Highway Safety Improvement Program

Data Driven Decisions

Colorado
Highway Safety Improvement Program
2016 Annual Report

Prepared by: CO

Disclaimer

Protection of Data from Discovery & Admission into Evidence

23 U.S.C. 148(h)(4) states "Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for any purpose relating to this section [HSIP], shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location identified or addressed in the reports, surveys, schedules, lists, or other data."

23 U.S.C. 409 states "Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data."

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Executive Summary

Colorado's (5 year average) fatalities and fatal crash rates have increased in 2015. Both (5 year average) serious injuries and the serious injury crash rate have seen little change in 2015.

In FY 2016, Colorado was notified as being non-compliant with 23 U.S.C. Section 164. CDOT requested that 100% of the penalty amount be shifted from the National Highway Preservation Program (NHPP) and 100% of those funds be assigned to the Highway Safety Improvement Program (HSIP). The funding assigned to the HSIP will be used for eligible activities described in 23 U.S.C. Section 148 to correct hazardous locations, reduce identified safety problems, proactively address safety risks, and address safety emphasis areas identified in Colorado's Strategic Highway Safety Plan (SHSP).

Colorado uses HSIP resources to incorporate safety improvements across a broad range of maintenance, safety and non-infrastructure projects. Innovative methodologies developed and used by CDOT will continue to identify more locations, on a statewide scale, with the greatest potential for crash reduction. Applications of new Highway Safety Manual concepts and systemic approaches are also being integrated into the HSIP program.

The SHSP implementation plan will target goals and devise strategies in each emphasis area to see where improvements can made in order to support the vision of moving towards zero deaths. In the next fiscal year, CDOT hopes to solicit a greater number of off system (non-state highway) locations with high potential for crash reduction with the help of local agencies partners and stakeholders.

Introduction

The Highway Safety Improvement Program (HSIP) is a core Federal-aid program with the purpose of achieving a significant reduction in fatalities and serious injuries on all public roads. As per 23 U.S.C. 148(h) and 23 CFR 924.15, States are required to report annually on the progress being made to advance HSIP implementation and evaluation efforts. The format of this report is consistent with the HSIP MAP-21 Reporting Guidance dated February 13, 2013 and consists of four sections: program structure, progress in implementing HSIP projects, progress in achieving safety performance targets, and assessment of the effectiveness of the improvements.

Program Structure

Program Administration

How are Highway Safety Improvement Program funds allocated in a State?

Central

Describe how local roads are addressed as part of Highway Safety Improvement Program.

Under this program all public roadways are eligible for participation. Submittals for projects not located on the State Highway system are solicited from local authorities through the various Metropolitan Planning Organizations (MPO's) and the Special Highway Committee of the Colorado Counties, Inc. and the Colorado Municipal League. These candidate proposals for safety improvement projects are submitted for locations identified using the locals' own high hazard locations identification system. As with the Region applications, all submittals will be required to meet the minimum criteria. Copies of project applications received in the Safety and Traffic Engineering Office from locals are submitted to the Region offices for comments, evaluation and approval. The Region offices are specifically requested to verify project cost estimates, and when necessary, are also requested to make project cost adjustments with the submitting local authorities' concurrence.

Identify which internal partners are involved with Highway Safety Improvement Program planning.

Design
Planning
Operations
Governors Highway Safety Office
Other-Office of Financial Management & Budget

Briefly describe coordination with internal partners.

The CDOT HQ Traffic and Safety Engineering (TSE) branch periodically produces a statewide composite listing of potential locations for crash reduction is compiled for all highway segments and intersections performing at a sub-standard level of service of safety (LOSS) as well as identifying crash patterns that are over-represented at those locations. This listing is provided to each CDOT Region where their traffic units, roadway design staff and transportation planners can coordinate and select appropriate safety

improvement projects with the goal of reducing roadway fatalities and serious injuries. The Regions use the listing along with other information such as their own operational reviews, input from citizens, staff and city/county personnel as well as other ongoing or scheduled construction activities in order to determine the most feasible and beneficial candidate safety projects. The Region may also choose to nominate other safety project locations besides those mentioned on the listing.

Applications for new highway safety improvement projects are sent to TSE branch for evaluation to determine HSIP eligibility and level of funding. The TSE branch works with the Office of Financial Management & Budget (OFMB) to determine the amount of HSIP funding available for the current fiscal year as well as how much is anticipated to be available in future fiscal years for HSIP project planning and scheduling. The TSE branch also works with OFMB to obtain status updates on HSIP obligation and expenditure amounts for ongoing projects. Approved HSIP projects are incorporated into the Integrated Safety Plan in coordination with the CDOT Office of Transportation Safety group and their safety programs.

Identify which external partners are involved with Highway Safety Improvement Program planning.

Metropolitan Planning Organizations
Governors Highway Safety Office
Other-Local Agencies

Identify any program administration practices used to implement the HSIP that have changed since the last reporting period.

Other-FAST Act

Describe any other aspects of Highway Safety Improvement Program Administration on which you would like to elaborate.

In FY 2016, Colorado was notified as being non-compliant with 23 U.S.C. Section 164. CDOT requested that 100% of the penalty amount be shifted from the National Highway Preservation Program (NHPP) and 100% of those funds be assigned to the Highway Safety Improvement Program (HSIP). The funding assigned to the HSIP will be used for eligible activities described in 23 U.S.C. Section 148 to correct hazardous locations, reduce identified safety problems, proactively address safety risks, and address safety emphasis areas identified in the State Strategic Highway Safety Plan.

Program Methodology

Select the programs that are administered under the HSIP.

Other-General

Program: **Other-General**
Date of Program Methodology: **1/1/2000**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
All crashes	Traffic Volume	Functional classification

What project identification methodology was used for this program?

Crash frequency
Expected crash frequency with EB adjustment
Level of service of safety (LOSS)
Excess expected crash frequency using SPFs
Excess expected crash frequency with the EB adjustment
Probability of specific crash types
Excess proportions of specific crash types

Are local roads (non-state owned and operated) included or addressed in this program?

Yes
If yes, are local road projects identified using the same methodology as state roads?
Yes

How are highway safety improvement projects advanced for implementation?

Competitive application process

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Ranking based on B/C	2
Available funding	1

What proportion of highway safety improvement program funds address systemic improvements?

5%

Highway safety improvement program funds are used to address which of the following systemic improvements?

Cable Median Barriers
Rumble Strips
Traffic Control Device Rehabilitation
Pavement/Shoulder Widening
Install/Improve Signing
Install/Improve Pavement Marking and/or Delineation
Upgrade Guard Rails
Clear Zone Improvements
Safety Edge
Install/Improve Lighting
Add/Upgrade/Modify/Remove Traffic Signal

What process is used to identify potential countermeasures?

Engineering Study
Road Safety Assessment
Other-Requests by local agencies for investigations

Identify any program methodology practices used to implement the HSIP that have changed since the last reporting period.

Highway Safety Manual
Systemic Approach

Describe any other aspects of the Highway Safety Improvement Program methodology on which you would like to elaborate.

Over the last year, CDOT Traffic and Safety has participated in peer exchanges covering the Systemic Approach and also Data Driven Safety Analysis using the Highway Safety Manual. CDOT is looking towards incorporating more of these elements into the HSIP program. CDOT has applied HSIP funding in updating all Colorado specific highway segment diagnostic norms and safety performance functions (SPF) using the latest available crash data. Over the next year, CDOT plans to update Colorado specific intersection diagnostic norms and SPF's using HSIP funding. This will include rural intersection SPF's which had not existed prior. These improvements in crash data analysis will help identify new locations with potential for crash reduction which will be vital in helping to reduce fatalities and serious injuries across the state. HSIP funding has also been applied to before-and-after studies to help assess the safety impact and performance of individual safety improvement projects funded by HSIP.

HSIP funding has applications towards the following efforts:

- Crash Data Improvements
- Statewide Safety Summit (Towards Zero Death)
- Workzone Safety Devices and Strategies
- Traffic Incident Management
- New Technology

Progress in Implementing Projects

Funds Programmed

Reporting period for Highway Safety Improvement Program funding.

State Fiscal Year

Enter the programmed and obligated funding for each applicable funding category.

Funding Category	Programmed*		Obligated	
HSIP (Section 148)	$34,113,819.00	71 %	$21,852,509.00	61 %
Penalty Transfer – Section 164	$11,169,962.00	23 %	$11,169,962.00	31 %
State and Local Funds	$2,741,382.00	6 %	$2,741,382.00	8 %

Totals	$48,025,163.00	100%	$35,763,853.00	100%

How much funding is programmed to local (non-state owned and operated) safety projects?
$3,504,711.00
How much funding is obligated to local safety projects?
$2,482,766.00

How much funding is programmed to non-infrastructure safety projects?
$423,389.00
How much funding is obligated to non-infrastructure safety projects?
$411,786.00

How much funding was transferred in to the HSIP from other core program areas during the reporting period?
$0.00
How much funding was transferred out of the HSIP to other core program areas during the reporting period?
$0.00

Discuss impediments to obligating Highway Safety Improvement Program funds and plans to overcome this in the future.

CDOT's Office of Financial Management and Budget (OFMB) does not typically obligate HSIP funding until the project has invoices submitted while under construction. The purpose of this is limit the

possibility of having inactive projects. However, this does impact Colorado HSIP obligation rates as this tends to result in delayed obligation of funds for HSIP projects. There are longer than expected start up times for safety improvement projects, especially those run by local agencies. Special attention will now be given to construction scheduling and priority for fund programming will be given to projects that can deliver on a timely basis.

Describe any other aspects of the general Highway Safety Improvement Program implementation progress on which you would like to elaborate.

The OFMB is working with the HSIP program managers to find ways to manage Section 164 penalty funds so that those funds can be obligated immediately. It is anticipated that Section 164 penalty funding will continue into future fiscal years in Colorado.

