Highway Safety Improvement Program

Data Driven Decisions

Vermont
Highway Safety Improvement Program
2013 Annual Report

Prepared by: VT

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

There are different reporting periods used in this report. The report presents processes, and methodologies and programmed and obligated funding for the state fiscal year July 1, 2012 to June 30, 2013 while crash data and trends are presented on a calendar year basis.

The Highway Safety Improvement Program was implemented following the typical methodology established in 2005. The Agency further continued to work with local municipalities in the review of high risk local roads and in the constructions of low cost improvements.

For the state fiscal year (July 1, 2012 to June 30 2013), the total amount of funding that was obligated during the reporting period was $5,373,566. Of these, $2,705,375 was obligated from HSIP Section 148, $621,957 was obligated from HRRRP SAFETEA-LU and $2,046,234 was obligated from Section 164.

During the reporting period, fifteen projects were in a design stage and six were completed or being constructed.

The Vermont Highway Safety Alliance , a partnership whose make-up is a diversity of organizations and agencies, public and private that represent the 4 Es of Highway Safety (Education, Engineering, Enforcement, and Emergency Services), was created in August 2012 and now oversees the development of the Strategic Highway Safety Plan. One of the first accomplishments of the Alliance was the development and adoption of a new Strategic Highway Safety Plan in March 2013.

Over the years, the HSIP and other related safety efforts have been efficient at reducing the number of major crashes (fatal + serious injury crashes). One of the principal measures of success that illustrates this is the reduction in the five-year average of major crashes which passed from 433 major crashes for the 2004-2008 period to 375 for the 2008-2012 period. This represents approximately a 13% reduction in the five-year average. Furthermore, since the implementation of the SHSP in 2006, major crashes at intersections have been below the 105 crashes per year target set by the 2006 SHSP. Similarly, the 2006 SHSP target for the number of major run-off-the-road crashes was set to 205 crashes per year and the number of major crashes in each of the last four years has been below this target.

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.

Local roads that are part of the Federal Aid System are addressed the same way as state maintained roads, using the approved HSIP ranking methodology for the identification of locations with potential safety problems. The local roads that rank within the subset of top locations are reviewed through an engineering study. Low cost remedial actions are implemented via a statewide project, while high cost solutions are implemented by VTrans through the regular design process.

During the reporting period, local roads that were functionally classified as 7 (major collector), 8 (Minor collector) and 9 (local) were considered for evaluation and improvement under our state high risk rural roads program. Locations were identified by the regional planning commissions using crash data as well as anecdotal information. For these locations, safety corridor reviews were performed to identify signing, markings and guardrail improvements. These low cost treatments will be designed and implemented via a statewide project.

Upon the request of a municipality, VTrans will perform a road safety audit of any local road to assist the municipality with local safety concerns. A multidisciplinary team is put together, a site visit is performed and a report outlying recommendations is provided to the municipality.

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.

Depending on the characteristics of the site to be reviewed, Design, Operations and/or Maintenance staff are asked to take part to the visit of the site and to formulate some recommendations. Key personal in Design and/or Maintenance are contacted several weeks in advance usually by email by the lead investigator. Along with a request to attend an on-site meeting, the lead investigator also sends relevant background information such as crash information and a general description of the problem.

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

☒Metropolitan Planning Organizations

☐Governors Highway Safety Office

☐Local Government Association

☒Other: Other-Municipalities

☒Other: Other-Regional Planning Commissions

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-There has been no change since the last reporting period. We are planning to write our HISP procedure in the coming months.

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

In the past, a significant challenge in administering the HSIP had been the implementation of low cost projects on town or city maintained roads as well as having municipalities follow federal procurement procedures. As of 2012, VAOT has been developing and contracting regional projects to implement low cost solutions on town or city owned roads.

Another challenge in the deployment of the HSIP and of its overall effectiveness at the spot location level is the design and construction of countermeasure projects in an accelerated manner. While this remains an issue for large project, whenever possible, low to mid range projects are incorporated in paving projects or other existing projects.

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: **Rural State Highways**

Date of Program Methodology: **3/12/2009**

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-Anecdotal information	☒ 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-All the locations that are reviewed get funded for signage

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 1

☐ Incremental B/C

☐ Ranking based on net benefit

☐ Cost Effectiveness

Program: **Low-Cost Spot Improvements**

Date of Program Methodology: **1/28/2005**

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

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	

Program: **Sign Replacement And Improvement**

Date of Program Methodology: **9/18/2007**

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-Incidental to Class II Highway Grant Projects	☐ Lane miles	☐ Roadside features
☒ Other-Age of signs along a corridor	☐ 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-Districts' Class II Highway Grant Awards

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	1
☐Incremental B/C	
☐Ranking based on net benefit	
☐Cost Effectiveness	
☒In the case of FY 2010 Class II paving projects, projects were also funded for MUTCD sign	2

upgrades

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

30

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:

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.

One significant challenge concerning the HSIP ranking methodology is that it does not address roads that are off the Federal Aid System. The HSIP ranking methodology currently built upon the high crash locations generated by VTrans' Highway Research Section using their computerized algorithm. The data that they use as input are only for the roads that fall under the Federal Aid highway system. Consequently, only locally maintained roads that are on the Federal Aid systems are considered as part of the ranking methodology of the HSIP.

A consultant has been hired to review our HSIP ranking process with the aim of being able to analyze all local roads in the future. A key issue is the localization of crashes on roads that are off the Federal Aid System. The use of GPS by law enforcement is growing and this has permitted to locate crashes on local roads. As more years of data are available more significant analysis will be able to be performed. A second issue is the development of a computerized analysis tool that would incorporate the roads that are off the Federal Aid System. A linear reference system for local roads has been developed in the past but has not yet been

integrated with an analysis tool.

Another significant challenge is that in Vermont, rural crashes are dispersed. Our current spot improvement methodology requires an average on one crash per year to flag a high crash location along with a critical ratio of above 1 when compared to the average ratio of similar roads. These conditions either tend to identify rural locations with very few crashes or urban locations with a large number of crashes at high traffic intersections.

We are using SafetyAnalyst to implement the project evaluation methodology of the Highway Safety Manual.

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)	2705375	50 %	2705375	50 %
HRRRP (SAFETEA-LU)	621957	12 %	621957	12 %
HRRR Special Rule				
Penalty Transfer - Section 154				

Penalty Transfer – Section 164	2046234	38 %	2046234	38 %
Incentive Grants - Section 163				
Incentive Grants (Section 406)				
Other Federal-aid Funds (i.e. STP, NHPP)				
State and Local Funds				
Totals	5373566	100%	5373566	100%

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

20 %

How much funding is obligated to local safety projects?

20 %

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

20 %

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

15 %

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

10 %

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

0 %

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

Safety projects should have a quick turnaround to have a significant impact. Major construction projects that follow the rigid design process are an impediment to obligating funds. Producing more systemic projects with little or no right-of-way and little environmental impacts is one way to design and construct more projects and thus spending more money on safety.

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

Beginning in 2012, we have started to design and contract statewide low cost projects as part of the HSIP to implement countermeasures on roads with municipal jurisdiction.

A consultant will be helping us reviewing our HSIP methodology in the next reporting period.

