Highway Safety Improvement Program

Data Driven Decisions

Massachusetts
Highway Safety Improvement Program
2013 Annual Report

Prepared by: MA

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

SAFETEA-LU first instituted the Highway Safety Improvement Program (HSIP) in 2005 and MAP-21 continued the program in 2012. Although Massachusetts was in fact designing and constructing safety projects, it was using other funding categories. In 2009 Massachusetts began obligating funds from the HSIP funding category, only after an HSIP Task Force was developed and HSIP guidelines were implemented. Massachusetts is now in the fifth year of an active HSIP program. This report summarizes the HSIP management and structure in Massachusetts as well as describing the selected HSIP programs and projects. New this year, we are submitting the HSIP report on line. This has been particularly challenging for us because obtaining access for online submitting is in conflict with our policies on security. We have not yet resolved the issues of gaining access and our presently using the access of MassDOT personnel with existing access.

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 : The STIP provided for $15 million in 2013 HSIP funds. In an effort to distribute the HSIP funds in an equitable manner throughout the Commonwealth on all public roadways (both local and State-owned) without an overemphasis on the metro-Boston area

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

The HSIP project selection criteria was based on locations being identified as top crash locations (based on the number of equivalent property damage only crashes – which weights a fatal crash 10 times that of a property damage only crash, and injury crashes as five times that of property damage only crashes) in several key focus areas based on our Strategic Highway Safety Plan, regardless of roadway jurisdiction. Massachusetts was designated as a Lead State in Lane Departure crashes so top lane departure locations were eligible. Similarly, the SHSP included focus areas on intersections, bicycle and

pedestrian crashes so top crash locations in these focus areas were also eligible, regardless of the jurisdiction. Finally, other eligible projects / programs were selected based on HSIP-eligible criteria such as statewide improvements to data or assistance with SHSP. These programs impact safety on all roadways regardless of roadway jurisdiction.

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

☒ Design

☒ Planning

☒ Maintenance

☒ Operations

☐ Governors Highway Safety Office

☐ Other:

Briefly describe coordination with internal partners.

The HSIP Task Force consists of seven members: 2 FHWA representatives (one from Massachusetts Division Office in Planning and one from the Massachusetts Division Office in Safety), 2 representatives from MassDOT Highway Division (Chief Engineer and Safety Engineer), one from MassDOT Office of Transportation Planning and two representatives from the Regional Planning Agencies (RPAs), the technical arm of the Metropolitan Planning Organizations (MPOs). The initial role of the Task Force was to establish HSIP guidelines based on input and feedback from others. Once the guidelines were finalized, the role of the Task Force is to meet annually or more frequently, ("meetings" could be via email or in person) and to confirm the selection of HSIP projects and update the guidelines as needed. The HSIP Guidelines were last updated in June 2012 prior to the MAP-21 ruling on HSIP.

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

☒ Metropolitan Planning Organizations

☐ Governors Highway Safety Office

☐ Local Government Association

☐ Other:

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-nothing changed

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

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:		

Program: **Intersection**

Date of Program Methodology: **10/1/2012**

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-CRASH SEVERITY WEIGHTING	☐ Lane miles	☐ Roadside features
	☐ Other	☐ Other

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-MPO

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

☐ Available funding

☐ Incremental B/C

☐ Ranking based on net benefit

☐ Cost Effectiveness

☒ PROJECT READINESS

Program: **Crash Data**

Date of Program Methodology: **10/1/2012**

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

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-STATEWIDE CRASH PROGRAM

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-STATEWIDE NEEDS

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

☐ Available funding

☐ Incremental B/C

☐ Ranking based on net benefit

☐ Cost Effectiveness

☒ STATEWIDE NEED

Program: **Low-Cost Spot Improvements**

Date of Program Methodology: **10/1/2012**

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

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-FHWA SYSTEMATIC PROGRAM

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

☒ Available funding 100

☐ Incremental B/C

☐ Ranking based on net benefit

☐ Cost Effectiveness

Program: **Sign Replacement And Improvement**

Date of Program Methodology: **10/1/2012**

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	☐ Population	☒ Functional classification

crashes only

☒ Other-SYSTEMATIC APPROACH NOT BASED ON CRASHES

☐ Lane miles

☐ Roadside features

☐ Other

☐ Other

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-ALL SECONDARY STATE HIGHWAYS

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

☐ Yes

☐ No

How are highway safety improvement projects advanced for implementation?

☐ Competitive application process

☐ selection committee

☒ Other-ALL SECONDARY ROADS

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

☐ Available funding

☐ Incremental B/C

☐ Ranking based on net benefit

☐ Cost Effectiveness

☒ ALL SECONDARY ROADS

Program: **Left Turn Crash**

Date of Program Methodology: **10/1/2012**

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-ALL STATE SIGNALIZED INTERSECTIONS	☐ Lane miles	☐ Roadside features
	☐ Other	☐ Other

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-ALL STATE SIGNALIZED INTERSECTIONS

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

☐ Yes

☒No

How are highway safety improvement projects advanced for implementation?

☐Competitive application process

☐selection committee

☒Other-ALL STATE SIGNALIZAED INTERSECTIONS

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

☒Available funding 100

☐Incremental B/C

☐Ranking based on net benefit

☐Cost Effectiveness

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

0

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

improvments?

- ☐ 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
- ☐ Other

What process is used to identify potential countermeasures?

- ☐ Engineering Study
- ☐ Road Safety Assessment
- ☒ Other: Other-statewide crash statistics

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: Other-nothing changed

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

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)	15046224	90 %	13680000	90 %
HRRRP (SAFETEA-LU)				
HRRR Special Rule				
Penalty Transfer - Section 154				

Penalty Transfer – Section 164				
Incentive Grants - Section 163				
Incentive Grants (Section 406)				
Other Federal-aid Funds (i.e. STP, NHPP)				
State and Local Funds	1671803	10 %	1520000	10 %
Totals	16718027	100%	15200000	100%

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

19 %

How much funding is obligated to local safety projects?

19 %

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

$2,100,000.00

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

$2,100,000.00

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.

Not enough shovel-ready projects in the pipeline because local communities must fund the design on locally owned roadways and funding is tight. Previously, in 2009 and 2010, in order to get the HSIP projects moving, MassDOT and FHWA allowed the use of HSIP funding for design as long as the project was HSIP eligible and was programmed on the STIP in an outlying year. This enabled a full HSIP program for the next few years. We may work with FHWA and revisit the idea of using HSIP funding for design. Local communities may also work through their MPOs to push projects that are more systematic with minimal design efforts like a retroreflective sign upgrade program. Right now several things are being considered. Finally, we tied our HSIP funds programs / strategies identified in the updated 2013 SHSP. However, the strategies developed from the emphasis areas teams are in the process of being worked out through the public process and have not yet been finalized. This will be completed in FFY2014 so specific strategies will be identified and funded.

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

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
602182-Great Barrington-Reconstruction of Main Street (Route 7)	Roadway Roadway - other	0.51 Miles	320368	5155000	HSIP (Section 148)	Urban Principal Arterial - Other	19600	25	City of Municipal Highway Agency	Improving the design and operation of highway intersections	
602984-Concord/Lincoln-Limited Access Highway Improvements at Route 2 and 2A around Crosby's Corner	Intersection geometry Intersection geometrics - miscellaneous/other/unspecified	1 Numbers	4767039	6377500	HSIP (Section 148)	Urban Principal Arterial - Other Freeways and Expressways	48800	45	State Highway Agency	Improving the design and operation of highway intersections	

602213-Orleans-Roundabout Improvements at Routes 28 and 6A	Intersection traffic control Modify control - all-way stop to roundabout	1 Numbers	412663	1870000	HSIP (Section 148)	Urban Principal Arterial - Other	25400	35	State Highway Agency	Improving the design and operation of highway intersections	
602037-Worcester-Intersection Improvements at Lincoln St, Highland St, Pleasant St Corridor	Intersection traffic control Systemic improvements - signal-controlled	3 Numbers	1800000	3260344	HSIP (Section 148)	Urban Principal Arterial - Other	25700	25	City of Municipal Highway Agency	Improving the design and operation of highway intersections	
606048-Greenfield-Roundabout construction at Colrain Road, College Street, and Colrain Street	Intersection traffic control Modify control - all-way stop to roundabout	1 Numbers	228578	1681000	HSIP (Section 148)	Urban Collector	7300	30	Town or Township Highway Agency	Improving the design and operation of highway intersections	
604813-Oak Bluffs-Intersection	Intersection traffic control Modify control - all-way stop to roundabout	1 Numbers	220356	1145500	HSIP (Section 148)	Urban Principal Arterial -	9400	35	Town or Township	Improving the design and	

Improvements at Edgartown, Vineyard Road and Barnes Road						Other			Highway Agency	operation of highway intersections	
605181-Methuen-Interchange reconstruction on I-93 at route 110/113 rotary	Interchange design Interchange design - other	1 Numbers	398660	77632000	HSIP (Section 148)	Urban Principal Arterial - Interstate	161400	65	State Highway Agency	Improving the design and operation of highway intersections	
607219-Winchendon-Resurfacing and Improvements on Route 140, from Gardner Town Line to Teel Road	Roadway Pavement surface - miscellaneous	2.148 Miles	361344	1252800	HSIP (Section 148)	Rural Principal Arterial - Other	10900	50	State Highway Agency	Improving the design and operation of highway intersections	
603457-West Bridgewater-Intersection	Intersection geometry Intersection geometry - other	2 Numbers	410359	3593000	HSIP (Section 148)	Urban Principal Arterial -	22700	35	State Highway Agency	Improving the design and	

Improvements at Route 106 and 128 (Central Square)						Other				operation of highway intersections	
606643-West Springfield-Improvements and Related Work on I-91/Route 5/I-90 Connector Road	Interchange design Acceleration / deceleration / merge lane	1 Numbers	1004946	1477185	HSIP (Section 148)	Urban Principal Arterial - Interstate	0	45	State Highway Agency	Creating more effective processes and safety management systems	
605365-New Bedford-Intersection Improvements at Route 140/Route 6 (Kempton St) and Brownell Ave	Intersection traffic control Modify traffic signal - miscellaneous/other/unspecified	1 Numbers	806419	3634000	HSIP (Section 148)	Urban Principal Arterial - Other	26800	45	State Highway Agency	Improving the design and operation of highway intersections	
607070-Statewide-Implementation (Phase I) of the	Intersection traffic control Modify traffic signal - add flashing yellow arrow	400 Numbers	1800000	2000000	HSIP (Section 148)	Varies	0	0	State Highway Agency	Improving the design and operation of	

Flashing Yellow Arrow at Signalized Intersections										highway intersections	
607402-Statewide-Signs and Marketing upgrades at interchanges to reduce wrong way crashes	Roadway signs and traffic control Roadway signs and traffic control - other	348 Numbers	1507500	1675000	HSIP (Section 148)	Varies	0	0	State Highway Agency		
607521-Implement Emphasis Area Plans for SHSP	Miscellaneous	0	1102500	1125500	HSIP (Section 148)	Varies	0	0			