General Listing of Projects

List each highway safety improvement project obligated during the reporting period.

Project	Improvement Category	Output	HSIP Cost	Total Cost	Funding Category	Functional Classification	AADT	Speed	Roadway Ownership	Relationship to SHSP	
										Emphasis Area	Strategy
I-70:HAVANA TO I-225 RESURFACING	Roadway Roadway - other	0.5 Miles	509827	717760	HSIP (Section 148)	Urban Principal Arterial - Interstate	151000	0	State Highway Agency	Lane Departure	
Shields St: Drake to Davidson Dr. HES	Roadway Roadway - other	0.2 Miles	986000	986000	HSIP (Section 148)	Urban Major Collector	30000	0	City of Municipal Highway Agency	Intersections	
Valmont & 29th Street HES	Intersection geometry Auxiliary lanes - add left-turn lane	2 Numbers	3375555	3415555	Penalty Transfer – Section 164	Urban Minor Arterial	21000	0	City of Municipal Highway Agency	Intersections	
US 6 & I-70 EB Accel. Lane & Chain Sta.	Roadway Roadway widening - add lane(s) along segment	2.5 Miles	3701353	4263245	HSIP (Section 148)	Rural Principal Arterial - Interstate	28000	0	State Highway Agency	Lane Departure	
Mesa Cty SH 141 Agape Way to Green Acres	Intersection traffic control Modify traffic signal - modernization/replacement	1 Numbers	750000	750000	HSIP (Section 148)	Urban Principal Arterial - Other	18000	0	State Highway Agency	Intersections	

US 24 PASSING LANES ON TROUT CREEK PASS	Roadway Roadway widening - add lane(s) along segment	3.5 Miles	1300000	9676486	HSIP (Section 148)	Rural Minor Arterial	4000	0	State Highway Agency	Lane Departure	
88TH AVE & COLORADO BLVD-INTERSECTION IM	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	1746418	1746418	HSIP (Section 148)	Urban Principal Arterial - Other	14000	0	City of Municipal Highway Agency	Intersections	
SH 96A - Arkansas River to US50B	Pedestrians and bicyclists Miscellaneous pedestrians and bicyclists	0	1658000	11119651	HSIP (Section 148)	Urban Principal Arterial - Other	0	0	State Highway Agency	Pedestrians	
COUNTY LINE RD & BROADWAY SIGNAL UPGRADE	Intersection traffic control Modify traffic signal - modernization/replacement	1 Numbers	679824	679824	HSIP (Section 148)	Urban Principal Arterial - Other	18000	0	City of Municipal Highway Agency	Intersections	
FEDERAL BLVD SAFETY/PED IMPROVEMENTS	Pedestrians and bicyclists Pedestrian signal - install new at intersection	8 Numbers	2585021	2585021	Penalty Transfer – Section 164	Urban Principal Arterial - Other	36000	0	State Highway Agency	Pedestrians	
I-70 Fiber Vail to Glenwood Springs	Advanced technology and ITS Advanced technology and ITS - other	0	1350000	20394778	HSIP (Section 148)	Rural Principal Arterial - Interstate	21500	0	State Highway Agency	Data	
SH 119 County Line to I-25	Intersection geometry Auxiliary lanes - add right-turn lane	2 Numbers	990000	13869530	HSIP (Section 148)	Urban Principal Arterial - Other	29000	0	State Highway Agency	Lane Departure	

						Freeways and Expressways					
SH21-ACCEL/DECEL LANES MP 141.7-148.7	Intersection geometry Auxiliary lanes - extend acceleration/deceleration lane	2 Miles	4248496	7162289	Penalty Transfer – Section 164	Urban Principal Arterial - Other Freeways and Expressways	53000	0	State Highway Agency	Intersections	
I-25: 120th Avenue (SH 128) to SH 7	Advanced technology and ITS Advanced technology and ITS - other	0	6500000	97218499	HSIP (Section 148)	Urban Principal Arterial - Interstate	90000	0	State Highway Agency	Lane Departure	
US 50 TOP OF MONARCH TO MAYSVILLE	Roadside Barrier- metal	10 Miles	550000	6373973	HSIP (Section 148)	Rural Principal Arterial - Other	2400	0	State Highway Agency	Roadway Departure	
SH165A SAFETY IMPROVEMENTS	Roadway Rumble strips - edge or shoulder	8.3 Miles	1016587	1016587	HSIP (Section 148)	Rural Major Collector	3600	0	State Highway Agency	Roadway Departure	
REGION 2 FY14 SIGNAL IMPROVEMENTS	Intersection traffic control Modify traffic signal - modernization/replacement	0	1495000	3078217	HSIP (Section 148)	Various Locations	0	0	State Highway Agency	Intersections	
US50B 32ND LANE TO 36TH INT. IMPROVEMENT	Intersection geometry Auxiliary lanes - add acceleration lane	3 Numbers	3554696	4877893	Penalty Transfer – Sectio	Urban Principal Arterial - Other Freeways	9000	0	State Highway Agency	Intersections	

					n 164	and Expressways					
I-76 @ 88TH AVE. OPERATION IMPROVEMENTS	Intersection traffic control Modify traffic signal - modify signal mounting (spanwire to mast arm)	3 Numbers	1050000	2513126	HSIP (Section 148)	Urban Principal Arterial - Other	16000	0	State Highway Agency	Intersections	
SH 30(DARTMOUTH-DAYTON) PED. SAFETY CON	Pedestrians and bicyclists Install sidewalk	0	2726237	2726237	HSIP (Section 148)	Urban Principal Arterial - Other	0	0	State Highway Agency	Pedestrians	
Adaptive Signals US 287 & SH 119	Intersection traffic control Modify traffic signal - modernization/replacement	0	1416321	308979 4	HSIP (Section 148)	Various Locations	0	0	State Highway Agency	Intersections	
84TH & GRANT ST INTERSECTION REBUILT	Intersection geometry Intersection geometrics - miscellaneous/other/unspecified	1 Numbers	550000	550000	HSIP (Section 148)	Urban Minor Arterial	13000	0	City of Municipal Highway Agency	Intersections	
SH 340 Redlands Parkway Roundabout	Intersection traffic control Modify control - traffic signal to roundabout	1 Numbers	580530	580530	HSIP (Section 148)	Urban Minor Arterial	15500	0	State Highway Agency	Intersections	
LAKEWOOD FY15 TRAFFIC SIGNALS PROJECT	Intersection traffic control Modify traffic signal - modernization/replacement	8 Numbers	1294500	129450 0	HSIP (Section 148)	Various Locations	0	0	City of Municipal Highway Agency	Intersections	
I-70:C470 TO	Roadside Barrier - cable	4.5	17061	170615	HSIP	Urban	9000	0	State	Roadway	

32ND CABLE RAIL		Miles	56	6	(Section 148)	Principal Arterial - Interstate	0		Highway Agency	Departure	
I-70 MP 180-186 Barrier Replacement	Roadside Barrier - other	10 Miles	5100000	6574055	HSIP (Section 148)	Rural Principal Arterial - Interstate	19000	0	State Highway Agency	Roadway Departure	
I-25 RAMP METERS REGION 1	Interchange design Ramp metering	0	3396450	3396450	HSIP (Section 148)	Urban Principal Arterial - Interstate	0	0	State Highway Agency	Lane Departure	
US285/S ELK CREEK RD SAFETY PROJECT	Roadside Barrier - concrete	0.25 Miles	755685	755685	HSIP (Section 148)	Rural Principal Arterial - Other	14000	0	State Highway Agency	Roadway Departure	
REGION 2 GUARDRAIL PROJ (I-25, SH 115)	Roadside Barrier - cable	30 Miles	1553327	1553327	HSIP (Section 148)	Rural Principal Arterial - Interstate	30000	0	State Highway Agency	Roadway Departure	
SH96A ABRIENDO - ORMAN Safety Improv	Roadway Roadway widening - add lane(s) along segment	0.5 Miles	315950	315950	HSIP (Section 148)	Urban Principal Arterial - Other	19000	0	State Highway Agency	Lane Departure	
SAFETY ASSESSMENTS 2016	Non-infrastructure Road safety audits	1 Numbers	299472	299472	HSIP (Section 148)		0	0	State Highway Agency	Data	
US24 WILKERSON PASS SAFETY IMPROVEMENTS	Shoulder treatments Widen shoulder - paved or other	1.5 Miles	350000	350000	HSIP (Section 148)	Rural Minor Arterial	2000	0	State Highway Agency	Roadway Departure	
FY 2016 HSIP BEFORE AND	Non-infrastructure Data/traffic records	1 Numbe	73006	73006	HSIP (Sectio		0	0	State Highway	Data	

AFTER		rs			n 148)				Agency		
SH96 SAFETY UPGRADE MP85.44-86.33	Roadside Barrier - cable	1 Miles	1057175	1057175	HSIP (Section 148)	Rural Minor Arterial	1280	0	State Highway Agency	Roadway Departure	
SAFETY TIERING LIST FY2016	Non-infrastructure Data/traffic records	1 Numbers	76150	76150	HSIP (Section 148)		0	0	State Highway Agency	Data	
MOVING TOWARDS ZERO DEATHS	Non-infrastructure Outreach	1 Numbers	49000	49000	HSIP (Section 148)		0	0	State Highway Agency	Data	
POWERS BLVD - BRADLEY & SB I-25 SIGNALS	Intersection traffic control Intersection traffic control - other	1 Numbers	843956	896651	HSIP (Section 148)	Urban Principal Arterial - Other Freeways and Expressways	15000	0	State Highway Agency	Intersections	

