclist Fatalities and Serious Injuries
2007 to 2012



The majority of bicyclist fatalities and serious injuries involve individuals age 25 to 54 (Figure 25).

Figure 25. Bicyclist Fatalities and Serious Injuries by Age
2007 to 2012

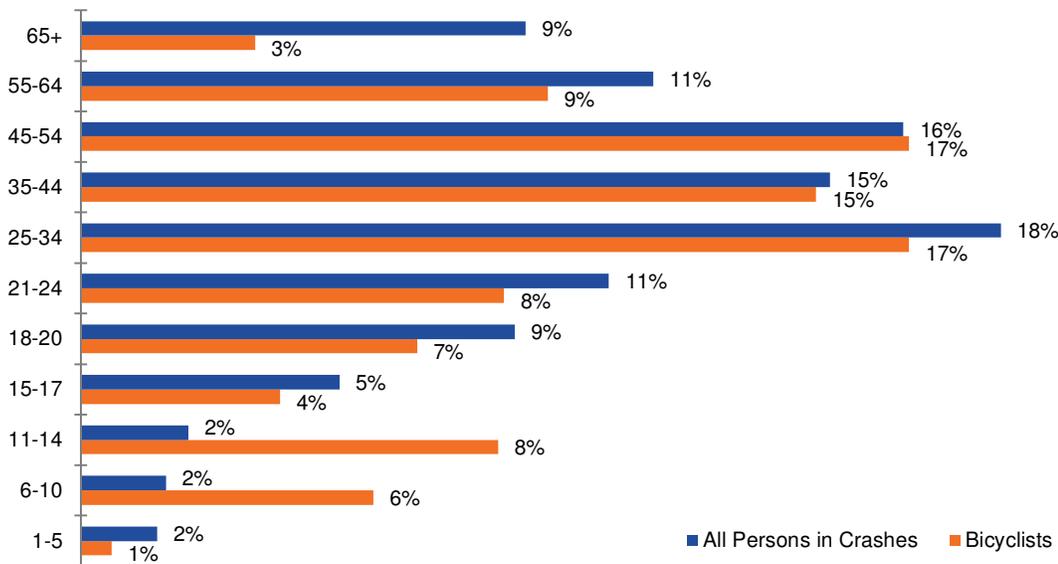
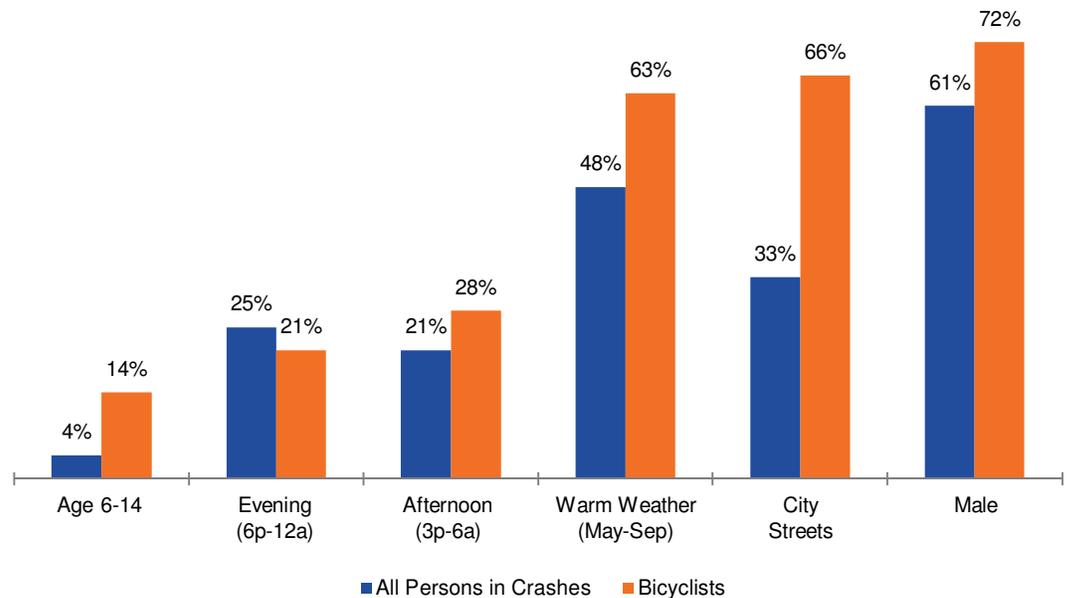


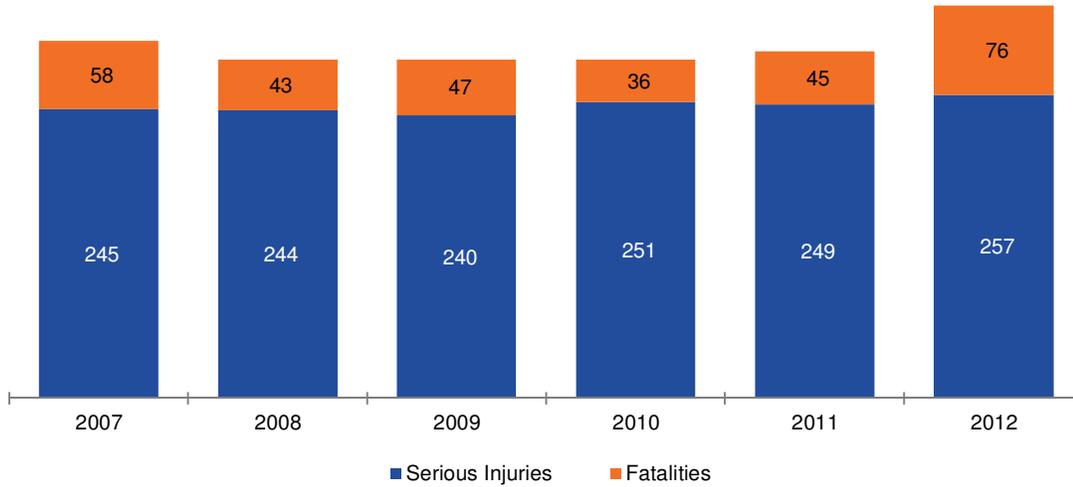
Figure 26 compares fatalities and serious injuries among bicyclists and all persons in crashes for several factors. For each of these factors, bicyclists represent a higher percentage than all persons who were fatally or seriously injured in a crash. As an example, 72 percent of fatalities and serious injuries involve male bicyclists versus 61 percent for males which received fatal and serious injuries in all crashes. On city streets, where the majority of serious bicycle crashes occur, bicyclists are twice as likely to receive fatal or serious injuries. Perhaps not surprising given Colorado’s winter weather, 63 percent of bicyclists’ fatal and serious injuries occur in warm weather (May to September) versus 48 percent for all persons receiving these injuries during the same months. A higher percent of bicyclist fatalities and serious injuries occur in the afternoon between 3 p.m. and 6 p.m. as opposed to evening hours when all persons in crashes are more likely to be seriously injured. In addition, youth ages six to fourteen are more likely to be fatally or seriously injured in bicycle crashes than in all crashes.

Figure 26. Bicyclist Fatalities and Serious Injuries by Behavioral and Environmental Risk Factors
2007 to 2012



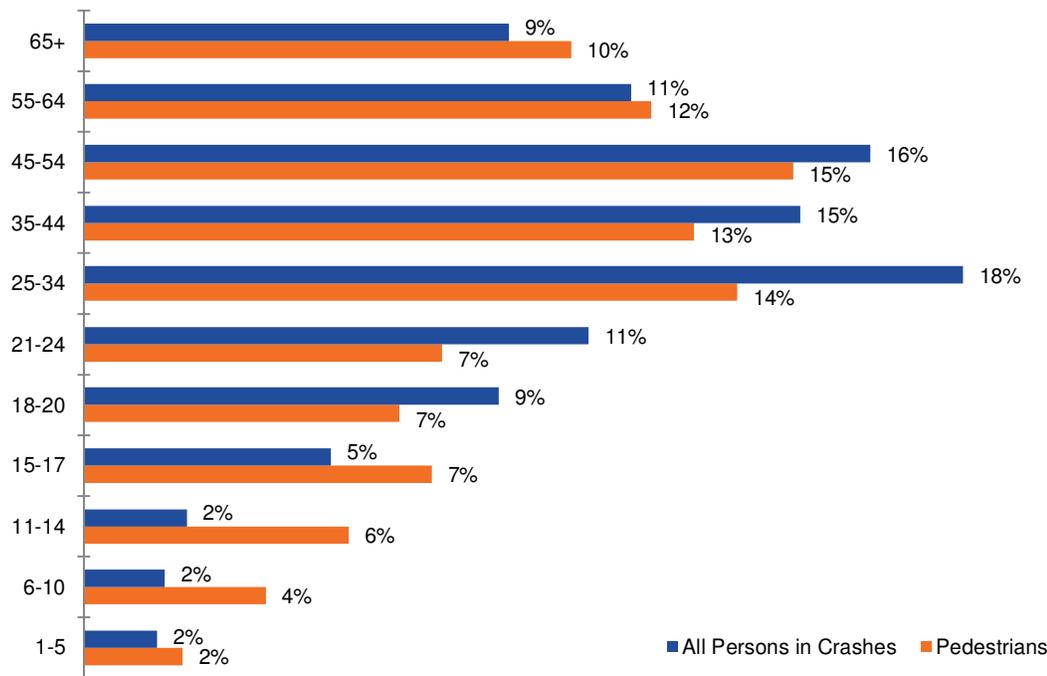
Three hundred and five (305) pedestrians were killed between 2007 and 2012 and 1,486 were seriously injured (Figure 27).

Figure 27. Pedestrian Fatalities and Serious Injuries
2007 to 2012



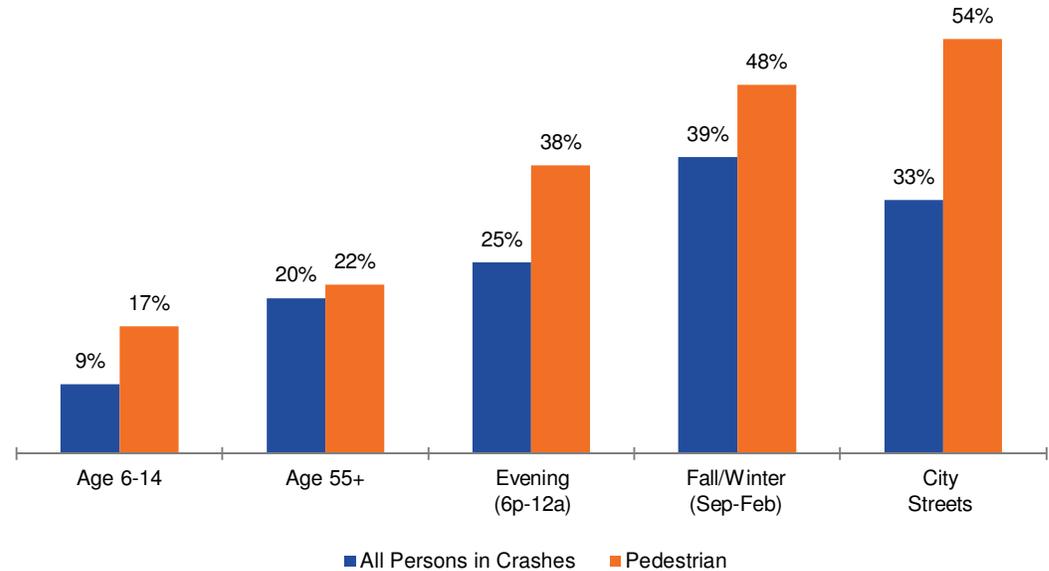
Pedestrians ages 25 to 54 were most often killed or seriously injured in crashes as shown in Figure 28. Sixty-four percent of all pedestrians fatally or seriously injured are male.

Figure 28. Pedestrian Fatalities and Serious Injuries by Age
2007 to 2012



Pedestrians are more likely to be killed or seriously injured at a higher percent than all persons killed or seriously injured in crashes on city streets (54 percent versus 33 percent), between September and February (48 percent versus 39 percent), and in the evening between 6 p.m. and 12 a.m. (38 percent versus 25 percent). Pedestrians ages six to fourteen were almost twice as likely to sustain fatal or serious injuries than youth their age in all crashes (Figure 29).

Figure 29. Pedestrian Fatalities and Serious Injuries by Behavioral and Environmental Risk Factors
2007 to 2012



BICYCLISTS AND PEDESTRIANS ACTION PLAN

Strategy 1: Investigate and research the effectiveness of technology, countermeasures or design which impact bicycle and pedestrian crashes.

AS 1.1	Conduct a scanning project to synthesize research and best practices in the bicycle and pedestrian area.
AS 1.2	Study use of countermeasures, technology, and/or design to determine effectiveness.
AS 1.3	Conduct pilot and/or demonstration projects.
AS 1.4	Identify and implement methods for sharing knowledge about bicyclist and pedestrian crashes through publications, web sites, webinars, training, etc.
AS 1.5	Coordinate with the CDOT Research Implementation Council (RIC) to ensure continuity of bicyclist and pedestrian projects.

Strategy 2: Improve quality (timeliness, completeness, accuracy, accessibility, uniformity, and integration) of bicycle- and pedestrian-related data.

- AS 2.1 Work with STRAC to improve bicycle and pedestrian data.
-
- AS 2.2 Investigate the addition of a crash form supplement in absence of additional fields added to the new Colorado crash report form, DR 3447, e.g., NY State DMV Bicycle Accident Form <http://www.claimspages.com/documents/download/8320F.pdf>.
-
- AS 2.3 Work with STRAC to improve the timeliness and accessibility (encourage creation of customized database query functions) of bicycle and pedestrian data.
-
- AS 2.4 Increase collection and dissemination of bicycle/pedestrian volume data and improve standardization of the data.

Strategy 3: Reduce motor vehicle speeding through use of new and proven countermeasures, technology and design to provide safer bicycling and safer access for walking where appropriate.