Progress in Achieving Safety Performance Targets

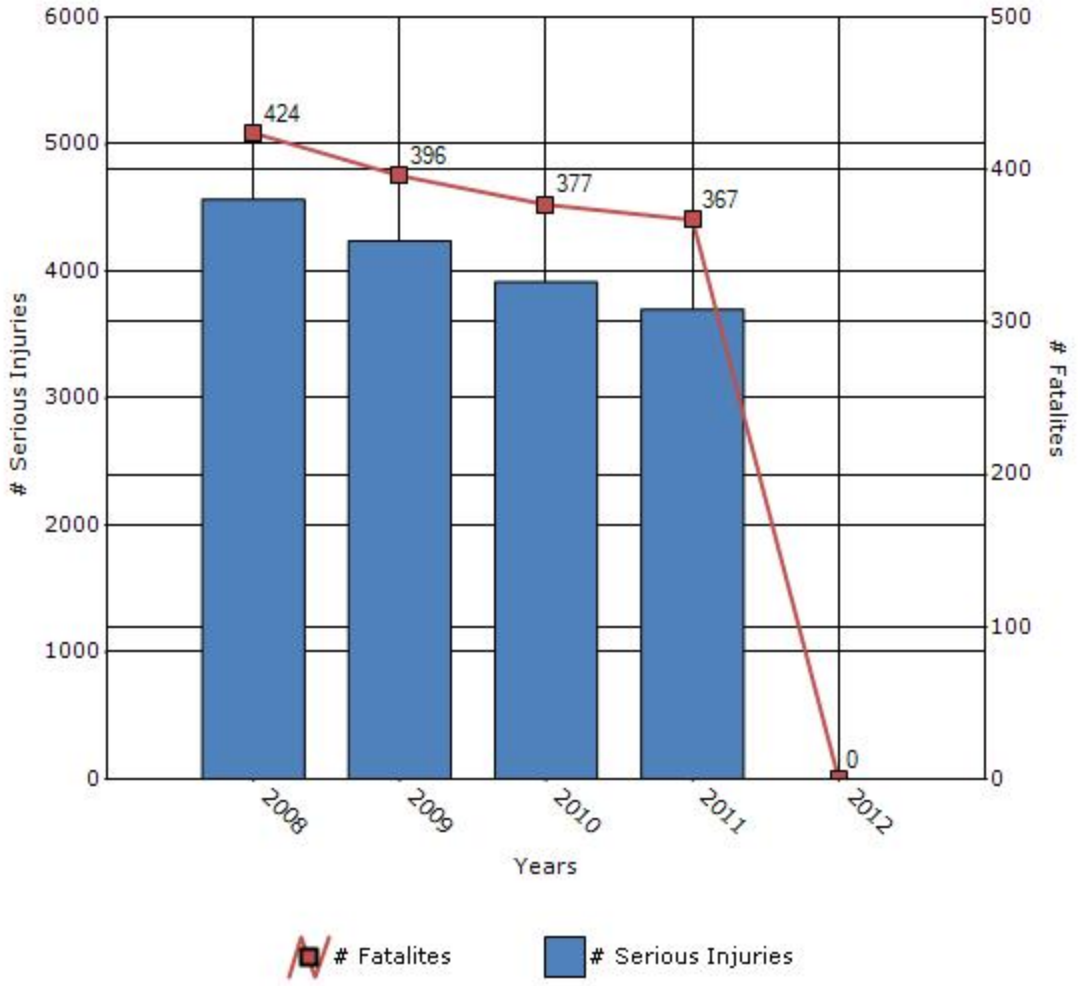
Overview of General Safety Trends

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

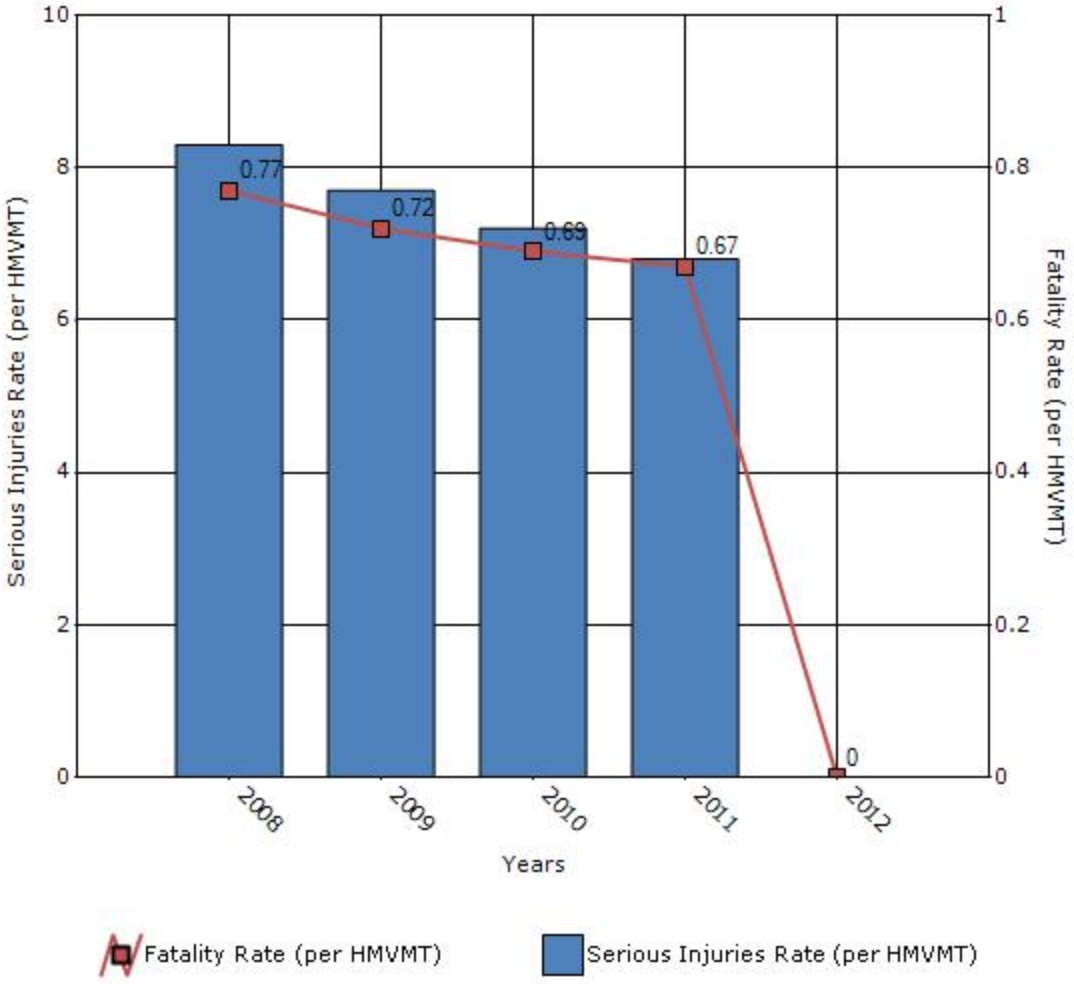
Performance Measures*	2008	2009	2010	2011	2012
Number of fatalities	424	396	377	367	0
Number of serious injuries	4566	4238	3915	3700	0
Fatality rate (per HMVMT)	0.77	0.72	0.69	0.67	0
Serious injury rate (per HMVMT)	8.3	7.7	7.2	6.8	0

*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

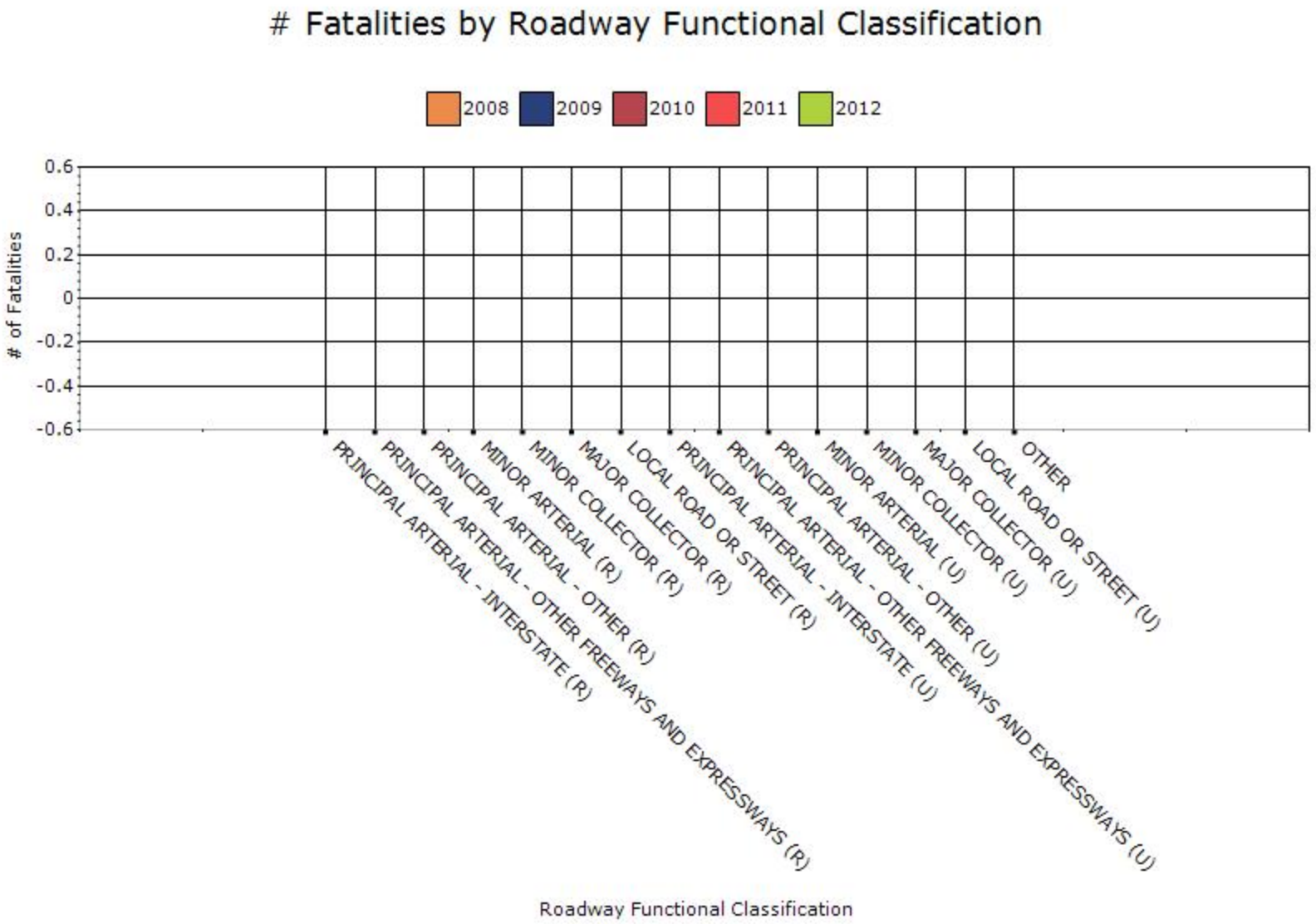


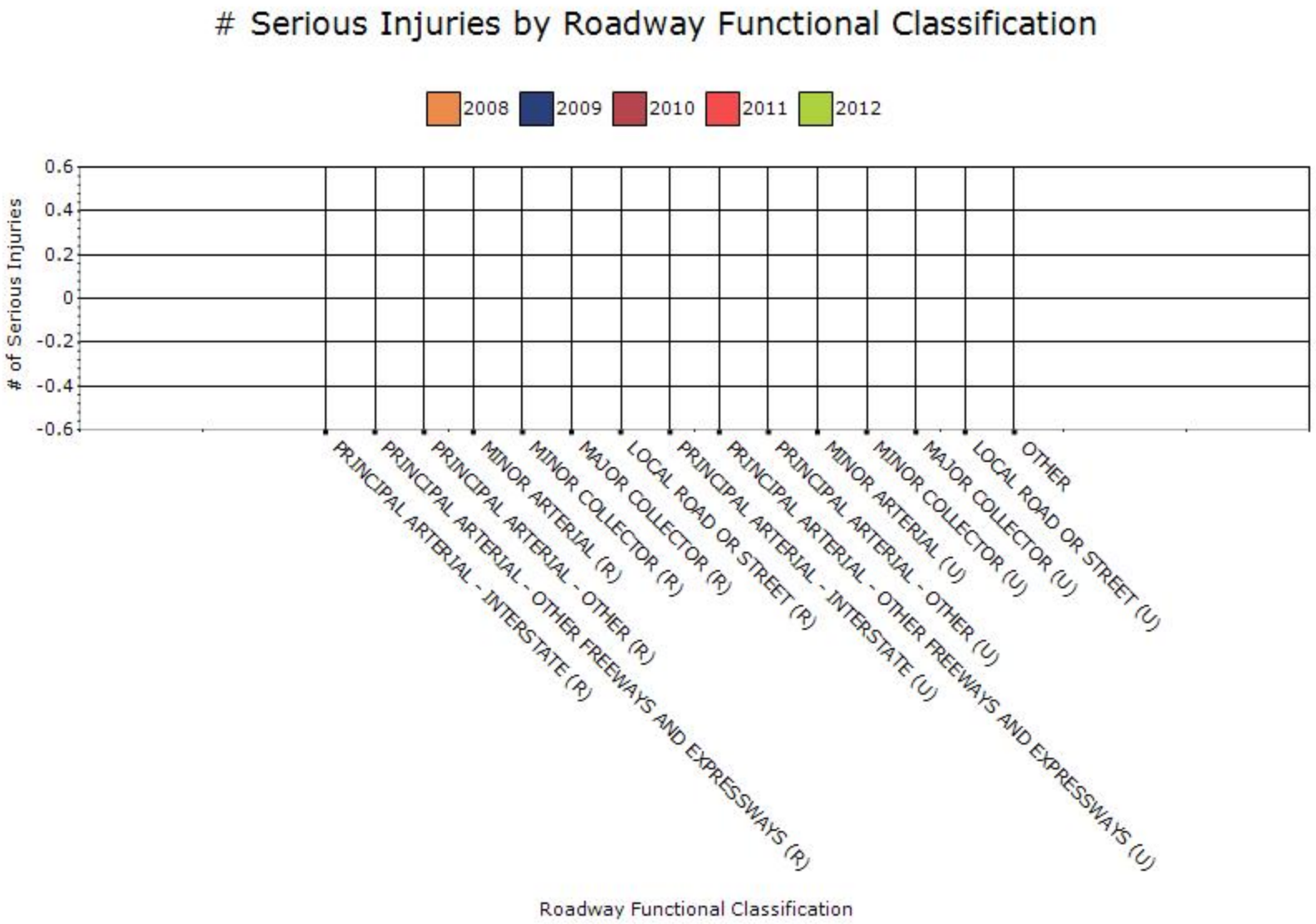
To the maximum extent possible, present performance measure* data by functional classification and ownership.

