Highway Safety Improvement Program

Data Driven Decisions

Colorado
Highway Safety Improvement Program
2013 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

The general trend in fatal crash reduction experienced on Colorado roadways has continued in the most recent reporting period. In recent years the numbers of fatalities from crashes has fallen from 743 in 2003 to less than 500 per year since 2009. This positive outcome can be, in part, attributed to the FHWA's focus on improving transportation safety and their support and promotion of this goal through the HSIP funding. Colorado's Strategic Highway Safety Plan (SHSP) emphasizes the goal of crash reduction and includes, among other performance measures, reducing fatal and injury crash rates from a 1995 base year level. Colorado has continued to progress in meeting these goals by effectively utilizing HSIP resources to incorporate safety improvements across a broad range of maintenance, safety and even non-safety-specific projects. Innovative methodologies have been developed and used by CDOT to identify locations, on a statewide scale, with the greatest potential for crash reduction. Crash data processing has improved considerably over the last few years. The increase in completeness, accuracy and timeliness has significantly improved crash data analysis and network screening. In combination with HSIP funding, these procedures have been applied to the selection of highly cost-effective safety improvement projects constructed under the Federal Hazard Elimination Program. An updated SHSP is anticipated to be implemented within the next fiscal year. This new SHSP will provide a detailed analysis of safety performance measures and will focus on additional emphasis areas in order to provide guidance on how to reduce severe crashes across the state.

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

☐ District

☐ Other

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 also solicited from local authorities through the various MPOs 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

☐Maintenance

☒Operations

☒Governors Highway Safety Office

☒Other: Other-Regional Traffic Operational and Design Units

☒Other: Other-Headquarters Safety and Traffic Engineering Branch

☒Other: Other-Office of Finance Management & Budget

Briefly describe coordination with internal partners.

A statewide composite listing of high hazard locations is compiled for all highway segments and intersections performing at a sub-standard level of service of safety (LOSS) as well as identifying accident patterns that are overrepresented at those locations. This listing is then stratified by the Region and provided to the appropriate CDOT Regions and Local Agencies for review. The initial candidate listing of high hazard locations is reviewed by each Regional traffic engineering unit. The Regions use the high hazard 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 project submittals. The Region may also choose to nominate other safety project locations besides those mentioned on the listing. Any regional nominations not on the list will still need to meet the criteria discussed above.

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

☒Metropolitan Planning Organizations

☒Governors Highway Safety Office

☒Local Government Association

☒Other: Other-Local Municipalities

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

☐Multi-disciplinary HSIP steering committee

☒Other: Other-Strategic Highway Safety Plan (SHSP)

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

An updated Colorado SHSP is anticipated to be implemented within the next fiscal year. This new SHSP will provide a detailed analysis of safety performance measures and will focus on additional emphasis areas in order to provide guidance on how to reduce severe crashes across the state.

Program Methodology

Select the programs that are administered under the HSIP.

☐Median Barrier	☐Intersection	☐Safe Corridor
☐Horizontal Curve	☐Bicycle Safety	☐Rural State Highways
☐Skid Hazard	☐Crash Data	☐Red Light Running Prevention

☐ Roadway Departure
☐ Low-Cost Spot Improvements
☐ Sign Replacement And Improvement
☐ Local Safety
☐ Pedestrian Safety
☐ Right Angle Crash
☐ Left Turn Crash
☐ Shoulder Improvement
☐ Segments
☒ Other: Other-Hazard Elimination

Program: **Other-Hazard Elimination**

Date of Program Methodology: **1/1/2000**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☒ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☒ Volume	☐ Horizontal curvature
☐ Fatal and serious injury crashes only	☐ Population	☒ Functional classification
☐ Other	☒ Lane miles	☐ Roadside features
	☐ Other	☒ Other-Terrain
		☒ Other-Number of Lanes

What project identification methodology was used for this program?

☒ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☐ Critical rate

☒ Level of service of safety (LOSS)

☒ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☒ Probability of specific crash types

☐ Excess proportions of specific crash types

☐ Other

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

☒ Yes

☐ No

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

☒ Yes

☐ No

How are highway safety improvement projects advanced for implementation?

☒ Competitive application process

☐ selection committee

☐ Other

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).

☐ Relative Weight in Scoring

☒ Rank of Priority Consideration

- ☒ Ranking based on B/C 2
- ☒ Available funding 1
- ☐ Incremental B/C
- ☐ Ranking based on net benefit
- ☐ Cost Effectiveness

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

5

Highway safety improvment program funds are used to address which of the following systemic improvments?

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

☒Add/Upgrade/Modify/Remove Traffic Signal ☐Other

What process is used to identify potential countermeasures?

☒Engineering Study

☒Road Safety Assessment

☒Other: Other-Requests for investigation by local agencies

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

☒Highway Safety Manual

☐Road Safety audits

☒Systemic Approach

☐Other:

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

A location does not need to be on a listing of high harzard locations to be considered for HSIP funding. Any local agency can initiate a request through their Regional office to see if a safety improvement for a public road can qualify for HSIP funding. The same methodology is applied to these potential safety improvements.

Progress in Implementing Projects

Funds Programmed

Reporting period for Highway Safety Improvement Program funding.

☐ Calendar Year

☒ State Fiscal Year

☐ Federal Fiscal Year

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

Funding Category	Programmed*		Obligated	
HSIP (Section 148)	33784197	93 %	13640220	82 %
HRRRP (SAFETEA-LU)	0	0 %	1308686	8 %
HRRR Special Rule				
Penalty Transfer - Section 154	0	0 %	577239	3 %
Penalty Transfer – Section 164				
Incentive Grants - Section 163				
Incentive Grants (Section 406)				

Other Federal-aid Funds (i.e. STP, NHPP)				
State and Local Funds	2453947.84	7 %	1066679.84	6 %
Totals	36238144.84	100%	16592824.84	100%

How much funding is programmed to local (non-state owned and maintained) safety projects?

50 %

How much funding is obligated to local safety projects?

30 %

How much funding is programmed to non-infrastructure safety projects?

10 %

How much funding is obligated to non-infrastructure safety projects?

10 %

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.

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. The plan includes identifying projects in advance for future fiscal years and funding projects in phases in order to obligate funds in the year that they are being spent.

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

A revised general budget process at CDOT will be implemented which will allow obligation of HSIP funding to be processed more efficiently.

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
US 85 Cable Rail, Ft. Lupton North	Roadside Barrier - cable	8 Miles	2594400	3143960	HSIP (Section 148)	Rural Principal Arterial - Other Freeways and Expressways	17200	65	State Highway Agency	Reducing head-on and across-median crashes	Highway Segments
SH 82 and JW Drive Improvements	Intersection geometry Auxiliary lanes - add acceleration lane	1 Numbers	2134000	7212202	HSIP (Section 148)	Urban Principal Arterial - Other	29000	55	State Highway Agency	Improving the design and operation of highway intersections	Intersection Related
SH285: MEDIAN	Roadside Barrier -	8 Miles	12287	138328	HSIP (Sectio	Rural Principal	250	55	State Highway	Reducing head-on	Highway Segment

CABLE RAIL	cable		53	8	n 148)	Arterial - Other	00		Agency	and across-median crashes	s
I-70 Wildlife Fencing MP 87-96	Animal-related	9 Miles	2700000	3697751	HSIP (Section 148)	Rural Principal Arterial - Interstate	17000	75	State Highway Agency	Wild Animals	Wild Animals
WIDENING SH45 TO ADD TURNING LANES	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	1532863	2306642	HSIP (Section 148)	Urban Principal Arterial - Other Freeways and Expressways	24500	45	State Highway Agency	Improving the design and operation of highway intersections	Intersection Related
SIGNALS:SH 121,128, 88, C470	Intersection traffic control Modify traffic signal - modify signal mounting (spanwire to mast arm)	4 Numbers	1382726	1568715	HSIP (Section 148)	Urban Principal Arterial - Other Freeways and Expressways			State Highway Agency	Improving the design and operation of highway intersections	Intersection Related

US 85 Bypass 5th to US 34 Bridges & Surf	Intersection traffic control Modify traffic signal timing - left-turn phasing (permissive to protected-only)	1 Numbers	700000	1678385	HSIP (Section 148)	Urban Principal Arterial - Other Freeways and Expressways	28000	45	State Highway Agency	Improving the design and operation of highway intersections	Intersection Related
SH88: ACCEL/DECEL & SIGNAL IMPROVEMENTS	Intersection geometry Auxiliary lanes - add acceleration lane	4 Numbers	775000	2622550	HSIP (Section 148)	Urban Principal Arterial - Other Freeways and Expressways	60000	55	State Highway Agency	Improving the design and operation of highway intersections	Intersection Related
ITS VM SIGNS ON I-25 AND C470	Advanced technology and ITS Dynamic message signs	2 Numbers	667885	799885	HSIP (Section 148)	Urban Principal Arterial - Interstate			State Highway Agency	Improving information and decision support systems	Highway Segments
SH115 Center Lane Ext. & Inter. Improv.	Intersection geometry Auxiliary lanes - add two-way left-turn	1 Miles	599035	2527115	HSIP (Section 148)	Urban Minor Arterial	7000	40	State Highway Agency	Improving the design	Intersection Related

	lane									and operation of highway intersections	
I-76 CABLERAIL: BROMLEY TO LOCHBUIE	Roadside Barrier - cable	3 Miles	578898	662847	HSIP (Section 148)	Rural Principal Arterial - Interstate	18000	75	State Highway Agency	Reducing head-on and across-median crashes	Highway Segments
US6(VASQUEZ): I70 TO I76 OVERLAY	Intersection traffic control Modify traffic signal - modify signal mounting (spanwire to mast arm)	1 Numbers	522437	8786684	HSIP (Section 148)	Urban Principal Arterial - Other	29000	45	State Highway Agency	Improving the design and operation of highway intersections	Intersection Related
SH 66 Roadway/Intersection Improvements	Intersection geometry Auxiliary lanes - add left-turn lane	3 Numbers	1860000	3619136	HSIP (Section 148)	Rural Minor Arterial	7000	65	State Highway Agency	Improving the design and operation of	Intersection Related

										highway intersections	
US 85 AT BROMLEY AD/CONST (BY BRIGHTON)	Intersection traffic control Modify traffic signal - modernization/replacement	1 Numbers	531846	1948742	HSIP (Section 148)	Urban Principal Arterial - Other Freeways and Expressways	32000	65	State Highway Agency	Improving the design and operation of highway intersections	Intersection Related
I-70:EB OPERATIONS	Roadway Roadway widening - add lane(s) along segment	3 Miles	313201	313201	HSIP (Section 148)	Rural Principal Arterial - Interstate	27500	65	State Highway Agency	Keeping vehicles in the roadway	Highway Segments
EXPOSITION & MISS ON KIPLING SIGNALS	Intersection traffic control Modify traffic signal - modernization/replacement	2 Numbers	725900	725900	HSIP (Section 148)	Urban Principal Arterial - Other	37000	45	State Highway Agency	Improving the design and operation of highway intersections	Intersection Related