- AS 3.1 Prioritize infrastructure solutions, e.g., curb and intersection bulbouts, right sizing the roadway, bike lanes, roundabouts, median and pedestrian refuge areas, walking zones, etc., giving consideration to all transportation modes.
-
- AS 3.2 Implement priority infrastructure solutions at identified locations and in new installations and retrofits.
-
- AS 3.3 Utilize speed trailers and radar feedback signs in high bicycle and pedestrian crash areas.
-
- AS 3.4 Study use of new bicycle and pedestrian countermeasures, technology, and/or design after implementation to determine effectiveness.

Strategy 4: Improve bicyclist and pedestrian safety at high crash locations through implementation of new and proven technology, design, and countermeasures.

- AS 4.1 Analyze bicycle and pedestrian involved crashes to identify and prioritize locations for potential crash reduction.
-
- AS 4.2 Identify and prioritize new and proven technological, design, and other solutions, e.g., leading pedestrian interval, pedestrian countdown timers, intersection lighting, directional curb ramps, good visibility and sight distance, grade separation, red light running cameras, and prohibiting right turn on red when supported by data, for deployment at high pedestrian volume and/or crash locations.

AS 4.3 Identify and prioritize new and proven technological, design, and other solutions, e.g., bike lane to the left of the right turn lane, green lanes through intersections, green bike boxes at intersections, continuous concrete pour, cycle tracks (on-street bike lanes protected with bollards, planters, crosswalk treatments, etc.), bicycle turn signals (left turns), shared lane markings, intersection lighting, good visibility and sight distance, and red light running cameras when supported by data in areas where there is high-speed traffic, multiple lanes, high traffic volumes, etc., for deployment at high bicycle crash intersections.

AS 4.4 Encourage use of new technology for pedestrian and bicycle detection.

AS 4.5 Post “Yield to Pedestrians – State Law” signage near high crash intersections where appropriate.

AS 4.6 Install midblock crossings where supported by data and criteria is met.

AS 4.7 Install proven pedestrian crossing treatments, e.g., rapid rectangular flashing beacons, HAWKs, Pelicans, hybrids, etc., in high pedestrian crash locations where appropriate.

AS 4.8 Coordinate pedestrian infrastructure and transit stop locations.

Strategy 5: Conduct communication and outreach safety campaign aimed at motorists, pedestrians, and bicyclists.

AS 5.1 Develop communications campaigns that educate pedestrians and motorists on pedestrian safety-related treatments, e.g., how they work, pedestrian crossing treatments, midblock crossing, each user’s responsibility in sharing the roadway to avoid crashes, and encourage bicyclists to increase conspicuity, e.g., use of reflective clothing, lighting, and reflective bands.

AS 5.2 Implement an outreach campaign to pedestrians and motorists using safety stakeholders, the media, and social media to deliver the pedestrian safety messages.

AS 5.3 Educate motorists, law enforcement, prosecutors, judges, and the public about Colorado’s bicycle- and pedestrian-related laws.

AS 5.4 Provide training and information to law enforcement officers regarding pedestrian safety issues to encourage enforcement of laws for all roadway users and increase intersection safety.

AS 5.5 Support Safe Routes to Schools (SRTS) safety education and programs.

DATA

The SHSP is data-driven process. Data inform the decisions to target resources at Colorado’s most serious traffic safety problems and will be used to determine whether the SHSP achieved that goal. Given the importance of data to the SHSP update and implementation effort, a decision was made to add Data as a specific emphasis area.

DATA ACTION PLAN

Strategy 1: Identify and support efforts which maintain and/or improve the timeliness, completeness, accuracy, uniformity, accessibility, and integration of individual agency traffic information system databases.

AS 1.1 Develop a traffic records information system strategic plan which focuses on improving the timeliness, completeness, accuracy, uniformity, accessibility, and integration of traffic information system databases and identifies performance measures for each traffic records system.

AS 1.2 Identify, prioritize, and select projects for funding which will support the goals and strategies in the traffic records information system strategic plan.

AS 1.3 Identify performance measures for each project based on guidelines in NHTSA’s Model Performance Measures for State Traffic Records Systems.

AS 1.4 Establish a reporting mechanism and protocols to track quarterly progress of the performance measures for each system and project in the strategic plan.

AS 1.5 Track progress of performance measures for each system and project in the strategic plan and report progress on meeting performance measure goals to the STRAC quarterly.

Strategy 2: Identify and document traffic safety databases and pathways of information throughout Colorado, and redundancy, needs, and gaps in current traffic safety data systems.

AS 2.1 Secure a contractor to develop: 1) a data resource guide that documents traffic safety databases and pathways of information throughout the state; and 2) a Gap Analysis Report which documents the redundancies, needs, and identified gaps of the current traffic safety data systems.

AS 2.2 Identify data owners and contact information.

AS 2.3 Identify data elements in the state and local databases and collect data maps/data dictionaries for each database.

AS 2.4 Identify key data elements (selected by STRAC) and determine existing and potential linkages between databases.

AS 2.5 Identify redundancy across traffic safety data systems.

AS 2.6 Identify needs of each traffic safety data system.

AS 2.7	Perform gap analysis of each traffic safety data system.
AS 2.8	Develop and deliver a Gap Analysis Report to the STRAC which documents the redundancies, needs, and identified gaps of the current traffic safety data systems.
AS 2.9	Develop a common curriculum and educate local agencies on data access and management.
AS 2.10	Provide training/resources on how to analyze and use the data.
AS 2.11	Develop and deliver a Data Resource Guide to the STRAC which documents the traffic safety databases and pathways of information throughout the state.

Strategy 3: Revise DR 2447 to reflect current and emerging data needs.

AS 3.1	Establish a working group to review the current DR2447 crash report and provide recommendations to STRAC for revision of the crash report.
AS 3.2	Review the most current Model Minimum Uniform Crash Criteria (MMUCC) guidelines, recent and proposed legislation, Gap Analysis Report (Strategy 2) and other pertinent information which may impact the DR 2447 and/or data collection, record maintenance, or crash records accessibility processes.
AS 3.3	Deliver recommendations for revision of the DR 2447 to the STRAC.
AS 3.4	Secure a contractor to facilitate development of the DR2447 implementation plan.
AS 3.5	Develop implementation plan to deliver paper and electronic form, user’s manual, develop training curriculum, migration plan, and communications plan for rollout.
AS 3.6	Implement new DR3447 crash report form statewide.

Strategy 4: Develop processes to integrate the crash, EMS/injury surveillance, citation, and roadway databases.

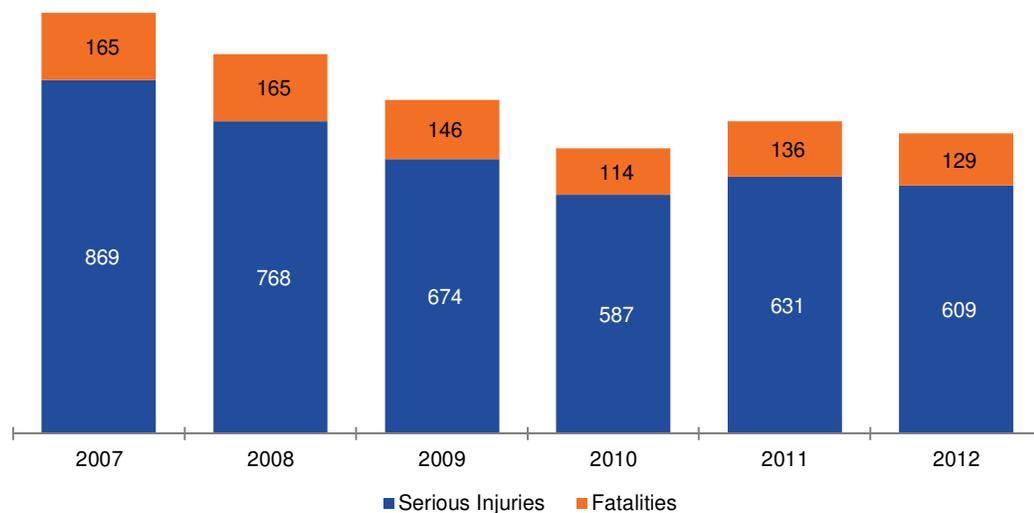
AS 4.1	Develop a plan to prioritize the desired capabilities for integration of the traffic information databases, with first priority on the crash, injury, and roadway databases.
AS 4.2	Explore the feasibility of a unique identifier across traffic safety data systems.
AS 4.3	Identify the Custodian of Record for each database and communicate with them the importance to the state of seeking a unique identifier.
AS 4.4	Establish a STRAC working group to develop an ingrained process to improve the location accuracy which uses electronic capture of location data.
AS 4.5	Establish a STRAC working group to determine how to collect accurate date and time reporting (of the incident).
AS 4.6	Develop functional and technical data models to integrate the crash, EMS/injury surveillance, citation, and roadway databases.

IMPAIRED DRIVING

The impaired driving emphasis area includes impairment by alcohol, and legal and illegal drugs, including many over-the-counter drugs.

The data presented below separate alcohol and drug impairment. Between 2007 and 2012, there were 855 fatalities and 4,138 serious injuries in alcohol-related crashes as shown in Figure 30.

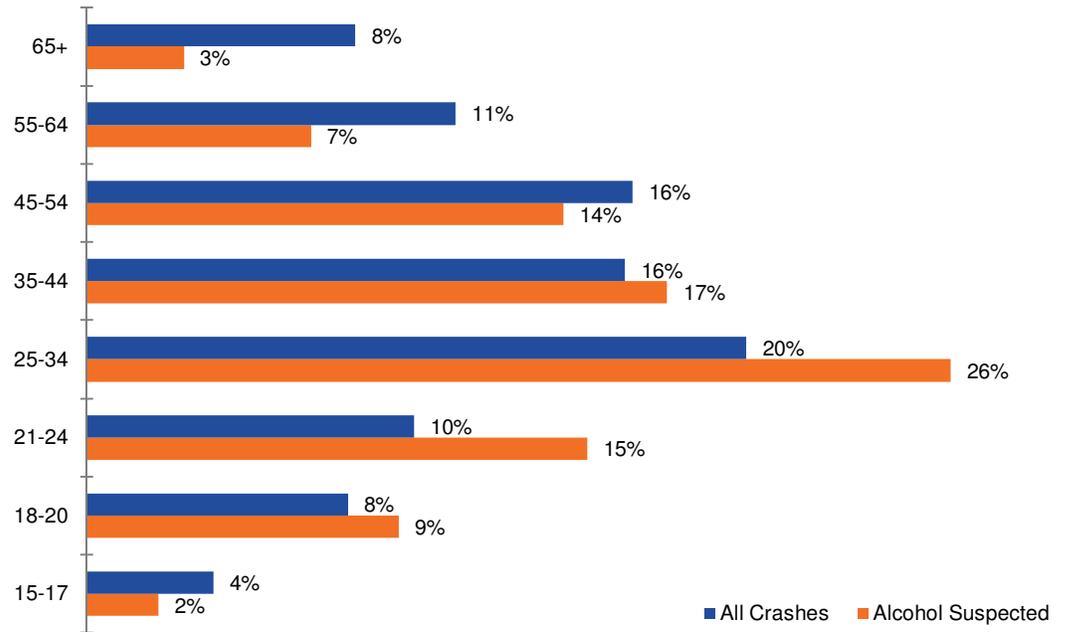
Figure 30. Alcohol-Related Fatalities and Serious Injuries
2007 to 2012



In the following figures, “alcohol suspected” is terminology from fields in the crash report. Officers complete a ‘Suspected Alcohol (Officer Opinion Only)’ field for all parties involved, including passengers who were contacted by the investigating officer at the scene or shortly after the accident. This field is intended to record the officer’s opinion only, and may or may not be supported by other evidence. Similarly, ‘Suspected Drugs (Officer Opinion Only)’ is used to record suspected drug impairment.

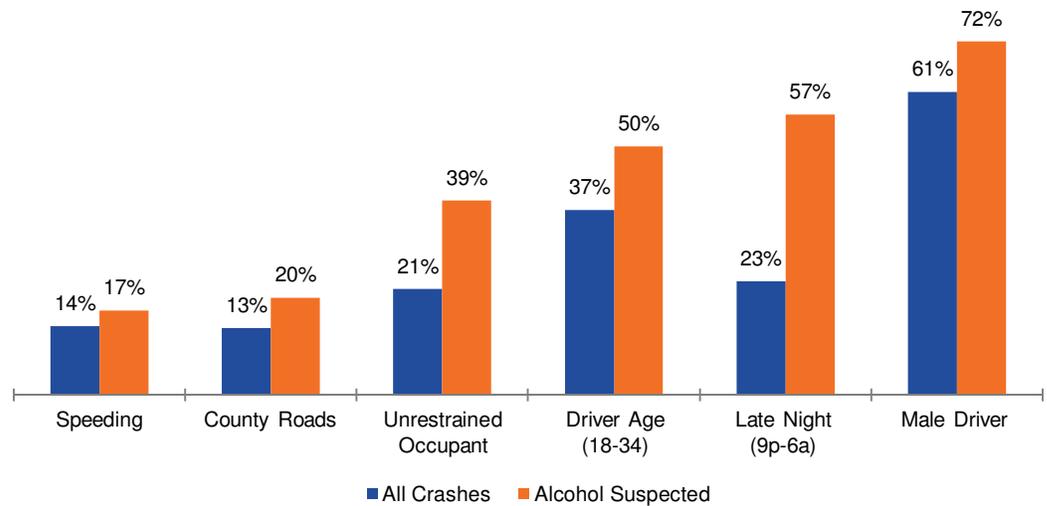
The majority of alcohol-related fatalities and serious injuries involve individuals age 25 to 34. For ages 18 to 44, the percentage of alcohol related fatalities and serious injuries are higher than for similar injuries in all other crashes (Figure 31).