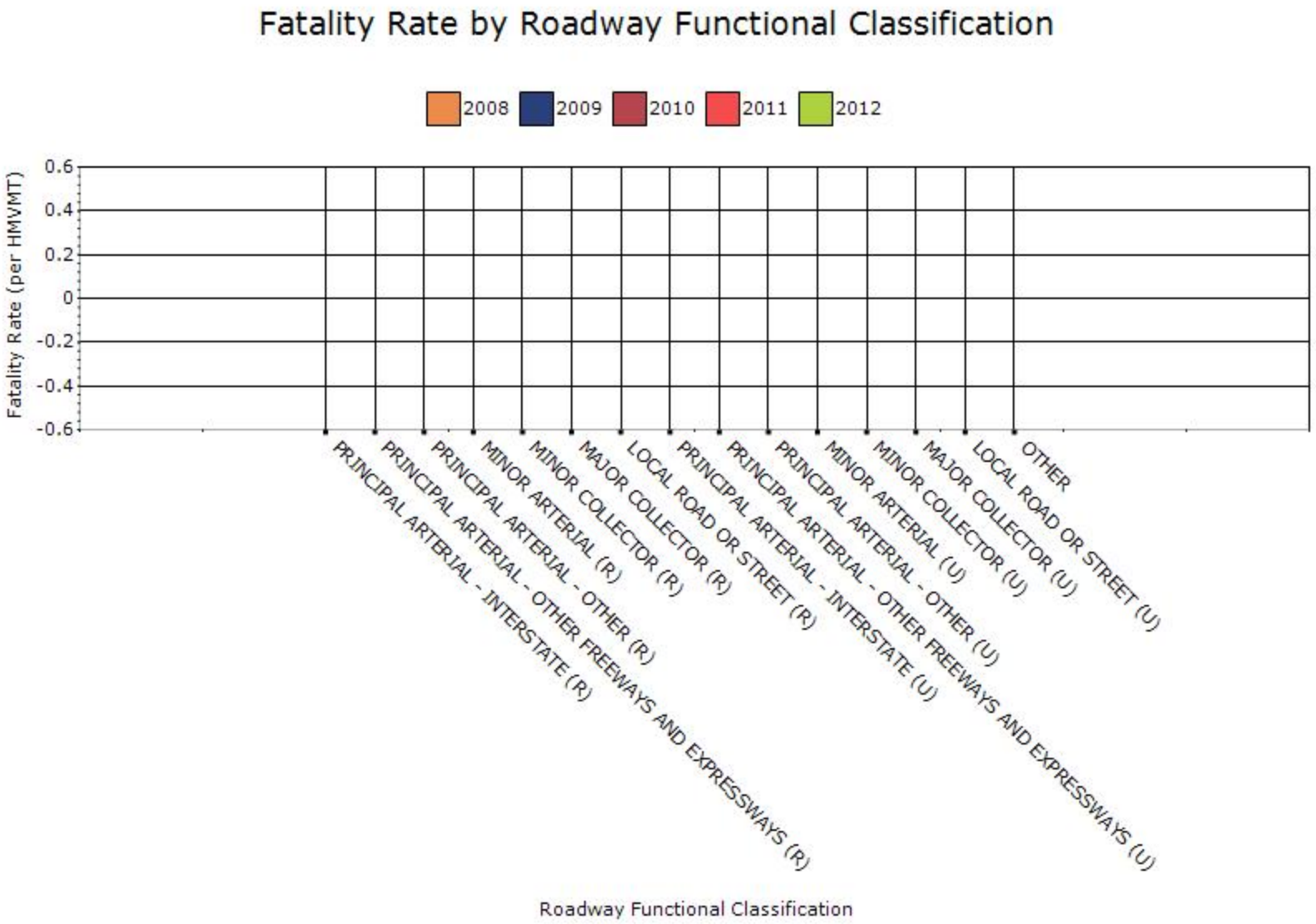
Year - 2012

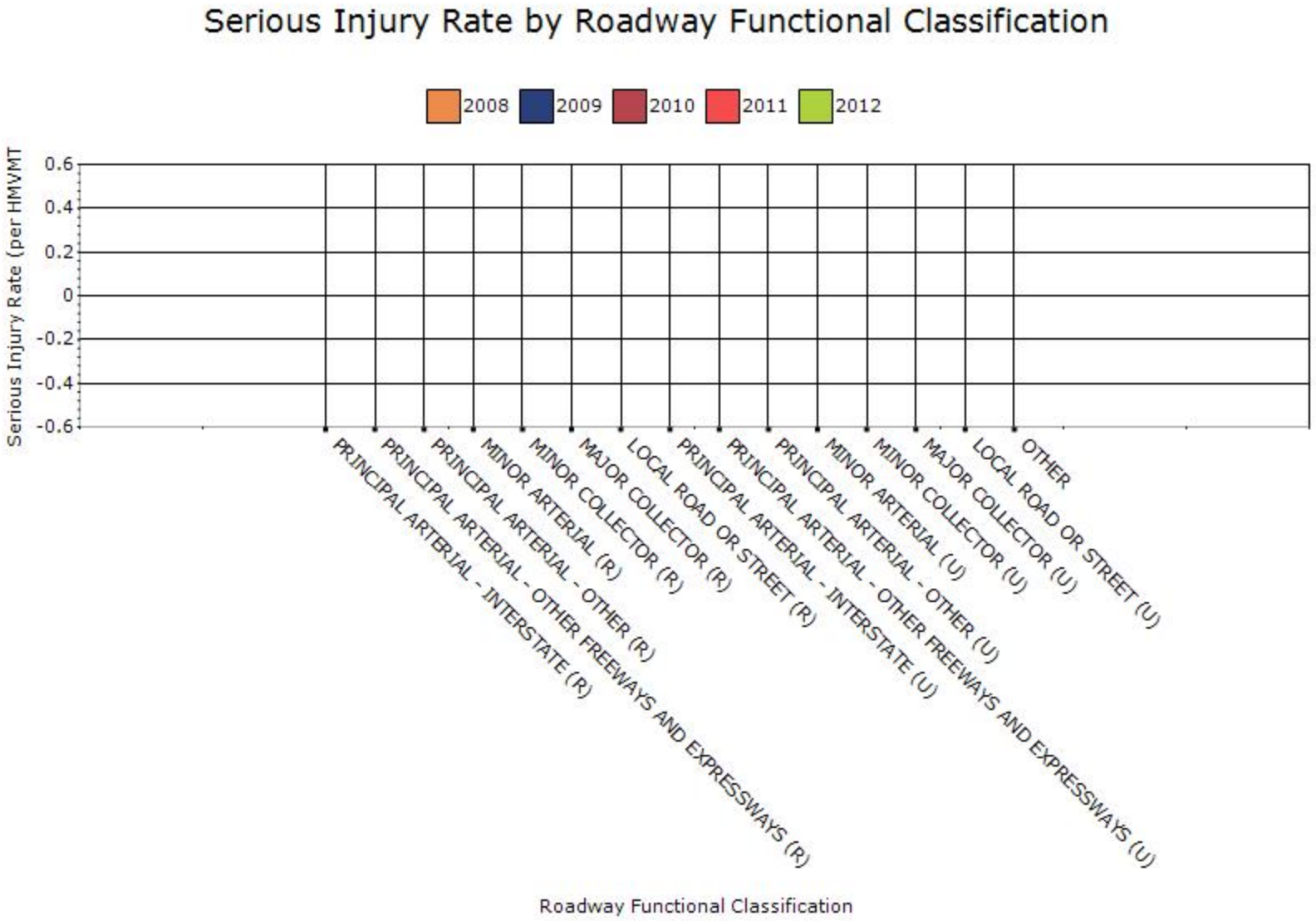
Function Classification	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
RURAL PRINCIPAL ARTERIAL - INTERSTATE	0	0	0	0
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	0	0	0	0
RURAL PRINCIPAL ARTERIAL - OTHER	0	0	0	0
RURAL MINOR ARTERIAL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

ARTERIAL - INTERSTATE				
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	0	0	0	0
URBAN PRINCIPAL ARTERIAL - OTHER	0	0	0	0
URBAN MINOR ARTERIAL	0	0	0	0
URBAN MINOR COLLECTOR	0	0	0	0
URBAN MAJOR COLLECTOR	0	0	0	0
URBAN LOCAL ROAD OR STREET	0	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
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 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