Progress in Achieving Safety Performance Targets

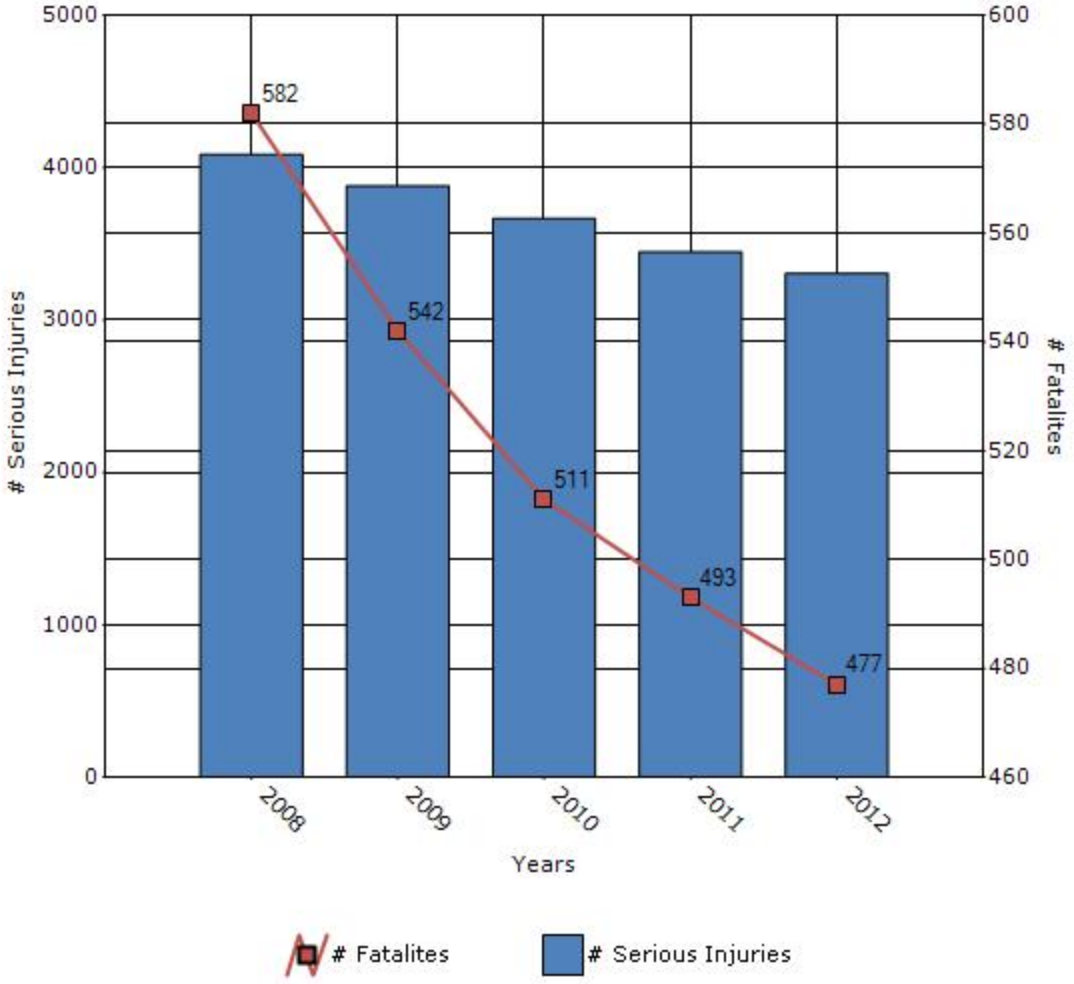
Overview of General Safety Trends

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

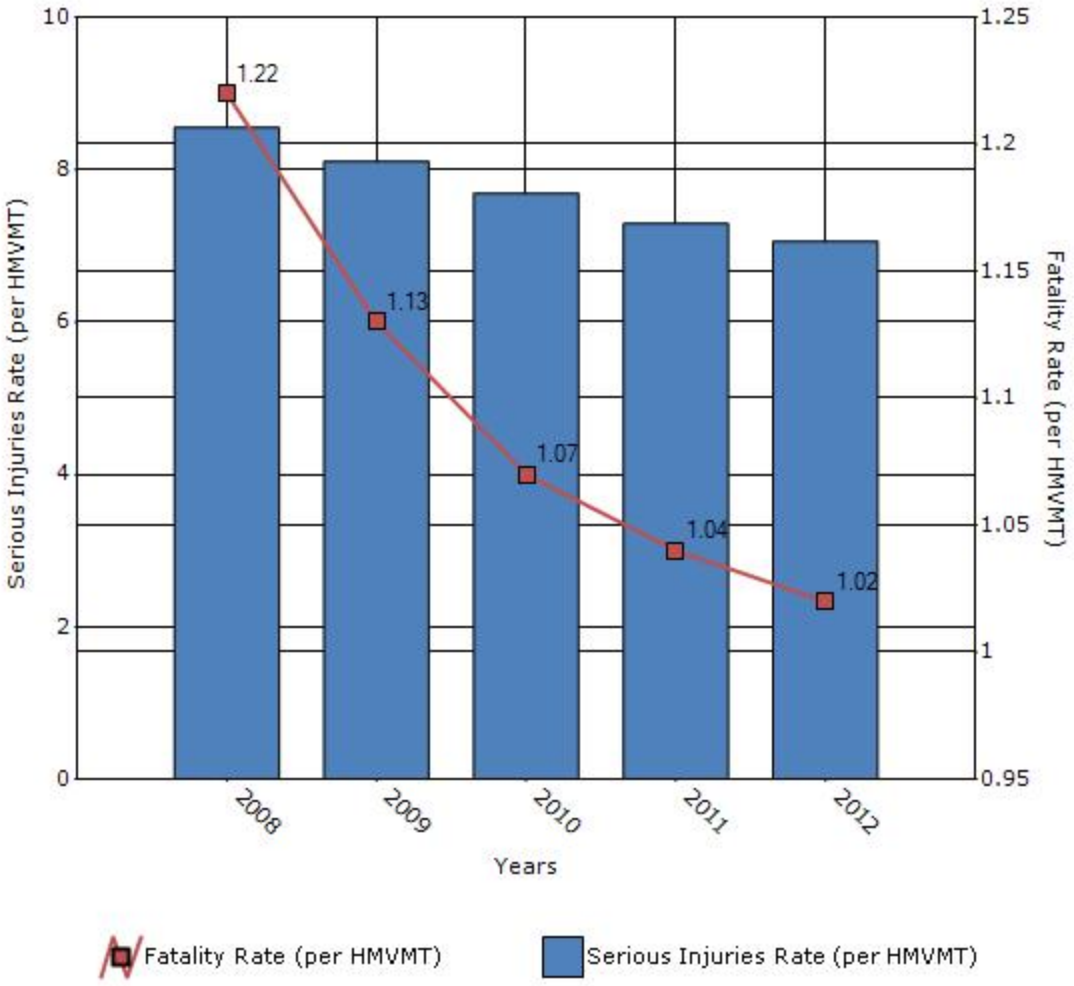
Performance Measures*	2008	2009	2010	2011	2012
Number of fatalities	582	542	511	493	477
Number of serious injuries	4086	3880	3665	3446	3307
Fatality rate (per HMVMT)	1.22	1.13	1.07	1.04	1.02
Serious injury rate (per HMVMT)	8.55	8.11	7.69	7.29	7.06