Figure 31. Alcohol Fatalities and Serious Injuries by Age
2007 to 2012



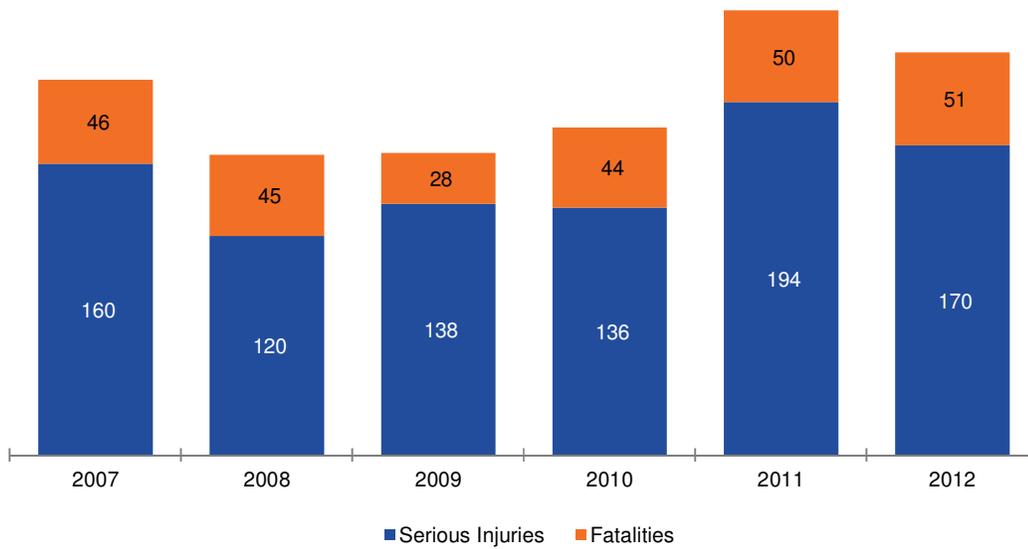
The majority of alcohol-related fatalities and serious injuries occur late at night (9 p.m. to 6 a.m.), involve male drivers age 18 to 34, and involve unrestrained occupants. Nearly one-fifth of alcohol-related fatalities occur on county roads (Figure 32).

Figure 32. Alcohol-Related Fatalities and Serious Injuries by Behavioral and Environmental Risk Factors
2007 to 2012



Two hundred sixty-four people died and 918 were seriously injured in drug-related crashes as shown in Figure 33. Note that medical marijuana was legalized in Colorado in November 2000 and recreational marijuana legislation was passed in November 2012 with retail sales beginning on January 1, 2014.

Figure 33. Drug-Related Fatalities and Serious Injuries
2007 to 2012



Drug-related fatalities and serious injuries occur throughout the year with the highest happening in August (Figure 34). The highest number of drug-related fatalities and serious injuries occur between 3 p.m. and 6 p.m. and between 12 a.m. and 3 a.m. (Figure 35).

Figure 34. Drug-Related Fatalities and Serious Injuries by Month
2007 to 2012

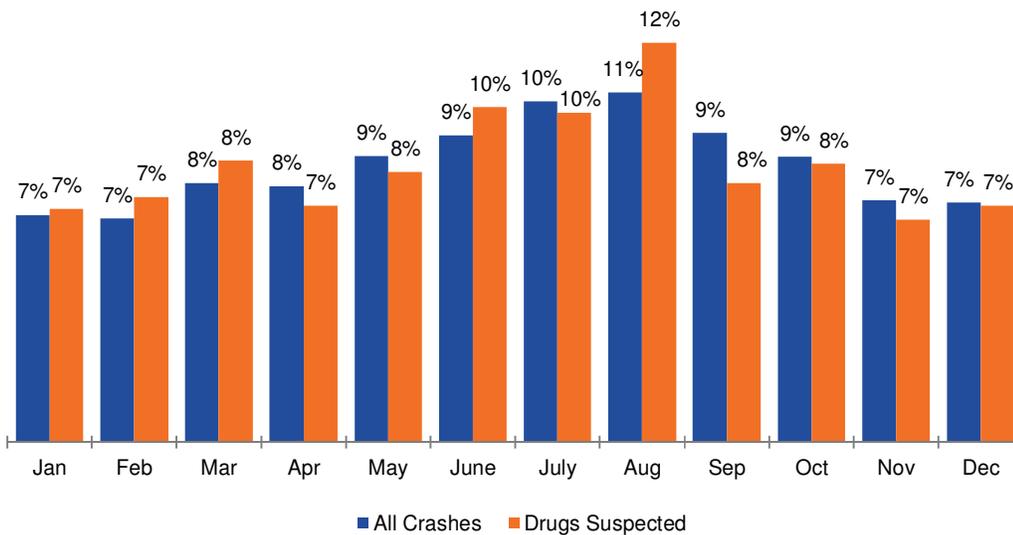
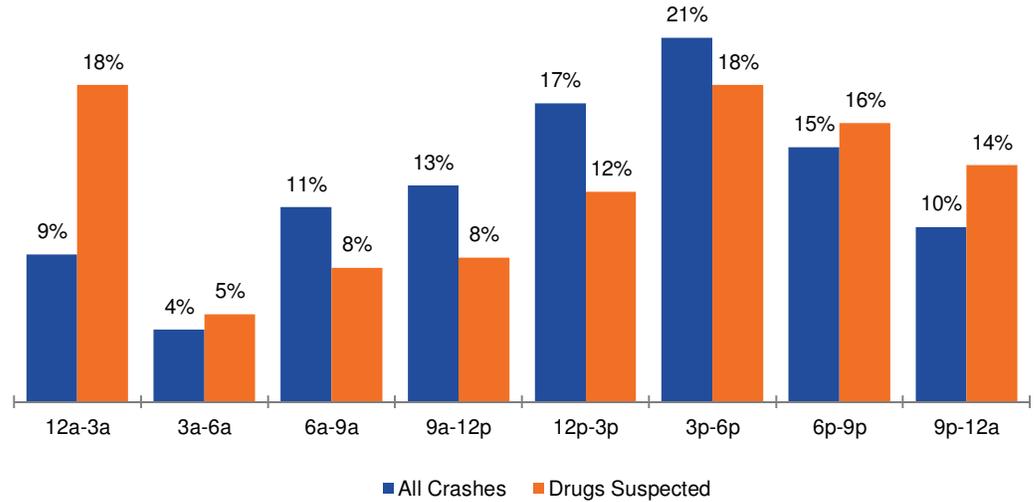
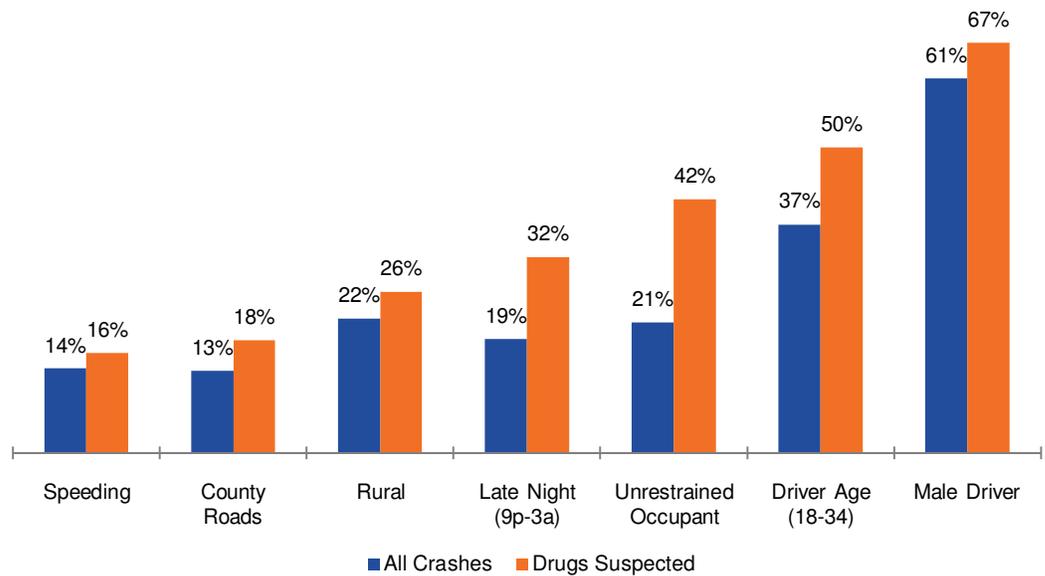


Figure 35. Drug-Related Fatalities and Serious Injuries by Time of Day
2007 to 2012



Over a quarter of drug-related fatalities and serious fatalities occur in rural areas, and during the year involve male drivers age 18 to 34. Nearly one-half of those seriously injured were not restrained by a safety belt (Figure 36).

Figure 36. Drug-Related Fatalities and Serious Injuries by Behavioral and Environmental Risk Factors
2007 to 2012



IMPAIRED DRIVING ACTION PLAN

Strategy 1: Ensure greater awareness of the dangers of drug-impaired driving.

- AS 1.1 Provide education to the public, particularly males age 25 to 34, on the impairing components of drugs, particularly marijuana.
- AS 1.2 Identify current efforts regarding prescription drug abuse education and prevention and coordinate with those efforts to ensure there is a driving component and the use of data to identify target populations and locations.
- AS 1.3 Provide recommendations to law enforcement agencies and elected officials on new technologies, such as using oral fluids to detect drug use, that would be effective in Colorado.
- AS 1.4 Continue and expand the Drug Recognition Expert (DRE) program which currently includes 212 DREs statewide with a planned increase to 300.

Strategy 2: Improve the collection and analysis of data that informs enforcement, education, and prosecution/adjudication of impaired driving efforts.

- AS 2.1 Improve the collection and analysis data on drug impaired driving, i.e., types of drugs, including prescription drugs.
- AS 2.2 Determine what other data sources exist on DUI that could be used for enforcement and education programs, pursue opportunities to share that information with DUI stakeholders, and document the process for future efforts.
- AS 2.3 Partner with Distracted Driving Task Force and meet with Police Chiefs and Sheriff's Associations to obtain input on ways to improve the collection of impaired driving data.
- AS 2.4 Change the crash/incident report form to include more definitive information on impaired driving crashes and incidents.

Strategy 3: Continue to support and improve existing and new impaired driving messaging and awareness.

- AS 3.1 Explore opportunities to partner with hunting check stations conducted by the Department of Parks and Wildlife and provide training to help Department of Parks and Wildlife officers identify impaired drivers.
- AS 3.2 Reach out to insurance companies and identify ways to educate their customers about the dangers of impaired driving in Colorado. Utilize the Rocky Mountain Insurance Information Association as an insurance industry resource.

AS 3.3 Survey Colorado colleges and universities to determine the types of information and programming currently being conducted and provide recommendations on how it can be improved based on principles of community-based prevention and social norming.

Strategy 4: Continue to support and improve existing and new impaired driving enforcement programs and activities.

AS 4.1 Explore the possibility of using sobriety checkpoints as a way to also identify and/or educate unbelted drivers and passengers.

AS 4.2 Pilot test a program that uses a data-driven approach to impaired driving, i.e., Data Driven Approaches to Crime and Traffic Safety (DDACTS).

AS 4.3 Use data to deploy enforcement where impaired driving crashes, fatalities, and serious injuries are highest.

AS 4.4 Review strategies being piloted in municipalities with tourist, breweries, and college environments to determine effectiveness and recommend effective approaches to affected communities statewide, i.e., Durango Designated Driver environmental strategy that encourages role modeling through social norming.

Strategy 5: Continue and when possible increase Colorado’s strong prosecution and adjudication programs.

AS 5.1 Publicize to the public, the judiciary, elected officials, and safety stakeholders information on the effectiveness (performance measures) of Colorado’s prosecution, and adjudication programs, including ignition interlocks and DUI Courts.

AS 5.2 Determine the number and type of diversion programs pertaining to DUI and minors in possession that are offered in Colorado and how they are being used by the judiciary; provide recommendations to the judicial system (courts, bar association, DAs association) for improved practices.

INFRASTRUCTURE – RURAL AND URBAN

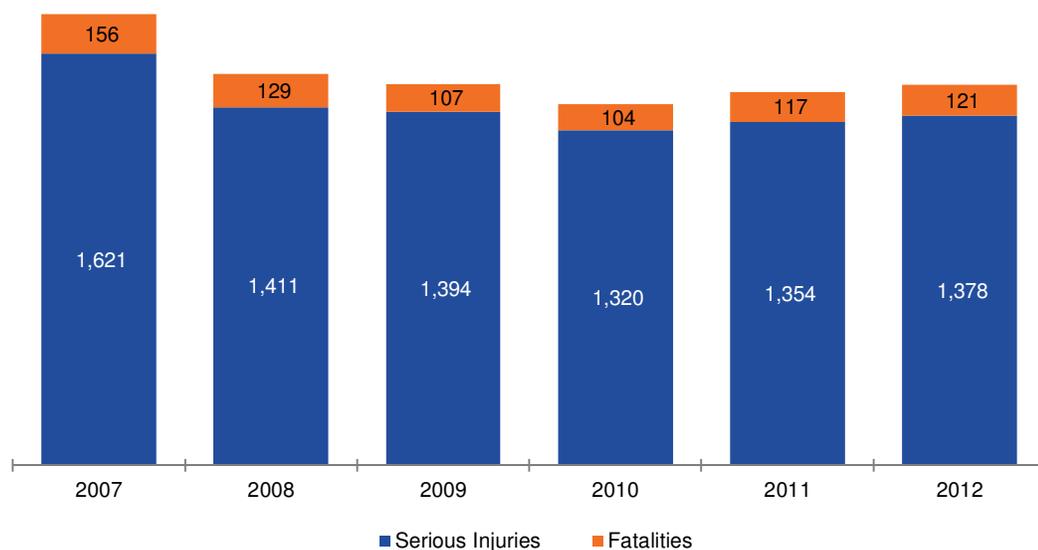
In developing the action plan for this emphasis area, Colorado created separate urban infrastructure and rural infrastructure teams. Each team focused on the specific risks and issues associated with their roadway type and created an action plan. The two plans were later combined due to the similarities in strategies resulting in the current infrastructure emphasis area plan.

Counties classified as urban include: Adams, Arapahoe, Boulder, Broomfield, Clear Creek, Denver, Douglas, El Paso, Elbert, Jefferson, Larimer, Mesa, Park, Pueblo, Teller, and Weld. The remaining 48 counties were classified as rural. The definition of rural used for the SHSP is based on the Office of Management and Budget’s classification of urban and rural counties, and is consistent with the definition used by the Colorado Department of Public Health and Environment and the Colorado Rural Health Center. CDOT’s Office of Transportation Safety (Colorado’s highway safety office) also uses this rural/urban definition in its annual Problem Identification Report.