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
BARRE CITY HES 037-1(8) - Design	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	939375	939375	Penalty Transfer – Section 164	Urban Minor Arterial	4900	25	City of Municipal Highway Agency	Improving the design and operation of highway intersections	Improve Geometry
BARRE TOWN HES STPG 6100(6) - Preliminary	Intersection geometry Auxiliary lanes - add left-turn lane	0 Numbers	156170 0	156170 0	Penalty Transfer – Section 164	Urban Minor Arterial	2700	35	State Highway Agency	Improving the design and operation of highway intersections	Improve Geometry
BERLIN STPG SGNL(40) -	Intersection traffic control Modify traffic signal - modernization/replaceme	1 Numbe	675000	675000	HSIP (Sectio	Urban Principal Arterial -	11459	50	State Highway	Improving the design and	Improve Operatio

Design	nt	rs			n 148)	Other			Agency	operation of highway intersecti ons	ns
BRISTOL HES 021-1(28) - Design	Intersection traffic control Modify traffic signal - modernization/replaceme nt	1 Numbe rs	95000 0	95000 0	Penalt y Transf er – Section 164	Rural Minor Arterial	5900	30	Town or Townshi p Highway Agency	Improving the design and operation of highway intersecti ons	Improve Operatio ns
BURLINGTO N HES 5200 (18) - Design	Intersection traffic control Modify control - all-way stop to roundabout	1 Numbe rs	27350 00	27350 00	Penalt y Transf er – Section 164	Urban Principal Arterial - Other	1940 0	30	City of Municip al Highway Agency	Improving the design and operation of highway intersecti ons	Improve Operatio ns
CAMBRIDG E STP 030-2(27) - Design	Intersection traffic control Modify control - all-way stop to roundabout	1 Numbe rs	22878 39	22878 39	Penalt y Transf er – Section 164	Rural Minor Arterial	7150	40	State Highway Agency	Improving the design and operation of highway	Improve Operatio ns

										intersections	
COLCHESTER HES028-1(28) - Design	Intersection geometry Auxiliary lanes - add left-turn lane	2 Numbers	560000	560000	Penalty Transfer – Section 164	Rural Principal Arterial - Other	11450	55	State Highway Agency	Improving the design and operation of highway intersections	Improve Geometry
COLCHESTER HES NH 5600(14) - Design	Intersection geometry Intersection geometry - other	2 Numbers	693480 0	693480 0	Penalty Transfer – Section 164	Urban Principal Arterial - Other	21150	30	State Highway Agency	Improving the design and operation of highway intersections	Improve Geometry
ESSEX STPG SGNL(41) - Construction	Intersection traffic control Modify traffic signal - modernization/replacement	1 Numbers	385425	385425	HSIP (Section 148)	Urban Minor Arterial	13200	40	State Highway Agency	Improving the design and operation of highway intersections	Improve Operations

ESSEX TOWN STP HES 5400(5) - Design	Intersection traffic control Intersection traffic control - other	1 Numbers	1038199	1038199	HSIP (Section 148)	Urban Minor Arterial	8950	40	State Highway Agency	Improving the design and operation of highway intersections	Improve Operations
FERRISBURGH NHG SGNL(42) - Design	Intersection traffic control Intersection traffic control - other	1 Numbers	470000	470000	HSIP (Section 148)	Rural Principal Arterial - Other	12300	40	State Highway Agency	Improving the design and operation of highway intersections	Improve Operations
HINESBURG HES 021-1(19) - Design	Intersection geometry Auxiliary lanes - add left-turn lane	2 Numbers	2221795	2221795	Penalty Transfer – Section 164	Rural Minor Arterial	8550	40	State Highway Agency	Improving the design and operation of highway intersections	Improve Geometry
JERICHO STP HES 030-1(21) -	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	0	0	HSIP (Section 148)	Rural Minor Arterial	10149	50	State Highway Agency	Improving the design and	Improve Geometry

Design										operation of highway intersections	
LOW COST SAFETY IMPROVE - Completed	Roadway signs and traffic control Roadway signs (including post) - new or updated	6 Numbers	3690.51	3690.51	Penalty Transfer – Section 164	Various	0	0	State Highway Agency	Keeping vehicles in the roadway	Visibility
MILTON HES 028-1(27)	Roadway signs and traffic control Roadway signs and traffic control - other	0.3 Miles	6500	6500	Penalty Transfer – Section 164	Rural Principal Arterial - Other	55	9500	State Highway Agency	Improving the design and operation of highway intersections	Improve Operations
MORRISTOWN STP HES 030-2(20)	Intersection geometry Intersection geometrics - modify skew angle	1 Numbers	127500	127500	HSIP (Section 148)		6700	50	State Highway Agency	Improving the design and operation of highway intersections	Improve Geometry

NEW HAVEN HES 032-1(8) - Design	Intersection geometry Intersection geometrics - miscellaneous/other/unspecified	1 Numbers	1050000	1050000	Penalty Transfer – Section 164	Rural Minor Arterial	4050	45	State Highway Agency	Improving the design and operation of highway intersections	Improve Geometry
SOUTH BURLINGTON HES 5200(20) - Design	Intersection traffic control Modify traffic signal - add long vehicle detection	4 Numbers	10400	10400	Penalty Transfer – Section 164		6350	25	City of Municipal Highway Agency	Improving the design and operation of highway intersections	Improve Operations
SOUTH HERO STP HES 028-1(22) - Design	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	1300000	1300000	HSIP (Section 148)	Rural Principal Arterial - Other	6950	35	State Highway Agency	Improving the design and operation of highway intersections	Improve Geometry
STATEWIDE HES CRSH	Non-infrastructure Data/traffic records	1 Numbers	92423	311791	Penalty Transf	Not Applicable, Crash	0	0	State Highway Agency	Improving information and	Improve Data Quality

					er – Section 164	Management				decision support systems	
STATEWIDE HES SFTY(6) CLASS II TH TRAFFIC CONTROL	Roadway signs and traffic control Roadway signs (including post) - new or updated	45 Miles	26544	26544	Penalty Transfer – Section 164	Rural Major Collector	0	0	Town or Township Highway Agency	Keeping vehicles in the roadway	Local Roads, Visibility
Statewide STPHRRR(12) - Completed	Roadway signs and traffic control Roadway signs (including post) - new or updated	10.757 Miles	86493	86493	HSIP (Section 148)	Rural Major, Minor and Local Roads	0	0	Town or Township Highway Agency	Keeping vehicles in the roadway	Local Roads, Visibility
Statewide STPHRRR(13) - Completed	Roadway signs and traffic control Roadway signs (including post) - new or updated	34.827 Miles	186455	186455	HSIP (Section 148)	Rural Major, Minor and Local Roads	0	0	Town or Township Highway Agency	Keeping vehicles in the roadway	Local Roads, Visibility
Statewide STPHRRR(14) - Completed	Roadway signs and traffic control Roadway signs (including post) - new or updated	12.456 Miles	106217	106217	HSIP (Section 148)	Rural Major, Minor and Local Roads	0	0	Town or Township Highway Agency	Keeping vehicles in the roadway	Local Roads, Visibility
Statewide STPHRRR(1	Roadway signs and traffic control Roadway signs	12.799	11666	11666	HSIP (Sectio	Rural Major,	0	0	Town or Townshi	Keeping vehicles in	Local Roads,