Progress in Achieving Safety Performance Targets

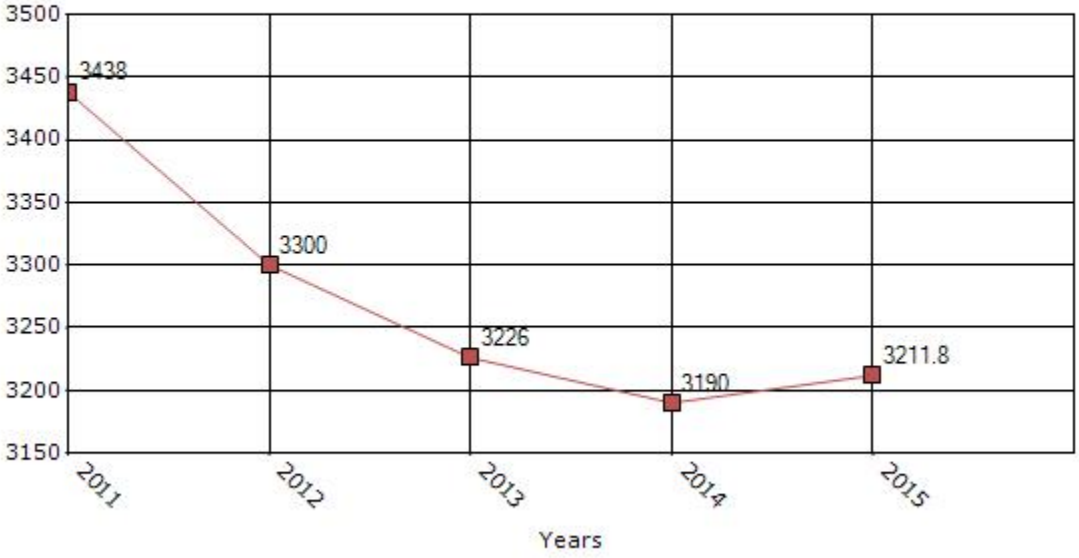
Overview of General Safety Trends

Present data showing the general highway safety trends in the state for the past five years.

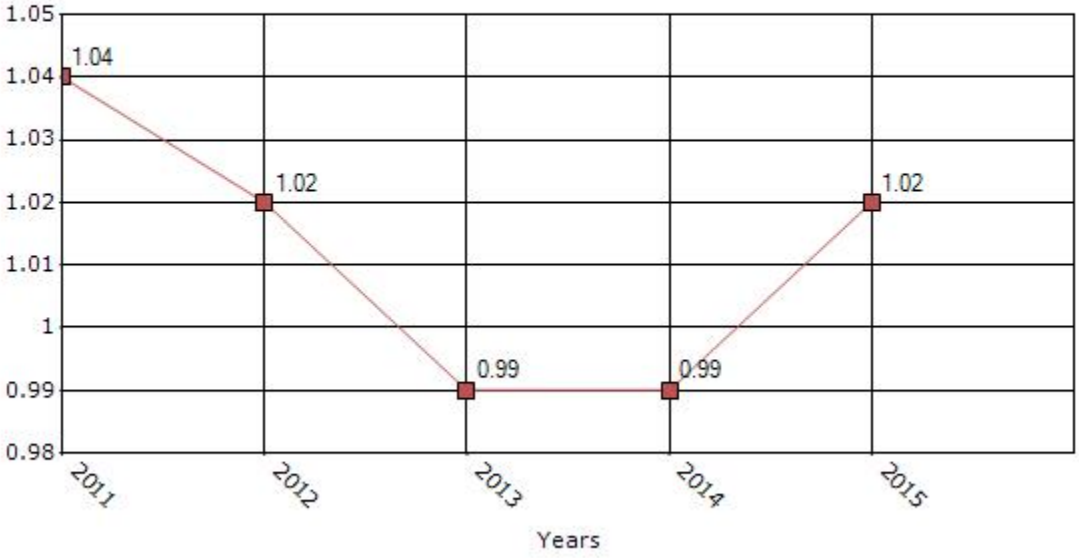
Performance Measures*	2011	2012	2013	2014	2015
Number of fatalities	493.2	477	463.6	468	487.4
Number of serious injuries	3438	3300	3226	3190	3211.8
Fatality rate (per HMVMT)	1.04	1.02	0.99	0.99	1.02
Serious injury rate (per HMVMT)	7.28	7.05	6.91	6.75	6.7

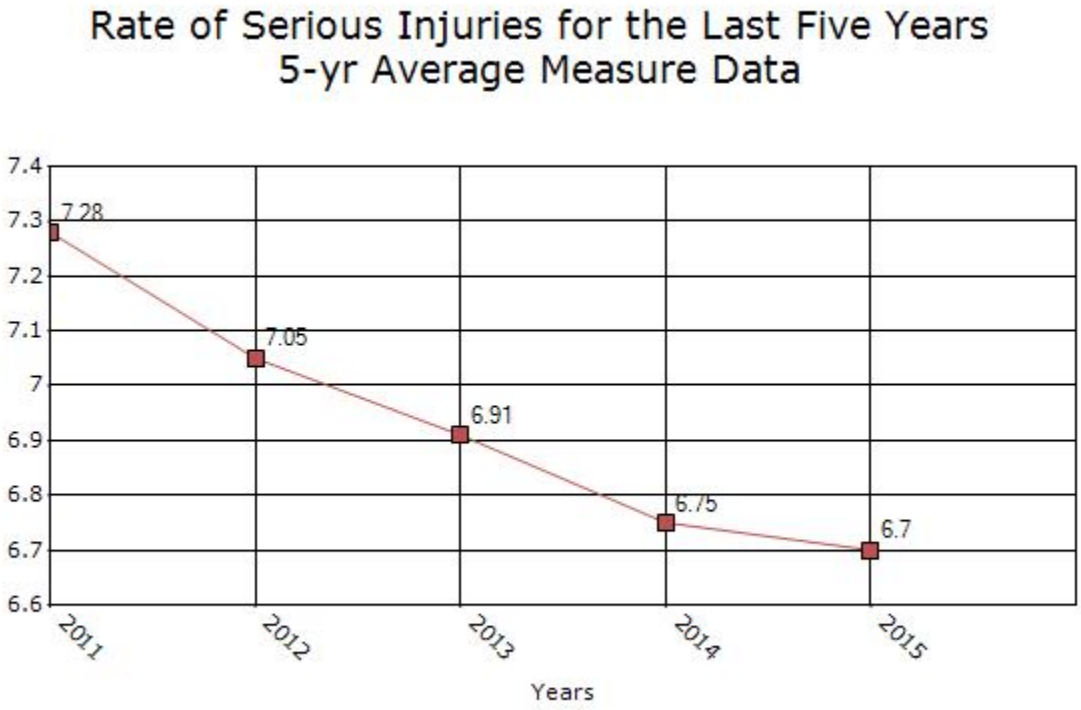
*Performance measure data is presented using a five-year rolling average.

Number of Serious Injuries for the Last Five Years
5-yr Average Measure Data



Rate of Fatalities for the Last Five Years
5-yr Average Measure Data



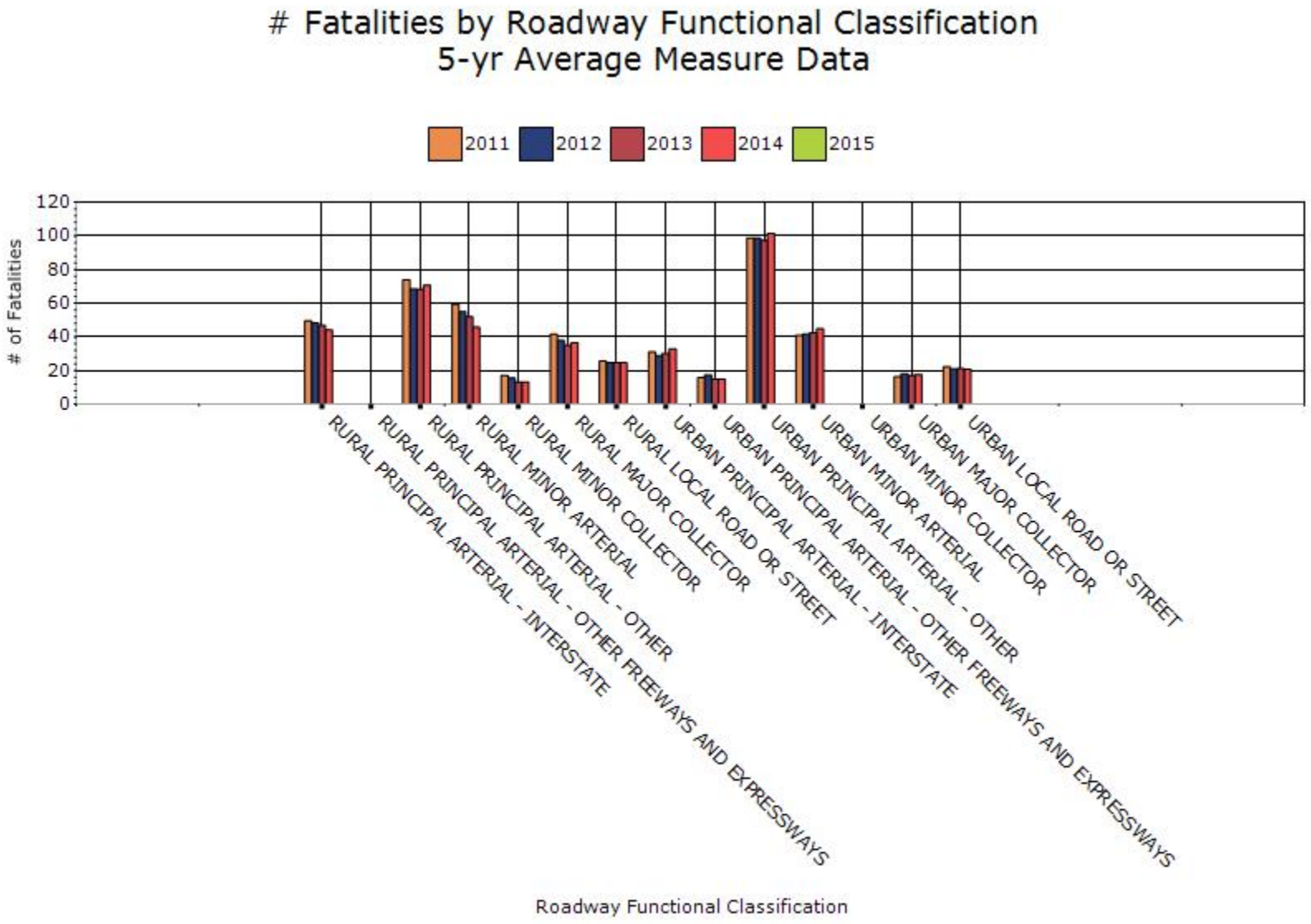

Rate of Serious Injuries for the Last Five Years
5-yr Average Measure Data
7.4
7.3
7.2
7.1
7
6.9
6.8
6.7
6.6
7.28
7.05
6.91
6.75
6.7
2011
2012
2013
2014
2015
Years

To the maximum extent possible, present performance measure* data by functional classification and ownership.