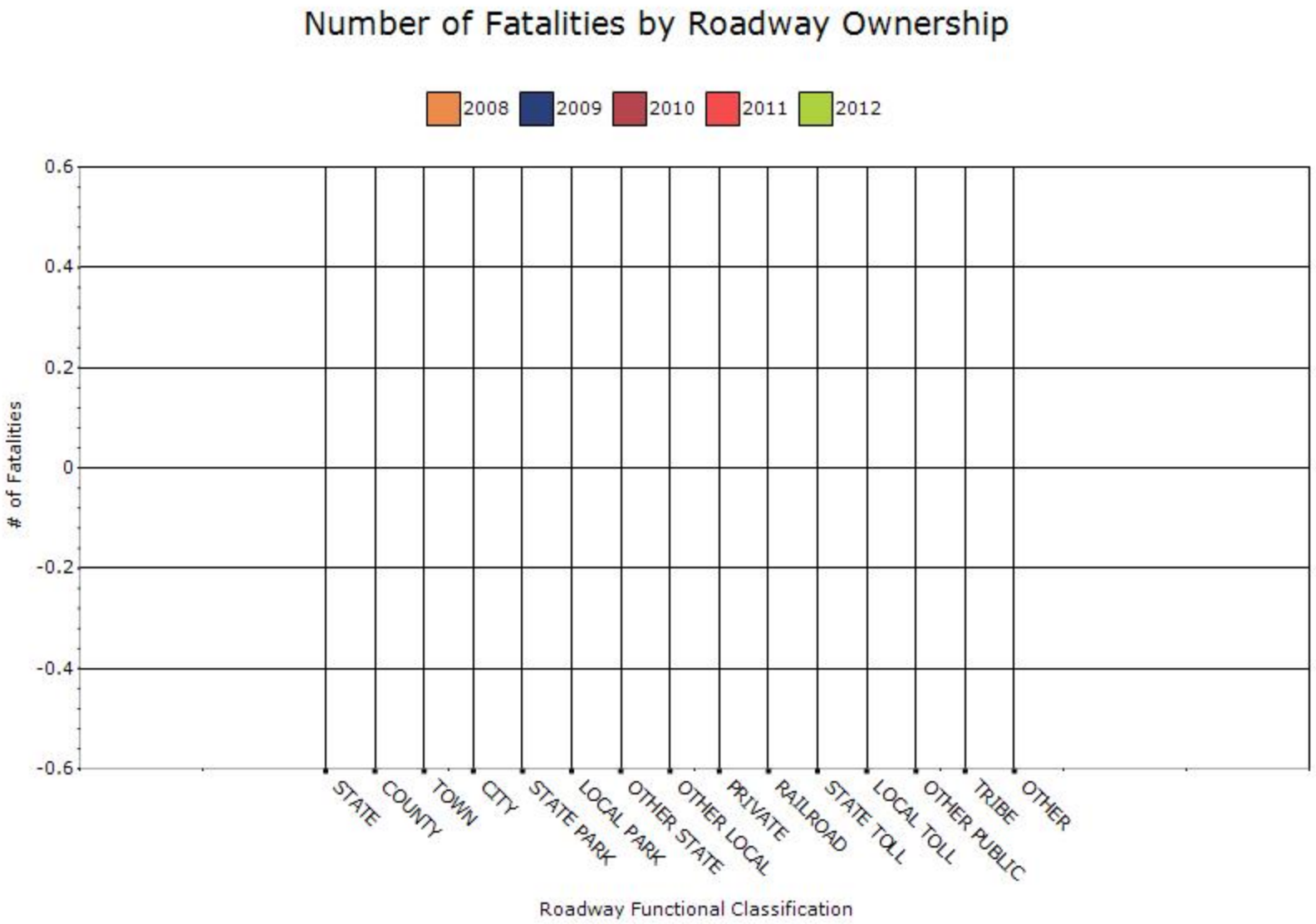

Fatality Rate by Roadway Functional Classification
2008
2009
2010
2011
2012
Fatality Rate (per HMVMT)
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR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

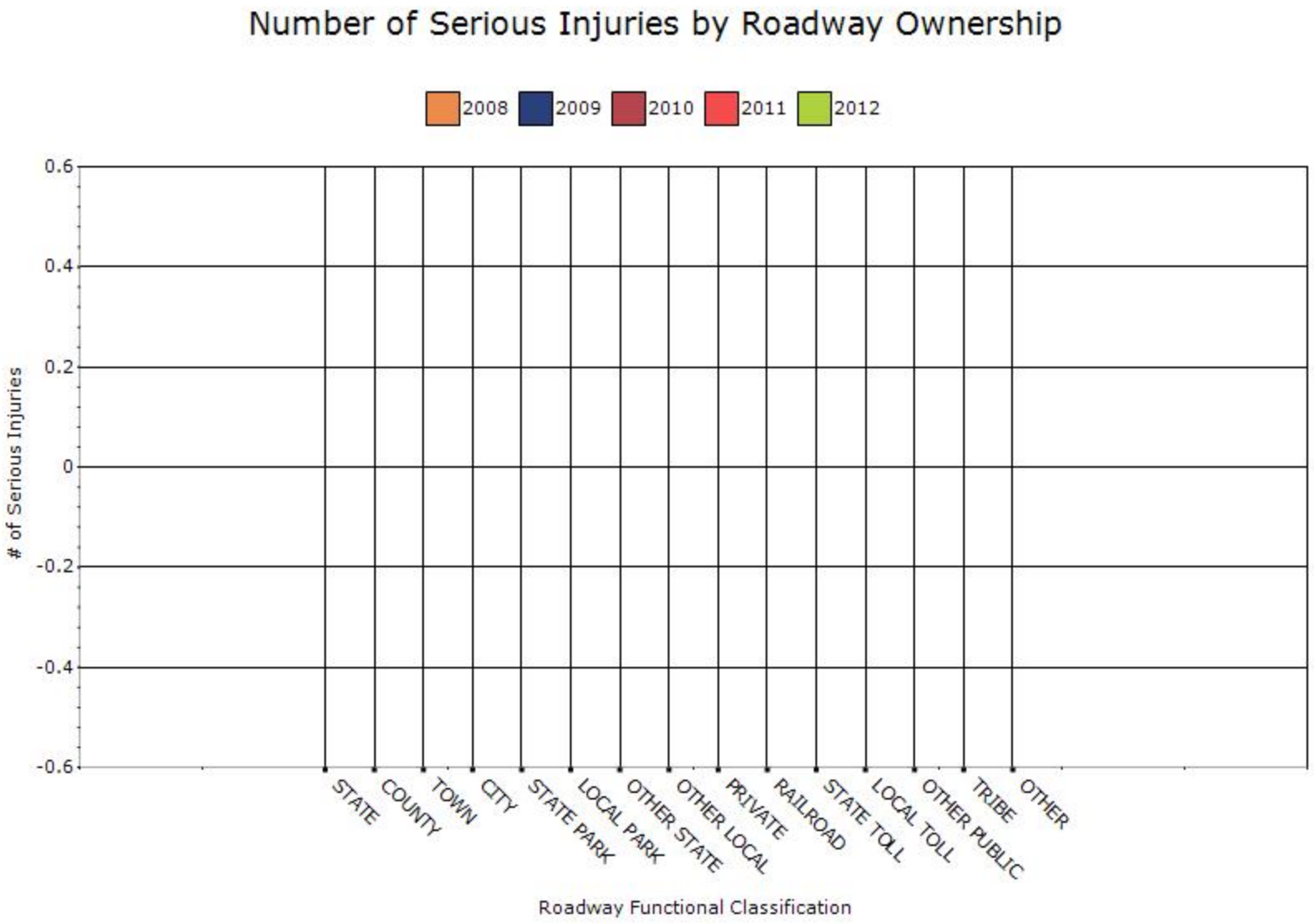

Serious Injury Rate by Roadway Functional Classification
2008
2009
2010
2011
2012
Serious Injury Rate (per HMVMT
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)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

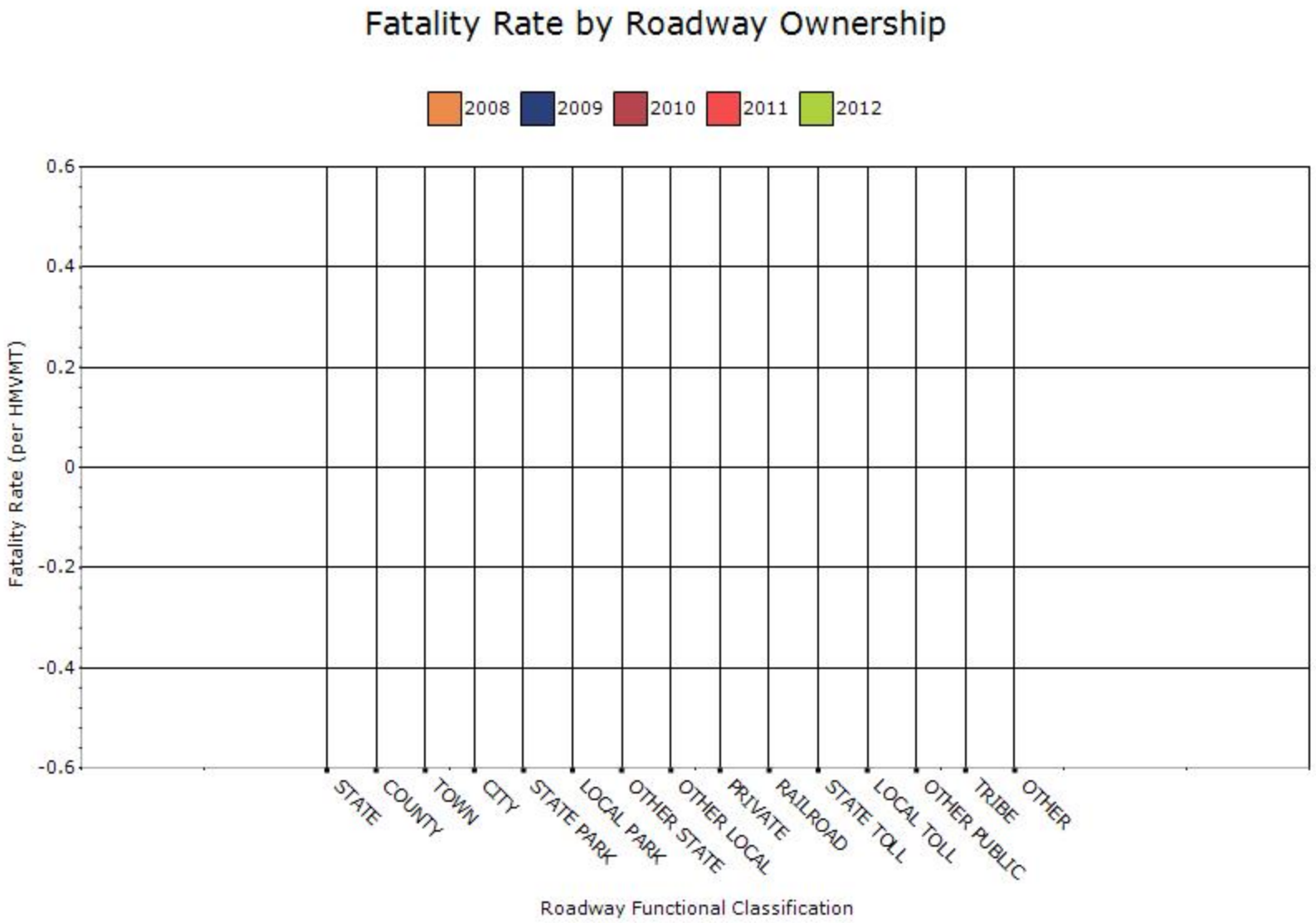
Year - 2012

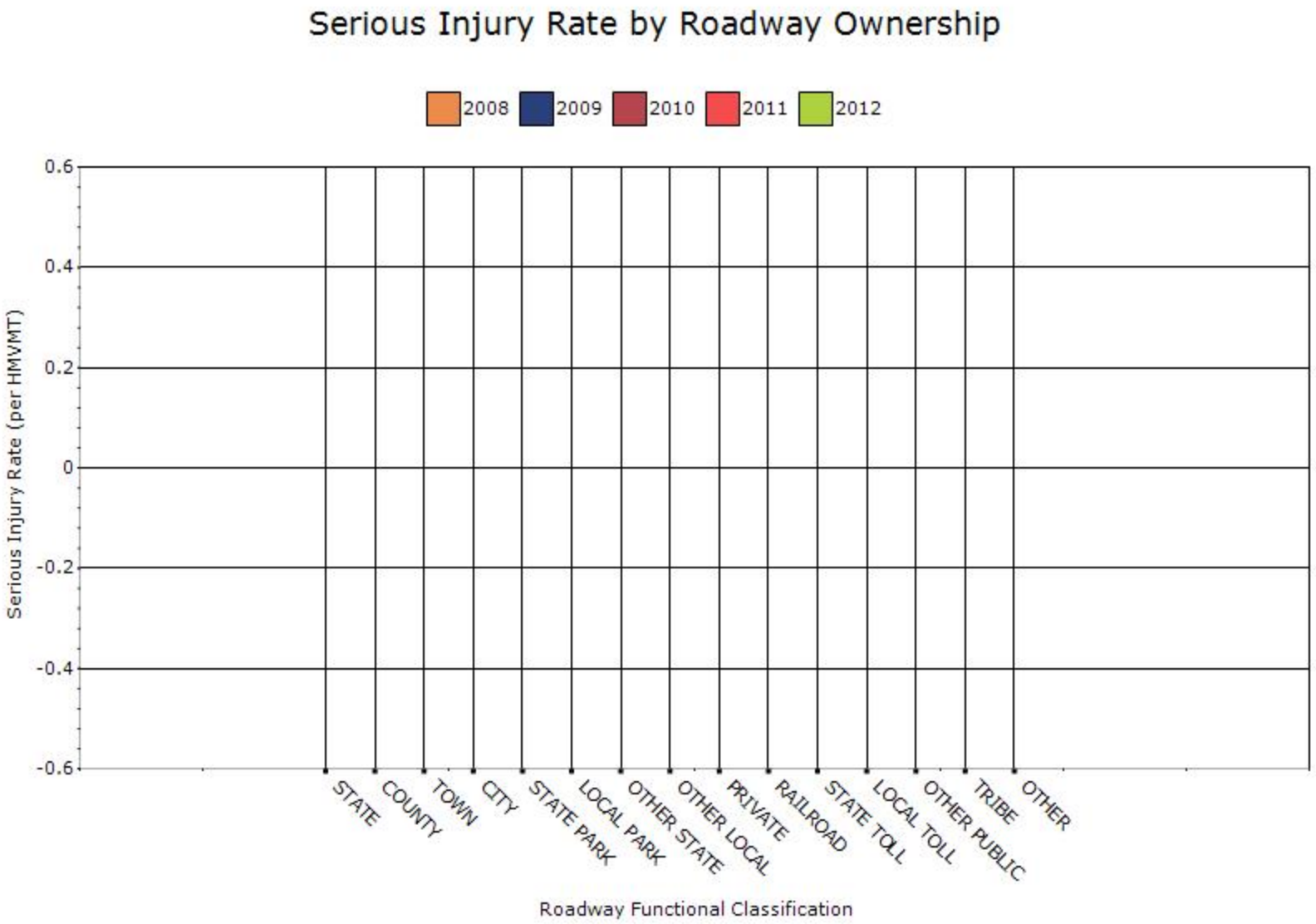
Roadway Ownership	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
STATE HIGHWAY AGENCY	0	0	0	0
COUNTY HIGHWAY AGENCY	0	0	0	0
TOWN OR TOWNSHIP HIGHWAY AGENCY	0	0	0	0
CITY OF MUNICIPAL HIGHWAY AGENCY	0	0	0	0
STATE PARK, FOREST, OR RESERVATION AGENCY	0	0	0	0
LOCAL PARK, FOREST OR RESERVATION AGENCY	0	0	0	0
OTHER STATE AGENCY	0	0	0	0
OTHER LOCAL AGENCY	0	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
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
# 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.