5) - Cpmpleted	(including post) - new or updated	Miles	4	4	n 148)	Minor and Local Roads			p Highway Agency	the roadway	Visibility
Statewide HES HSIP(3) - Completed	Roadway signs and traffic control Roadway signs (including post) - new or updated	0.421 Miles	3912	3912	HSIP (Sectio n 148)	Rural Major, Minor and Local Roads	0	0	Town or Townshi p Highway Agency	Keeping vehicles in the roadway	Local Roads, Visibility
Statewide HES HSIP(4) - Completed	Roadway signs and traffic control Roadway signs (including post) - new or updated	5.094 Miles	29871	29871	HSIP (Sectio n 148)	Urban & Rural Major, Minor and Local Roads	0	0	Town or Townshi p Highway Agency	Keeping vehicles in the roadway	Local Roads, Visibility
Statewide HES HSIP(5) - C ompleted	Roadway signs and traffic control Roadway signs (including post) - new or updated	1.239 Miles	4799	4799	HSIP (Sectio n 148)	Rural Major, Minor and Local Roads	0	0	Town or Townshi p Highway Agency	Keeping vehicles in the roadway	Local Roads, Visibility
Statewide HES HSIP(6) - C ompleted	Roadway signs and traffic control Roadway signs (including post) - new or updated	3.248 Miles	67657	67657	HSIP (Sectio n 148)	Urban & Rural Major, Minor and Local Roads	0	0	Town or Townshi p Highway Agency	Keeping vehicles in the roadway	Local Roads, Visibility

STPG SIGN(33) - Completed	Roadway signs and traffic control Roadway signs (including post) - new or updated	33.11 Miles	223391	223391	HSIP (Section 148)	Rural Principal Arterial - Other	0	0	State Highway Agency	Keeping vehicles in the roadway	Visibility
STPG SIGN(35) - Completed	Roadway signs and traffic control Roadway signs (including post) - new or updated	30.77 Miles	121267	121267	HSIP (Section 148)	Rural Principal Arterial - Other	0	0	State Highway Agency	Keeping vehicles in the roadway	Visibility
STPG SIGN(37) - Completed	Roadway signs and traffic control Roadway signs (including post) - new or updated	21.46 Miles	86035	86035	HSIP (Section 148)	Rural Principal Arterial - Other	0	0	State Highway Agency	Keeping vehicles in the roadway	Visibility