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

Number of Fatalities and Serious injuries for the Last Five Years



Rate of Fatalities and Serious injuries for the Last Five Years

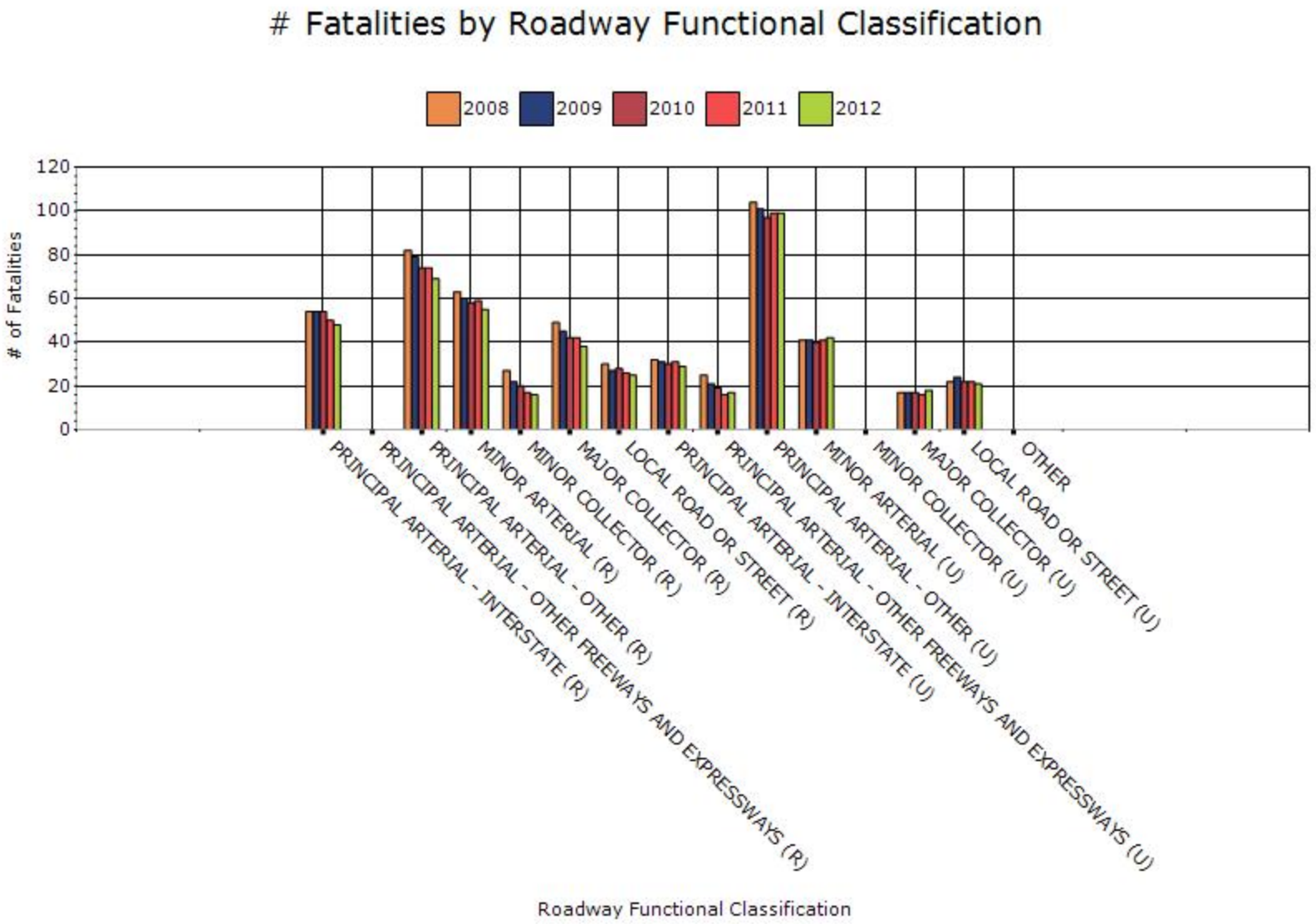


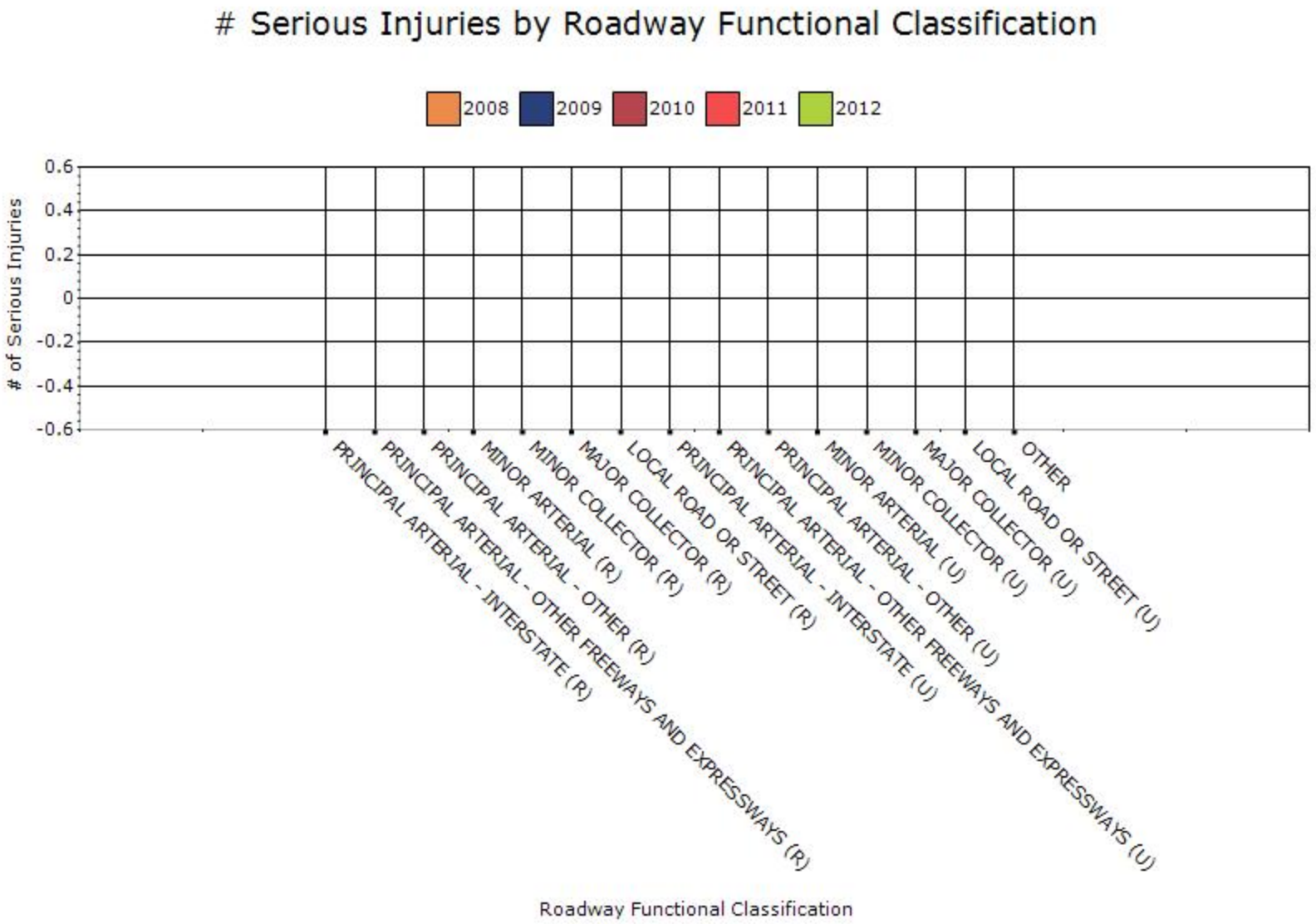
To the maximum extent possible, present performance measure* data by functional classification and ownership.

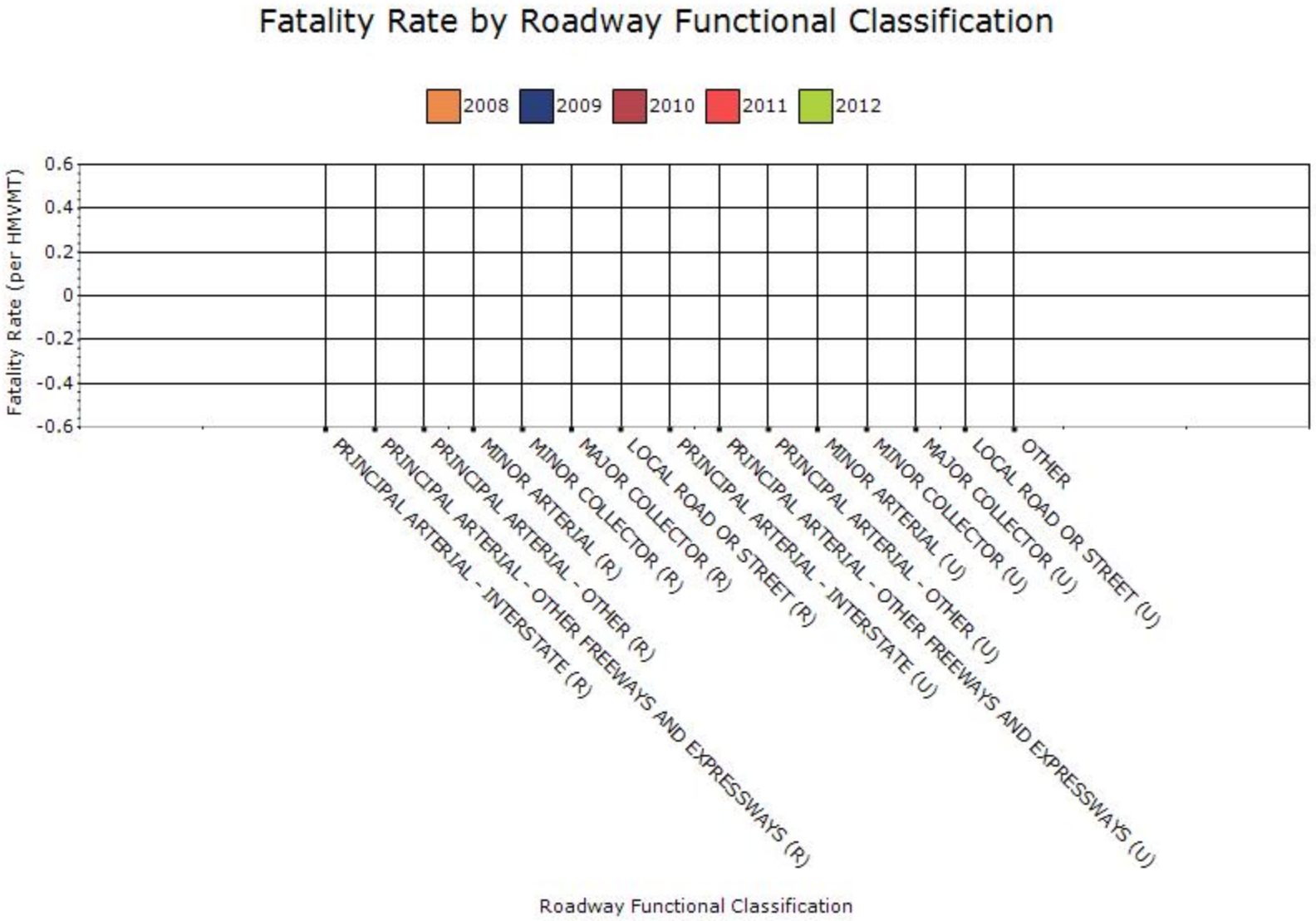
Year - 2012

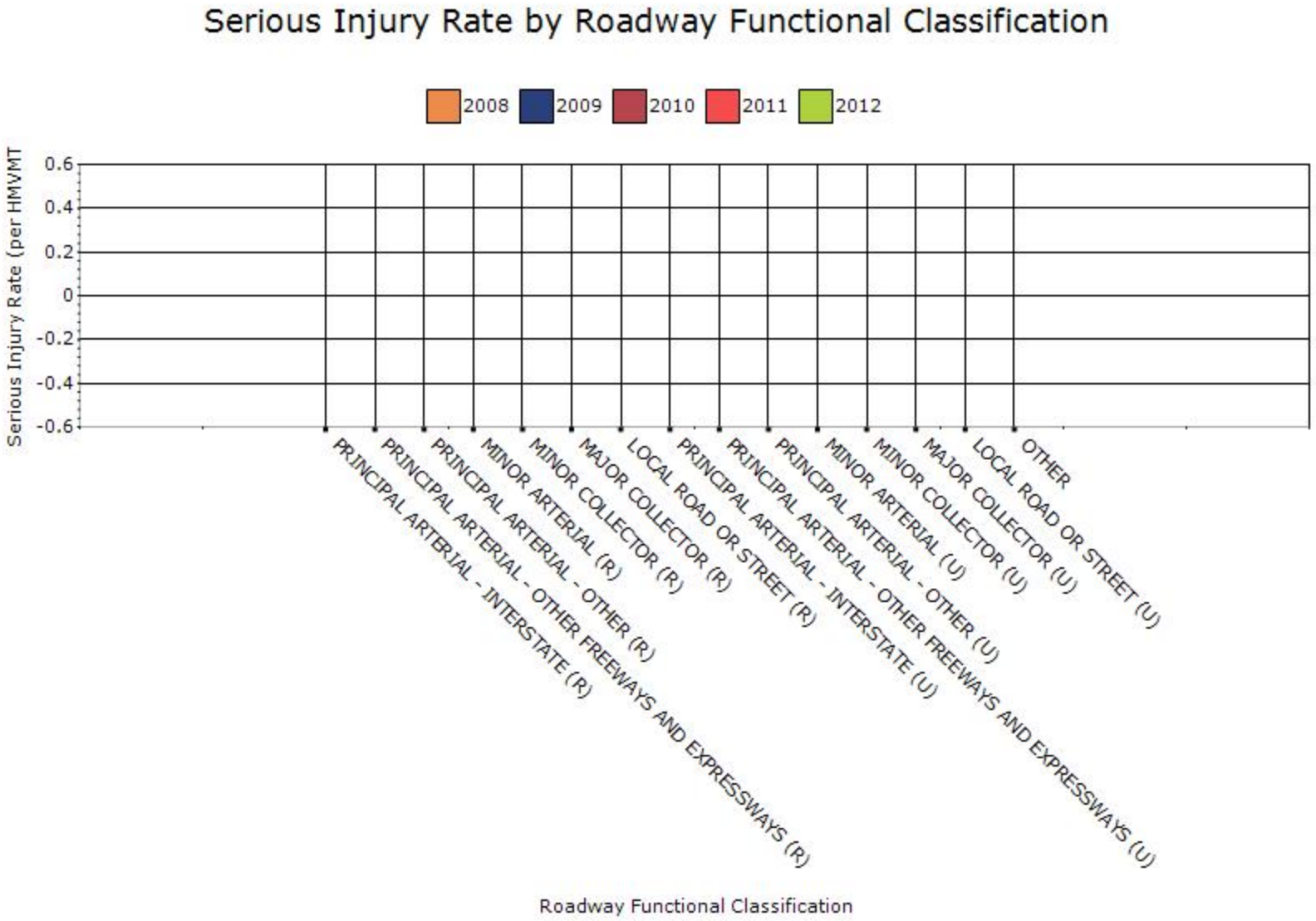
Function Classification	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
RURAL PRINCIPAL ARTERIAL - INTERSTATE	48	0	0	0
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	0	0	0	0
RURAL PRINCIPAL ARTERIAL - OTHER	69	0	0	0
RURAL MINOR ARTERIAL	55	0	0	0
RURAL MINOR COLLECTOR	16	0	0	0
RURAL MAJOR COLLECTOR	38	0	0	0
RURAL LOCAL ROAD OR STREET	25	0	0	0
URBAN PRINCIPAL	29	0	0	0