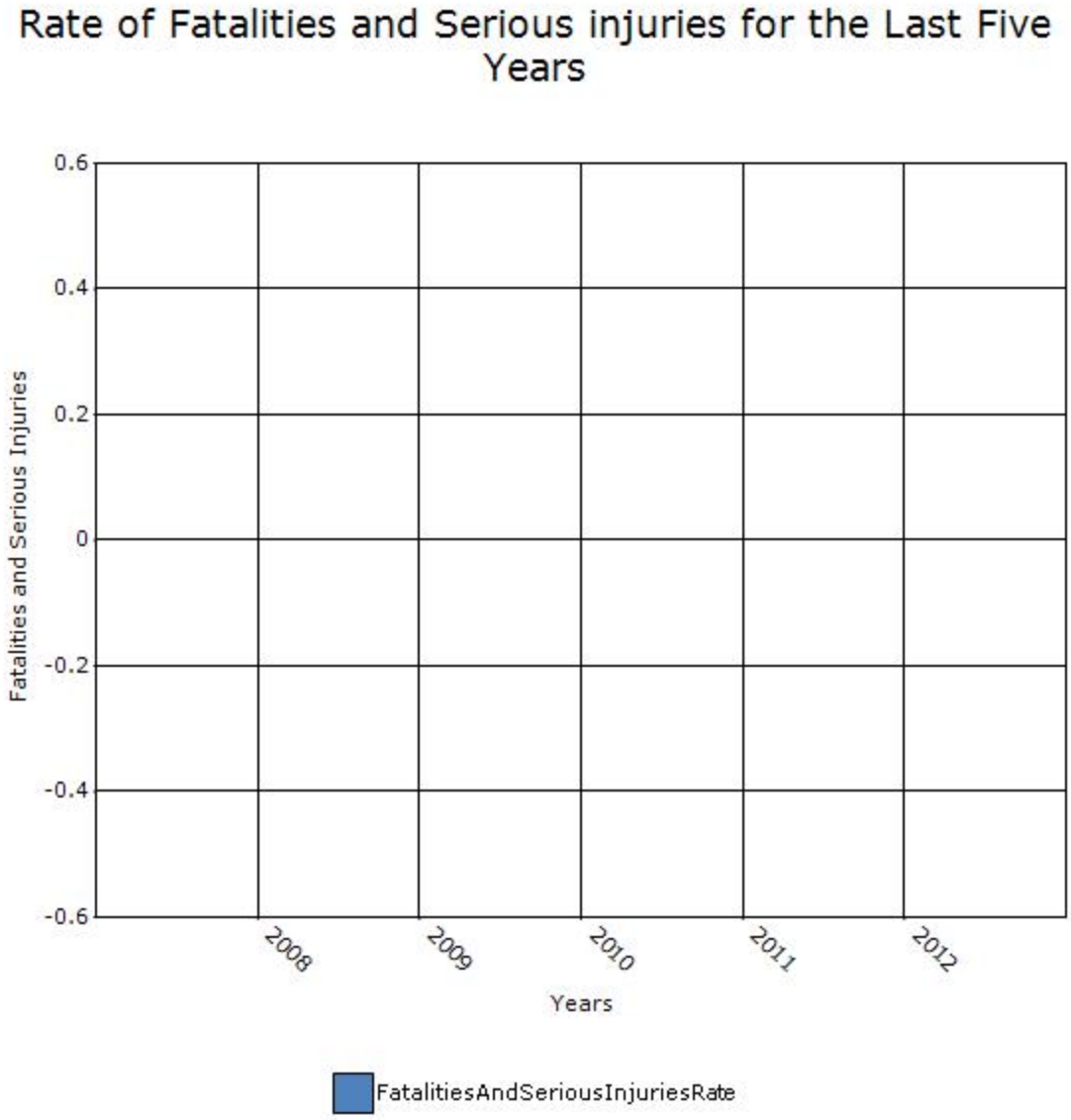
Application of Special Rules

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	0	0	0	0
Serious injury rate (per capita)	0	0	0	0	0
Fatality and serious injury rate (per capita)	0	0	0	0	0

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

To obtain number of fatalities of 65+ drivers and pedestrian, FARS was queried for injury severity = fatal injury, age > 65 and person type was driver or pedestrian. The serious injury information was based on hospital data, supplied by DPH for drivers and pedestrians over 65. This data was pulled for 2004-2011 and 5 year averages were calculated. The results were divided by the annual census estimates for persons n MA 65+. We simply divided the crashes by the population in MA over 65. Population data were obtain by National Center for Health Statistics Intercensal estimates of the resident population of the United States (2000-2009 Data) and National Center for Health Statistics. Postcensal estimates of the resident population of the United States (2010-2011 Data)



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: Other-reduction in fatalities and injuries

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: Other-more systemic programs included in HSIP

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

Our SHSP is being updated and we are setting up Emphasis Area teams to actively address and track (in a multi-disciplined way) several key factors. We have also implemented two new systemic approach projects to address left turning crashes at signalized intersections (FYA) and wrong way crashes

SHSP Emphasis Areas

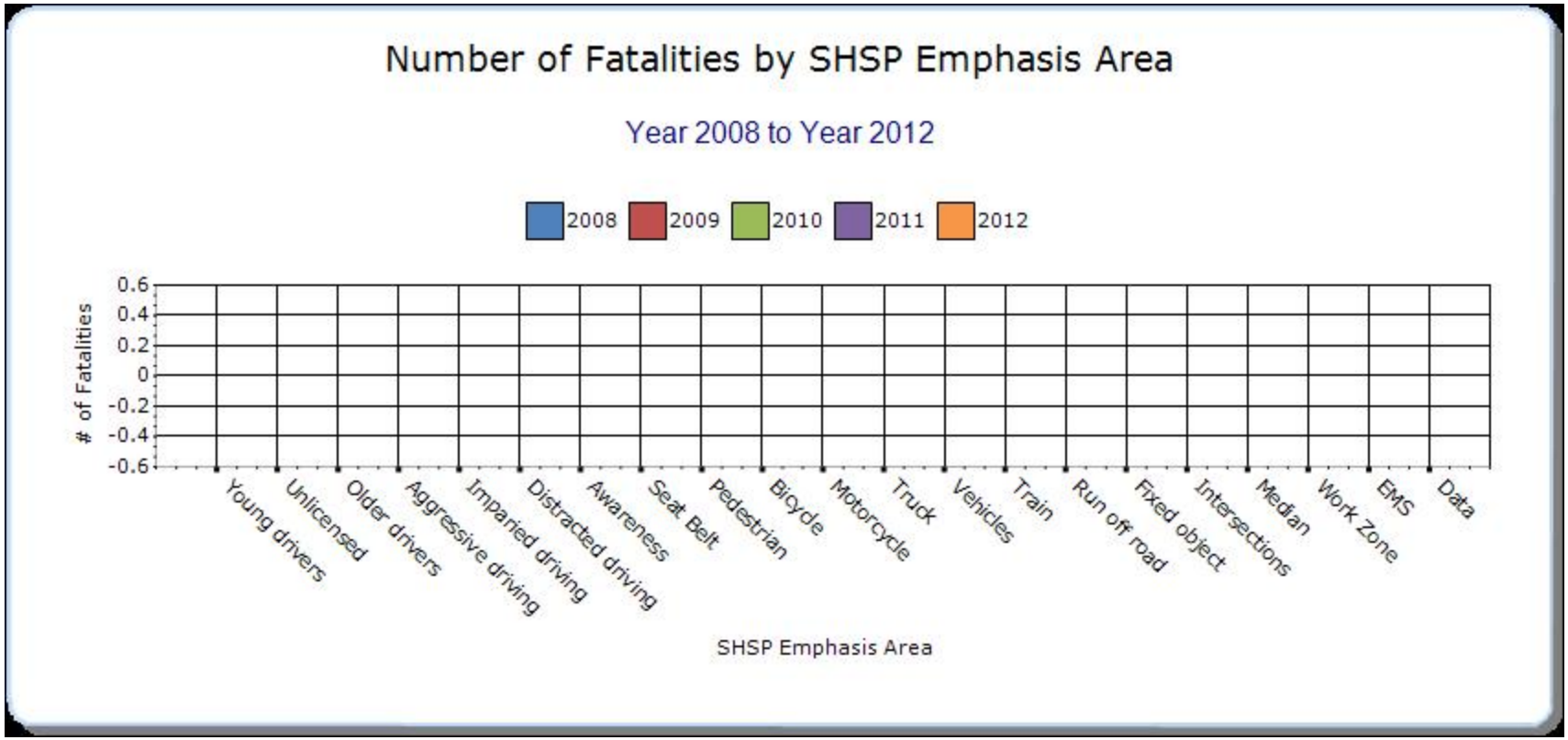
For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.