Throughout the action plans, “rural crashes” refer to those crashes occurring in rural counties.

Between 2007 and 2012, there were 734 intersection-related fatalities in Colorado and 8,478 serious injuries as shown in Figure 37.

Figure 37. Intersection-Related Fatalities and Serious Injuries
2007 to 2012



Intersection-related fatalities and serious injuries are slightly higher during warmer months (July to September) (Figure 38). The highest number of these crashes occurred in the traditional rush hour drive time, 3 p.m. to 6 p.m. (Figure 39).

Figure 38. Intersection-Related Fatalities and Serious Injuries by Month 2007 to 2012

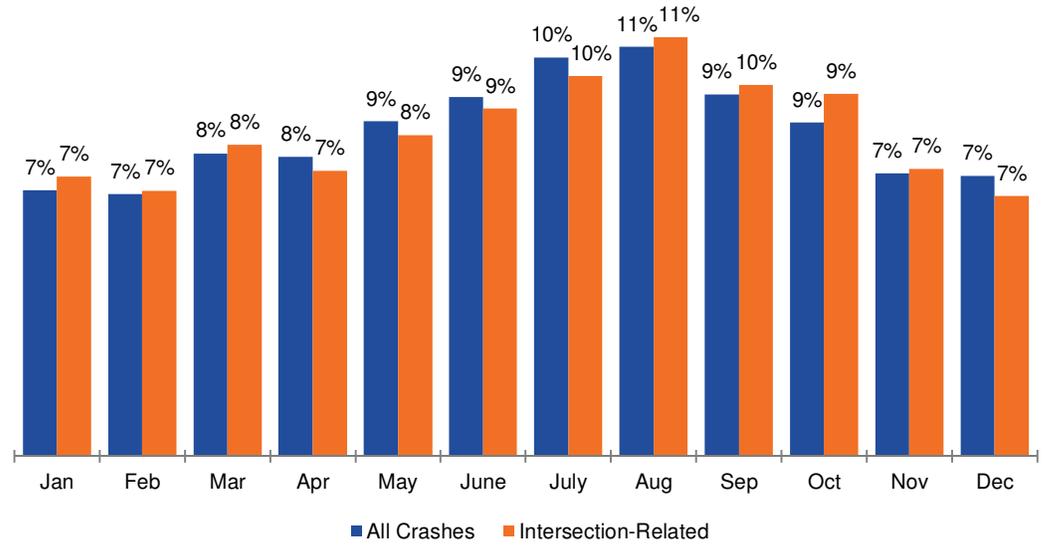
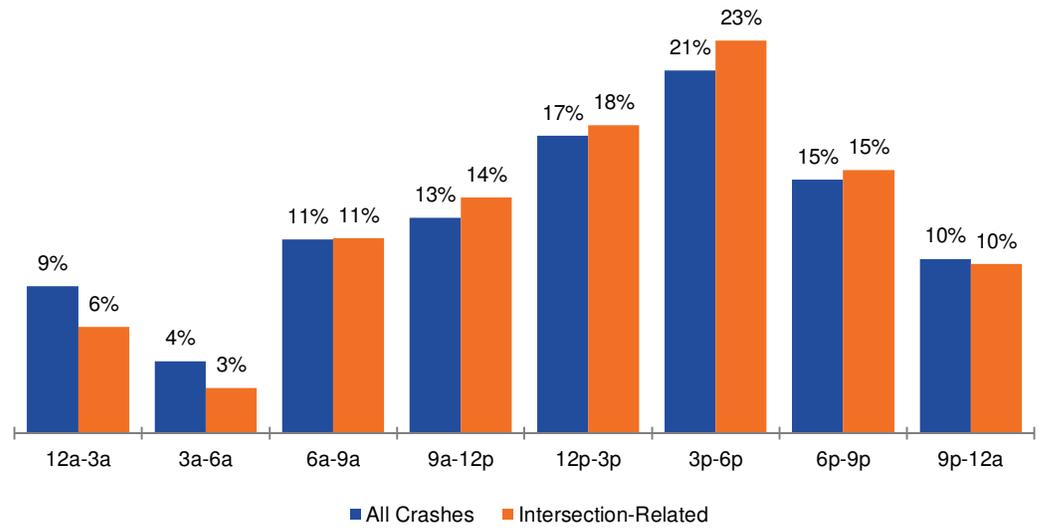
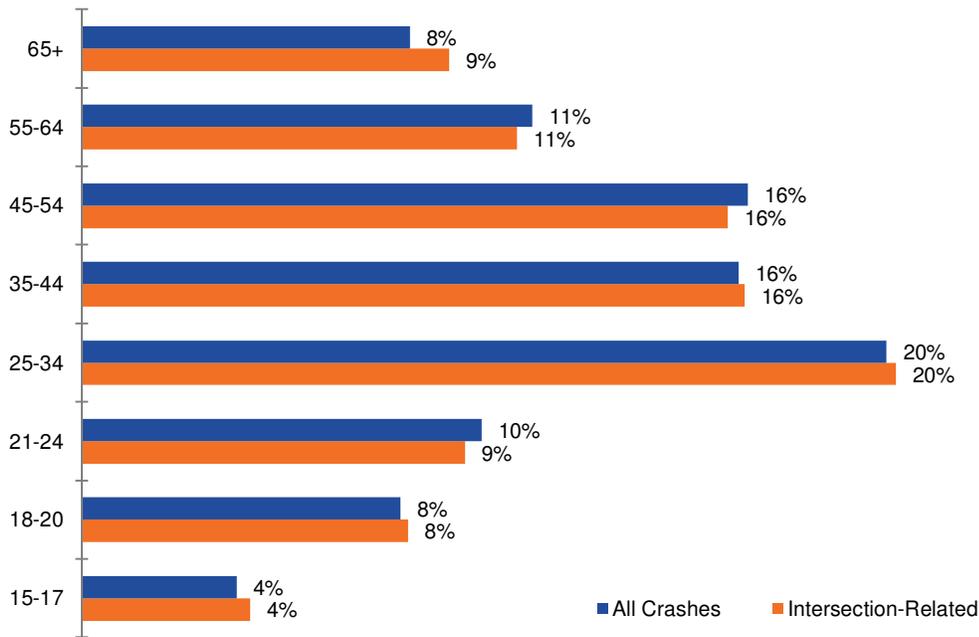


Figure 39. Intersection-Related Fatalities and Serious Injuries by Time of Day 2007 to 2012



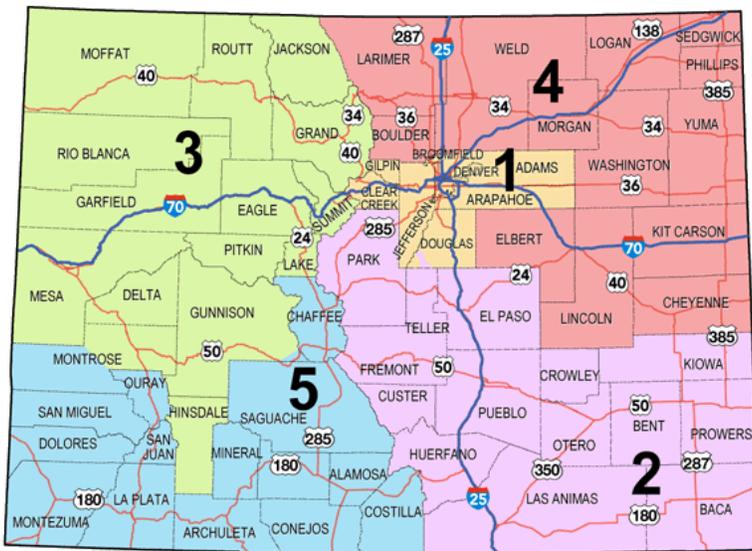
The highest number of intersection-related fatalities and serious injuries involve individuals age 24 to 34 (Figure 40). Male drivers represent 60 percent of these fatalities and serious injuries.

Figure 40. Intersection-Related Fatalities and Serious Injuries by Age 2007 to 2012



To enhance customer service, CDOT modified their engineering region boundaries effective July 1, 2013 (Figure 41). The new CDOT regions are used to identify intersection-related fatal and serious injury crashes by region in Figure 42.

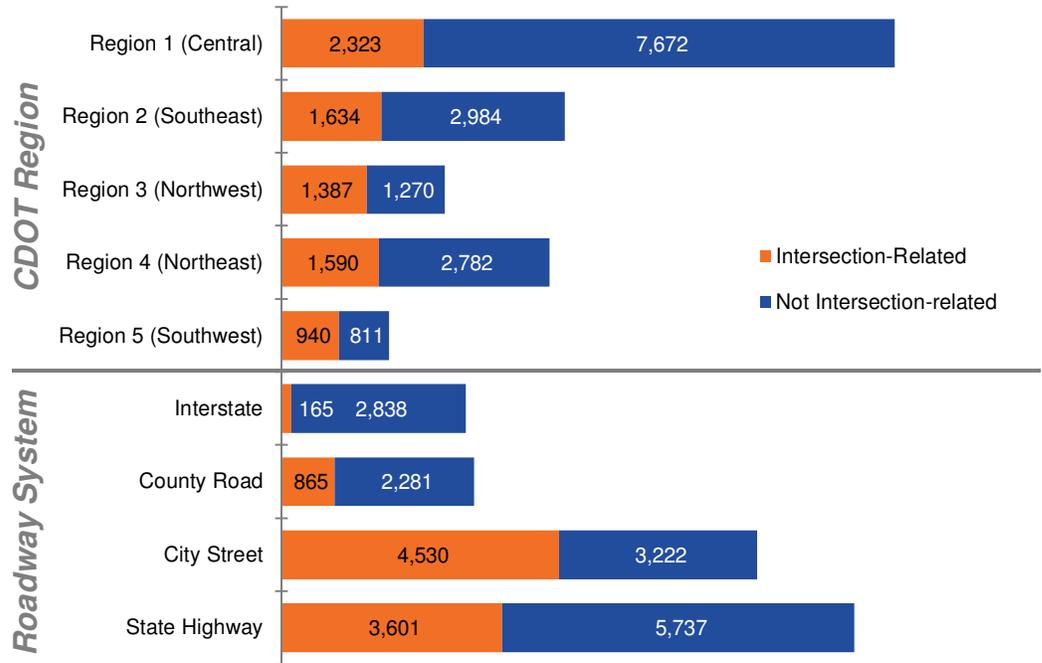
Figure 41. Colorado Department of Transportation Region Map Effective July 1, 2013



Source: CDOT website <http://www.coloradodot.info/about/regions.html>, accessed 10/7/2014.

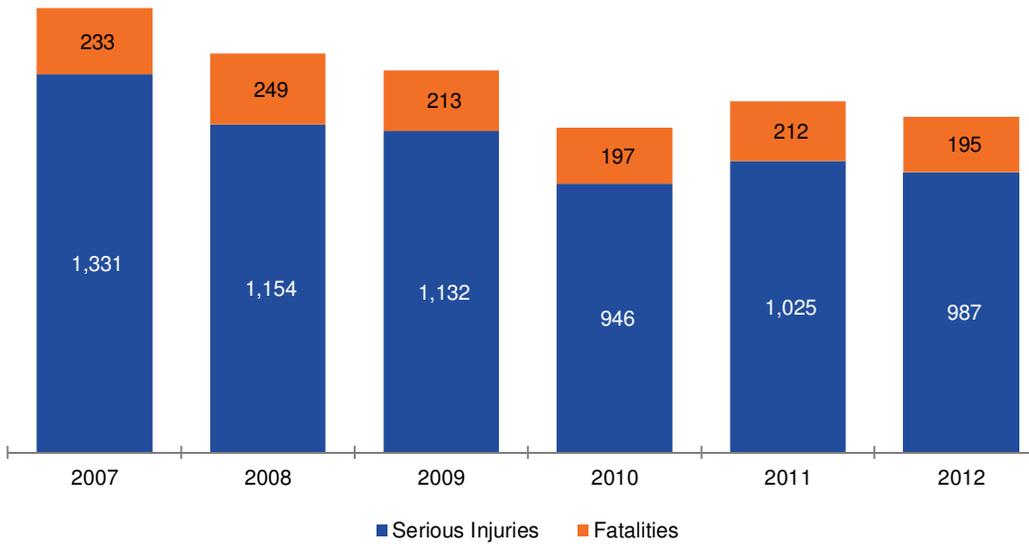
Intersection-related fatalities and serious injuries occur most often in CDOT Region 1 which includes the Denver metro urban area and on city streets as shown in Figure 42.

Figure 42. Intersection-Related Fatalities and Serious Injuries by Region and Roadway 2007 to 2012



Roadway departure crashes involve a crash with a reported location on the crash report form of ‘Ran off left side’, ‘Ran off right side’, or ‘Ran off T intersection’. Between 2007 and 2012, 1,299 people died in roadway departure crashes and 6,575 were seriously injured as shown in Figure 43.

Figure 43. Roadway Departure Fatalities and Serious Injuries
2007 to 2012



Roadway departure fatal and serious injury crashes are most frequent in the warmer months of July and August (Figure 44).