Year - 2014

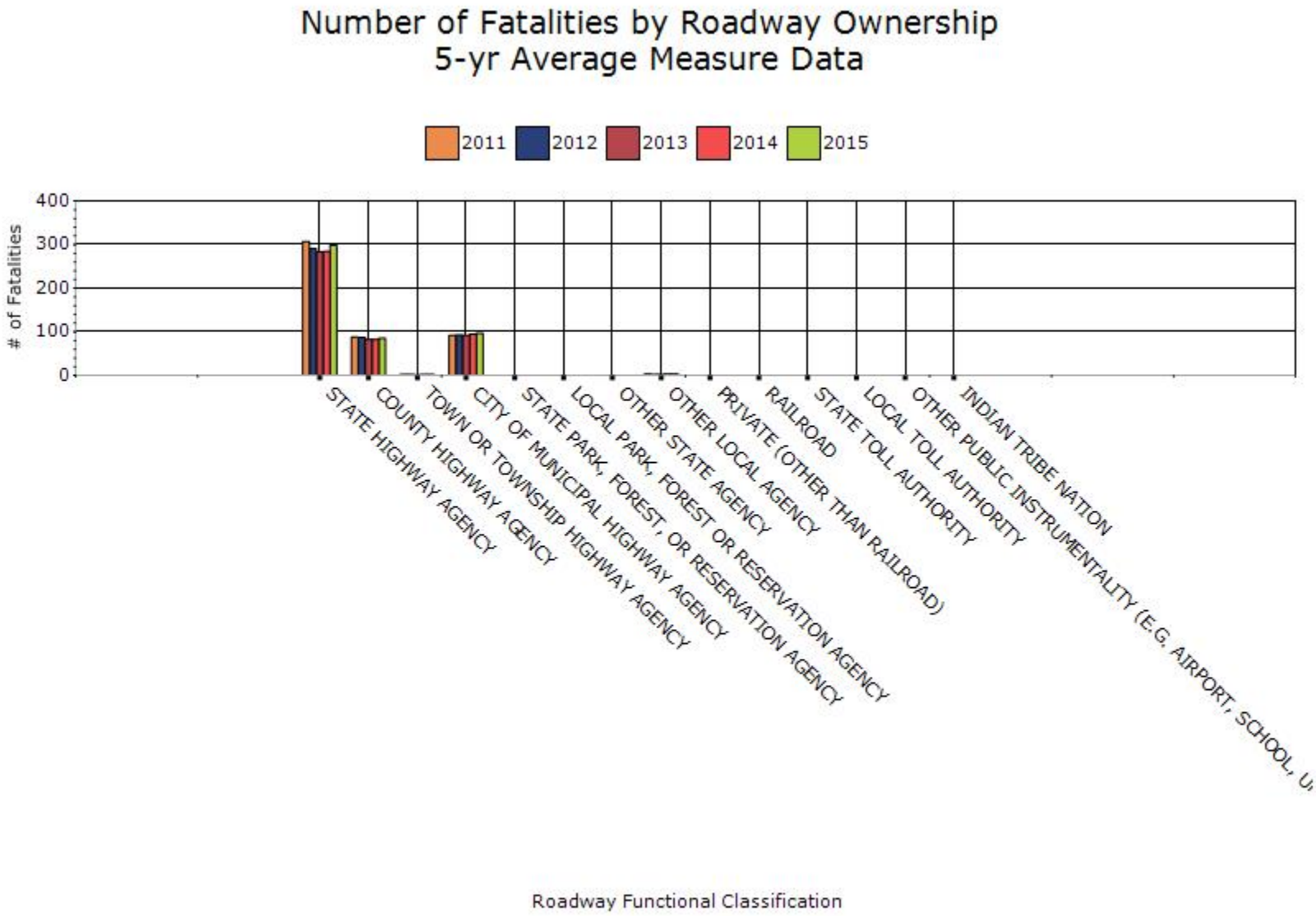
Function Classification	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
RURAL PRINCIPAL ARTERIAL - INTERSTATE	44.2			
RURAL PRINCIPAL ARTERIAL - OTHER	70.8			
RURAL MINOR ARTERIAL	45.8			
RURAL MINOR COLLECTOR	13.2			
RURAL MAJOR COLLECTOR	36.4			
RURAL LOCAL ROAD OR STREET	24.6			
URBAN PRINCIPAL ARTERIAL - INTERSTATE	32.8			
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	14.8			

URBAN PRINCIPAL ARTERIAL - OTHER	101.4			
URBAN MINOR ARTERIAL	44.8			
URBAN MAJOR COLLECTOR	17.6			
URBAN LOCAL ROAD OR STREET	20.8			


Fatalities by Roadway Functional Classification
5-yr Average Measure Data
2011
2012
2013
2014
2015
# of Fatalities
120
100
80
60
40
20
0
RURAL PRINCIPAL ARTERIAL - INTERSTATE
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS
RURAL PRINCIPAL ARTERIAL - OTHER
RURAL MINOR ARTERIAL
RURAL MINOR COLLECTOR
RURAL MAJOR COLLECTOR
RURAL LOCAL ROAD OR STREET
URBAN PRINCIPAL ARTERIAL - INTERSTATE
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS
URBAN PRINCIPAL ARTERIAL - OTHER
URBAN MINOR ARTERIAL
URBAN MINOR COLLECTOR
URBAN MAJOR COLLECTOR
URBAN LOCAL ROAD OR STREET
Roadway Functional Classification

Year - 2015

Roadway Ownership	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
STATE HIGHWAY AGENCY	298.8			
COUNTY HIGHWAY AGENCY	85.6			
TOWN OR TOWNSHIP HIGHWAY AGENCY	2.2			
CITY OF MUNICIPAL HIGHWAY AGENCY	97			
OTHER LOCAL AGENCY	3.4			


Number of Fatalities by Roadway Ownership
5-yr Average Measure Data
2011
2012
2013
2014
2015
# of Fatalities
400
300
200
100
0
STATE HIGHWAY AGENCY
COUNTY HIGHWAY AGENCY
TOWN OR TOWNSHIP HIGHWAY AGENCY
CITY OF MUNICIPAL HIGHWAY AGENCY
STATE PARK, FOREST, OR RESERVATION AGENCY
LOCAL PARK, FOREST OR RESERVATION AGENCY
OTHER STATE AGENCY
OTHER LOCAL AGENCY
PRIVATE (OTHER THAN RAILROAD)
RAILROAD
STATE TOLL AUTHORITY
LOCAL TOLL AUTHORITY
OTHER PUBLIC INSTRUMENTALITY (E.G. AIRPORT, SCHOOL, U
INDIAN TRIBE NATION
Roadway Functional Classification

Describe any other aspects of the general highway safety trends on which you would like to elaborate.

Following the trend seen across the country, fatalities have seen a noticeable increase in Colorado in 2015. Even with increased VMT, fatality rates have also increased. There were no specific areas where the increase of fatalities were over-represented. Serious injuries have remained relatively stable in this time with the rate continuing to decrease over the last several years.

Application of Special Rules

Present the rate of traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65.