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
Instituting graduated licensing for younger drivers		**0**	**0**	**0**	**0**	**0**	**0**	**0**
Ensuring drivers are licensed and fully competent		0	0	0	0	0	0	0
Sustaining proficiency in older drivers		0	0	0	0	0	0	0
Curbing aggressive driving		0	0	0	0	0	0	0
Reducing impaired driving		0	0	0	0	0	0	0
Keeping drivers alert		0	0	0	0	0	0	0
Increasing driver safety awareness		0	0	0	0	0	0	0
Increasing seat belt use and improving		0	0	0	0	0	0	0

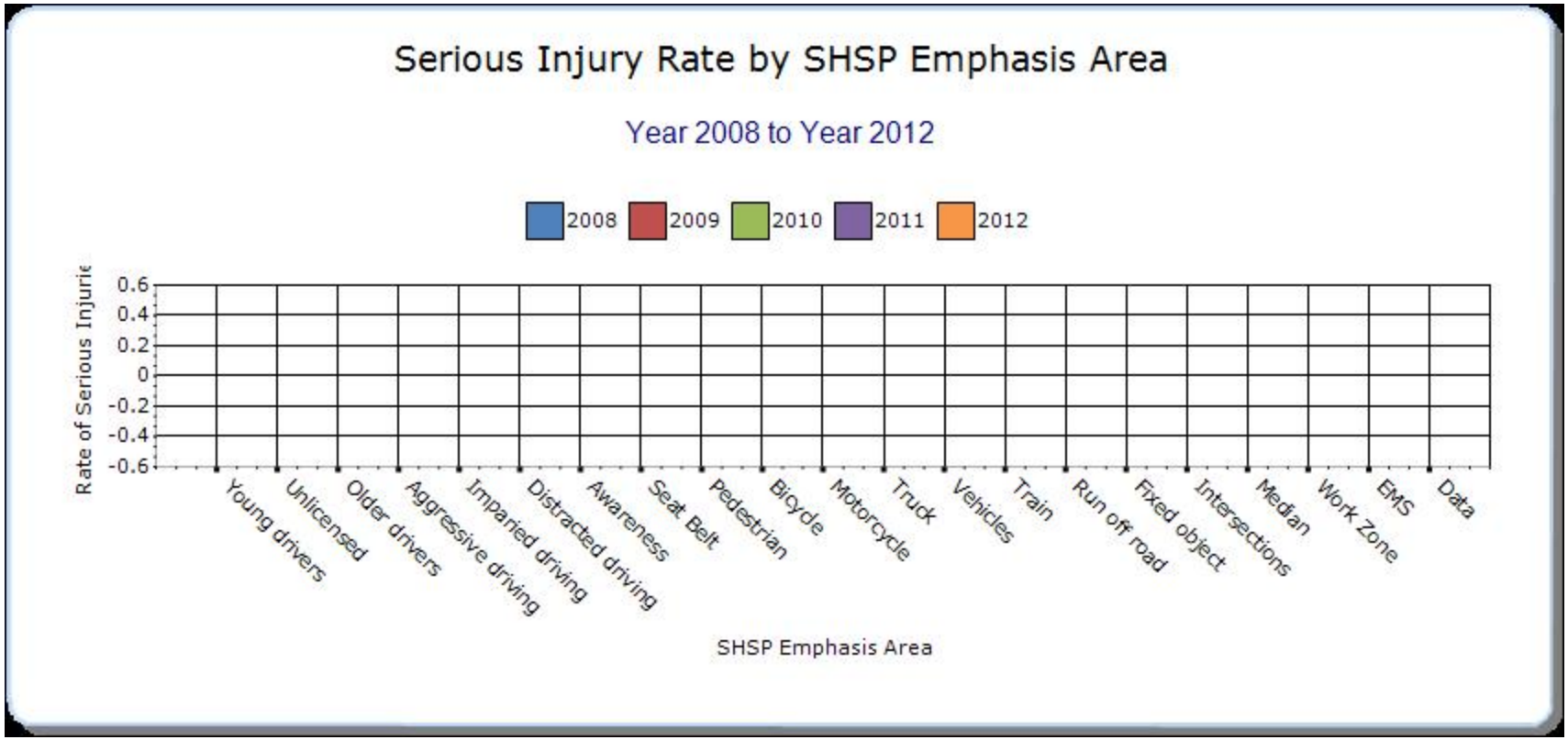
airbag effectiveness								
Making walking and street crossing easier		0	0	0	0	0	0	0
Ensuring safer bicycle travel		0	0	0	0	0	0	0
Improving motorcycle safety and increasing motorcycle awareness		0	0	0	0	0	0	0
Making truck travel safer		0	0	0	0	0	0	0
Increasing safety enhancements in vehicles		0	0	0	0	0	0	0
Reducing vehicle-train crashes		0	0	0	0	0	0	0
Keeping vehicles in the roadway		0	0	0	0	0	0	0
Minimizing the consequences of leaving the road		0	0	0	0	0	0	0
Improving the design and operation of		0	0	0	0	0	0	0

highway intersections								
Reducing head-on and across-median crashes		0	0	0	0	0	0	0
Designing safer work zones		0	0	0	0	0	0	0
Enhancing emergency medical capabilities to increase survivability		0	0	0	0	0	0	0
Improving information and decision support systems		0	0	0	0	0	0	0


Number of Fatalities by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
# of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Young drivers
Unlicensed
Older drivers
Aggressive driving
Impaired driving
Distracted driving
Awareness
Seat Belt
Pedestrian
Bicycle
Motorcycle
Truck
Vehicles
Train
Run off road
Fixed object
Intersections
Median
Work Zone
EMS
Data
SHSP Emphasis Area


Number of Serious Injuries by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
# of Serious Injuries
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Young drivers
Unlicensed
Older drivers
Aggressive driving
Impaired driving
Distracted driving
Awareness
Seat Belt
Pedestrian
Bicycle
Motorcycle
Truck
Vehicles
Train
Run off road
Fixed object
Intersections
Median
Work Zone
EMS
Data
SHSP Emphasis Area


Fatality Rate by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Young drivers
Unlicensed
Older drivers
Aggressive driving
Impaired driving
Distracted driving
Awareness
Seat Belt
Pedestrian
Bicycle
Motorcycle
Truck
Vehicles
Train
Run off road
Fixed object
Intersections
Median
Work Zone
EMS
Data
SHSP Emphasis Area

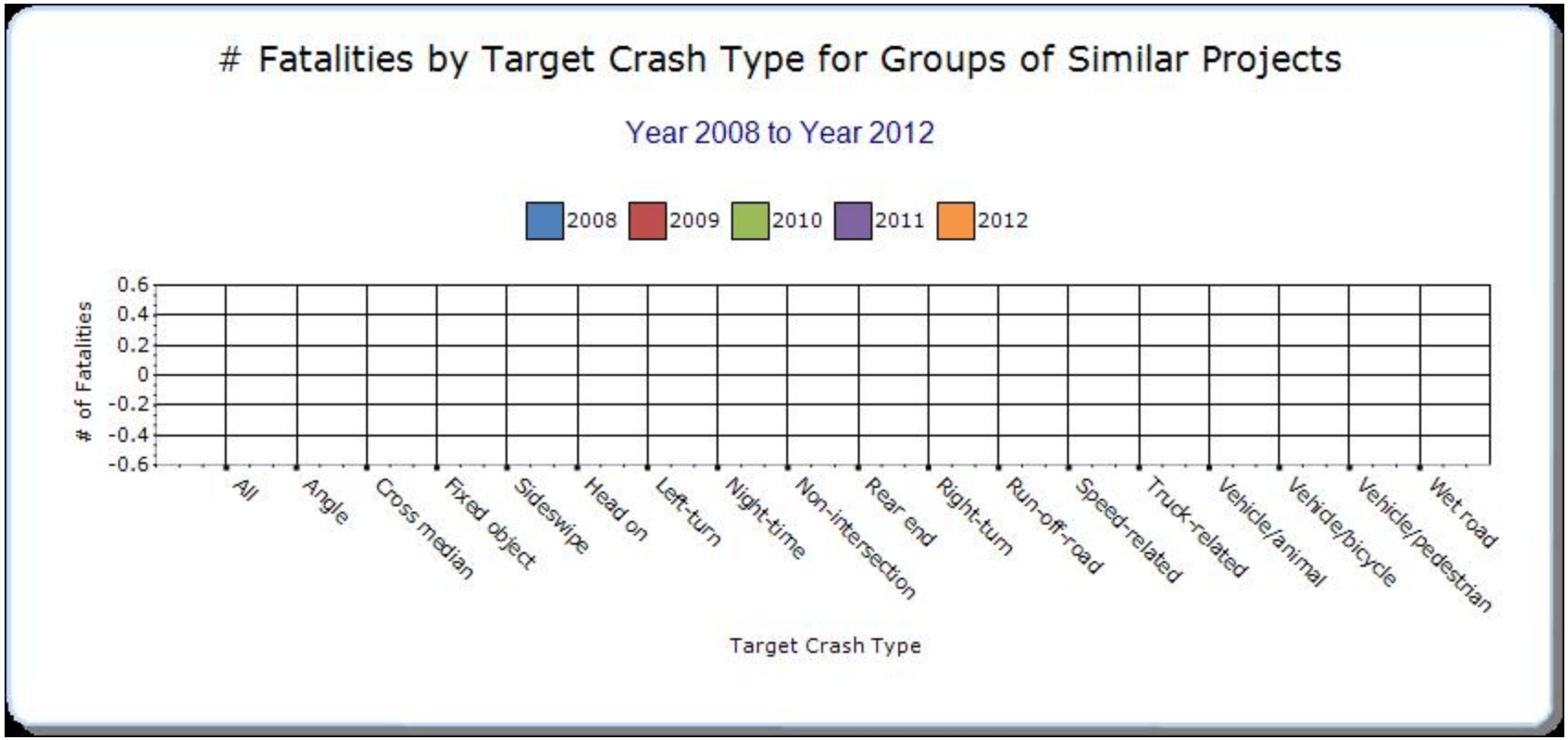

Serious Injury Rate by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Serious Injurie
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Young drivers
Unlicensed
Older drivers
Aggressive driving
Impaired driving
Distracted driving
Awareness
Seat Belt
Pedestrian
Bicycle
Motorcycle
Truck
Vehicles
Train
Run off road
Fixed object
Intersections
Median
Work Zone
EMS
Data
SHSP Emphasis Area