Figure 44. Roadway Departure Fatalities and Serious Injuries
2007 to 2012

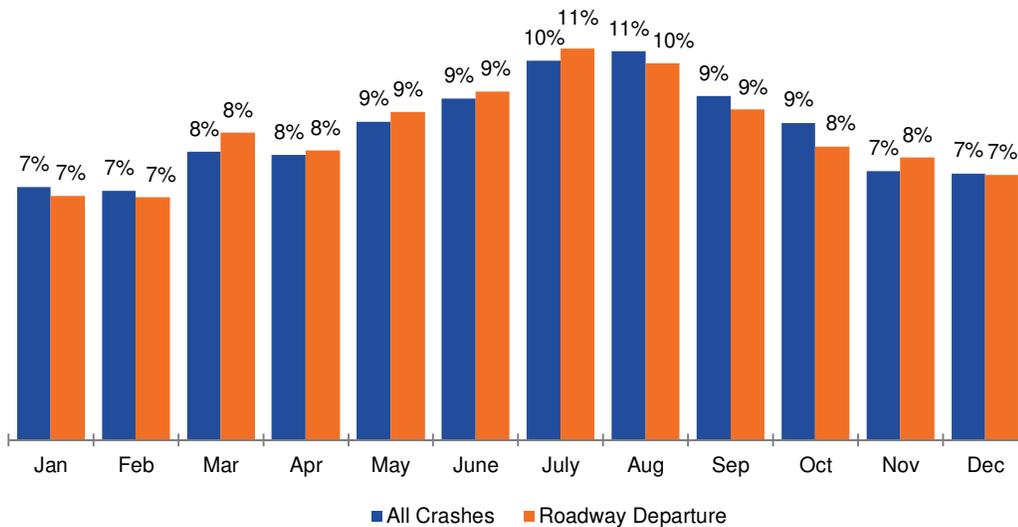
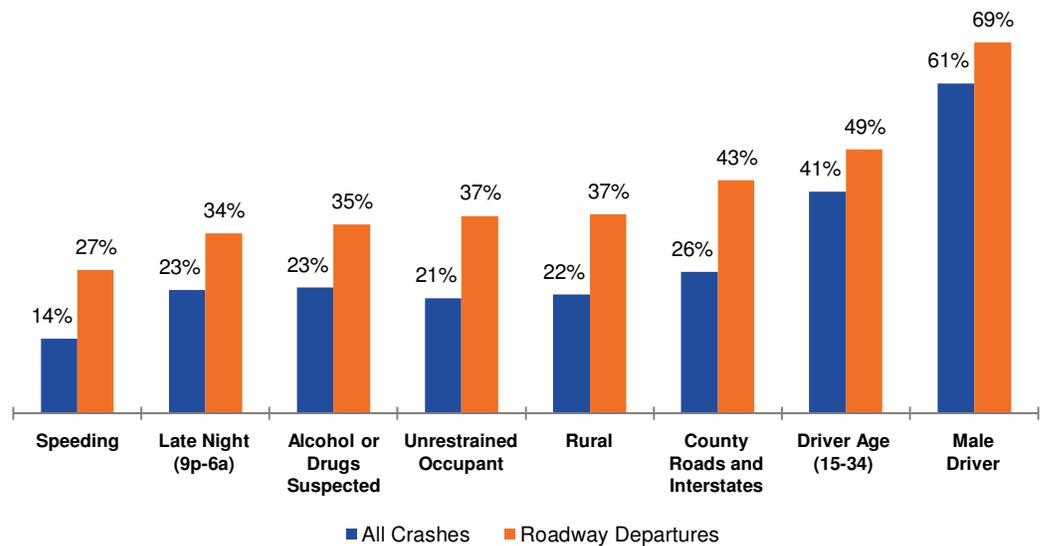


Figure 45 uses several factors to compare fatalities and serious injuries which occurred in roadway departure crashes to the same injury level for all persons in crashes. Using these same injury outcomes, roadway departure crashes represent a higher percentage for each of these factors. As an example, 69 percent of roadway departure fatalities and serious injuries involve males versus 61 percent for males which received fatal and serious injuries in all crashes. Roadway departure

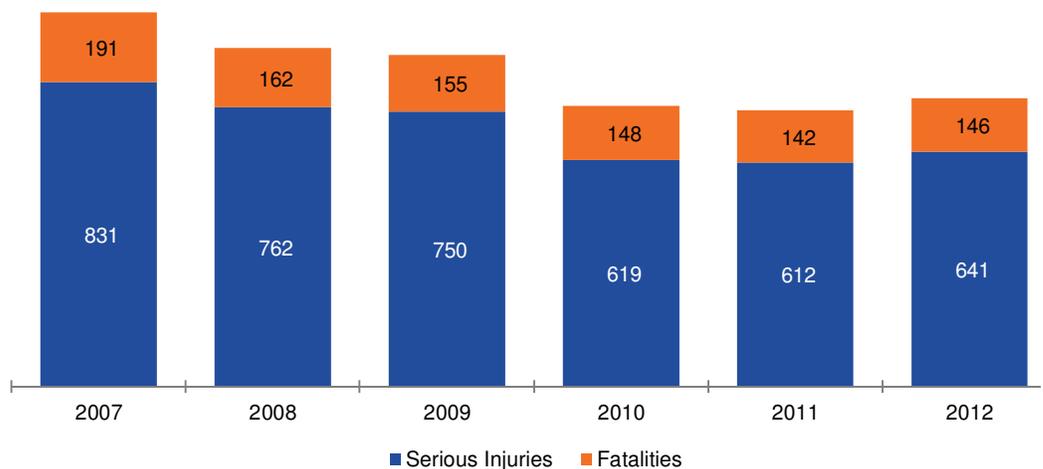
fatal and serious injury crashes involve a higher number of individuals between 15 and 34 (49 percent versus 41 percent in all crashes). Other factors include higher percentages for roadway departure fatalities and serious injuries occurring on county roads and interstates (43 percent versus 26 percent, on rural roads (37 percent versus 22 percent) and late at night between 9 p.m. to 6 a.m. (34 percent versus 23 percent). In addition, fatal and serious injury roadway departure crashes are more likely to involve unrestrained occupants, alcohol and drug use, and speeding.

Figure 45. Roadway Departure Fatalities and Serious Injuries by Behavioral and Environmental Risk Factors 2007 to 2012



Between 2007 and 2012, there were 944 fatal and 4,215 serious injury crashes in rural counties as shown in Figure 46.

Figure 46. Rural Fatalities and Serious Injuries 2007 to 2012



The highest number of rural county fatal and serious injury crashes happen in July and August (Figure 47). As shown in Figure 48, most of these crashes occur between 12 p.m. and 6 p.m.

Figure 47. Rural Fatalities and Serious Injuries by Month
2007 to 2012

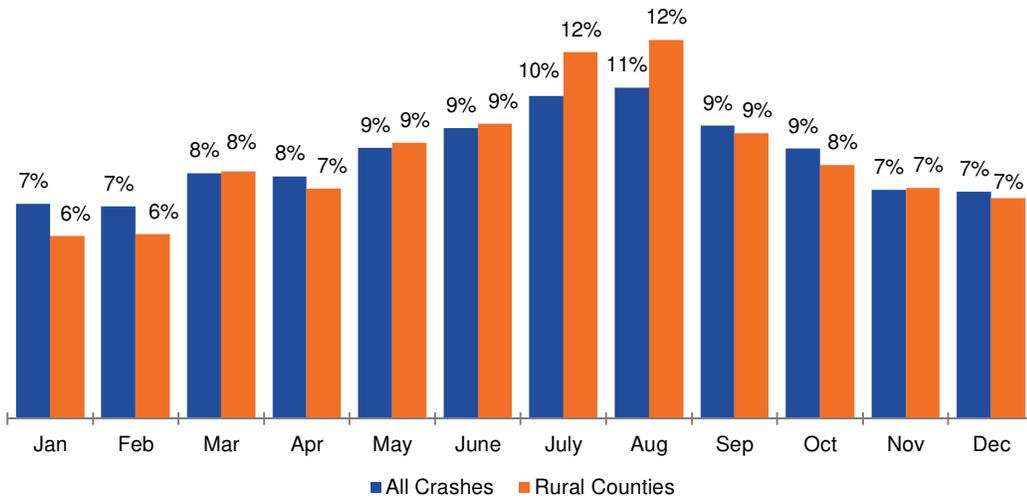
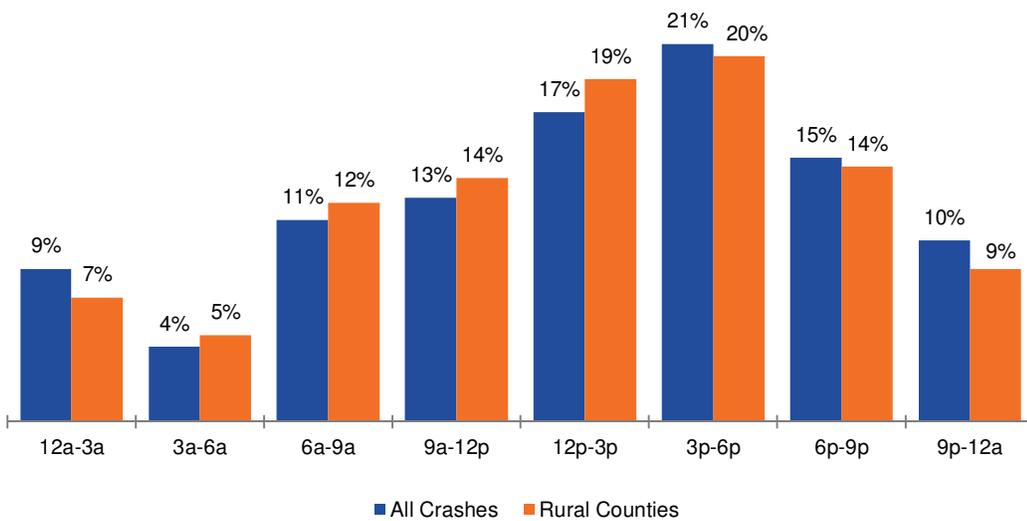


Figure 48. Rural Fatalities and Serious Injuries by Time of Day
2007 to 2012



Individuals age 25 to 34 and those 45 to 54 were involved in the most fatal and serious injury crashes in rural counties (Figure 49).

Figure 49. Rural Fatal and Serious Injury Crashes by Age
2007 to 2012

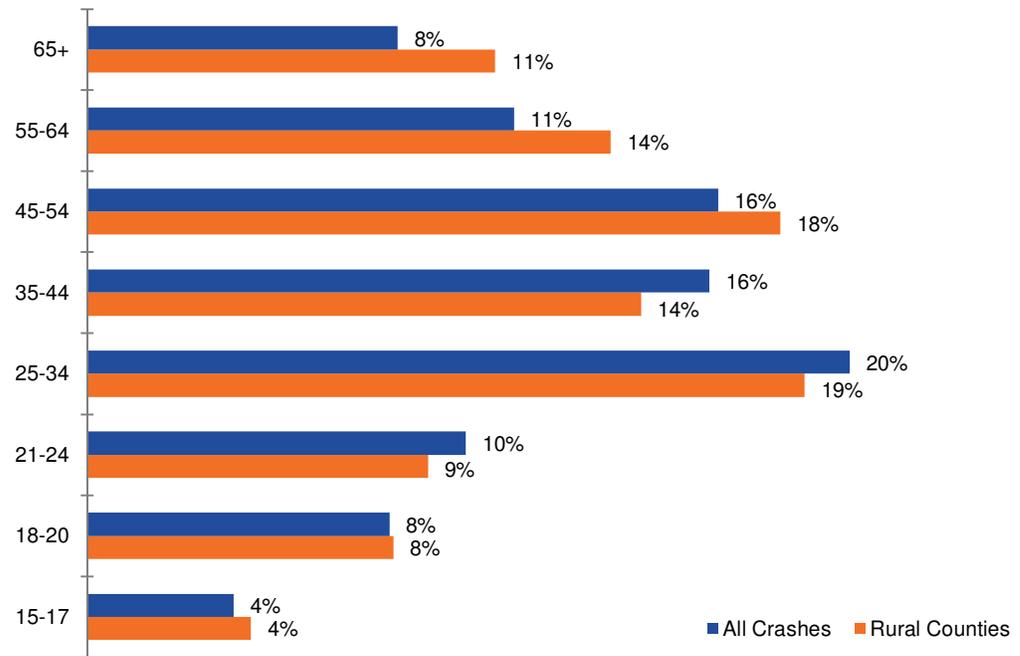
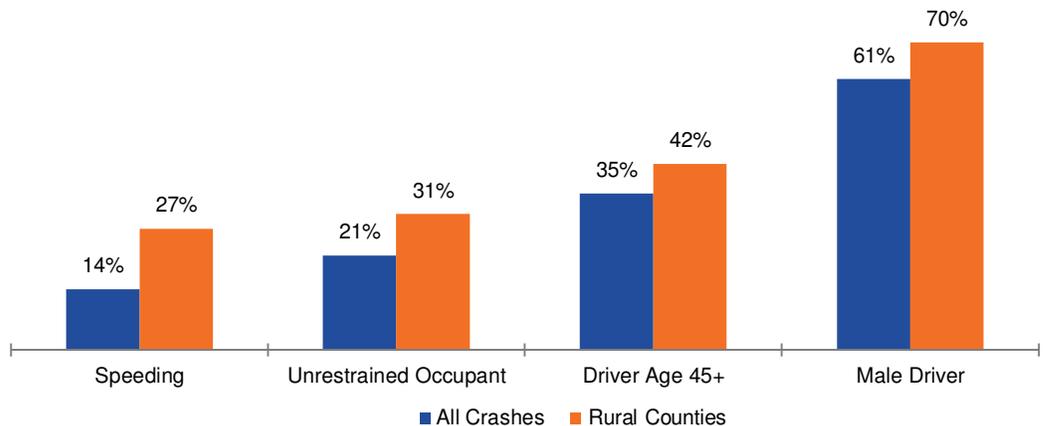


Figure 50 uses several factors to compare fatalities and serious injuries which occurred in rural crashes to the same injury level for all persons in crashes. Using the same injury outcomes, rural departure crashes represent a higher percentage for each of these factors. As an example, 70 percent of rural fatalities and serious injuries involve males versus 61 percent for males which received fatal and serious injuries in all crashes. Rural fatal and serious injury crashes involve a higher number of individuals 45 and older (42 percent versus 35 percent in all crashes). In addition, fatal and serious injury rural crashes are more likely to involve unrestrained occupants and speeding.

Figure 50. Rural Fatalities and Serious Injuries by Behavioral and Environmental Risk Factors
2007 to 2012



INFRASTRUCTURE – RURAL AND URBAN ACTION PLAN

Note: U indicates an urban strategy/action step; R indicates a rural strategy/action step.