Progress in Achieving Safety Performance Targets

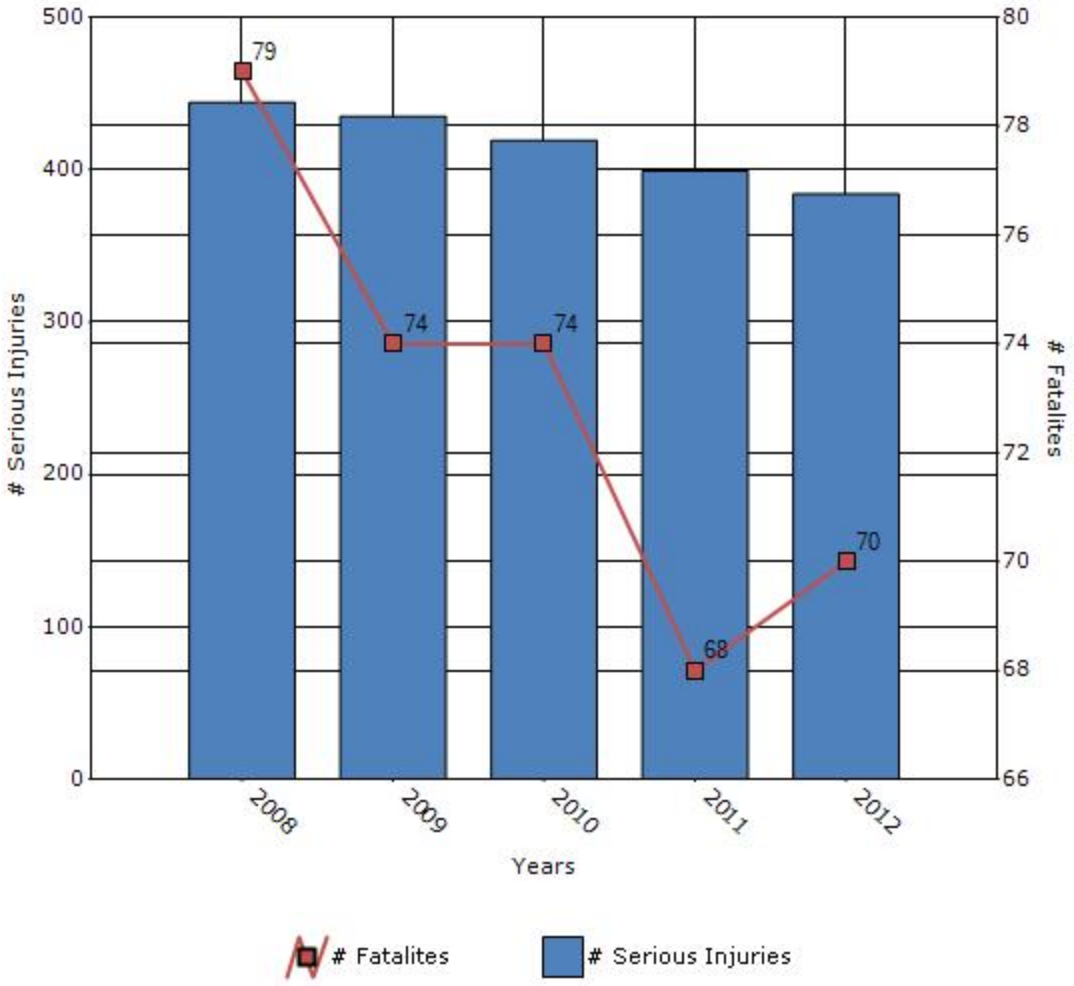
Overview of General Safety Trends

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

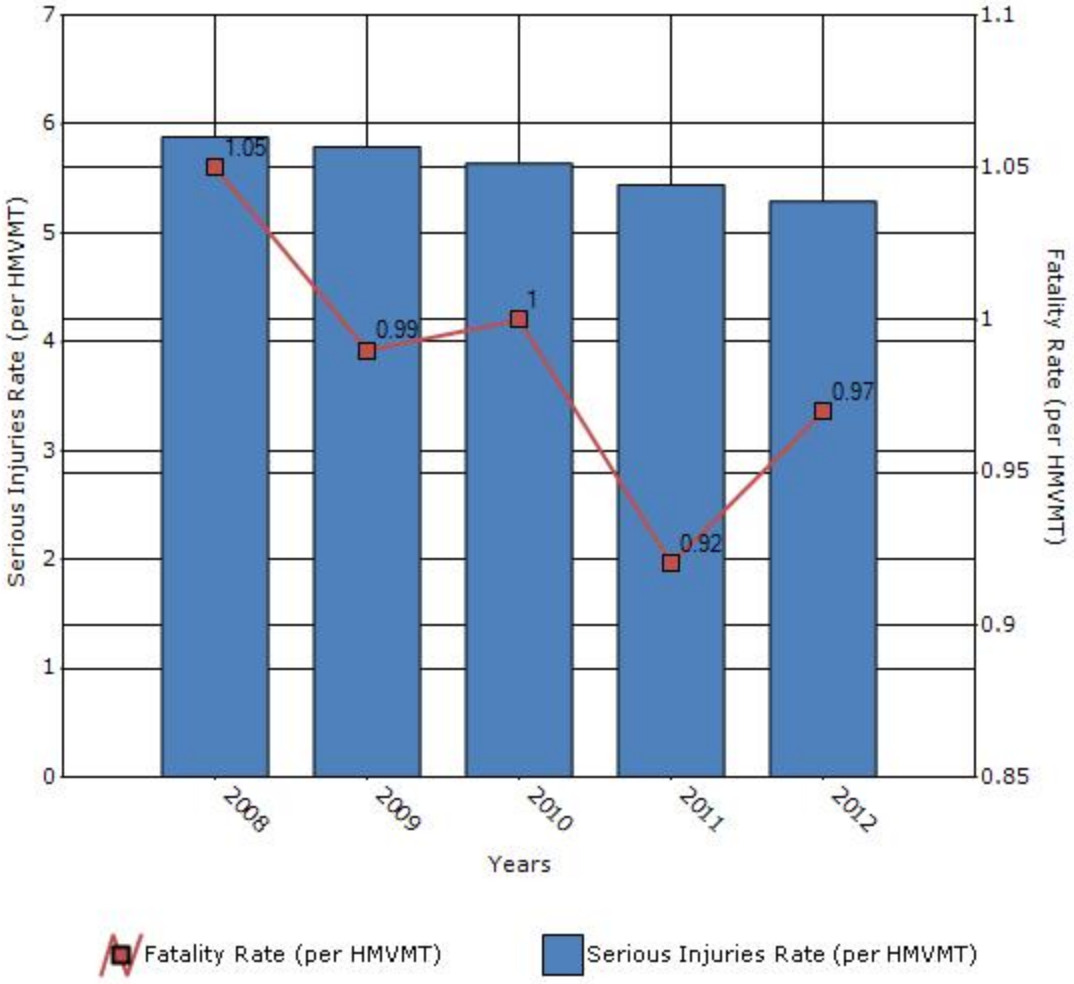
Performance Measures*	2008	2009	2010	2011	2012
Number of fatalities	79	74	74	68	70
Number of serious injuries	444	435	419	399	384
Fatality rate (per HMVMT)	1.05	0.99	1	0.92	0.97
Serious injury rate (per HMVMT)	5.88	5.79	5.64	5.44	5.29