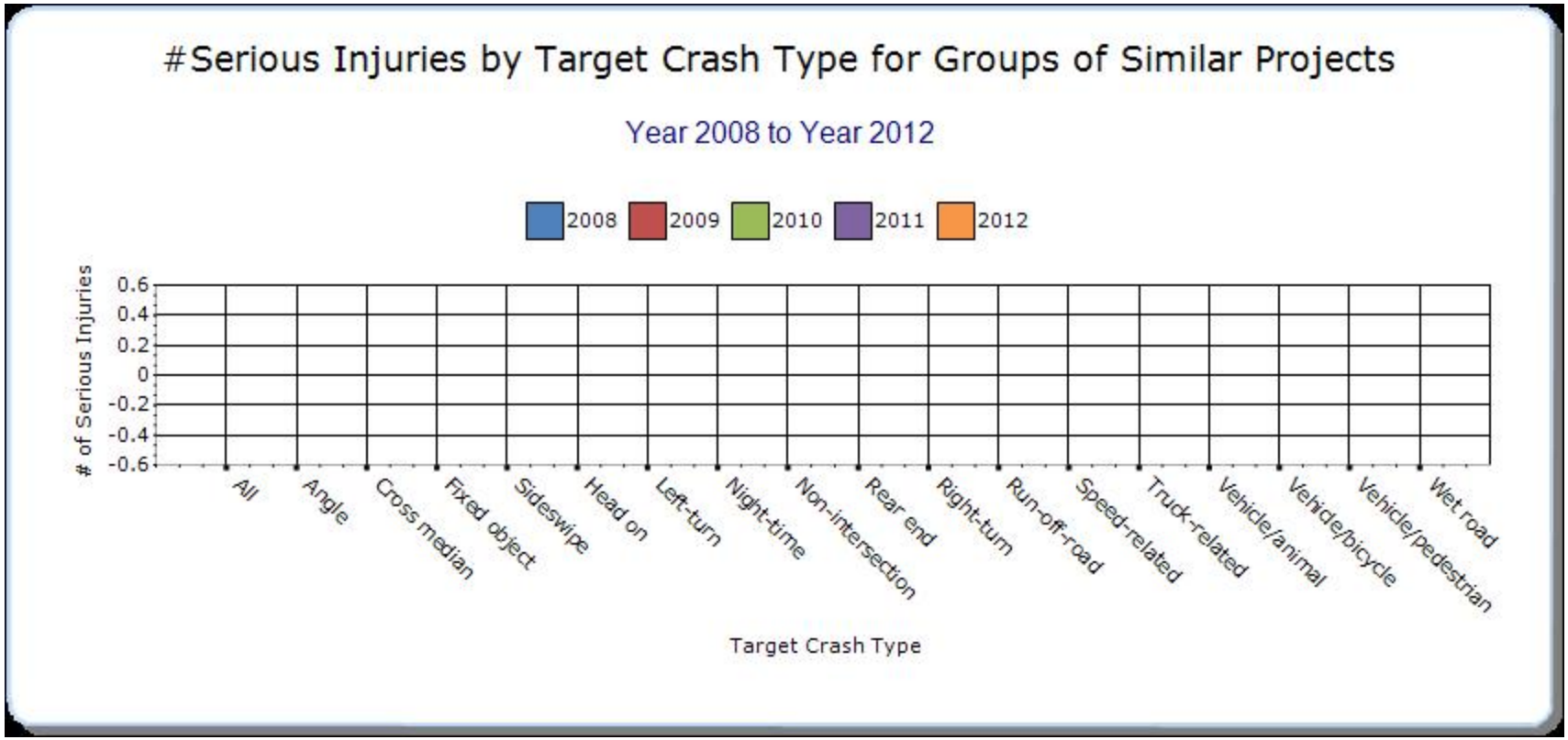
Groups of similar project types

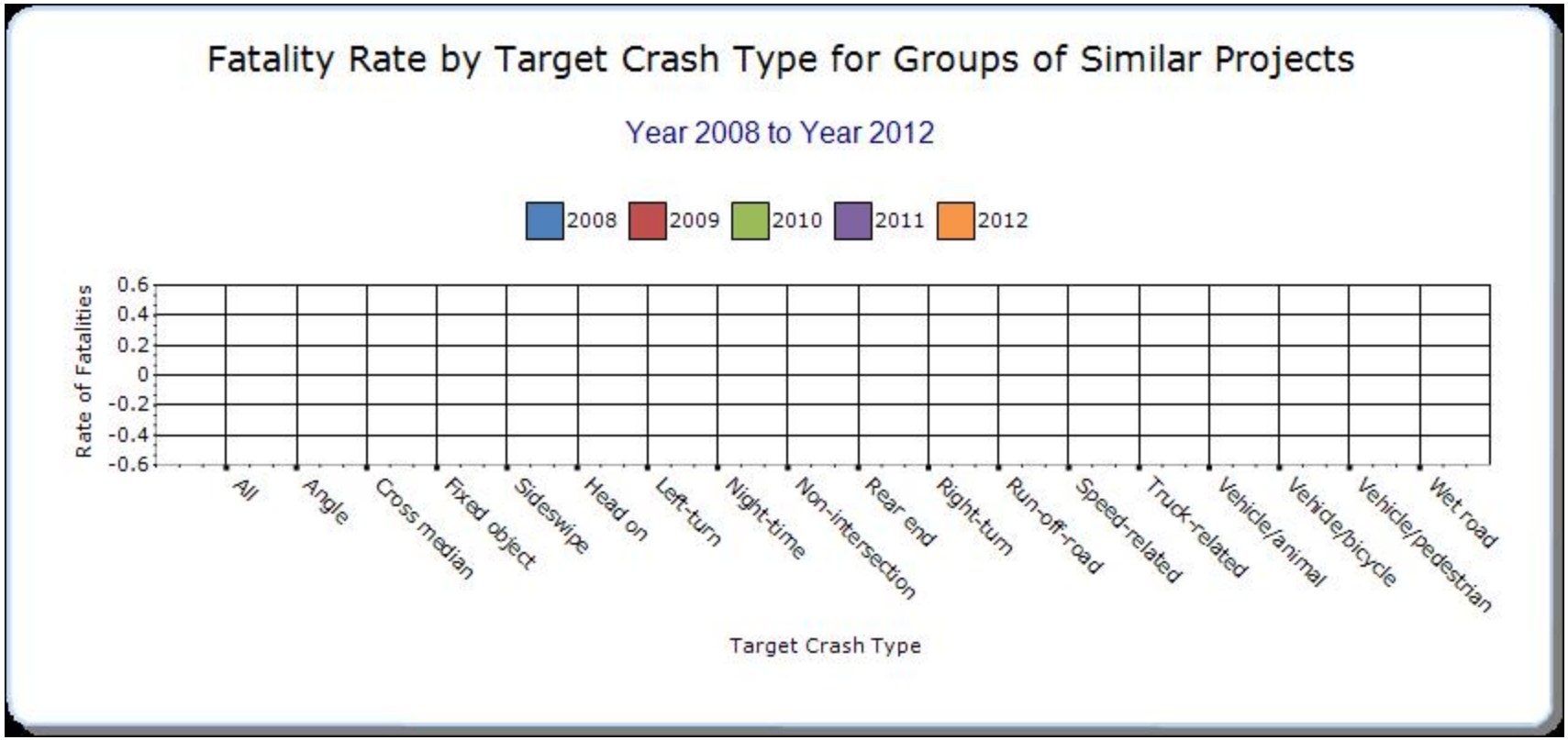
Present the overall effectiveness of groups of similar types of projects.

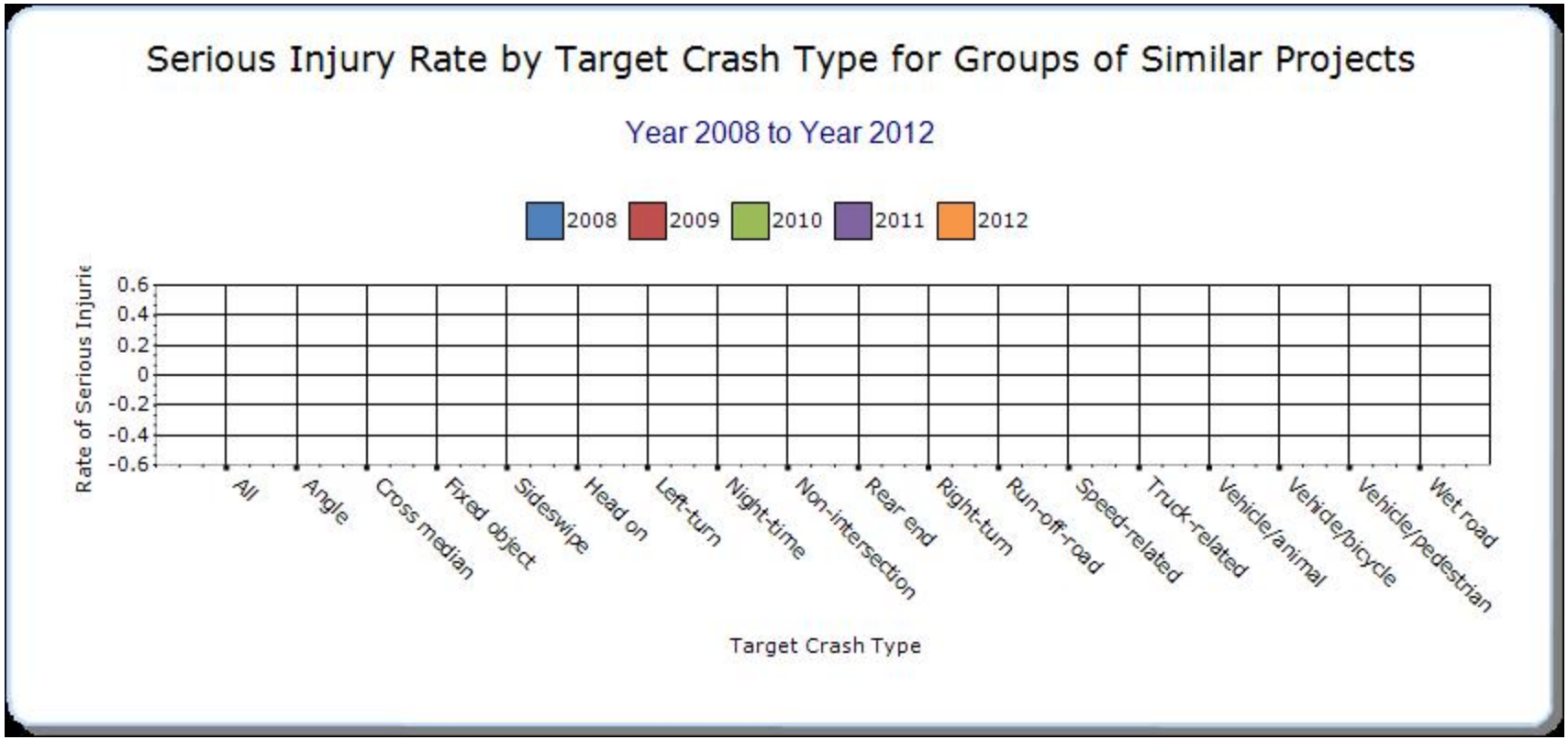
Year - 2012

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
		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
# of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
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
Year 2008 to Year 2012
2008
2009
2010
2011
2012
# of Serious Injuries
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
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
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type

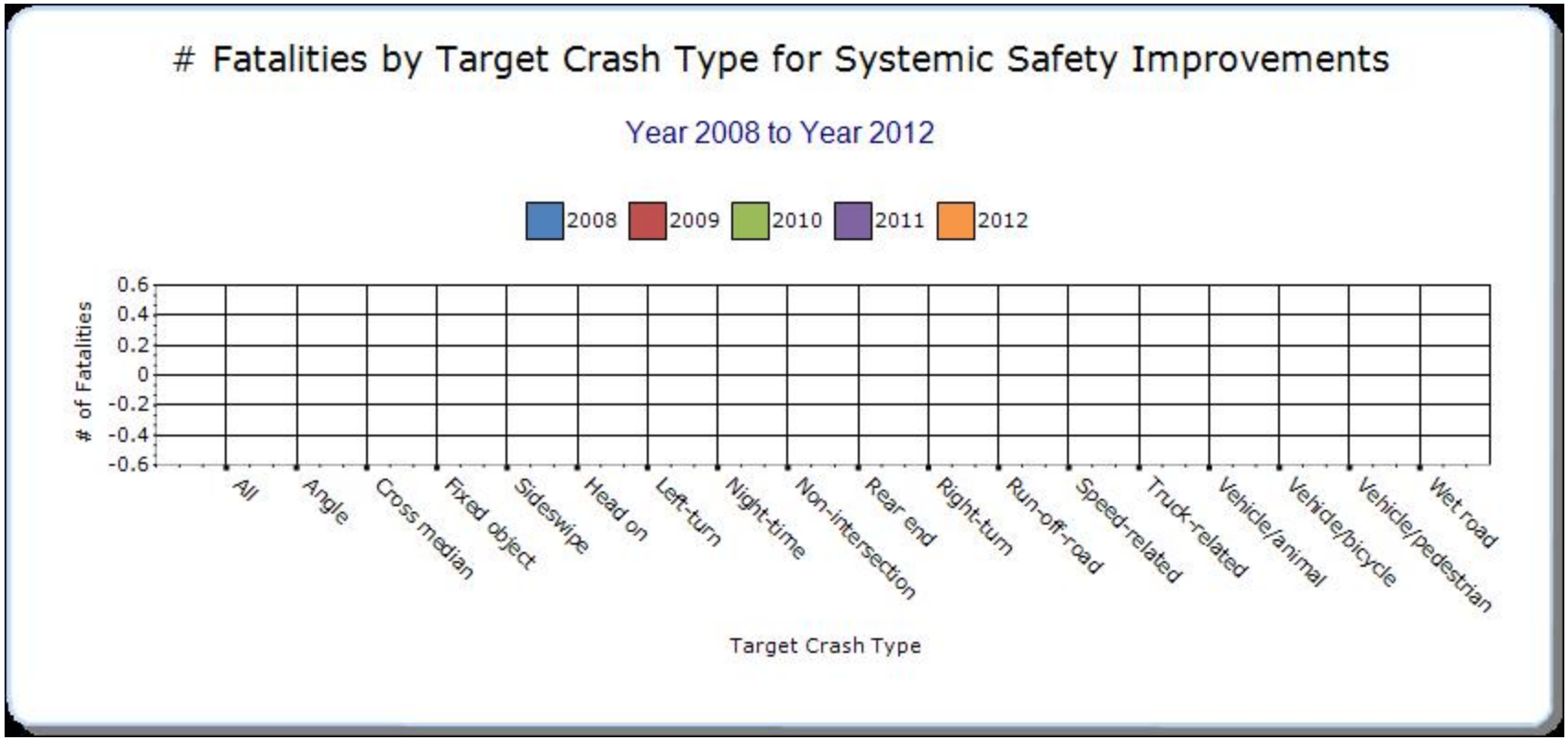

Serious Injury Rate by Target Crash Type for Groups of Similar Projects
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Serious Injurie
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type