Strategy 1: Identify and prioritize local road safety problems on all roadways using data-driven processes and implement infrastructure, operations, and policy improvements to reduce roadway crashes. (U & R)

AS 1.1 Develop and implement a program that encourages establishment of local road safety plans to identify data-driven problem areas with partners such as the Local Technical Assistance Program (LTAP), Colorado Counties, Inc. (CCI, the association for county commissioners), and Colorado Municipal League (CML, mayors and council members). (U/R)

AS 1.2 Identify rural counties with the highest potential for crash reduction. (R)

AS 1.3 Examine opportunities to adjust funding match based upon county capital program budget, population, or other factors. (R)

AS 1.4 Identify roadways where data show fatalities and serious injuries have a correctible pattern and pursue improvements to meet current engineering standards, i.e., signage, striping, flattened curves, shoulders, rumble strips, guardrails, hills, sight distance, clear zones, intersections, drainage, etc. (U/R)

AS 1.5 Identify intersections where data show fatalities and serious injuries have a correctible pattern and pursue improvements to meet current engineering standards, i.e., signage, signals, lighting, striping, curbs, guardrails, sight distance, clear zones, drainage, etc. (U/R)

AS 1.6 Analyze data to determine the effect on safety from heavy traffic and large vehicles on rural roadways and partner with heavy commercial vehicle industries to develop and implement education and outreach program on data-driven safety problems. (R)

AS 1.7 Provide information on rural roadway safety to local agencies to increase knowledge of rural roadway safety issues among local officials. (R)

AS 1.8 Identify locations where data show maintenance solutions may be effective and discuss at regional maintenance meetings for potential action by maintenance crews. (U/R)

AS 1.9 Increase the visibility of traffic safety devices at locations identified through data analysis using treatments such as improved retroreflectivity, LED signal heads, chevrons, reflective tape on signals, signal back plates, lighting, mast arms, etc. (U/R)

AS 1.10 Identify locations, including work zones, where speeding is a contributing factor and work with enforcement and other partners to develop and implement behavioral and engineering solutions. (U/R)

- AS 1.11 Identify locations where data show hot spot/pattern recognition methodologies may reduce motorcycle, young driver, aging road user, pedestrian, and bicycle crashes. (U/R)
-
- AS 1.12 Explore opportunities (e.g., obtaining staff support and/or administer smaller projects) to facilitate expenditures and reporting requirements for local agency roadway safety projects. (U/R)
-
- AS 1.13 Establish and monitor programs, projects, and guidelines to address safety concerns for all modes of transportation related to access management, work zones, railroad crossings, rock fall, and wildlife. (U/R)

Strategy 2: Use proven behavioral countermeasures to reduce crashes for all roadway users.

- AS 2.1 Use a data-driven approach to identify the target audiences and countermeasures to implement at locations with potential for crash reduction.
-
- AS 2.2 Implement appropriate countermeasure programs and initiatives, e.g., impaired driving, occupant protection, speeding/aggressive driving, distracted driving, bicycle/pedestrian, younger drivers, aging road users, motorcyclists, etc., targeted at locations which are supported by data. (U/R)
-
- AS 2.3 Develop and implement a distracted driving campaign which addresses distractions specific to urban and rural roadways. (U/R)

Strategy 3: Increase safe driving behaviors on rural roadways.

- AS 3.1 Provide information on sharing the road with other roadway users, i.e., bicyclists and pedestrians, since many rural roadways are narrow, gravel, or unmarked. (R)
-
- AS 3.2 Work with large employers to provide information to employees about safe driving in rural areas. (R)
-
- AS 3.3 Partner with the Department of Parks and Wildlife to provide rural road safe driving information when individuals obtain fish and hunting licenses and search and rescue permits. (R)
-
- AS 3.4 Provide information to novice drivers through driver’s education and other programs about the unique characteristics of rural roadways and safe driving in rural areas. (R)

Strategy 4: Improve collection and accessibility of data on all roads.

- AS 4.1 Improve data on the number and location of gravel and unpaved roads and where crashes occur on those roads. (R)
-
- AS 4.2 Improve data collected on roadways by obtaining accurate geolocation data. (U/R)
-
- AS 4.3 Develop a plan for collection of fundamental Model Inventory of Roadway Elements (MIRE) data elements on all roadways. (U/R)

Emphasis Area Action Plans

AS 4.4 Educate stakeholders on how to access, interpret, and analyze crash data for local safety programs, e.g., using Empirical Bayes methods in concert with advanced pattern recognition tools for diagnostics on all projects. (R)

Strategy 5: Implement countermeasures, technology, or design to reduce crashes on all roadways.

AS 5.1 Investigate new countermeasures, technology, or design to address roadway safety. (U/R)

AS 5.2 Maintain high-quality data and continue to advance the analytic tool capabilities of CDOT and its partners for use on all roadway projects.

AS 5.3 Deploy and evaluate (as data become available) new data-driven countermeasures, technology, or design to address roadway safety. (U/R)

AS 5.4 Evaluate and deploy opportunities for Traffic Incident Management (TIM) strategies such as driver notification and information; training; data collection and analysis; coordination and implementation; etc.

Strategy 6: Provide training and outreach to state and local safety stakeholders and the public (e.g., on roadway safety best practices, processes, issues, new methodologies, and partnership strategies).

AS 6.1 Identify roadway safety-related training needs of safety stakeholders and course instructors/workshop facilitators for training activities. (U/R)

AS 6.2 Develop/update, conduct, and evaluate training provided to state and local safety stakeholders on roadway safety topics such as roadway best practices, processes, issues, new methodologies, and partnership strategies. (U/R)

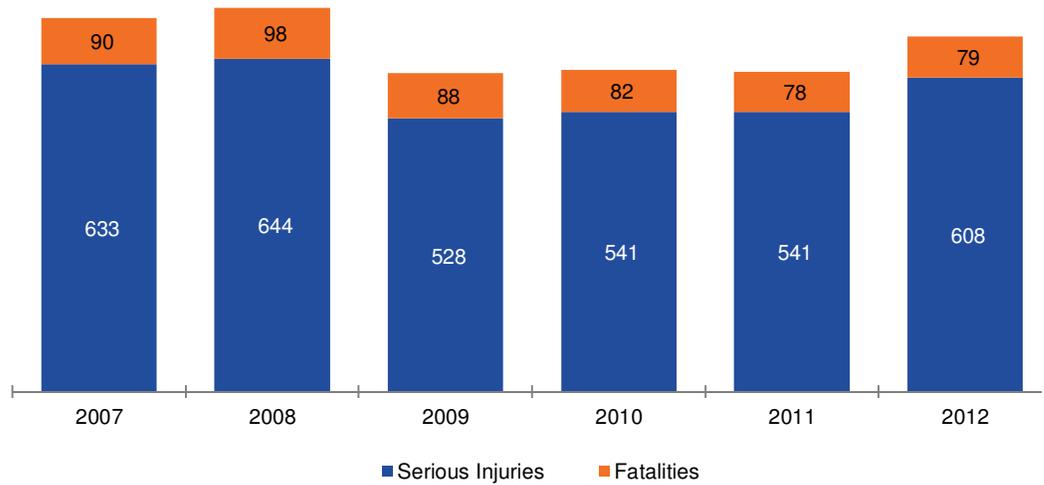
AS 6.3 Conduct and evaluate outreach, e.g., Safety Summit, web site, social media, etc., to state and local safety stakeholders to share roadway safety best practices, processes, issues, new methodologies. (U/R)

AS 6.4 Educate the public on roadway safety topics such as roadway best practices, processes, issues, new methodologies, e.g., roundabouts, flashing yellow arrows, diverging diamonds, etc. (U/R)

MOTORCYCLISTS

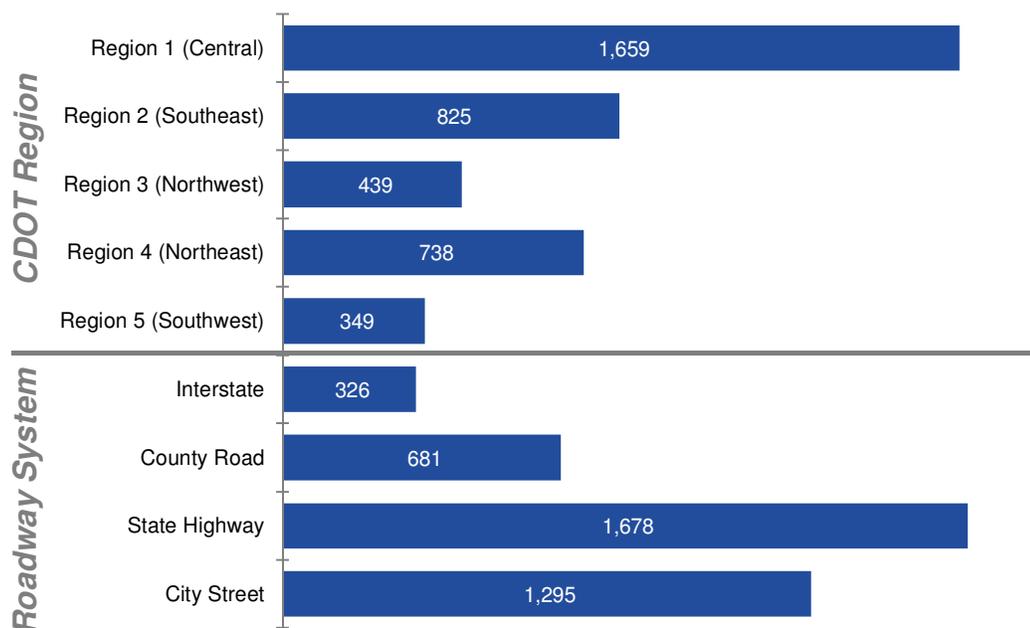
Between 2007 and 2012, there were 515 motorcyclist fatalities and 3,495 serious injuries as shown in Figure 51.

Figure 51. Motorcyclist Fatalities and Serious Injuries
2007 to 2012



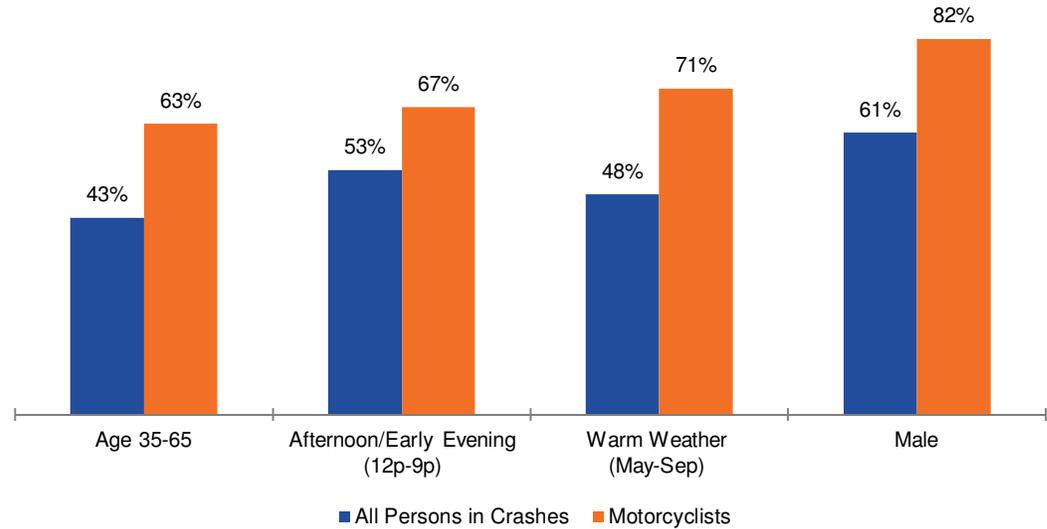
Motorcyclist fatal and serious injuries occur most often in the central part of the state (CDOT Region 1). More of these types of injuries occur on state highways than on other parts of the roadway system. (Figure 52). See Figure 41 for the CDOT region map.

Figure 52. Motorcyclist Fatalities and Serious Injuries by Region and Roadway
2007 to 2012



Several factors are used in Figure 53 to compare motorcyclist fatalities and serious injuries to the same injury level for all persons in crashes. Using the same injury outcomes, motorcycle-related crashes represent a higher percentage for each of these factors. Eighty-two percent of motorcyclist fatalities and serious injuries involve males versus 61 percent for males which received fatal and serious injuries in all crashes. Seventy-one percent of motorcyclists' fatal and serious injuries occur in warm weather (May to September) versus 48 percent for all persons receiving these injuries during the same months. A higher percent of motorcyclist fatalities and serious injuries occur in the afternoon/early evening between noon and 9 p.m. Motorcyclists' fatal and serious injuries involve a higher number of individuals 35 to 65 (63 percent versus 43 percent for individuals in all crashes).

Figure 53. Motorcyclist Fatalities and Serious Injuries by Behavioral and Environmental Risk Factors 2007 to 2012



MOTORCYCLIST ACTION PLAN

Strategy 1: Develop and implement programs to train motorcyclists on skills related to crash causes in Colorado.

- AS 1.1 Analyze motorcycle crash data to identify characteristics of the target population.
- AS 1.2 Form working group(s) to determine the deficient knowledge and skills which contributed to the crash types to inform selection of appropriate training programs.
- AS 1.3 Work with the motorcycle training community, i.e., training providers and instructors, to identify opportunities (including incentives to complete training) which will improve the riding skills and knowledge of the targeted rider populations.
- AS 1.4 Work with the Department of Revenue (DOR) to identify ways to train instructors in the new, innovative, or alternative training activities.
- AS 1.5 Develop communication and outreach programs to increase awareness of the crash problem and the availability of “cool” skill-related activities for the target populations.
- AS 1.6 Conduct data-driven skill activities which will improve the riding skills of the targeted rider populations.

Emphasis Area Action Plans

AS 1.7 Conduct an outreach programs to increase awareness of the crash problem and the availability of “cool” training activities for the target population using law enforcement motorcycle officers at motorcyclist events, motorcycle dealers, Department/Division of Motor Vehicles (DMV), and riders clubs as a distribution network.

Strategy 2: Conduct communications and outreach programs to promote motorcyclist safety.

AS 2.1 Analyze motorcycle crash injury patterns to inform development outreach and communication programs for motorcyclists and motorists.

AS 2.2 Identify resources needed and develop the campaign themes and communication and outreach materials.

AS 2.3 Work with training providers, motorcycle dealers, motorcycle officers, agency staff, and other partners to develop data-driven campaign themes and communication and outreach materials.

AS 2.4 Coordinate with DOR to show/distribute the campaign materials at DMVs and with motorcycle dealerships to show/distribute the campaign materials at dealerships and their activities.