*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

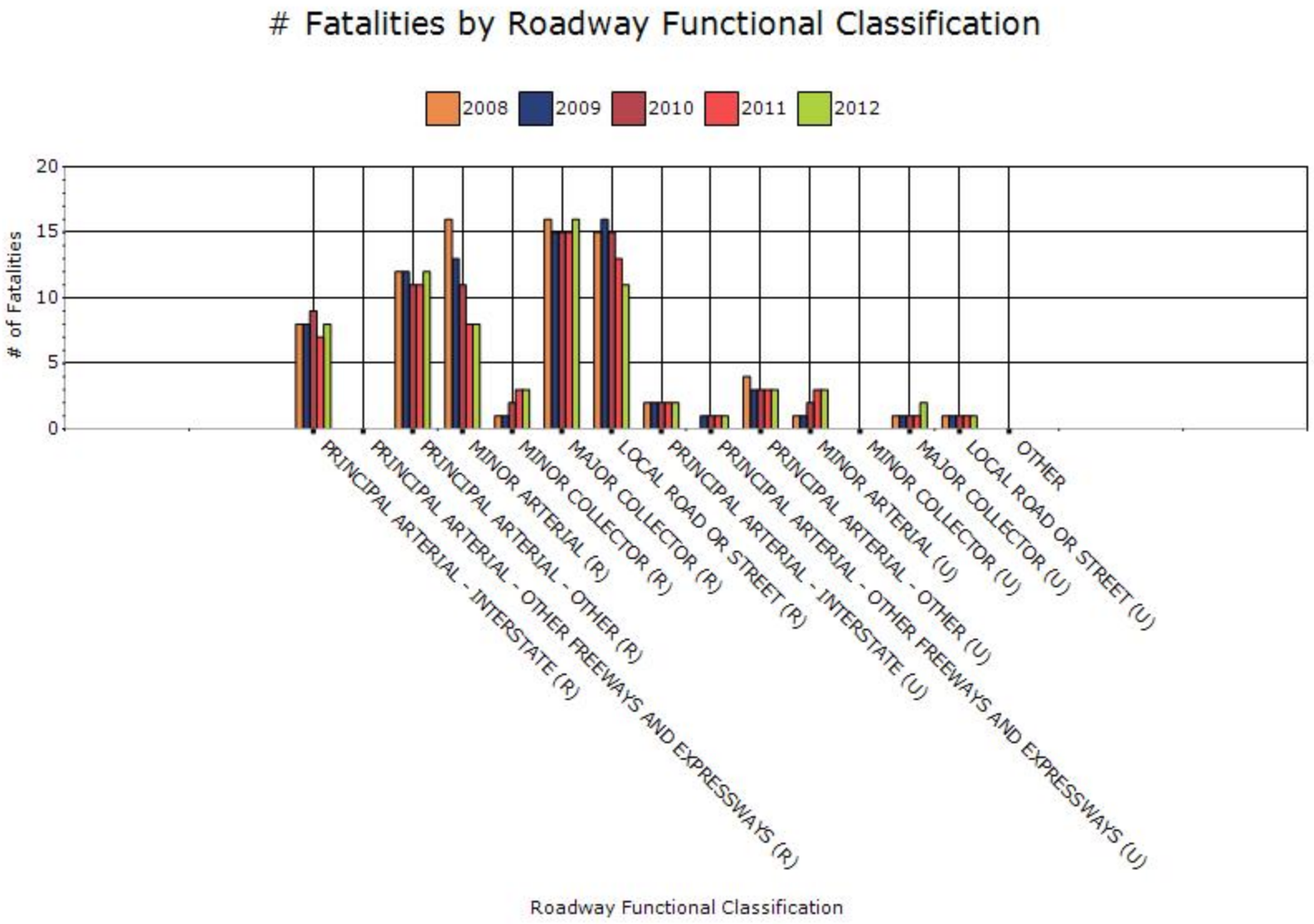


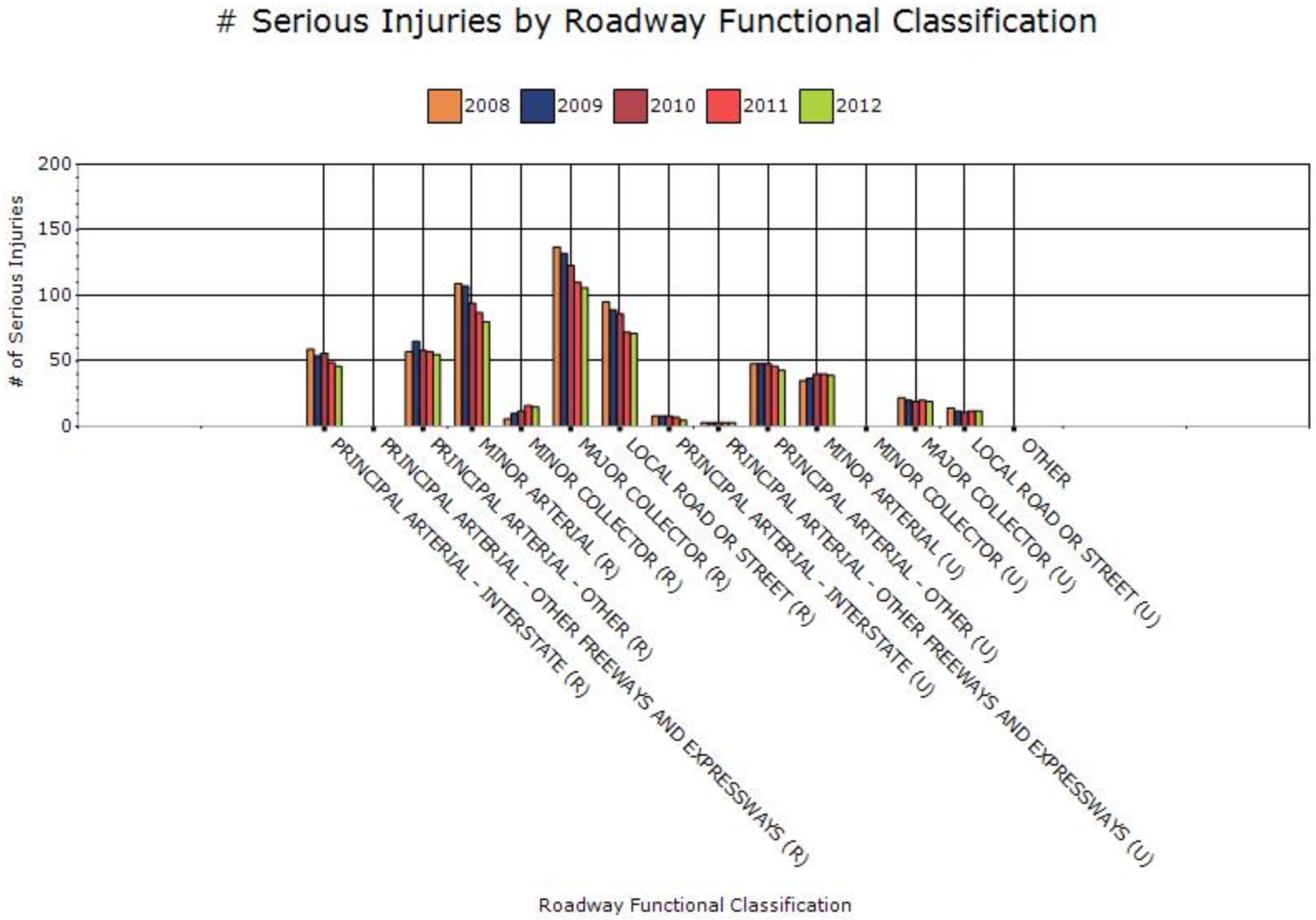
To the maximum extent possible, present performance measure* data by functional classification and ownership.