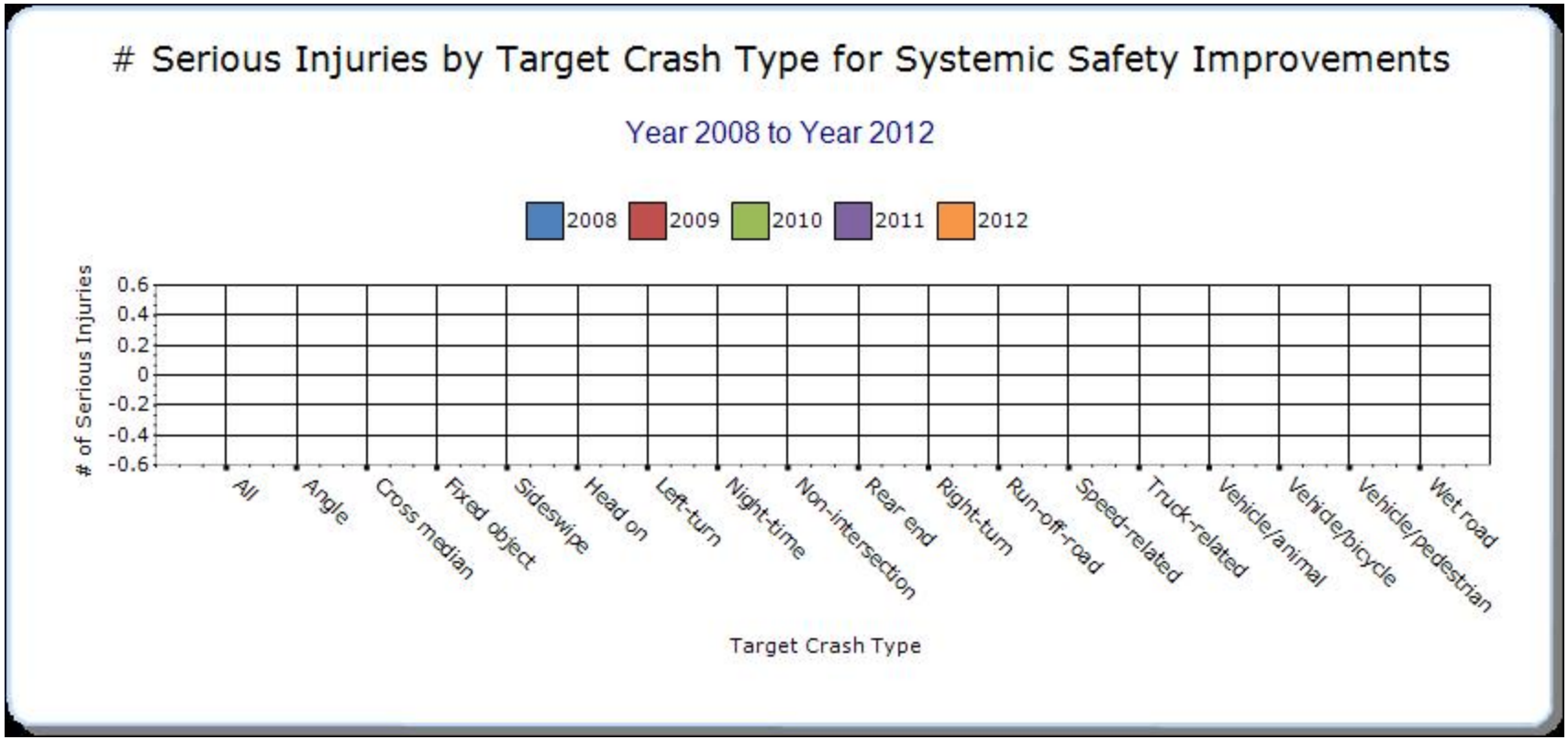
Systemic Treatments

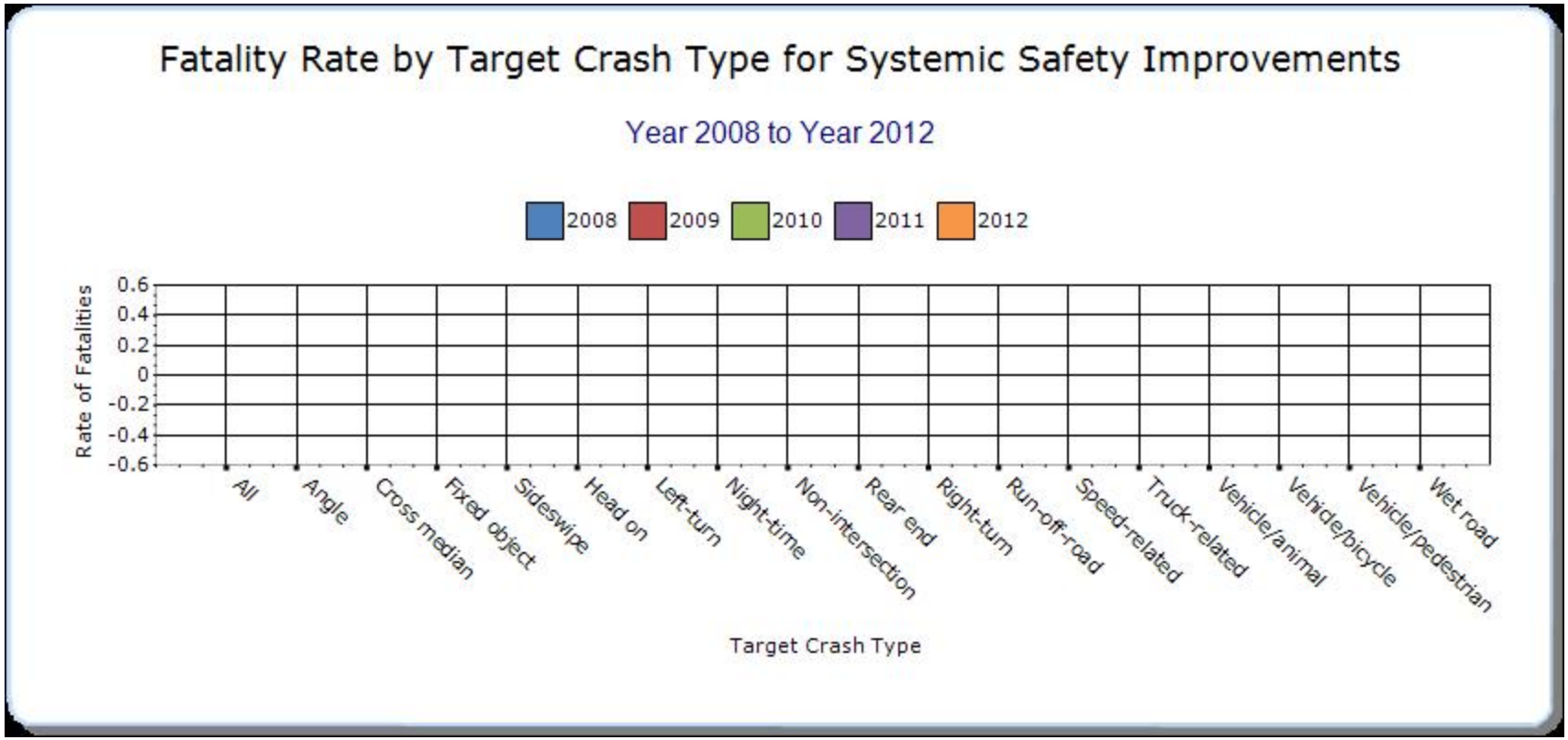
Present the overall effectiveness of systemic treatments..

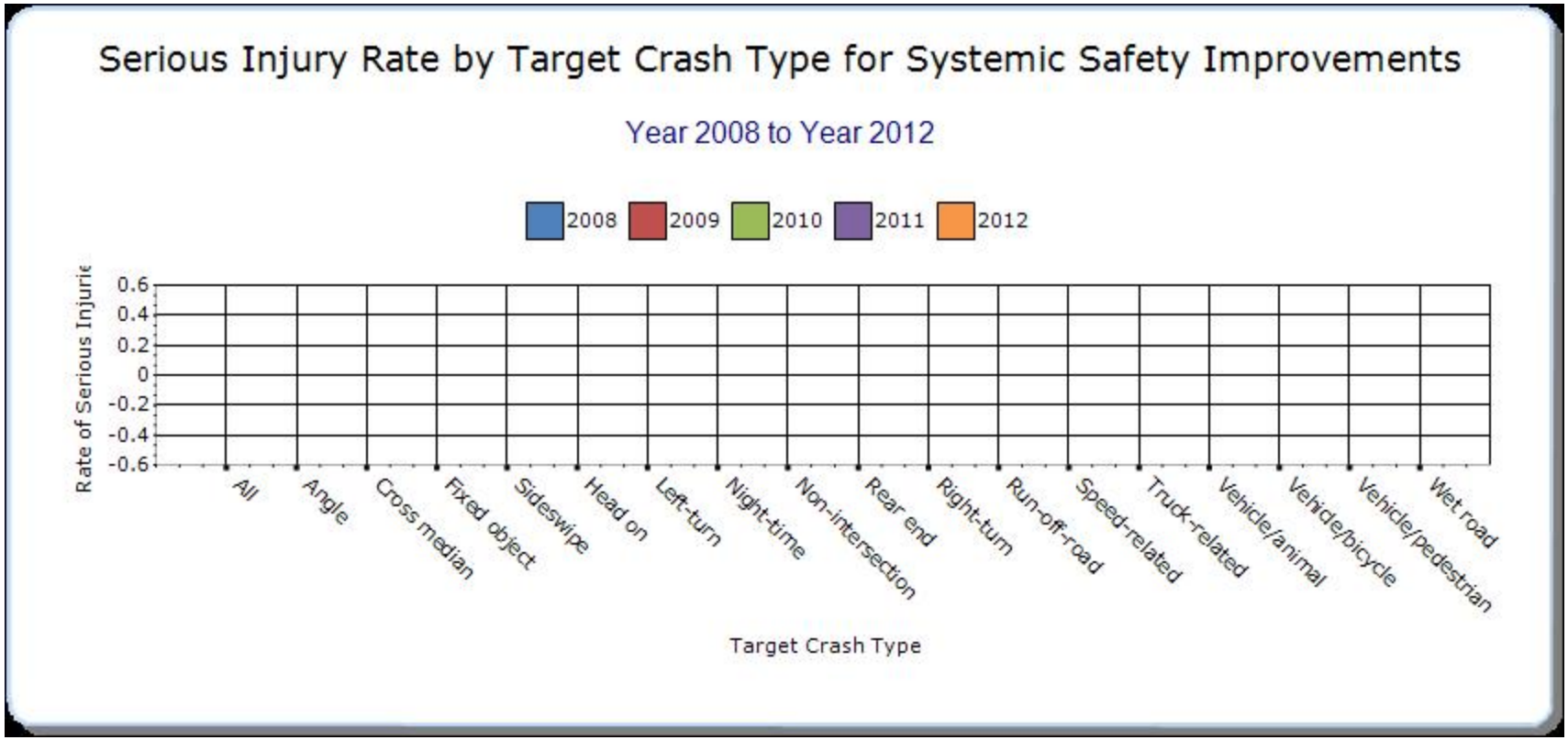
Year - 2012

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
		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
# of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
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 Systemic Safety Improvements
Year 2008 to Year 2012
2008
2009
2010
2011
2012
# of Serious Injuries
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
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 Systemic Safety Improvements
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
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 Injury Rate by Target Crash Type for Systemic Safety Improvements
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Serious Injurie
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type

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

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)

Optional Attachments

Sections	Files Attached
Assessment of the Effectiveness of the Improvements: Overview of General Highway Safety Trends	JUNK.xlsx
Assessment of the Effectiveness of the Improvements: Description of Overall Effectiveness	HSIP report FuncClass-Juris-Older.xlsx

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.