AS 2.5 Coordinate with law enforcement motorcycle officers to show/distribute the campaign materials at motorcyclist events.

AS 2.6 Develop and implement a “motorcycle ambassador” program to increase outreach to motorcyclists of motorcycle safety messages and programs.

Strategy 3: Develop a motorcycle crash awareness course for uniformed police officers to improve their understanding of motorcycle crash dynamics and general motorcycle safety issues.

AS 3.1 Develop a one-day course for law enforcement officers and use Academy instructors to train law enforcement colleagues on motorcycle safety issues and enforcement strategies.

AS 3.2 Promote the availability of course to local law enforcement agencies.

AS 3.3 Conduct and document courses.

Strategy 4: Limit the length of each motorcycle permit and the number of lifetime permit renewals.

AS 4.1 Work with the DOR to consider limiting the length of each motorcycle permit and the number of lifetime permit renewals.

AS 4.2 Pursue support for legislation to revise the length of motorcycle permits and the number of renewals.

Strategy 5: Increase awareness among state and local personnel regarding motorcycle roadway safety.

AS 5.1 Pursue opportunities to train CDOT engineering and maintenance staff to improve highways and construction zones which would benefit motorcyclists.

AS 5.2 Pursue opportunities to share information regarding improving roadways and construction zones which would benefit motorcyclists with local engineering and maintenance staff.

Strategy 6: Support policies that promote helmet use.

AS 6.1 Expand data on helmet use as opportunities arise in Colorado’s annual Problem Identification report and Motorcycle Operator Safety Training Annual Report.

AS 6.2 Examine ways to integrate crash data with hospital/trauma data to injury severity of non-helmet use in crashes.

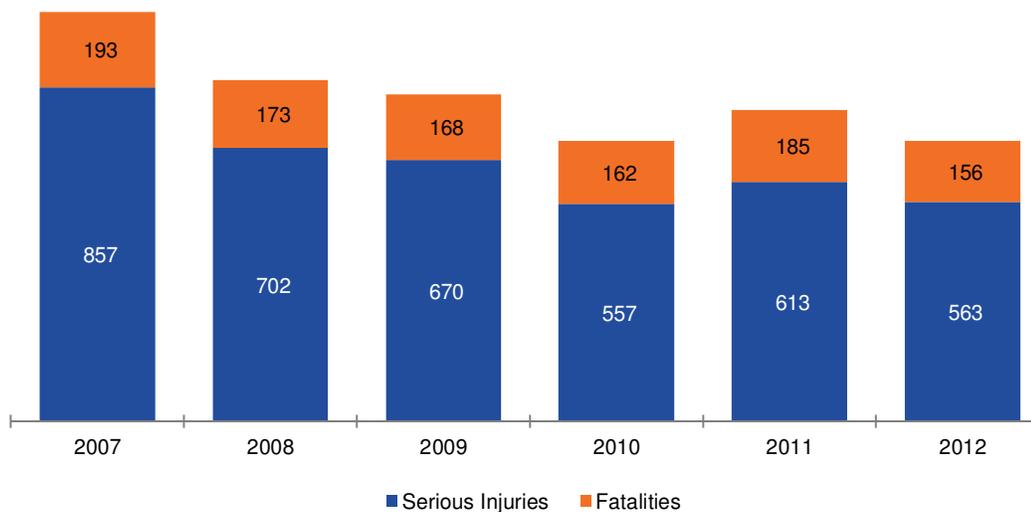
AS 6.3 Determine the impact of incentives for helmet usage, e.g., Wyoming’s seat belt incentive provides for a \$10 discount on primary offenses if the driver is buckled.

OCCUPANT PROTECTION

Throughout this action plan “unrestrained vehicle occupants” refers to passenger vehicle occupants only.

Between 2007 and 2012, there were 1,037 fatalities and 3,962 serious injuries because vehicle occupants were not restrained (Figure 54).

Figure 54. Unrestrained Passenger Vehicle Occupant Fatalities and Serious Injuries 2007 to 2012



The majority of unrestrained occupant fatalities and serious injuries involve individuals age 21 to 34 (Figure 55). Sixty-four percent of unrestrained fatalities and serious injuries are males.

Figure 55. Unrestrained Occupant Fatalities and Serious Injuries by Age
2007 to 2012

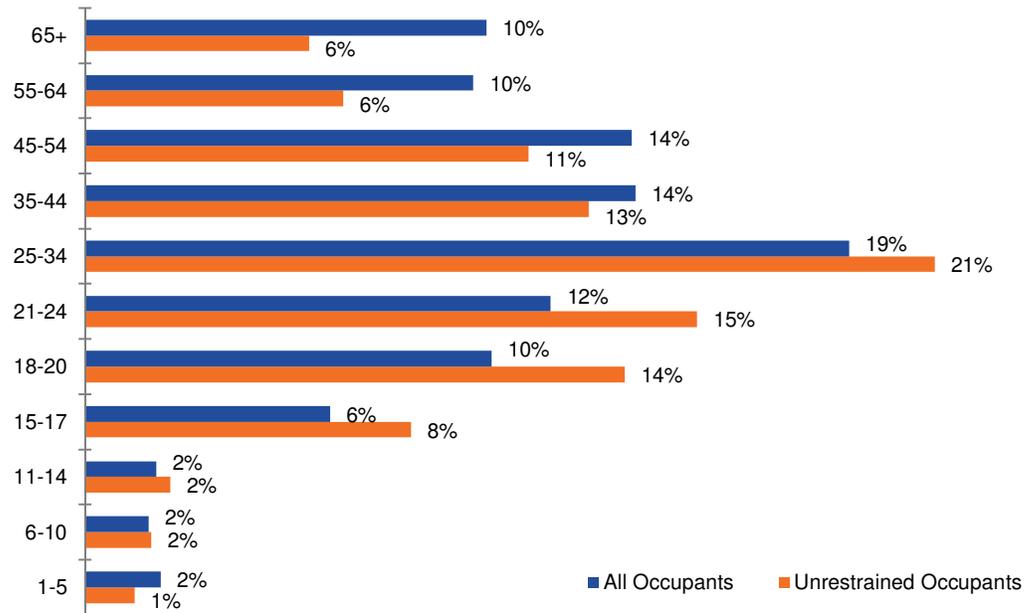
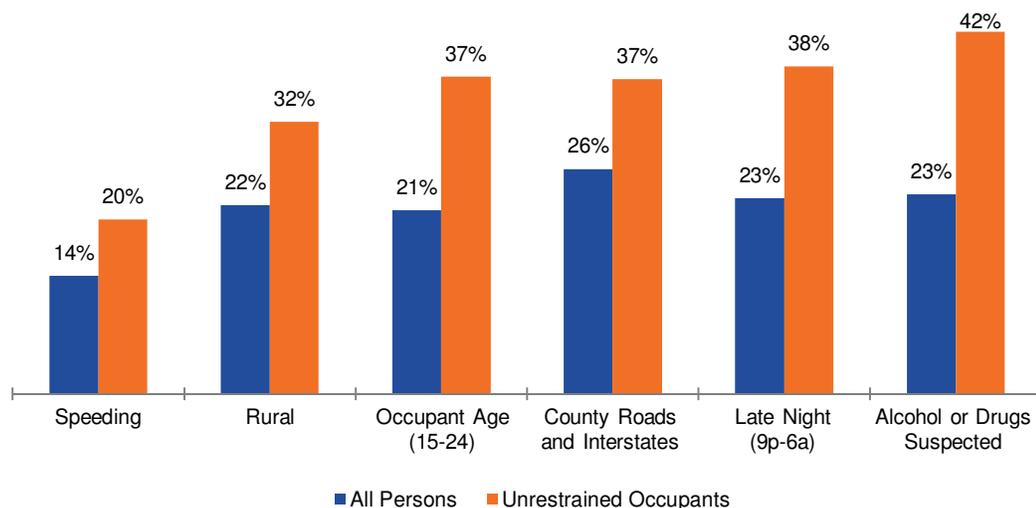


Figure 56 uses several factors to compare unrestrained fatalities and serious to the same injury level for all persons in crashes. Using the same injury outcomes, crashes in which one or more occupant was unrestrained represent a higher percentage for each of these factors. As an example, unrestrained fatalities and serious injuries are almost twice as likely to involve alcohol and/or drugs. Thirty-seven percent of the unrestrained occupants who sustain fatal and serious injuries are 15 to 24 years old. These injury outcomes are also higher when speeding is combined with nonuse of restraints (20 percent versus 14 percent for persons in all crashes). Thirty-eight percent of unrestrained occupants are killed or seriously injured between 9 p.m. and 6 a.m. (versus 23 percent of people in all crashes). A higher percentage of unrestrained occupants (37 percent) sustain these types of injuries on county roads and interstates.

Figure 56. Unrestrained Occupant Fatalities and Serious Injuries by Behavioral and Environmental Risk Factors 2007 to 2012



OCCUPANT PROTECTION ACTION PLAN

Strategy 1: Support policies and activities that promote seat belt use such as a primary seat belt law.

AS 1.1 Work with legislative liaisons to understand and document barriers toward amendment of the current seat belt law for all drivers and passengers who are not covered by the child passenger safety law and Graduated Driver Licensing (GDL) law, to a primary offense, which is the standard for all traffic laws.

AS 1.2 Support any efforts from medical or other community stakeholders for an initiative petition to amend the adult seat belt law to become a primary offense.

AS 1.3 Change the perception of seat belts by reframing the conversation, e.g., change the messaging to focus on the health aspects of seat belt use (frame as a health issue, not just a traffic safety issue).

AS 1.4 Explore the political feasibility of increasing the fines associated with seat belt use to address safety issues related to a secondary state status.

AS 1.5 Determine the impact of incentives for seat belt usage, e.g., Wyoming seat belt incentive provides for a \$10 discount on any traffic offense if the driver is buckled.

AS 1.6 Support local ordinances for a primary seat belt offense where there is political will in the community.

AS 1.7 Eliminate the Colorado peace officer and other seat belt exemptions within the state’s seat belt law.

AS 1.8 Revise language in the current seat belt law to require booster seat use for children through age eight.

Strategy 2: Increase awareness of the risks associated with non-seat belt use.

AS 2.1 Host a statewide occupant protection conference to share best practices, programs, and materials that have been particularly successful, and to discuss current state data, determine new target audiences and materials, and provide problem-solving sessions. Partners and stakeholders, including those representing diverse communities, should assist in the conference planning.

AS 2.2 Incorporate seat belt education into driver training and improvement courses or through court-ordered education.

AS 2.3 Develop guidance through a training program, video, or other means, for Office of Transportation Safety (OTS) grantees that provide services to diverse populations, to replace the potential for offending cultural norms or religious beliefs during one-on-one interactions with their clients.

AS 2.4 Explore opportunities to partner with and provide training to help Department of Parks and Wildlife officers identify and educate unbelted occupants and drivers.

AS 2.5 Work with other law enforcement agencies to encourage them to include a seat belt message during other enforcement activities such as sobriety checkpoints.

Strategy 3: Support and expand Colorado’s high-visibility seat belt enforcement initiatives.

AS 3.1 Work with the Colorado Sheriff’s Association and Chiefs of Police Association to identify ways to overcome reluctance to enforce Colorado’s seat belt law.

AS 3.2 Expand the current rural enforcement outreach to get more agencies enforcing seat belt laws on a continuous basis.

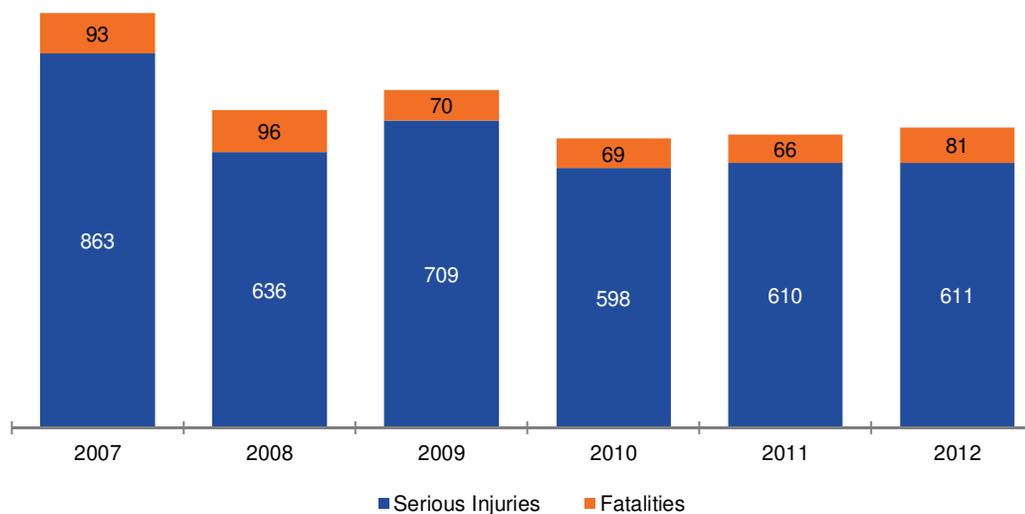
AS 3.3 Enforce current secondary seat belt law and use all existing traffic laws to strictly enforce the seat belt law.

AS 3.4 Develop a Law Enforcement Liaison (LEL) Program, managed by the Law Enforcement Coordinator, with one LEL per Regional Emergency Medical and Trauma Advisory Council.

YOUNG DRIVERS

Young drivers are defined as drivers 15 to 20 years of age. Between 2007 and 2010, young drivers involved fatal and serious injury crashes resulted in 475 deaths and 4,027 serious injuries as shown in Figure 57. These numbers reflect all people who were killed or seriously injured in crashes that involved a young driver.

Figure 57. Young Driver Involved Fatalities and Serious Injuries
2007 to 2012



The percent of fatalities and serious injuries resulting from crashes involving young drivers is slightly higher in May and August, however the percent of young drivers outpaces all drivers in fatal and serious injury crashes in January, March, May, June, September, and October (Figure 58). The majority occur in the evening between 6 p.m. and 9 p.m. as shown in Figure 59.