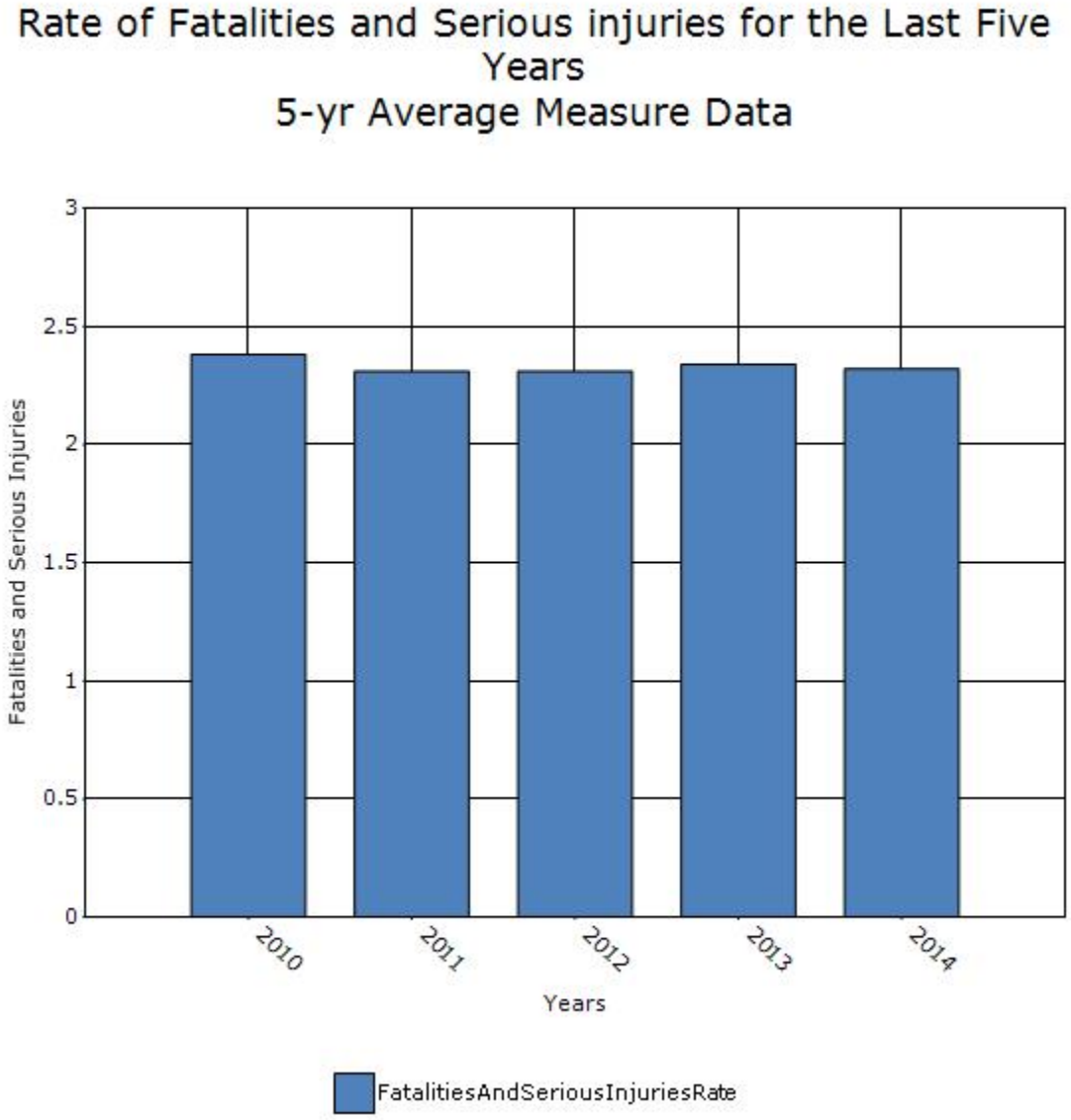
Older Driver Performance Measures	**2010**	**2011**	**2012**	**2013**	**2014**
Fatality rate (per capita)	0.52	0.51	0.49	0.48	0.45
Serious injury rate (per capita)	1.87	1.8	1.82	1.87	1.87
Fatality and serious injury rate (per capita)	2.38	2.31	2.31	2.34	2.32

*Performance measure data is presented using a five-year rolling average.

2009 Rate Example Equation:
2009 Fatality Rate (five year rolling average) = ((2009 FAT/2009 CAPITA)+(2008 FAT/2008 CAPITA)+(2007 FAT/2007 CAPITA)+(2006 FAT/2006 CAPITA)+(2005 FAT/2005 CAPITA))/5

2009 Serious Injury Rate (five year rolling average) = ((2009 INJ/2009 CAPITA)+(2008 INJ/2008 CAPITA)+(2007 INJ/2007 CAPITA)+(2006 INJ/2006 CAPITA)+(2005 INJ/2005 CAPITA))/5

2009 Fatality and Serious Injury Rate (five year rolling average) = 2009 Fatality Rate (five year rolling average)+2009 Serious Injury Rate (five year rolling average)



Does the older driver special rule apply to your state?

No

Assessment of the Effectiveness of the Improvements (Program Evaluation)

What indicators of success can you use to demonstrate effectiveness and success in the Highway Safety Improvement Program?

Benefit/cost

If 'benefit/cost', indicate the overall Highway Safety Improvement Program benefit/cost ratio.

FY2016 B/C = 3.53

Other-Long-term decreasing trend in fatalities& serious injuries

What significant programmatic changes have occurred since the last reporting period?

Other-Section 164 Penalty Funds

Briefly describe significant program changes that have occurred since the last reporting period.

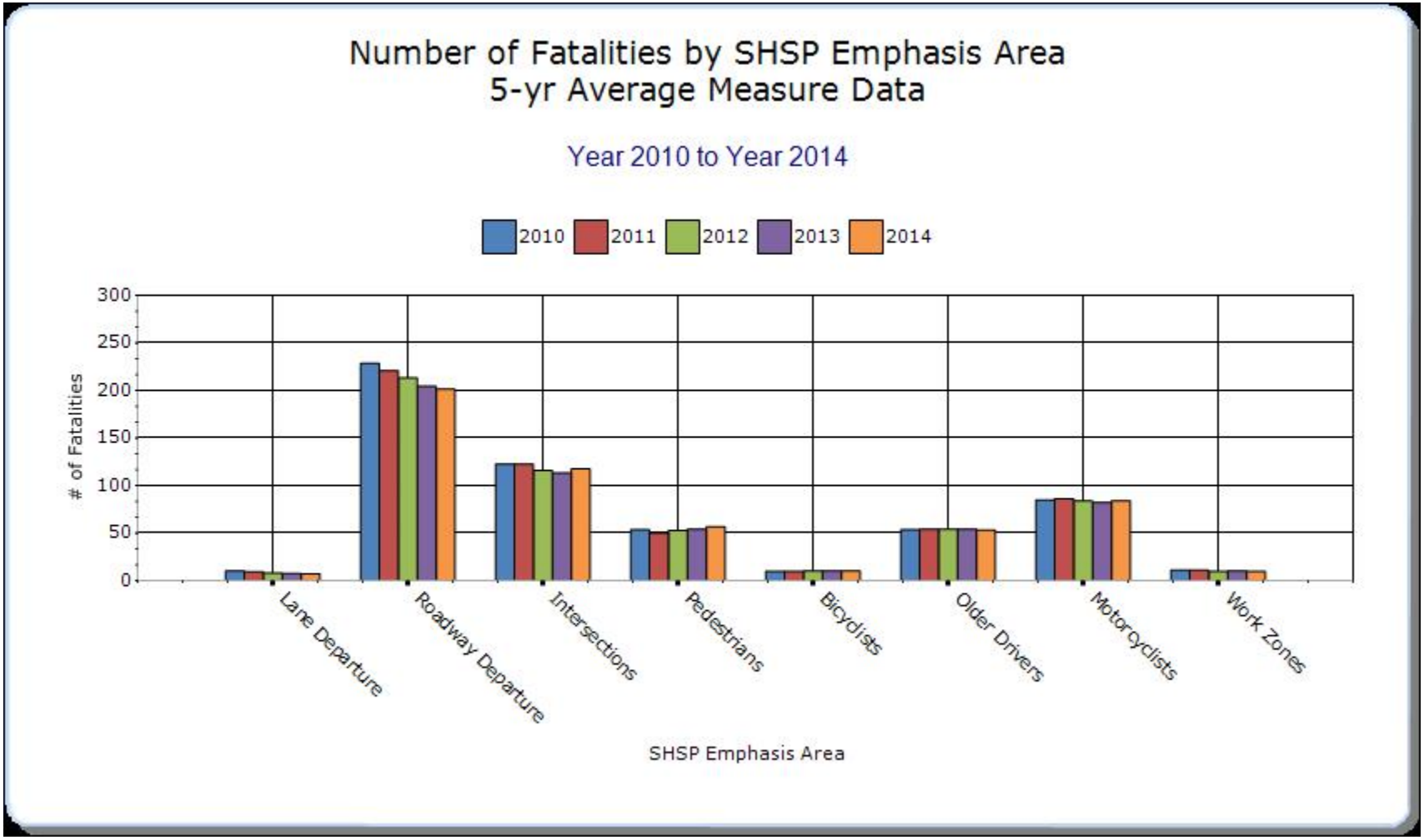
In FY 2016, Colorado was notified as being non-compliant with 23 U.S.C. Section 164. CDOT requested that 100% of the penalty amount be shifted from the National Highway Preservation Program (NHPP) and 100% of those funds be assigned to the Highway Safety Improvement Program (HSIP). The funding assigned to the HSIP will be used for eligible activities described in 23 U.S.C. Section 148 to correct hazardous locations, reduce identified safety problems, proactively address safety risks, and address safety emphasis areas identified in the State Strategic Highway Safety Plan.