ARTERIAL - INTERSTATE				
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	17	0	0	0
URBAN PRINCIPAL ARTERIAL - OTHER	99	0	0	0
URBAN MINOR ARTERIAL	42	0	0	0
URBAN MINOR COLLECTOR	0	0	0	0
URBAN MAJOR COLLECTOR	18	0	0	0
URBAN LOCAL ROAD OR STREET	21	0	0	0
OTHER	0	0	0	0
OTHER	0	0	0	0


Fatalities by Roadway Functional Classification
2008
2009
2010
2011
2012
# of Fatalities
120
100
80
60
40
20
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
LOCAL ROAD OR STREET (U)
OTHER
Roadway Functional Classification


Serious Injuries by Roadway Functional Classification
2008
2009
2010
2011
2012
# of Serious Injuries
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
LOCAL ROAD OR STREET (U)
OTHER
Roadway Functional Classification

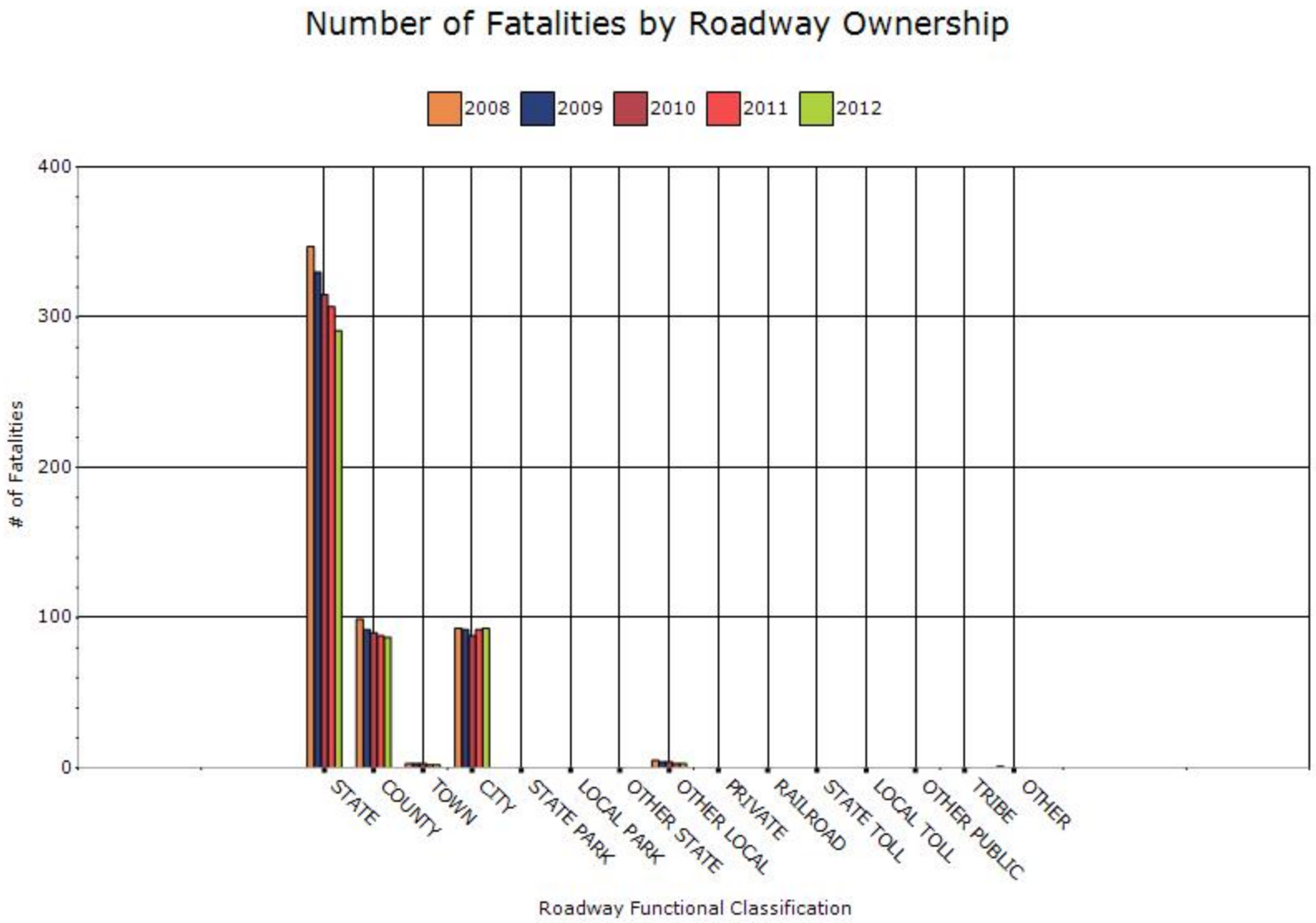

Fatality Rate by Roadway Functional Classification
2008
2009
2010
2011
2012
Fatality Rate (per HMVMT)
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
LOCAL ROAD OR STREET (U)
OTHER
Roadway Functional Classification

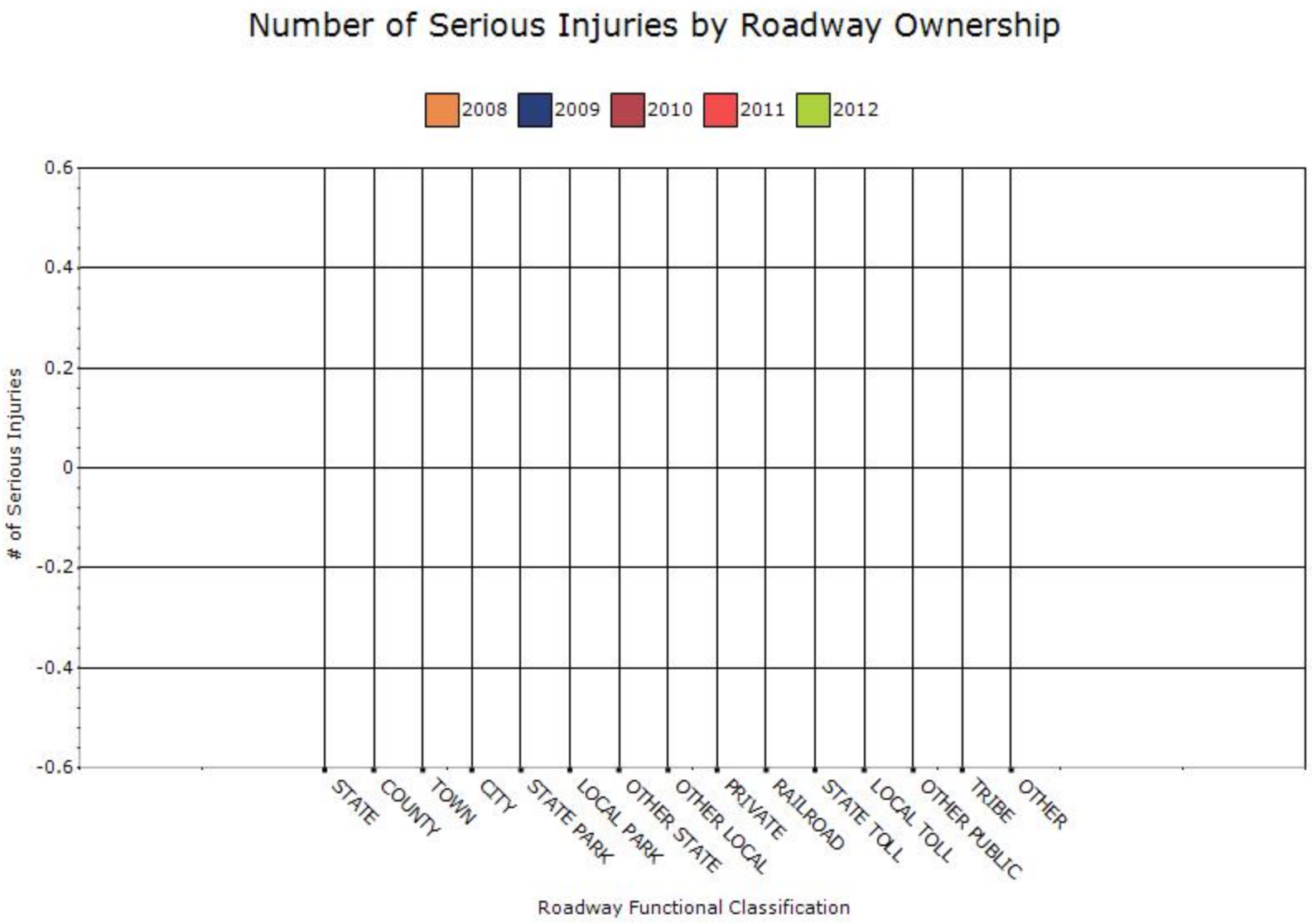

Serious Injury Rate by Roadway Functional Classification
2008
2009
2010
2011
2012
Serious Injury Rate (per HMVMT
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
LOCAL ROAD OR STREET (U)
OTHER
Roadway Functional Classification