Figure 58. Young Driver Involved Fatalities and Serious Injuries by Month
2007 to 2012

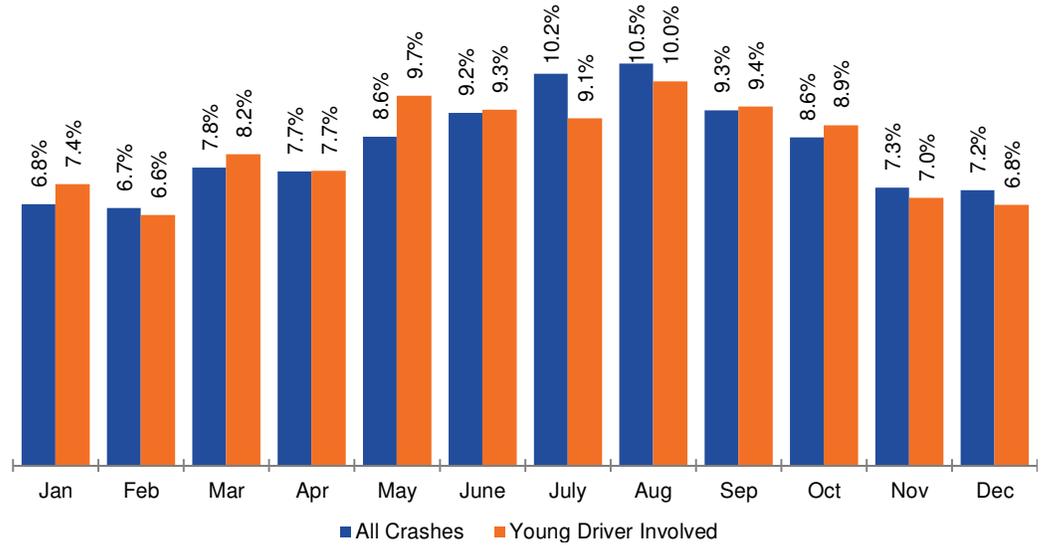
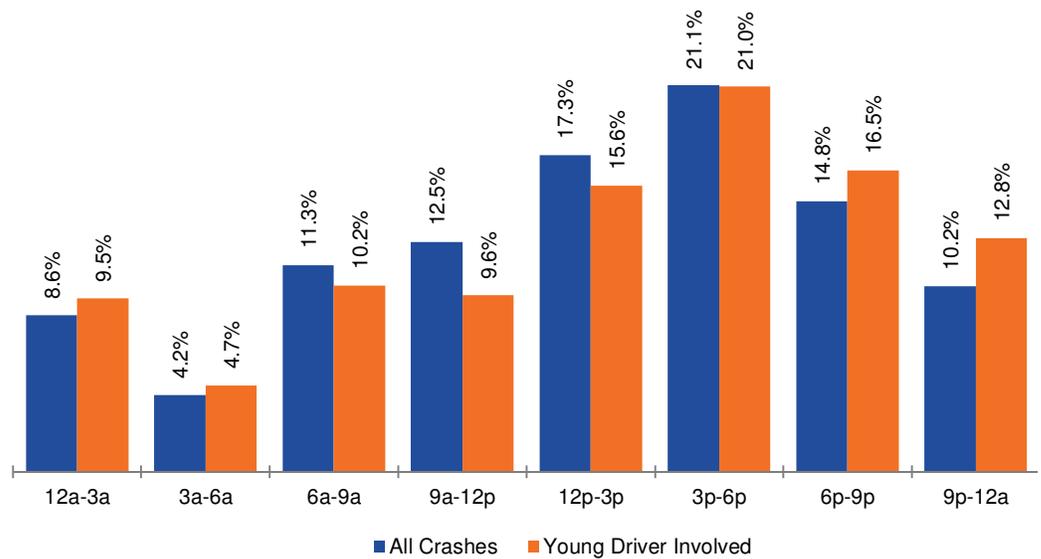
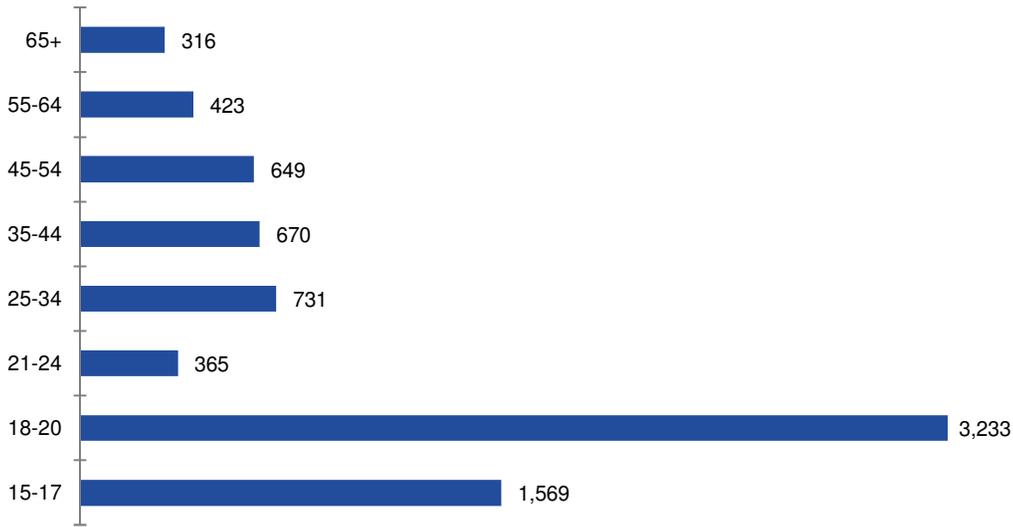


Figure 59. Young Driver Involved Fatalities and Serious Injuries by Time of Day
2007 to 2012



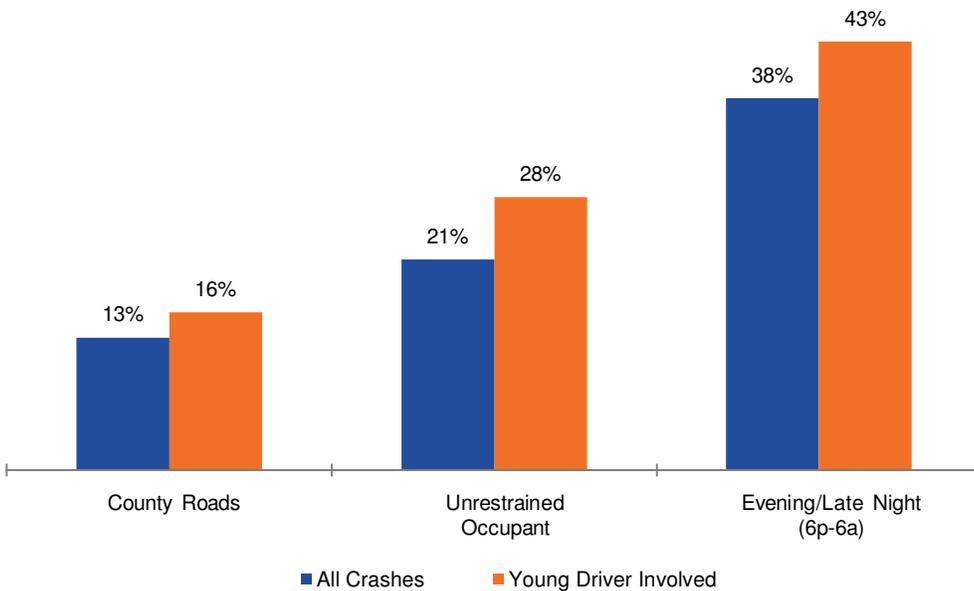
The 18 to 20 age range accounts for the largest portion of fatalities and serious injuries involved in crashes involving a young driver, as shown in Figure 60. Males account for 65 percent of the fatalities and serious injuries involved in these crashes.

Figure 60. Fatalities and Serious Injuries in Crashes by Age
2007 to 2012



Forty-three percent of fatalities and serious injuries in crashes involving a young driver occur between 6 p.m. and 6 a.m. In 28 percent of young driver crashes with the same injury outcomes, the passenger vehicle occupants were unrestrained. The percentage of young driver crashes which occur on county roads is slightly higher than fatal and serious injury crashes for all persons on these roads (Figure 61).

Figure 61. Young Driver Involved Fatalities and Serious Injuries by Behavioral and Environmental Risk Factors
2007 to 2012



YOUNG DRIVER ACTION PLAN

Strategy 1: Increase coordination, collaboration, and mission alignment among state-level motor vehicle partners in Colorado related to evidence-based practices that reduce motor vehicle occupant injuries among youth ages 15 to 20.

- AS 1.1 Convene monthly Colorado Teen Driving Alliance (CTDA) meetings.

- AS 1.2 Educate stakeholders about aligning Colorado’s graduated drivers licensing laws with MAP 21 guidance, specifically strengthening the curfew to 10 p.m. and maintaining curfew and passenger restrictions until teens reach full licensure.

- AS 1.3 Monitor and report national, state, and local legislation related to injury and violence prevention policy utilizing the Injury and Violence Prevention Legislative Tracker and vipreventionnetworkco.com web site.

- AS 1.4 Maintain the www.coteendriver.com web site.

Strategy 2: Increase the number of teen motor vehicle safety programs funded by state agencies that are implementing evidence-based programs by providing resources and technical assistance.

- AS 2.1 Continue to produce the CDOT Annual Problem Identification Report and disseminate it to local communities.

- AS 2.2 Continue to provide a webinar to local communities that covers the design of the Problem ID Report and how locals can use the information in their annual grant applications.

- AS 2.3 Generate a CTDA fact sheet on Graduated Driver Licensing (GDL) laws with updated graphics.

- AS 2.4 Evaluate and strengthen CDOT’s Request for Application (RFA) process for its local grant program.

- AS 2.5 Provide technical assistance on implementing evidence-based programs.

- AS 2.6 Update technical assistance tools to reflect emerging data and policy priorities.

- AS 2.7 Work with CDOT to disseminate information on programmatic best practices to their future grantees.

- AS 2.8 Monitor literature related to teen motor vehicle safety.

- AS 2.9 Broaden social marketing tools for parents, teens, schools, etc., related to teen driving.

Strategy 3: Increase seat belt use among teens.

- AS 3.1 Educate and inform decision-makers, stakeholders, and other professionals regarding the gap in Colorado’s seat belt law regarding 16- to 17-year-old passengers riding with adult drivers.
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- AS 3.2 Review teen motor vehicle deaths and identify how many teens that died in motor vehicle crashes were unbelted and include that information in the Child Fatality Prevention System Annual Report.
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- AS 3.3 Work with CDOT to disseminate information to their grantees on programmatic best practices related to educating teens about seat belt use.
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- AS 3.4 Provide technical assistance to local communities that are implementing programs to increase teen seat belt use, including Maternal and Child Health (MCH), CDOT, and Emergency Medical and Trauma Services (EMTS) grantees.
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- AS 3.5 Implement community-based projects to increase seat belt use among teens through local community programs.
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- AS 3.6 Support any efforts from medical or other community stakeholders for an initiative petition to amend the adult seat belt law to become a primary offense.

Strategy 4: Increase the percentage of law enforcement officers who report enforcing the GDL law.

- AS 4.1 Make the CTDA’s GDL roll-call video and PowerPoint available through the www.coteedriver.com web site for local community safety advocates to educate local law enforcement officers.
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- AS 4.2 Update and distribute the law enforcement GDL Cheat Sheet card and distribute to law enforcement agencies statewide.
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- AS 4.3 Distribute an updated survey (previously conducted in 2012) for Law Enforcement to assess their knowledge of and willingness to enforce the GDL law.
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- AS 4.4 Partner with the Colorado State Patrol to offer an annual webinar or training for law enforcement officers on the GDL Law.
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- AS 4.5 Educate law enforcement officers about the teen motor vehicle fatality statistics.

Strategy 5: Educate parents about the existing graduated drivers license law.

- AS 5.1 Conduct a biannual parent survey to assess understanding of the GDL law and use of teen driving contracts (baseline conducted May 2013, subsequent years 2015, 2017).
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- AS 5.2 Partner with other agencies that reach parents to promote the teen driving safety message and to share related resources.

AS 5.3	Update and distribute parent GDL brochures to parents through the Department of Motor Vehicles, Driving Schools and other venues.
AS 5.4	Implement the annual marketing and communication plan activities to educate parents on the GDL law.
AS 5.5	Educate parents of teen drivers and young drivers of the dangers of leaving the roadway along rural roadways with little or no recovery area.
AS 5.6	Work with CDOT to increase dissemination of information on programmatic best practices related to educating parents about teaching teens to drive.
AS 5.7	Provide technical assistance to local communities that are implementing programs targeted at parents, such as Teaching Your Teen to Drive classes.
AS 5.8	Disseminate the On-Line Parent GDL Course to local motor vehicle partners as a resource to increase at-home enforcement of GDL laws and increase parent knowledge of GDL.

Strategy 6: Decrease the number and rate of impaired driving-related crashes among young drivers.

AS 6.1	Educate parents on the dangers of impaired driving for young drivers, including the prohibition on providing alcohol or drugs to anyone under the age of 21 through current programs, including Speak Now, Mothers Against Drunk Driving’s (MADD) Power of Parents, at the DMV during licensing, and through other campaigns.
AS 6.2	Increase political will to approve policies that reduce the level of underage alcohol and drug use, including a social host law, increased alcohol taxes, keg registration, etc.
AS 6.3	Support enforcement of existing laws that restricts youth access and use of alcohol, marijuana, and other drugs.
AS 6.4	Obtain data on the number of citations for underage drinking, marijuana, and other drug use.

NEXT STEPS

The Strategic Highway Safety Plan (SHSP) provides the overall vision and mission to guide Colorado's traffic investments and decisions, and continue our traffic safety progress over the next five years (2015 to 2019). Colorado's safety stakeholders will implement the eight emphasis area action plans in Section 6 and meet regularly to monitor and evaluate progress in meeting the established performance targets.

For Colorado to achieve realistic reductions in traffic-related fatalities and serious injuries, everyone - whether they drive, walk, ride, or bike - must keep the Toward Zero Deaths goal foremost in their mind every trip, every time. This document will be available on the CDOT website for all Coloradoans interested in learning more about the Strategic Highway Safety Plan.

Please join us in staying safe on the roads and Moving Colorado Towards Zero Deaths.