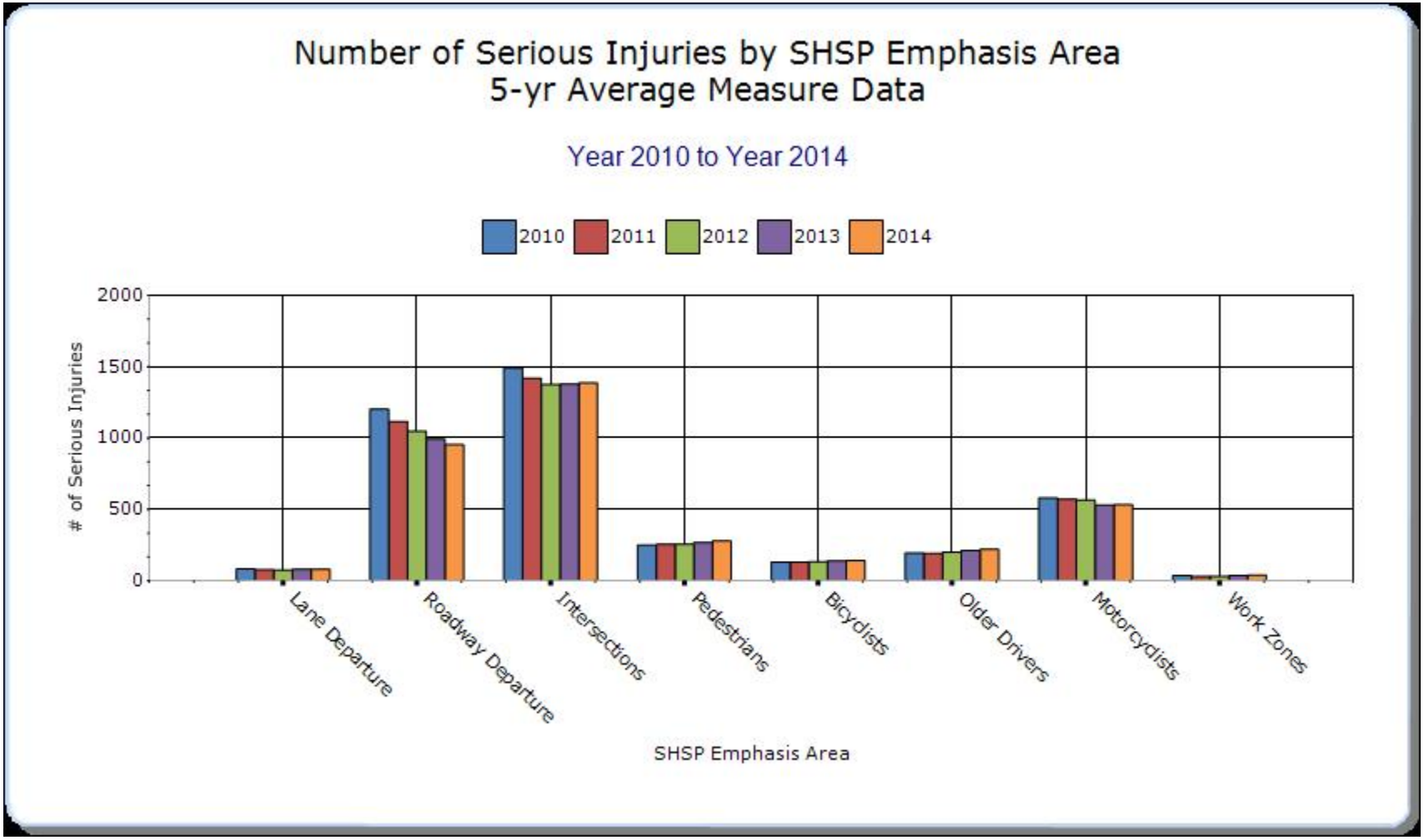
SHSP Emphasis Areas

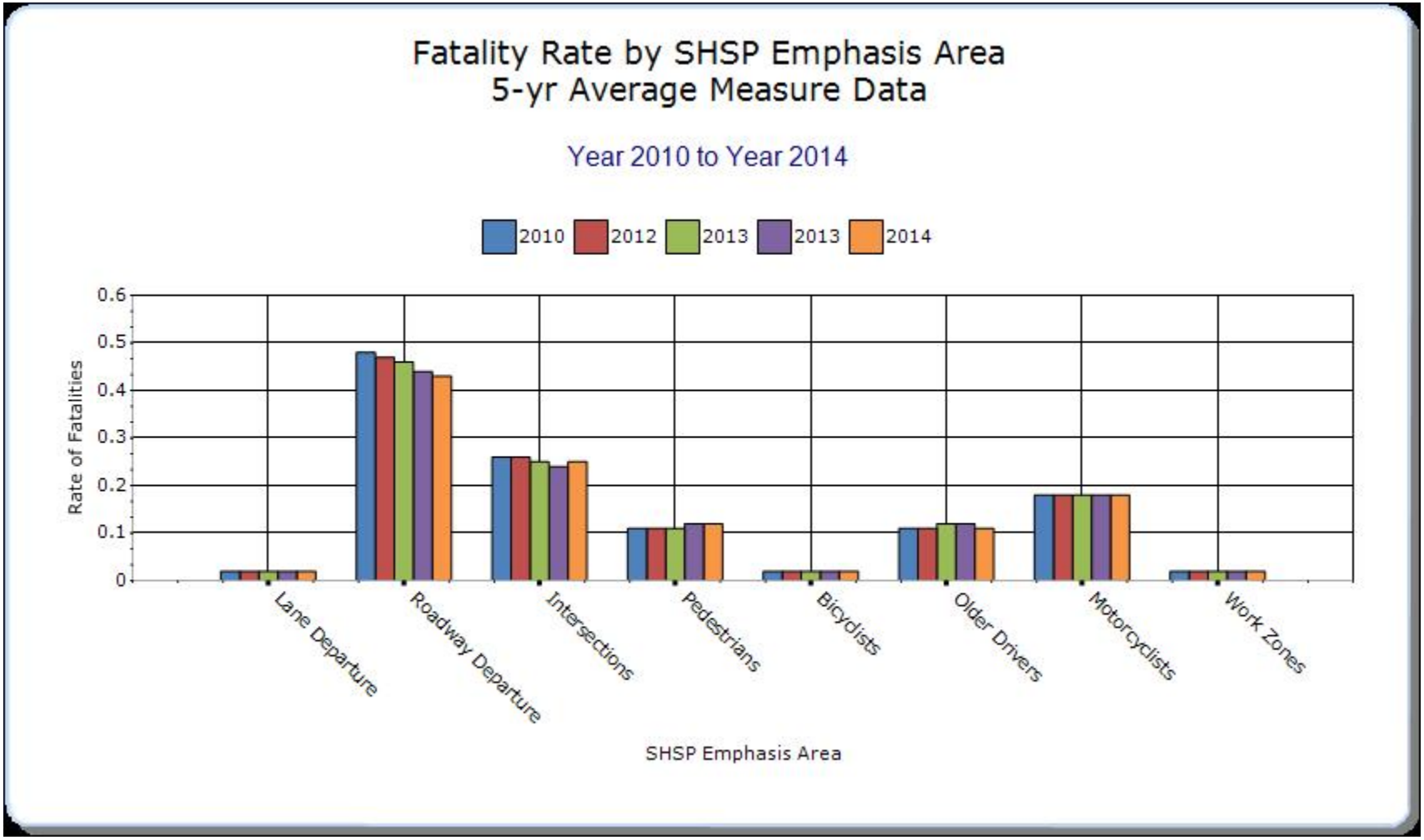
For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.

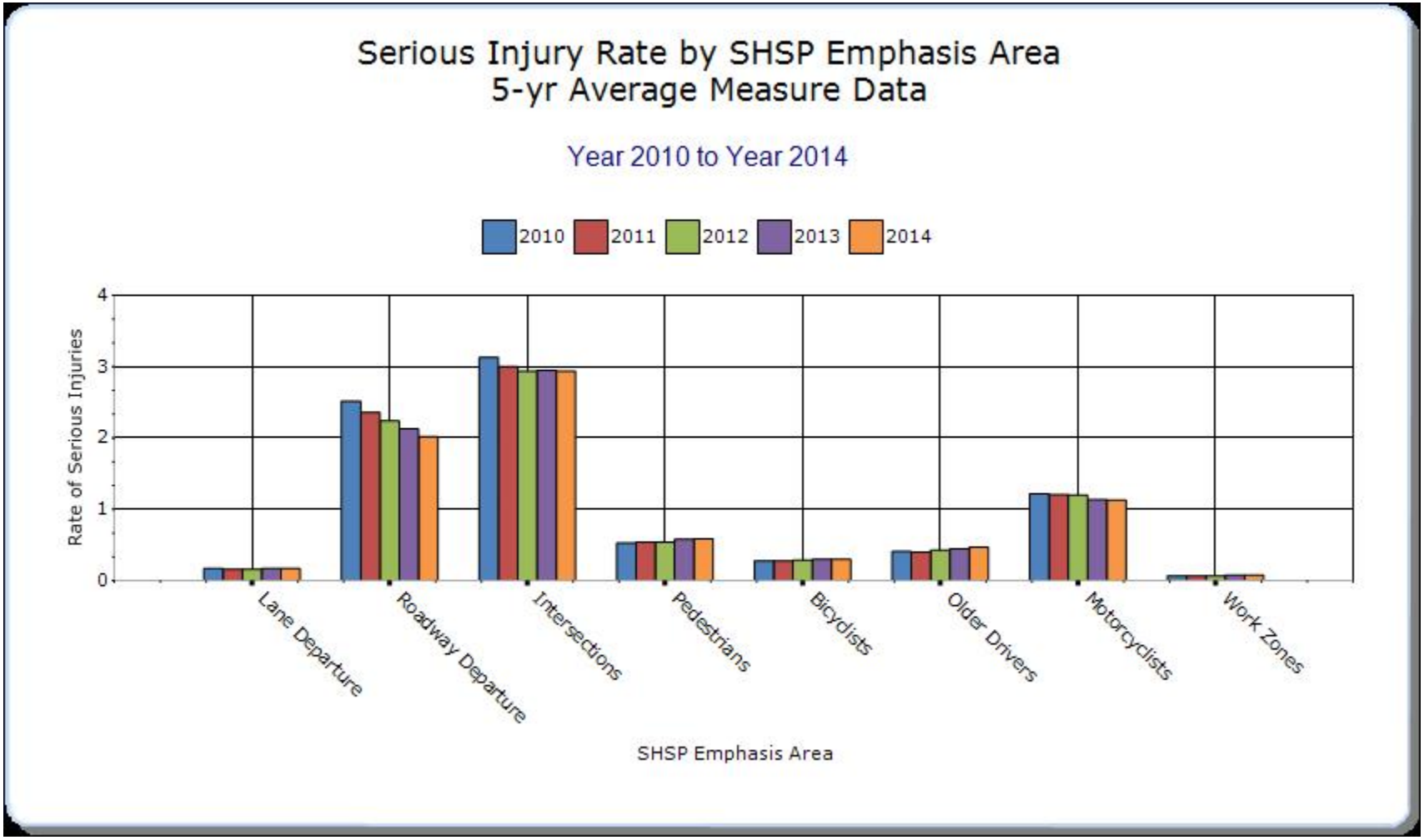
Year - 2014

HSIP-related SHSP Emphasis Areas	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Lane Departure		7.2	80.8	0.02	0.17			
Roadway Departure		201.4	953.6	0.43	2.02			
Intersections		117.6	1387.4	0.25	2.94			
Pedestrians		56.8	278.4	0.12	0.59			
Bicyclists		10.2	141.4	0.02	0.3			
Older Drivers		53.2	220	0.11	0.47			
Motorcyclists		84.2	533.2	0.18	1.13			
Work Zones		9.8	38.8	0.02	0.08			