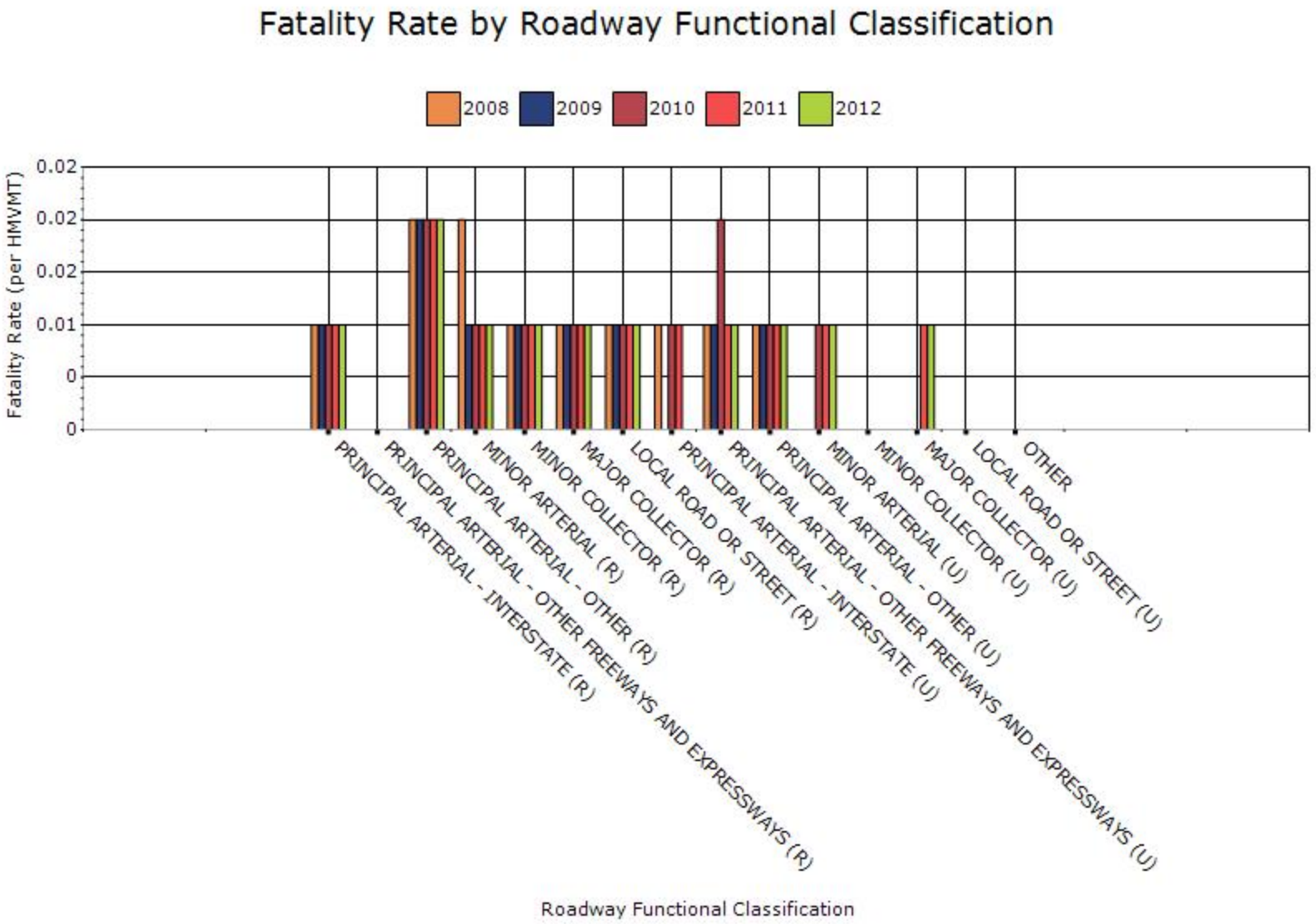
Year - 2012

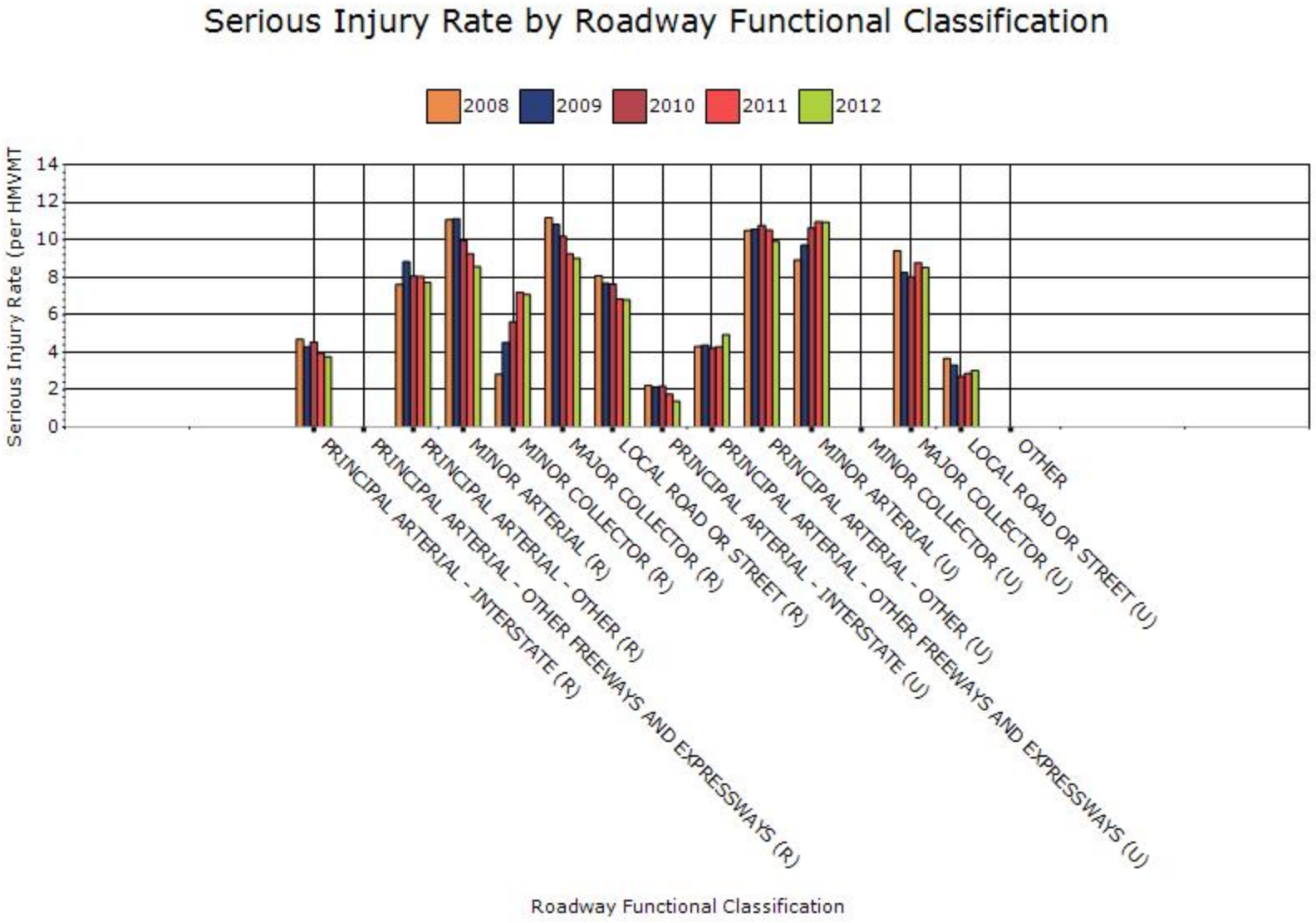
Function Classification	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
RURAL PRINCIPAL ARTERIAL - INTERSTATE	8	46	0.01	3.76
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	0	0	0	0
RURAL PRINCIPAL ARTERIAL - OTHER	12	55	0.02	7.72
RURAL MINOR ARTERIAL	8	80	0.01	8.56
RURAL MINOR COLLECTOR	3	15	0.01	7.07
RURAL MAJOR COLLECTOR	16	106	0.01	9.01
RURAL LOCAL ROAD OR STREET	11	71	0.01	6.79
URBAN PRINCIPAL	2	5	0	1.39

ARTERIAL - INTERSTATE				
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	1	3	0.01	4.93
URBAN PRINCIPAL ARTERIAL - OTHER	3	43	0.01	9.91
URBAN MINOR ARTERIAL	3	39	0.01	10.93
URBAN MINOR COLLECTOR	0	0	0	0
URBAN MAJOR COLLECTOR	2	19	0.01	8.52
URBAN LOCAL ROAD OR STREET	1	12	0	3.02
OTHER	0	0	0	0
OTHER	0	0	0	0


Fatalities by Roadway Functional Classification
2008
2009
2010
2011
2012
# of Fatalities
20
15
10
5
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
200
150
100
50
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