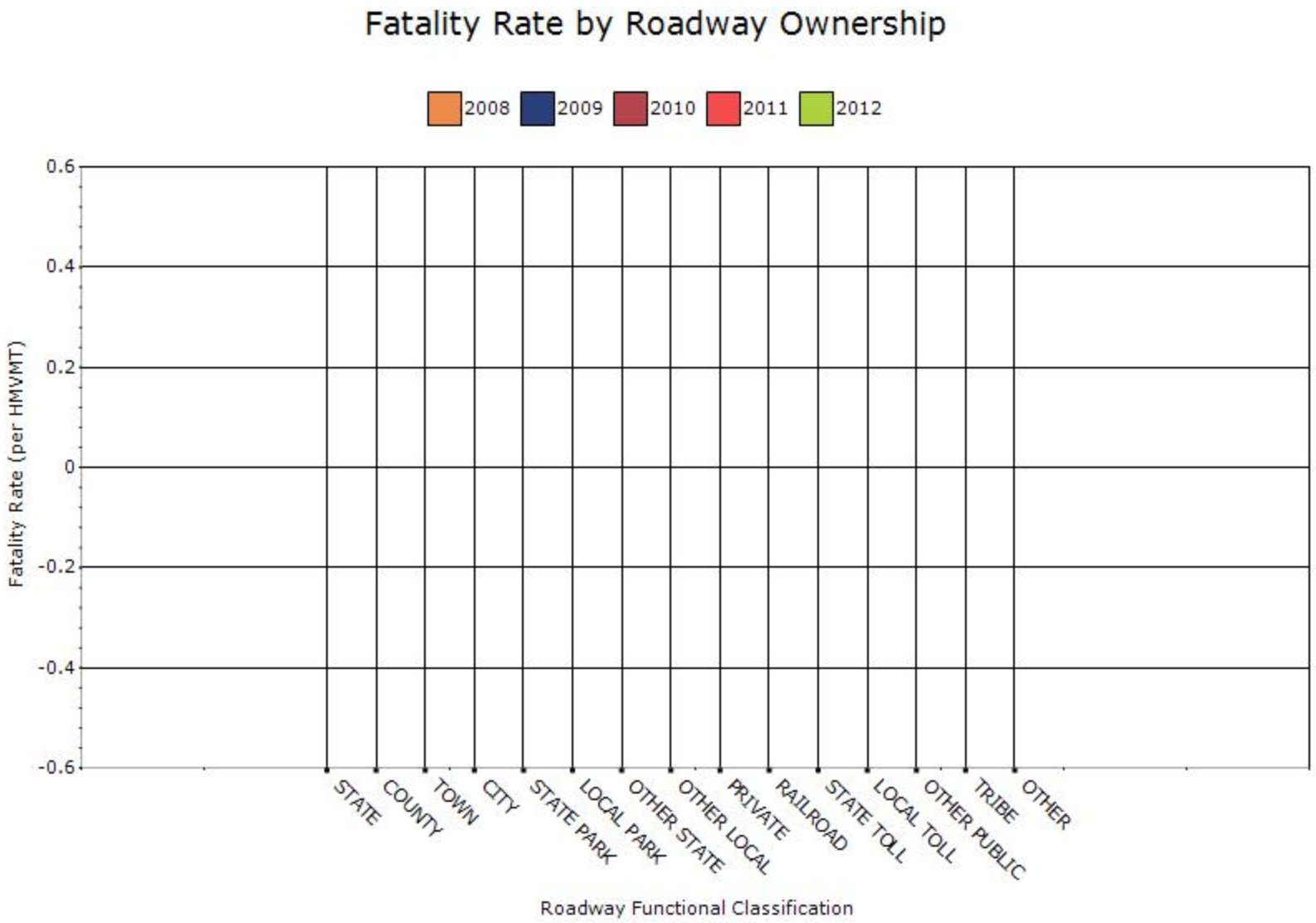
Year - 2012

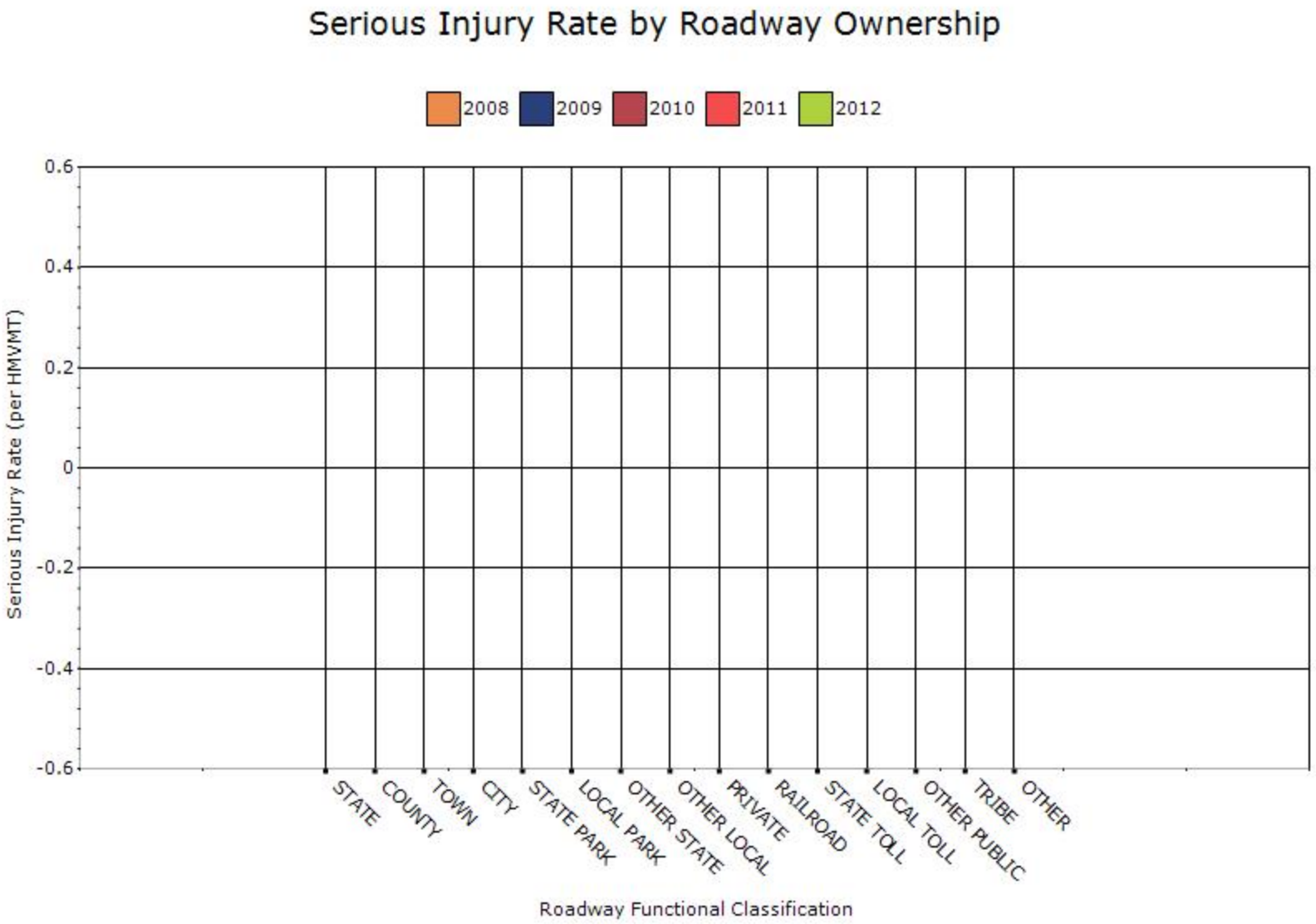
Roadway Ownership	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
STATE HIGHWAY AGENCY	291	0	0	0
COUNTY HIGHWAY AGENCY	87	0	0	0
TOWN OR TOWNSHIP HIGHWAY AGENCY	2	0	0	0
CITY OF MUNICIPAL HIGHWAY AGENCY	93	0	0	0
STATE PARK, FOREST, OR RESERVATION AGENCY	0	0	0	0
LOCAL PARK, FOREST OR RESERVATION AGENCY	0	0	0	0
OTHER STATE AGENCY	0	0	0	0
OTHER LOCAL AGENCY	3	0	0	0
PRIVATE (OTHER THAN RAILROAD)	0	0	0	0

RAILROAD	0	0	0	0
STATE TOLL AUTHORITY	0	0	0	0
LOCAL TOLL AUTHORITY	0	0	0	0
OTHER PUBLIC INSTRUMENTALITY (E.G. AIRPORT, SCHOOL, UNIVERSITY)	0	0	0	0
INDIAN TRIBE NATION	0	0	0	0
OTHER	0	0	0	0
OTHER	0	0	0	0


Number of Fatalities by Roadway Ownership
2008
2009
2010
2011
2012
400
300
200
100
0
# of Fatalities
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER PUBLIC
TRIBE
OTHER
Roadway Functional Classification


Number of Serious Injuries by Roadway Ownership
2008
2009
2010
2011
2012
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
# of Serious Injuries
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER PUBLIC
TRIBE
OTHER
Roadway Functional Classification


Fatality Rate by Roadway Ownership
2008
2009
2010
2011
2012
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Fatality Rate (per HMVMT)
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER PUBLIC
TRIBE
OTHER
Roadway Functional Classification


Serious Injury Rate by Roadway Ownership
2008
2009
2010
2011
2012
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Serious Injury Rate (per HMVMT)
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER PUBLIC
TRIBE
OTHER
Roadway Functional Classification

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

The general trend in fatal crash reduction experienced on Colorado roadways has continued in the most recent reporting period. In recent years the numbers of fatalities from crashes has fallen from 743 in 2003 to less than 500 per year since 2009. This positive outcome can be, in part, attributed to the FHWA's focus on improving transportation safety and their support and promotion of this goal through the HSIP funding. Results of a recent study by the National Cooperative Highway Research Program confirm the benefits of FHWA's safety funding for Colorado - "…The National Cooperative Highway Research Program (NCHRP) Project 20-24(37C) compared Colorado's safety performance results to other states in the US from the period 2000-2002 with those in 2005-2007. This draft report shows how Colorado has emerged as a leader in roadway safety: • 22 percent decrease in total fatalities • 31 percent decrease in fatalities per 100 million VMT • 35 percent decrease in speeding-related fatalities • 30 percent decrease in young driver involvement in fatal crashes • 20 percent decrease in alcohol-related fatalities (driver blood-alcohol content greater than 0.08) • 35 percent decrease in unrestrained passenger fatalities, all seat positions • 22 percent decrease in pedestrian fatalities…"

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	**2008**	**2009**	**2010**	**2011**	**2012**
Fatality rate (per capita)	0.56	0.55	0.54	0.53	0.51
Serious injury rate (per capita)	1.99	1.9	1.87	1.8	1.81
Fatality and serious injury rate (per capita)	2.55	2.46	2.41	2.32	2.33