Number of Fatalities by SHSP Emphasis Area
5-yr Average Measure Data
Year 2010 to Year 2014
2010
2011
2012
2013
2014
300
250
200
150
100
50
0
# of Fatalities
Lane Departure
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
SHSP Emphasis Area


Number of Serious Injuries by SHSP Emphasis Area
5-yr Average Measure Data
Year 2010 to Year 2014
2010
2011
2012
2013
2014
2000
1500
1000
500
0
# of Serious Injuries
Lane Departure
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
SHSP Emphasis Area


Fatality Rate by SHSP Emphasis Area
5-yr Average Measure Data
Year 2010 to Year 2014
2010
2012
2013
2013
2014
Rate of Fatalities
0.6
0.5
0.4
0.3
0.2
0.1
0
Lane Departure
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
SHSP Emphasis Area

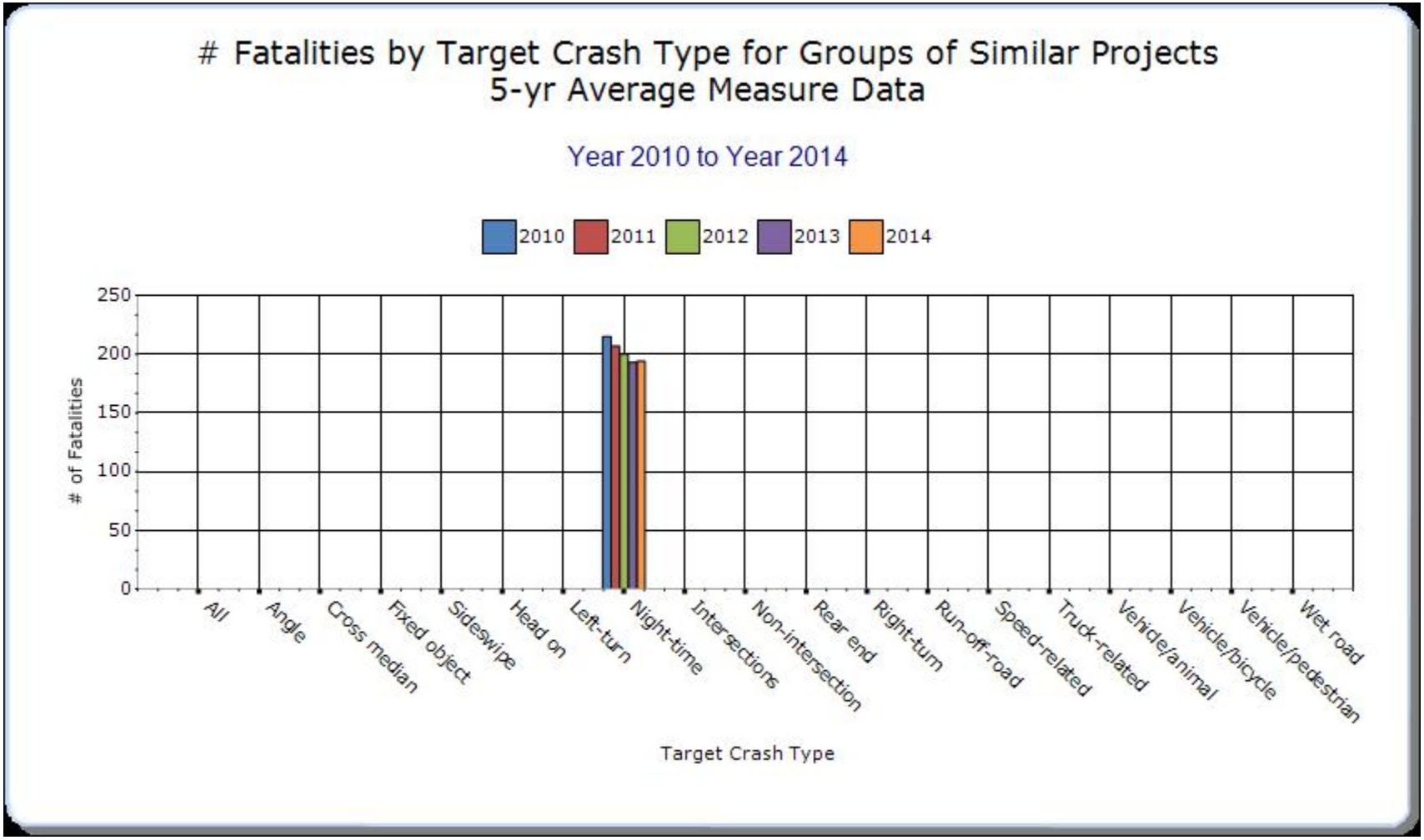


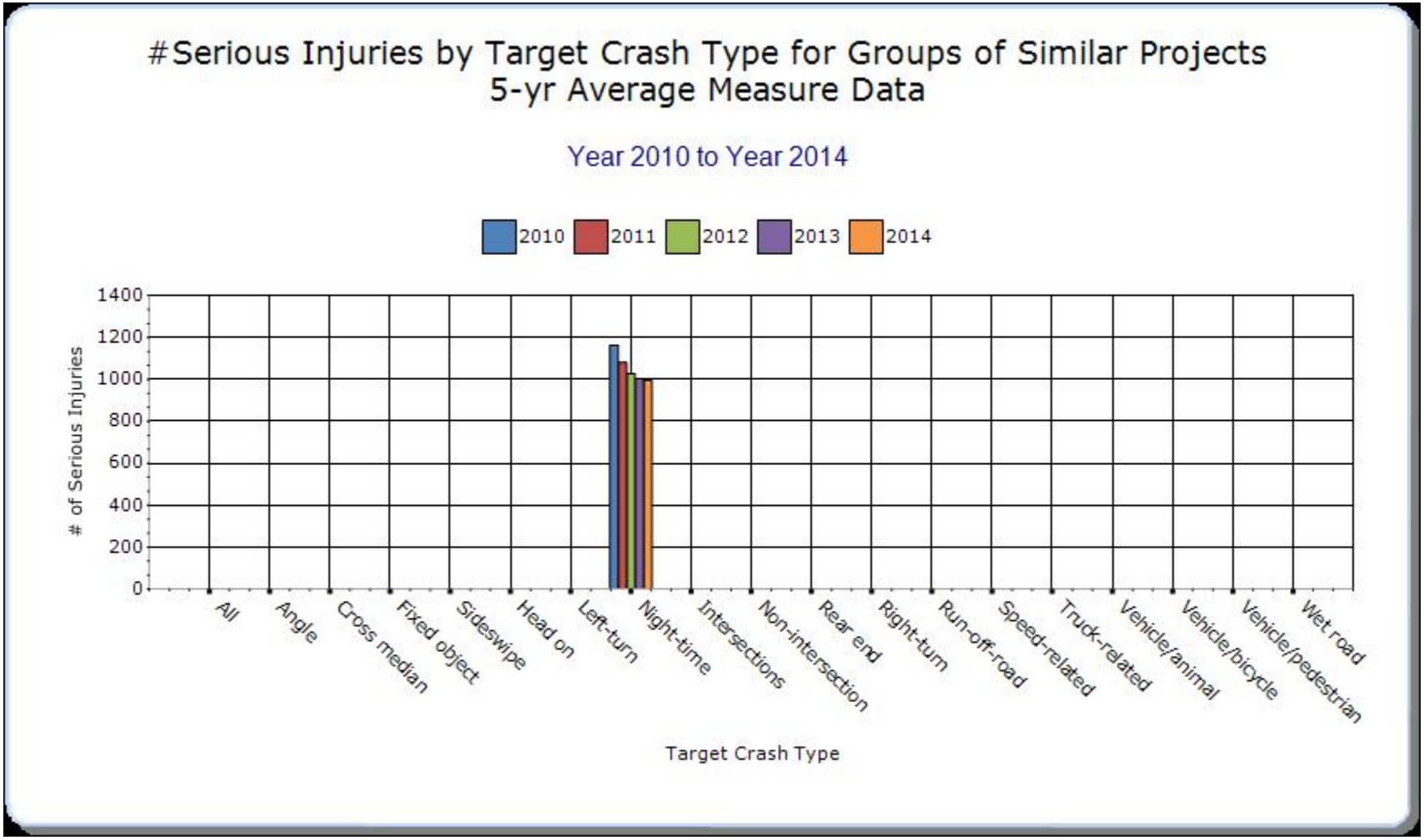
Groups of similar project types

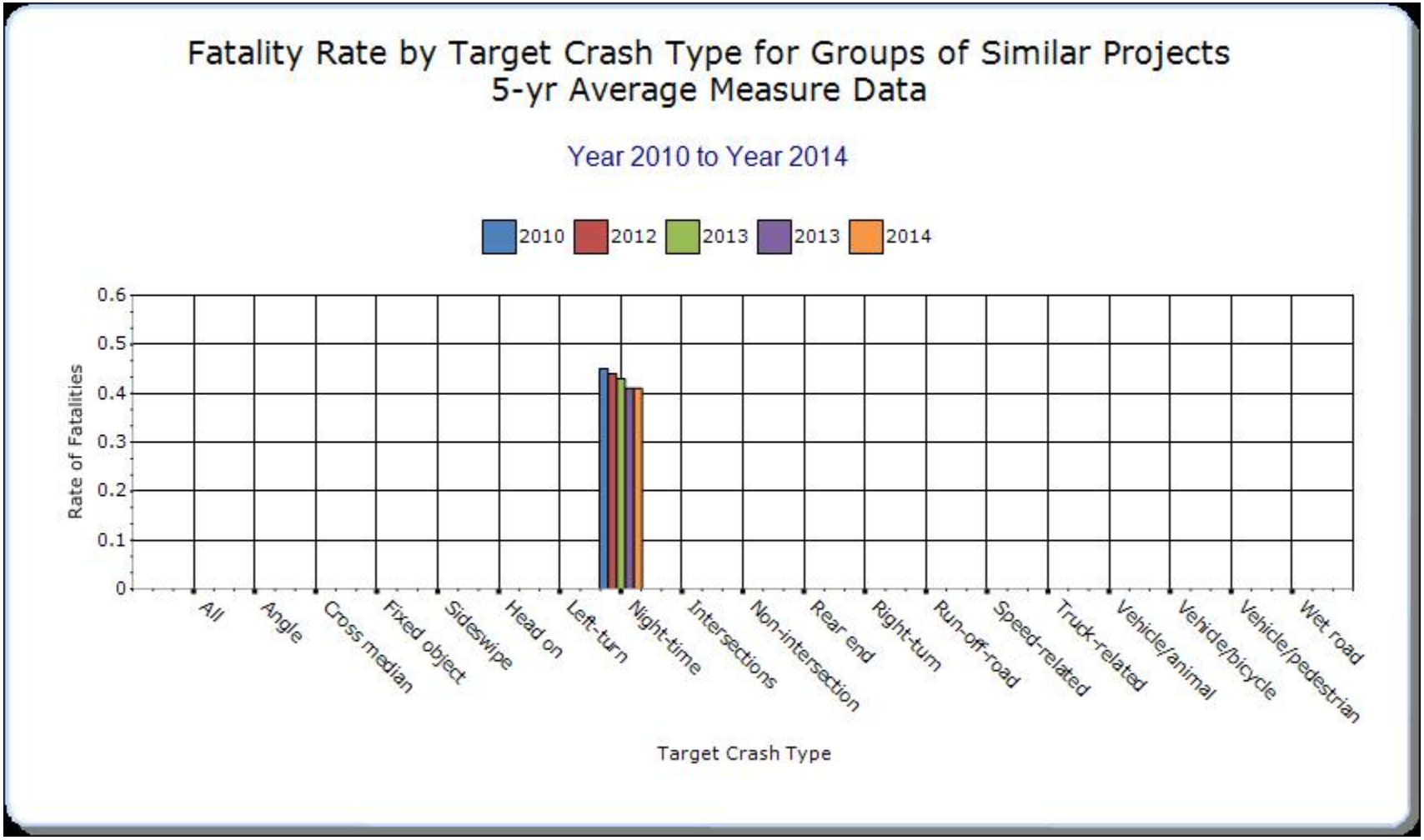
Present the overall effectiveness of groups of similar types of projects.

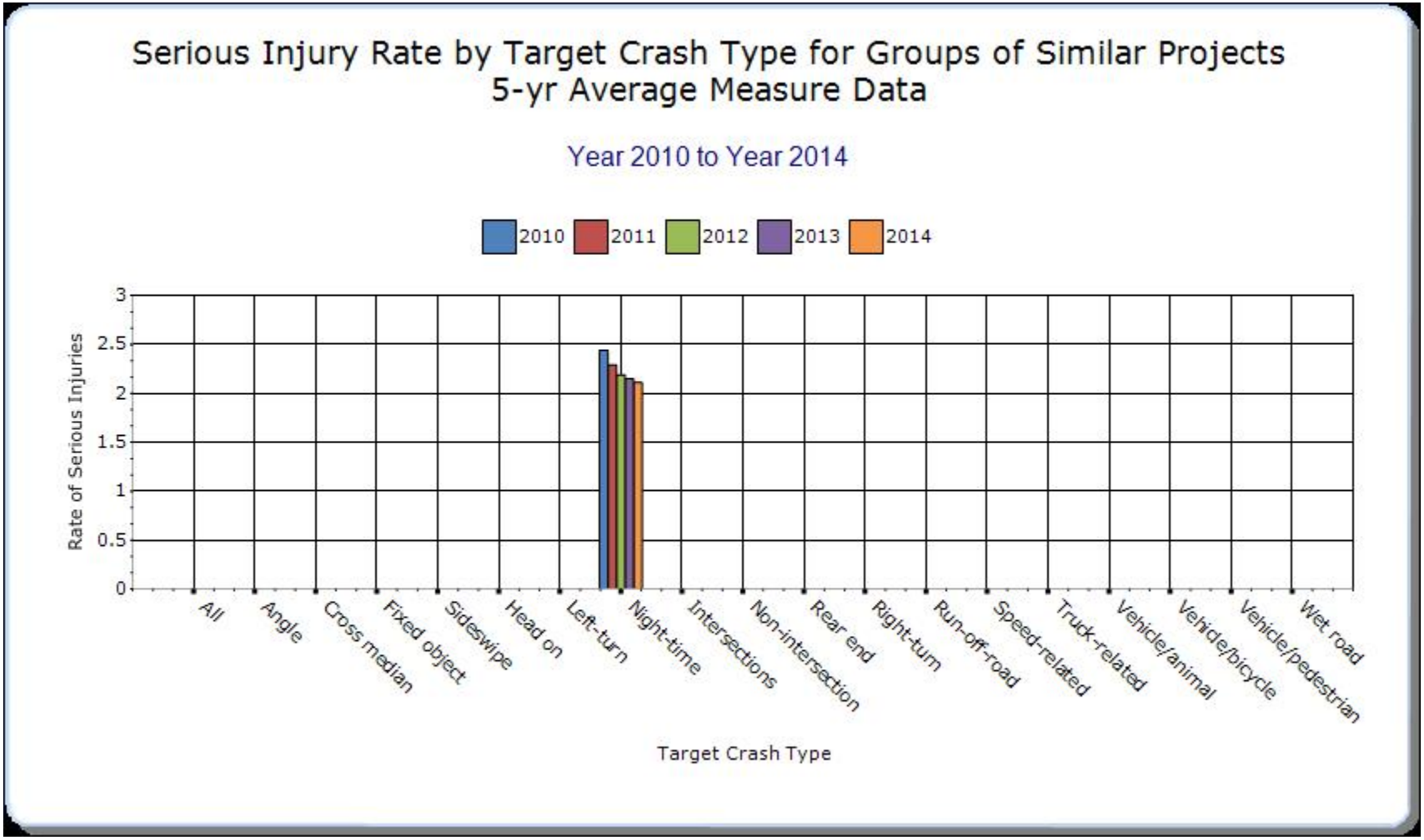
Year - 2014

HSIP Sub-program Types	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Other-General	Night-time	194	995	0.41	2.11			


Fatalities by Target Crash Type for Groups of Similar Projects
5-yr Average Measure Data
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Fatalities
250
200
150
100
50
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type


#Serious Injuries by Target Crash Type for Groups of Similar Projects
5-yr Average Measure Data
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Serious Injuries
1400
1200
1000
800
600
400
200
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type


Fatality Rate by Target Crash Type for Groups of Similar Projects
5-yr Average Measure Data
Year 2010 to Year 2014
2010
2012
2013
2013
2014
Rate of Fatalities
0.6
0.5
0.4
0.3
0.2
0.1
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type



Systemic Treatments

Present the overall effectiveness of systemic treatments.

Systemic improvement	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
SKIP	Systemic treatment program is currently under ongoing study and development.							

Describe any other aspects of the overall Highway Safety Improvement Program effectiveness on which you would like to elaborate.

The HSIP program will be running a new local agency solicitation in late 2016 to increase safety improvements along off system locations across Colorado. A new HSIP procedure manual will be released this year to help guide the local agencies through the application and evaluation process. The implementation of the SHSP will also aid in this effort, as emphasis area teams will meet and focus on future strategies to reduce fatalities and serious injuries for their respective areas.

Project Evaluation