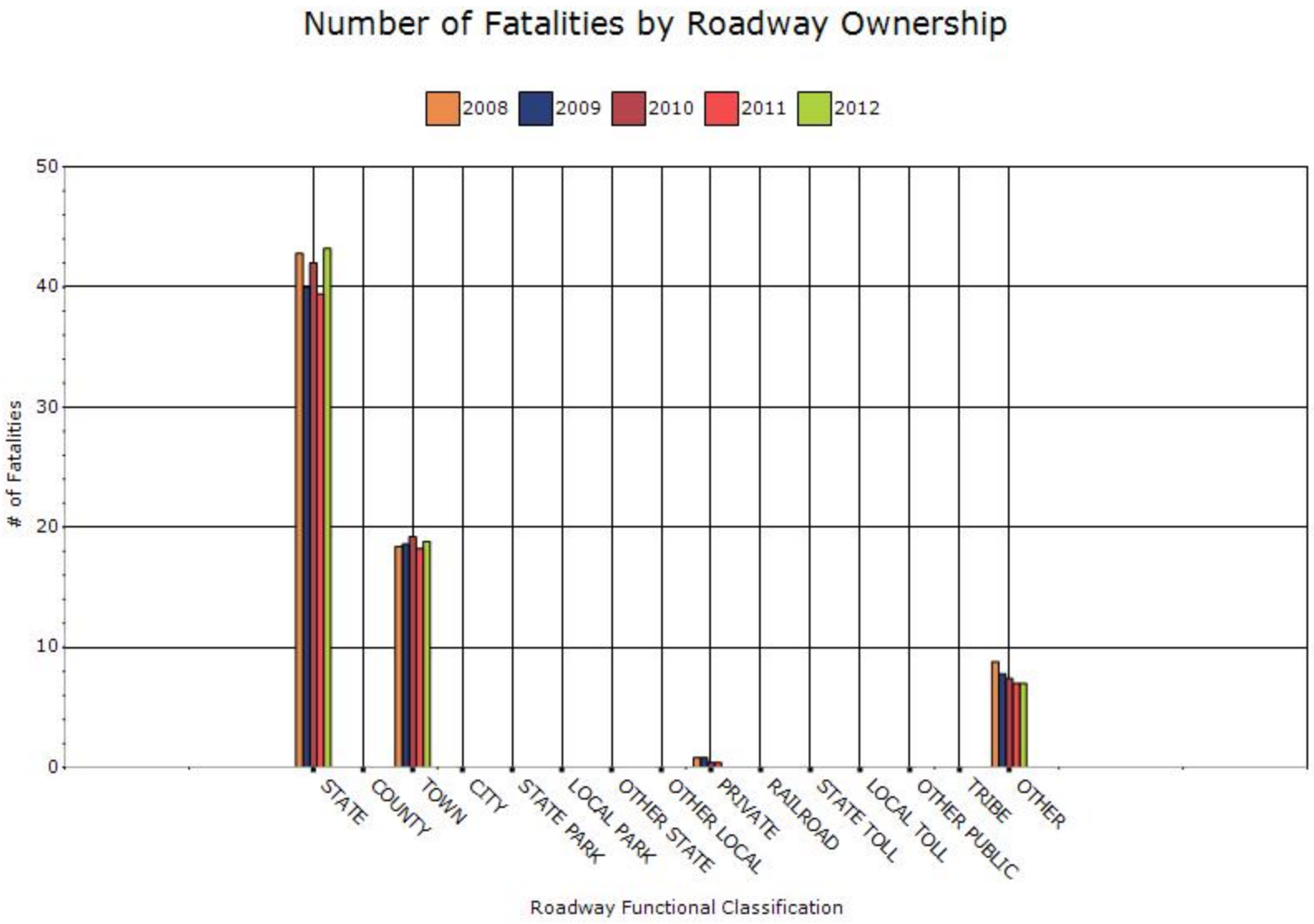

Fatality Rate by Roadway Functional Classification
2008
2009
2010
2011
2012
Fatality Rate (per HMVMT)
0.02
0.02
0.02
0.01
0
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (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

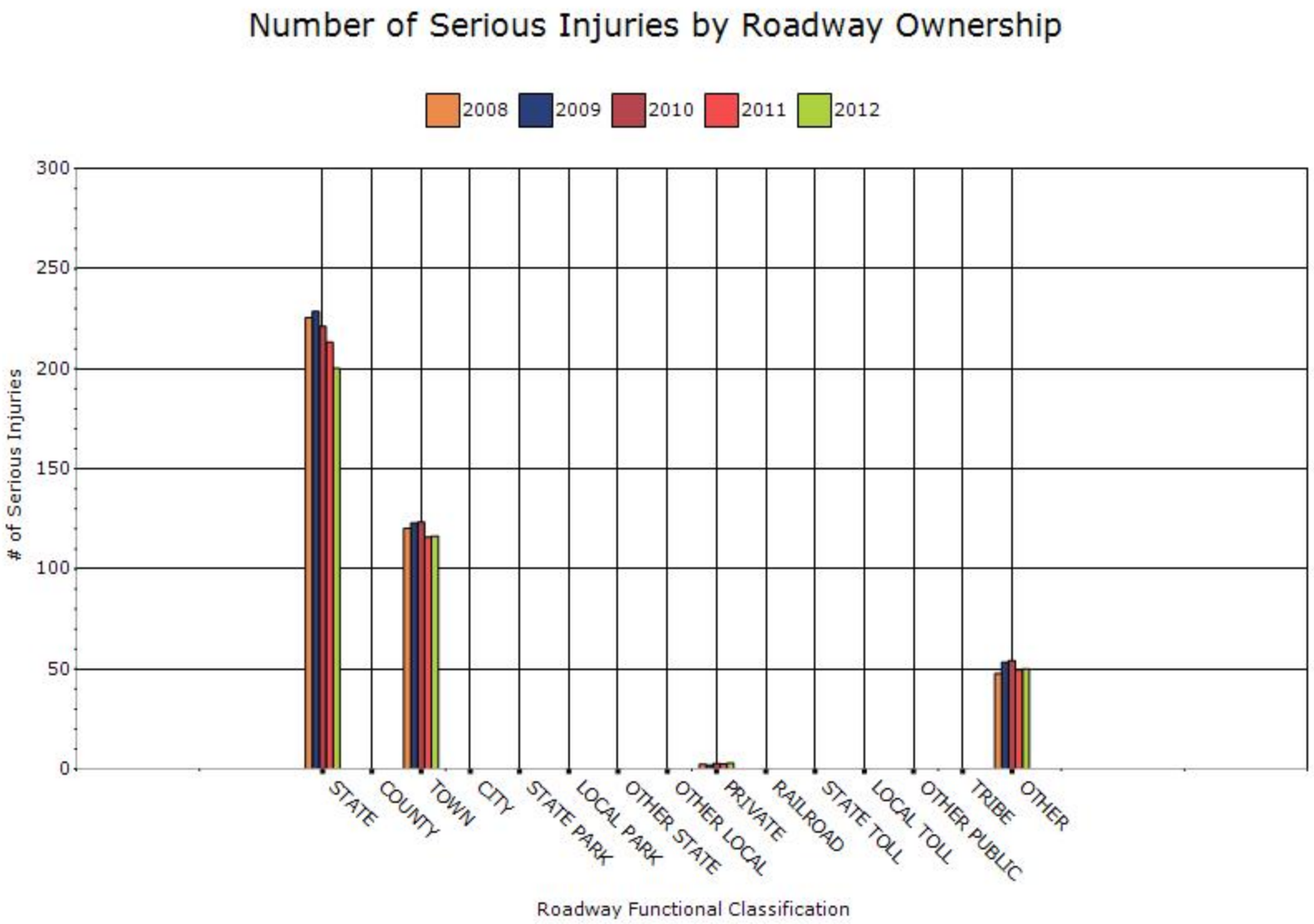

Serious Injury Rate by Roadway Functional Classification
2008
2009
2010
2011
2012
Serious Injury Rate (per HMVMT
14
12
10
8
6
4
2
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (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