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

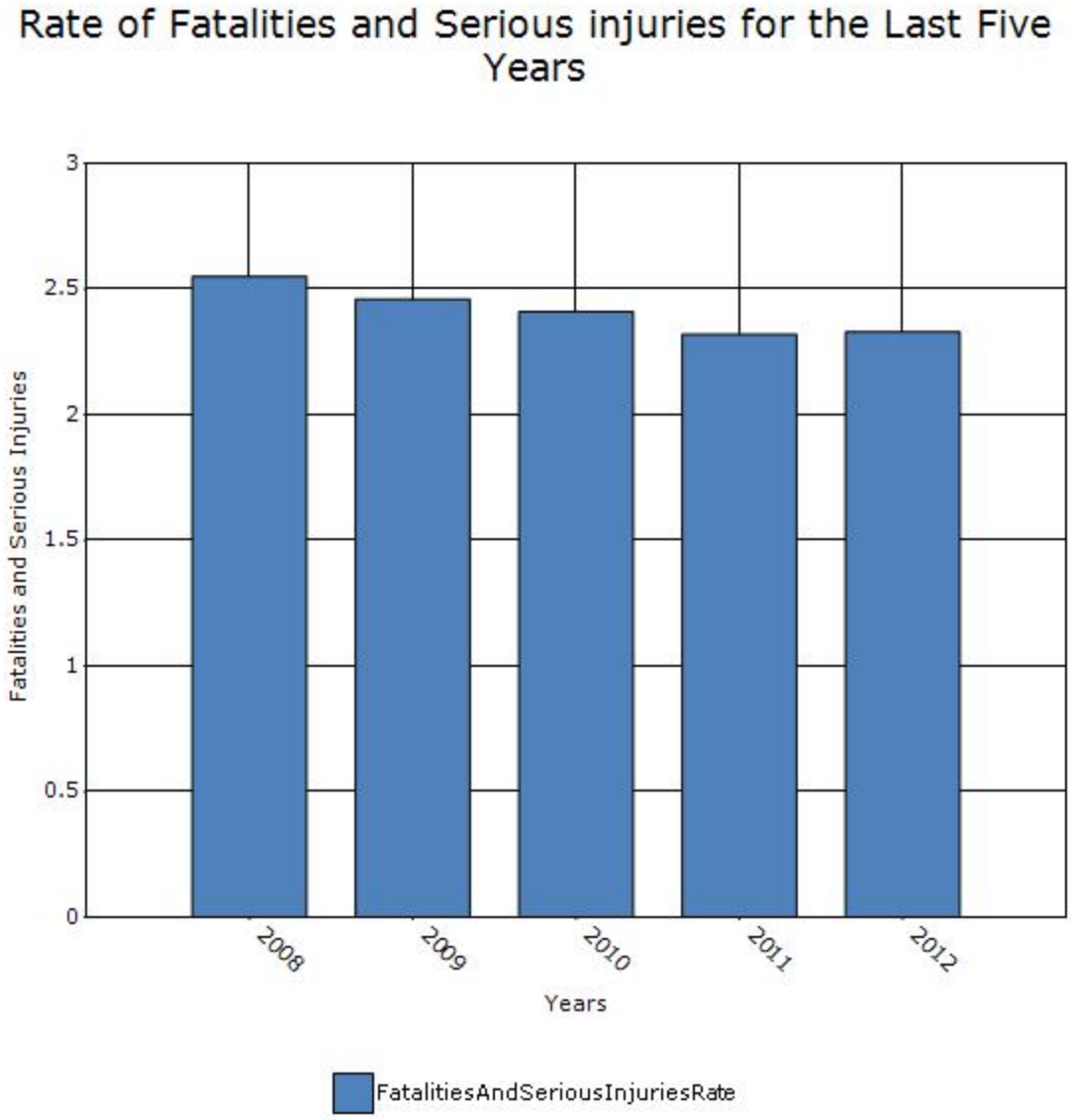
65 and Older Drivers or Pedestrians by Year:

2012 = 56 FAT, 242 INJ, 118 CAPITA
2011 = 47 FAT, 200 INJ, 112 CAPITA
2010 = 51 FAT, 178 INJ, 109 CAPITA
2009 = 58 FAT, 191 INJ, 106 CAPITA
2008 = 68 FAT, 187 INJ, 104 CAPITA
2007 = 55 FAT, 198 INJ, 101 CAPITA

2006 = 47 FAT, 215 INJ, 100 CAPITA
2005 = 52 FAT, 176 INJ, 97 CAPITA
2004 = 57 FAT, 220 INJ, 99 CAPITA

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)

Assumptions:
For 2012 Capita, use 2011 Capita (from Attachment 2 in Section 142: Older Drivers and Pedestrians Special Rule Interim Guidance)
For 2004 Capita, use 2005 Capita (from Attachment 2 in Section 142: Older Drivers and Pedestrians Special Rule Interim Guidance)



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?

☐ None

☒ Benefit/cost

☐ Policy change

☐ Other:

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

☐ Shift Focus to Fatalities and Serious Injuries

☐ Include Local Roads in Highway Safety Improvement Program

☐ Organizational Changes

☒ None

☐ Other:

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

No major programmatic changes have occurred during the FY2013 reporting period.

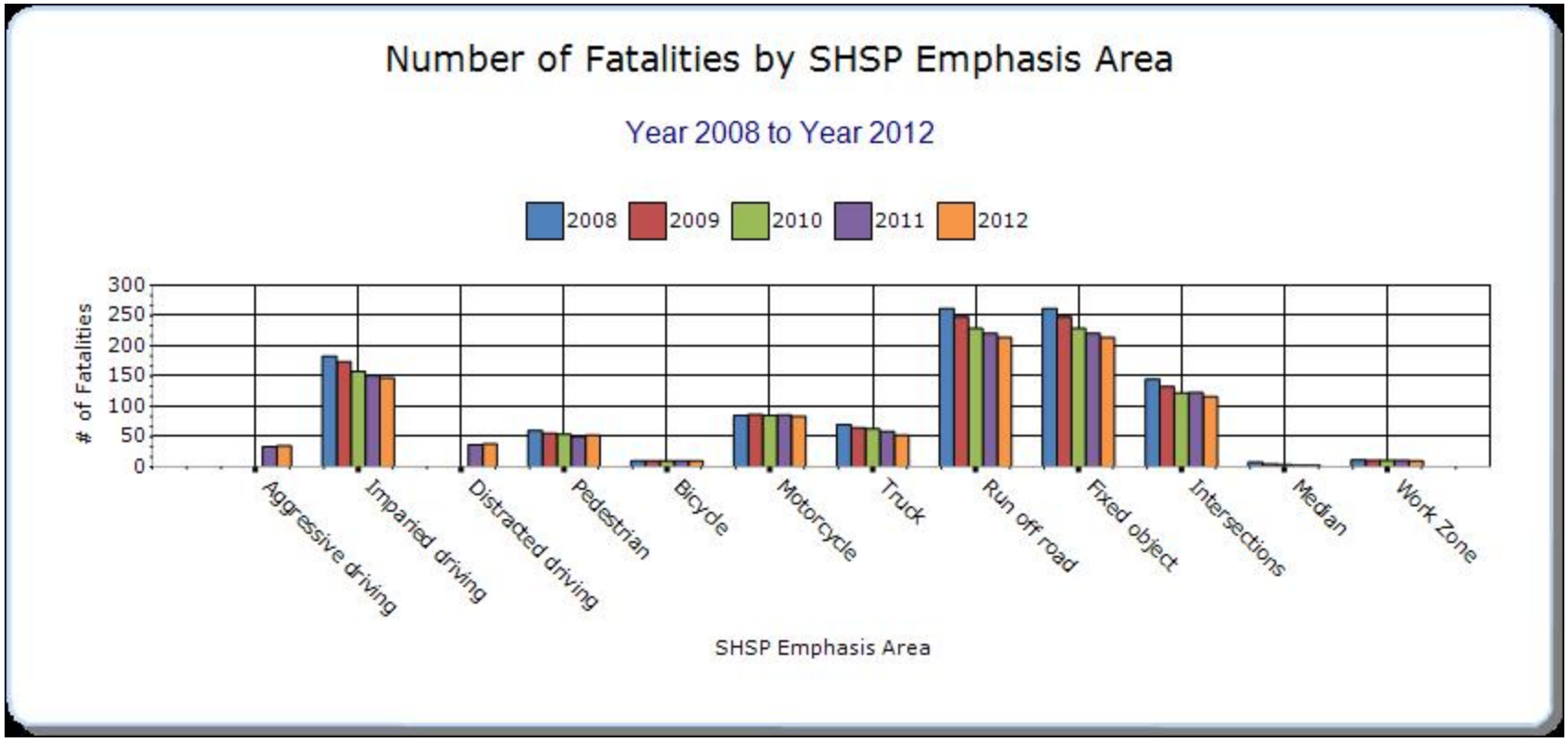
SHSP Emphasis Areas

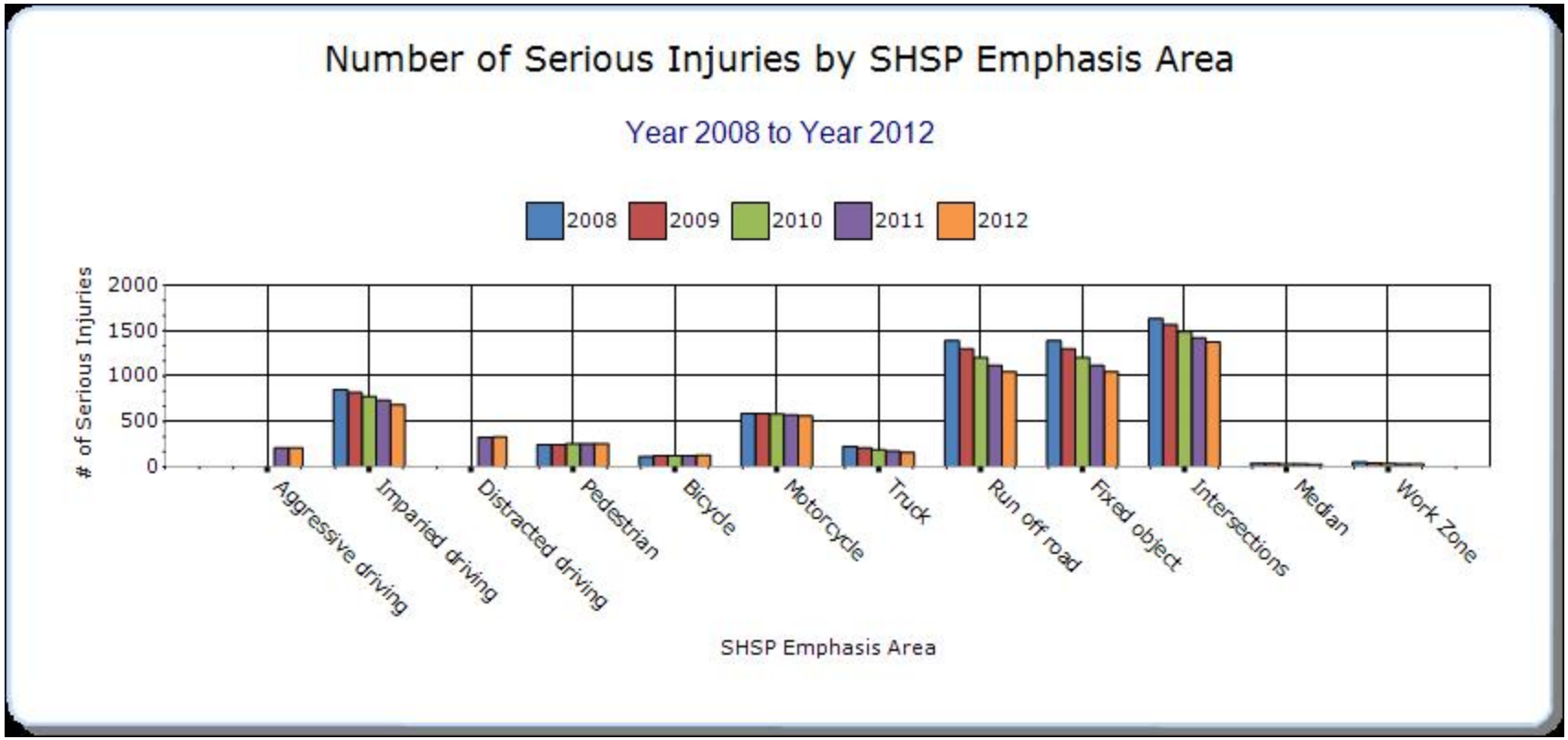
For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.