Provide project evaluation data for completed projects (optional).

Location	Functional Class	Improvement Category	Improvement Type	Bef-Fatal	Bef-Serious Injury	Bef-All Injuries	Bef-PDO	Bef-Total	Aft-Fatal	Aft-Serious Injury	Aft-All Injuries	Aft-PDO	Aft-Total	Evaluation Results (Benefit/ Cost Ratio)
SH 165 MP 18.65-23.90 Pueblo County	Rural Major Collector	Roadside	Barrier - Other	1	2	9	8	20			3	2	5	12.67

Optional Attachments

Sections	Files Attached

Glossary

5 year rolling average means the average of five individual, consecutive annual points of data (e.g. annual fatality rate).
Emphasis area means a highway safety priority in a State's SHSP, identified through a data-driven, collaborative process.
Highway safety improvement project means strategies, activities and projects on a public road that are consistent with a State strategic highway safety plan and corrects or improves a hazardous road location or feature or addresses a highway safety problem.
HMVMT means hundred million vehicle miles traveled.
Non-infrastructure projects are projects that do not result in construction. Examples of non-infrastructure projects include road safety audits, transportation safety planning activities, improvements in the collection and analysis of data, education and outreach, and enforcement activities.
Older driver special rule applies if traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65 in a State increases during the most recent 2-year period for which data are available, as defined in the Older Driver and Pedestrian Special Rule Interim Guidance dated February 13, 2013.
Performance measure means indicators that enable decision-makers and other stakeholders to monitor changes in system condition and performance against established visions, goals, and objectives.
Programmed funds mean those funds that have been programmed in the Statewide Transportation Improvement Program (STIP) to be expended on highway safety improvement projects.
Roadway Functional Classification means the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide.
Strategic Highway Safety Plan (SHSP) means a comprehensive, multi-disciplinary plan, based on safety data developed by a State Department of Transportation in accordance with 23 U.S.C. 148.
Systematic refers to an approach where an agency deploys countermeasures at all locations across a system.
Systemic safety improvement means an improvement that is widely implemented based on high risk roadway features that are correlated with specific severe crash types.
Transfer means, in accordance with provisions of 23 U.S.C. 126, a State may transfer from an apportionment under section 104(b) not to exceed 50 percent of the amount apportioned for the fiscal year to any other apportionment of the State under that section.