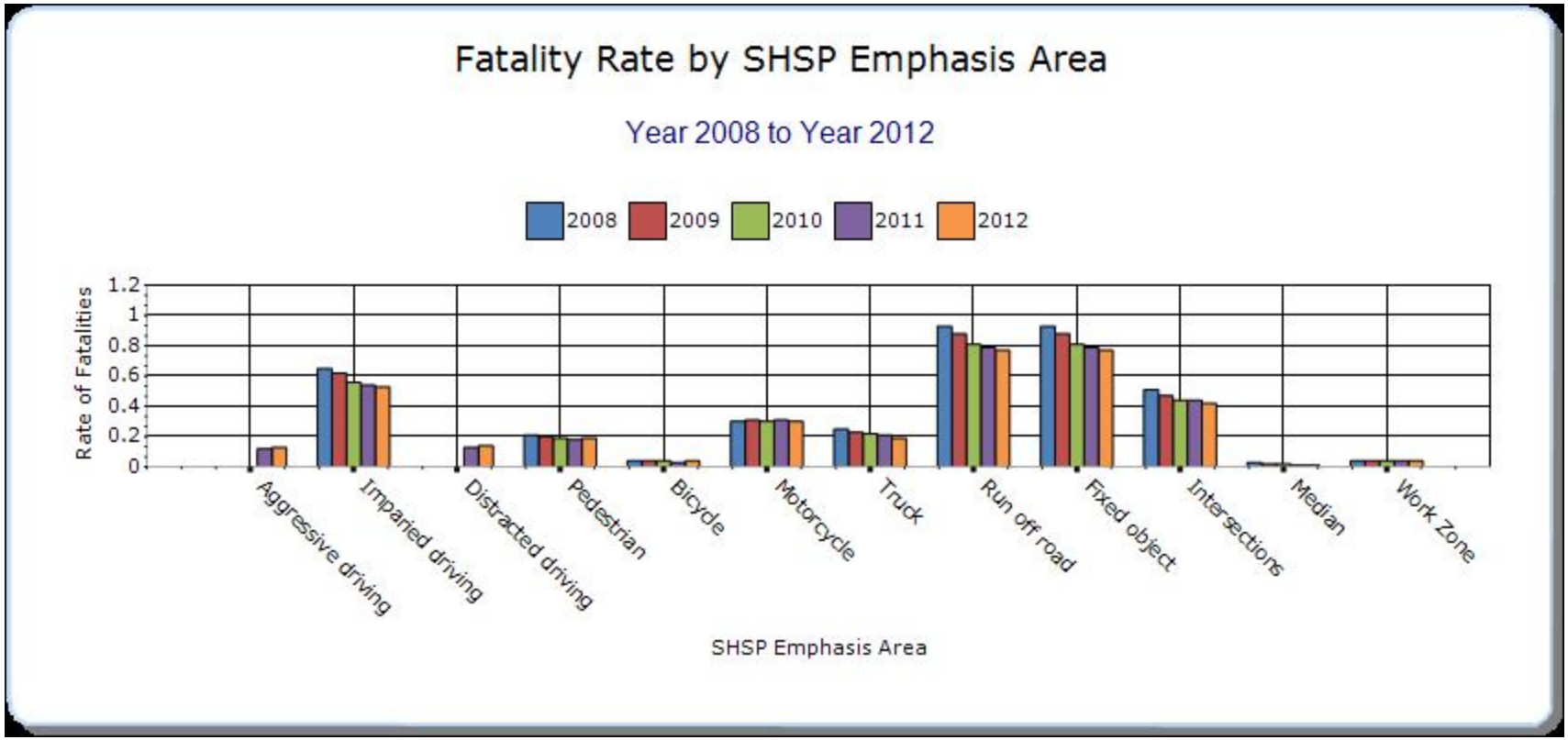
Year - 2012

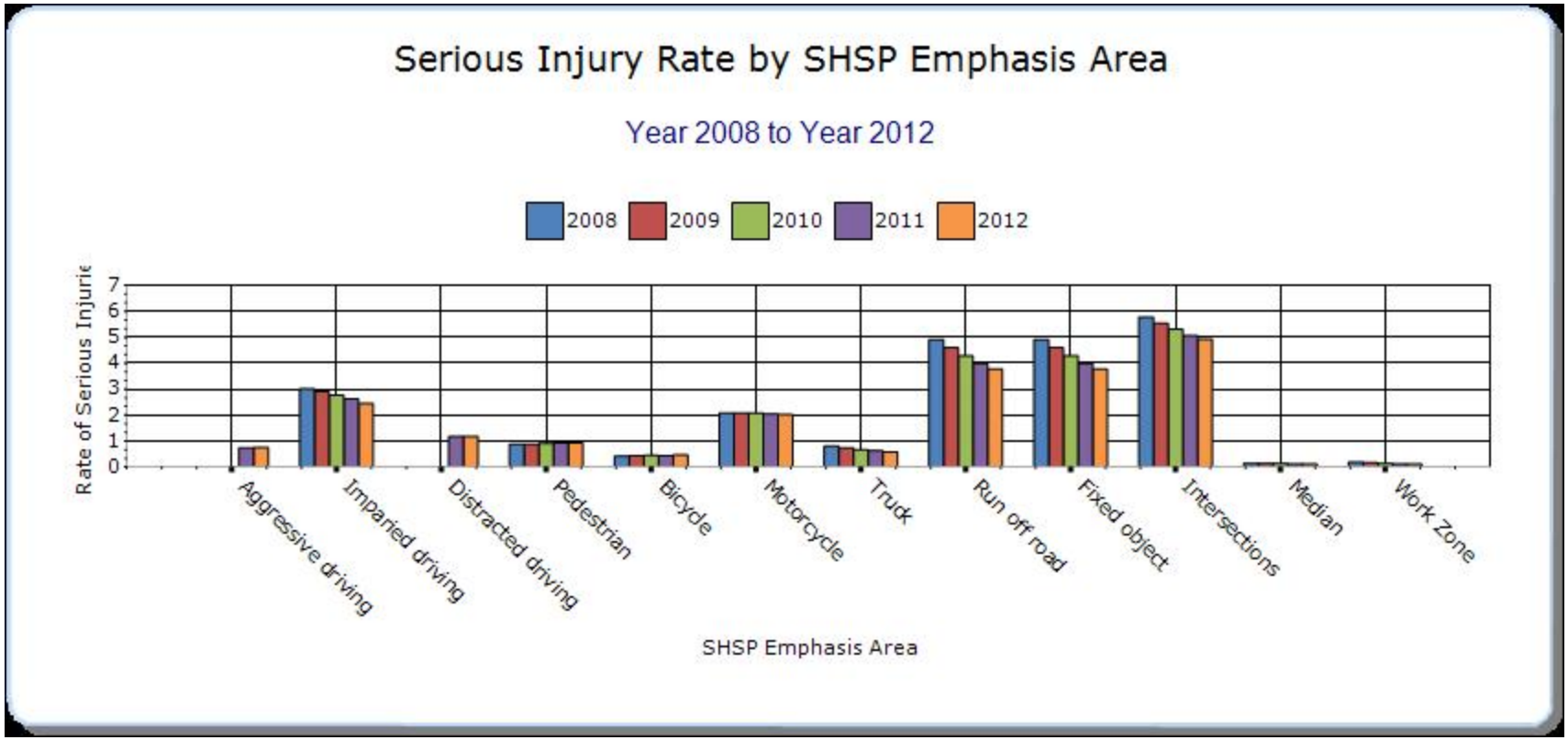
HSIP-related SHSP Emphasis Areas	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Curbing aggressive driving	**Agressive Driving**	**35**	**209**	**0.13**	**0.75**	**0**	**0**	**0**
Reducing impaired driving	Alcohol or Drugs Suspected	147	685	0.53	2.45	0	0	0
Keeping drivers alert	Distracted Driving	38	329	0.14	1.18	0	0	0
Making walking and street crossing easier	Vehicle/pedestrian	53	257	0.19	0.92	0	0	0
Ensuring safer bicycle travel	Vehicle/bicycle	10	128	0.04	0.46	0	0	0
Improving motorcycle safety and increasing motorcycle awareness	Motorcycle	84	565	0.3	2.02	0	0	0
Making truck travel safer	Truck-related	53	159	0.19	0.57	0	0	0

Keeping vehicles in the roadway	Run-off-road	214	1050	0.77	3.77	0	0	0
Minimizing the consequences of leaving the road	Run-off-road	214	1050	0.77	3.77	0	0	0
Improving the design and operation of highway intersections	Intersection Related	116	1375	0.42	4.93	0	0	0
Reducing head-on and across-median crashes	Cross median	3	30	0.01	0.11	0	0	0
Designing safer work zones	Construction Zone	10	32	0.04	0.11	0	0	0


Number of Fatalities by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
# of Fatalities
300
250
200
150
100
50
0
Aggressive driving
Impaired driving
Distracted driving
Pedestrian
Bicycle
Motorcycle
Truck
Run off road
Fixed object
Intersections
Median
Work Zone
SHSP Emphasis Area


Number of Serious Injuries by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
# of Serious Injuries
2000
1500
1000
500
0
Aggressive driving
Imparied driving
Distracted driving
Pedestrian
Bicycle
Motorcycle
Truck
Run off road
Fixed object
Intersections
Median
Work Zone
SHSP Emphasis Area


Fatality Rate by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Fatalities
1.2
1
0.8
0.6
0.4
0.2
0
Aggressive driving
Impaired driving
Distracted driving
Pedestrian
Bicycle
Motorcycle
Truck
Run off road
Fixed object
Intersections
Median
Work Zone
SHSP Emphasis Area

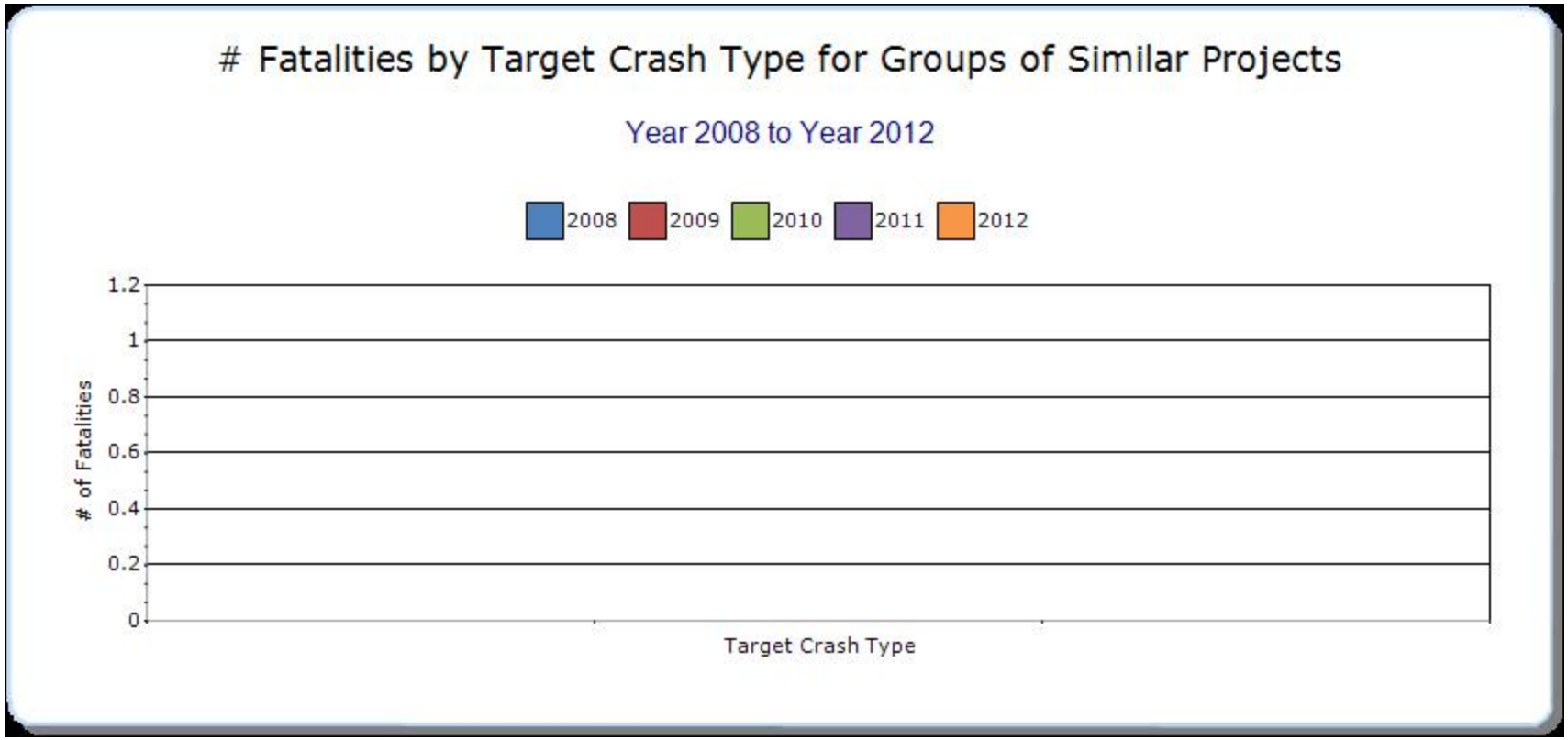

Serious Injury Rate by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Serious Injurie
7
6
5
4
3
2
1
0
Aggressive driving
Imparied driving
Distracted driving
Pedestrian
Bicycle
Motorcycle
Truck
Run off road
Fixed object
Intersections
Median
Work Zone
SHSP Emphasis Area

Groups of similar project types

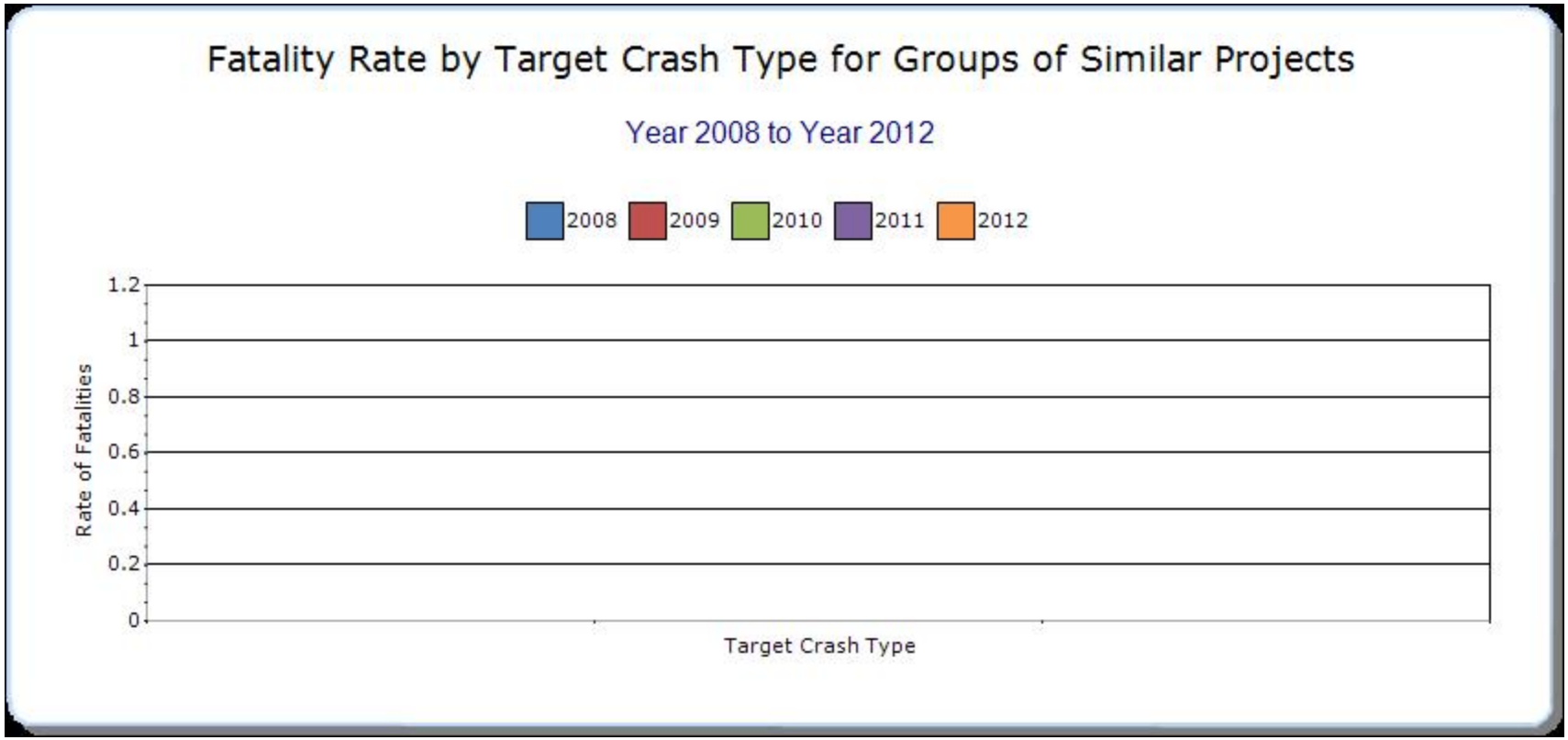
Present the overall effectiveness of groups of similar types of projects.

Year - 2012

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
Colorado is not reporting on this question this year because Colorado does not run any specific subprograms with the HSIP program		0	0	0	0	0	0	0


Fatalities by Target Crash Type for Groups of Similar Projects
Year 2008 to Year 2012
2008
2009
2010
2011
2012
1.2
1
0.8
0.6
0.4
0.2
0
# of Fatalities
Target Crash Type


#Serious Injuries by Target Crash Type for Groups of Similar Projects
Year 2008 to Year 2012
2008
2009
2010
2011
2012
1.2
1
0.8
0.6
0.4
0.2
0
# of Serious Injuries
Target Crash Type


Fatality Rate by Target Crash Type for Groups of Similar Projects
Year 2008 to Year 2012
2008
2009
2010
2011
2012
1.2
1
0.8
0.6
0.4
0.2
0
Rate of Fatalities
Target Crash Type


Serious Injury Rate by Target Crash Type for Groups of Similar Projects
Year 2008 to Year 2012
2008
2009
2010
2011
2012
1.2
1
0.8
0.6
0.4
0.2
0
Rate of Serious Injuries
Target Crash Type

Systemic Treatments

Present the overall effectiveness of systemic treatments..

Year - 2012

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
Colorado is not reporting on this question this year because we are still in the process of implementing the process and gathering data		0	0	0	0	0	0	0


Fatalities by Target Crash Type for Systemic Safety Improvements
Year 2008 to Year 2012
2008
2009
2010
2011
2012
1.2
1
0.8
0.6
0.4
0.2
0
# of Fatalities
Target Crash Type


Serious Injuries by Target Crash Type for Systemic Safety Improvements
Year 2008 to Year 2012
2008
2009
2010
2011
2012
1.2
1
0.8
0.6
0.4
0.2
0
# of Serious Injuries
Target Crash Type


Fatality Rate by Target Crash Type for Systemic Safety Improvements
Year 2008 to Year 2012
2008
2009
2010
2011
2012
1.2
1
0.8
0.6
0.4
0.2
0
Rate of Fatalities
Target Crash Type


Serious Injury Rate by Target Crash Type for Systemic Safety Improvements
Year 2008 to Year 2012
2008
2009
2010
2011
2012
1.2
1
0.8
0.6
0.4
0.2
0
Rate of Serious Injuries
Target Crash Type

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

HSIP funding has helped Colorado see a major decreasing trend in all crash types over the last ten years, not just serious injuries and fatalities. With the help of sustained funding and a renewed focus provided by an updated SHSP, it is the goal of CDOT to facilitate the continuation of these downward trends in Colorado.

Provide project evaluation data for completed projects (optional).

Location	Functional Class	Improvement Category	Improvement Type	Bef-Fatal	Bef-Serious Injury	Bef-Other Injury	Bef-PDO	Bef-Total	Aft-Fatal	Aft-Serious Injury	Aft-Other Injury	Aft-PDO	Aft-Total	Evaluation Results (Benefit/ Cost Ratio)
I-225 MP 3.95-7.91	Urban Principal Arterial - Interstate	Roadside	Barrier - cable	1	9	8	7	25	0	1	2	0	3	3.38

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.

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.