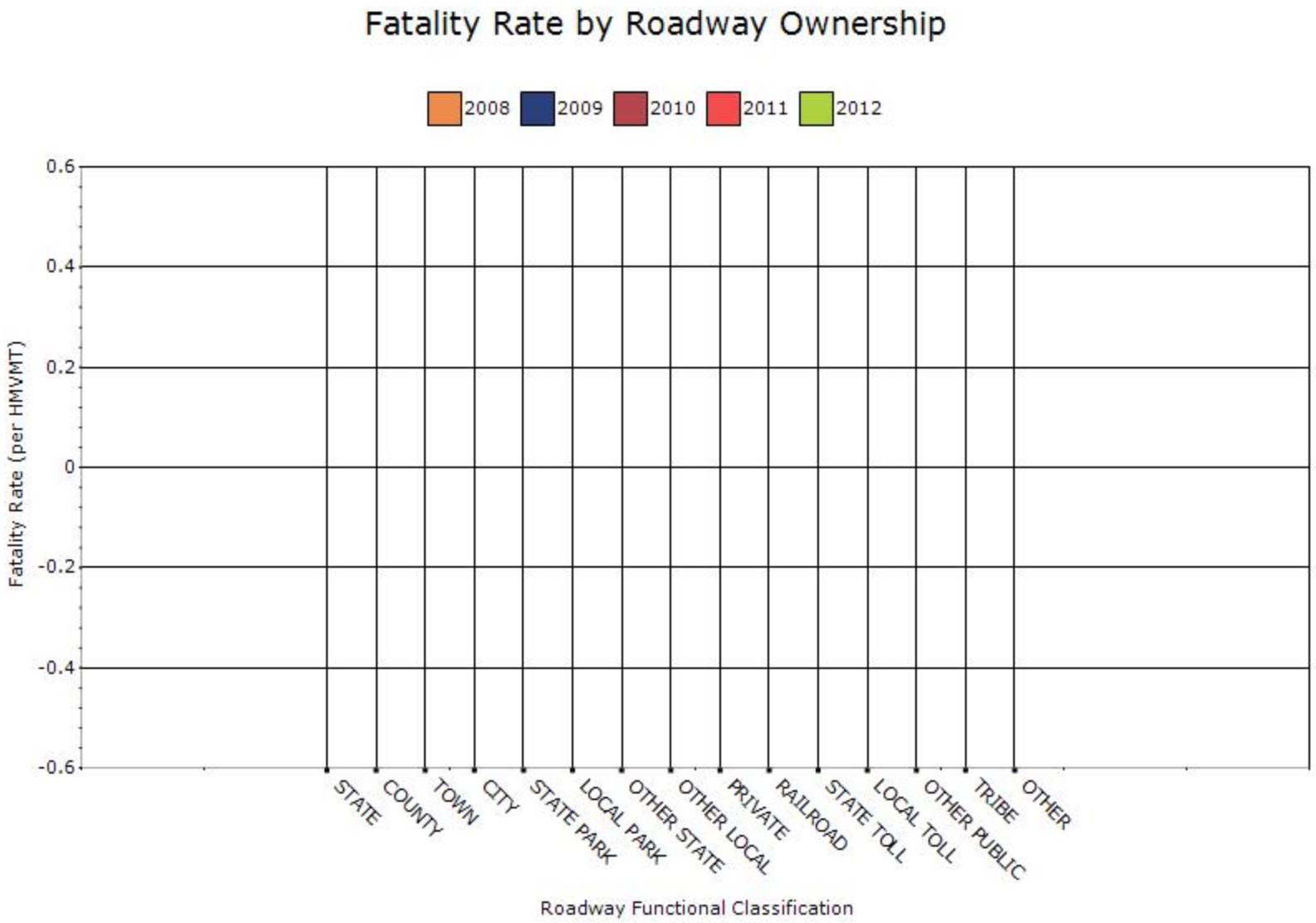
Year - 2012

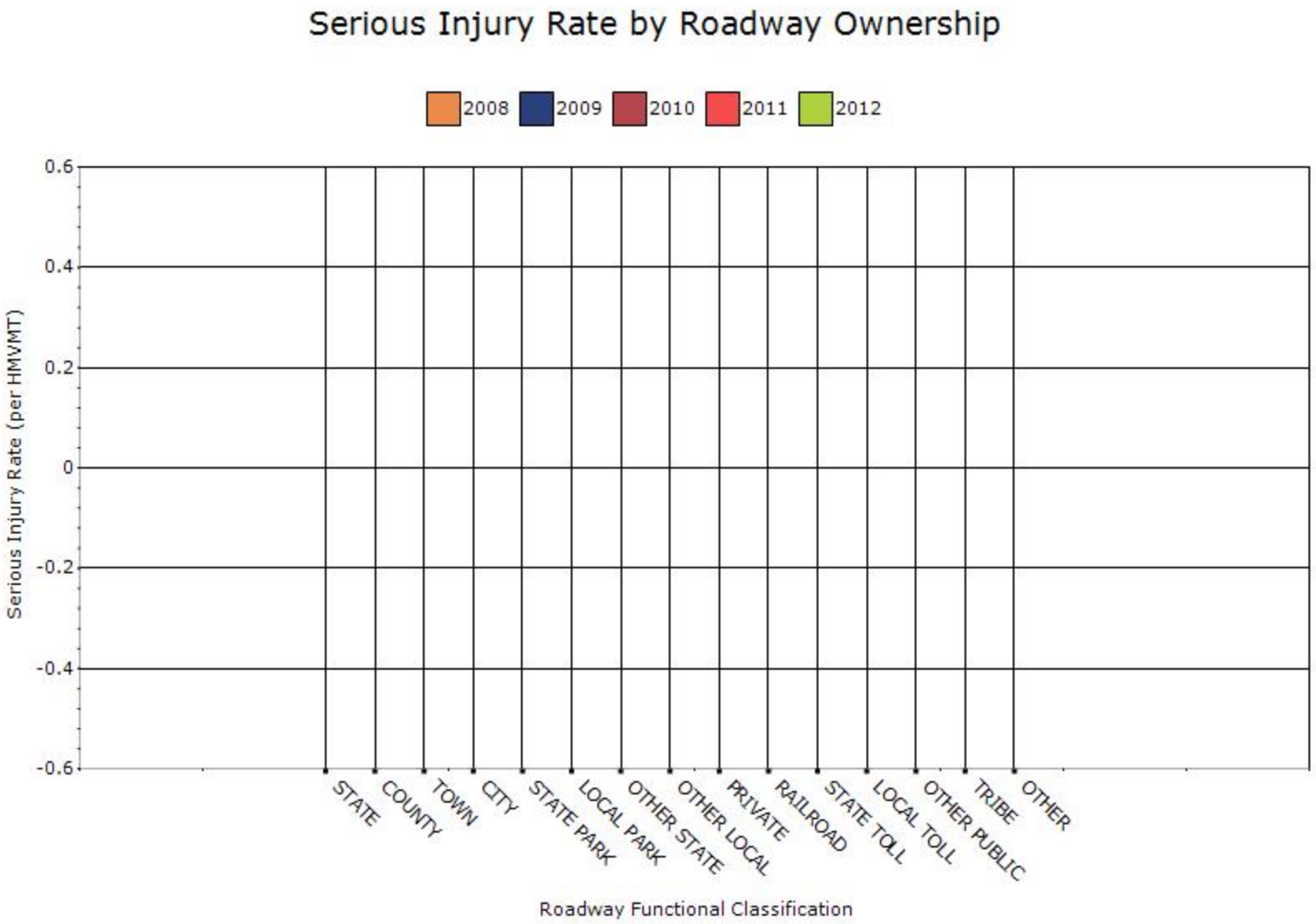
Roadway Ownership	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
STATE HIGHWAY AGENCY	43.2	200.2	0	0
COUNTY HIGHWAY AGENCY	0	0	0	0
TOWN OR TOWNSHIP HIGHWAY AGENCY	18.8	116.4	0	0
CITY OF MUNICIPAL HIGHWAY AGENCY	0	0	0	0
STATE PARK, FOREST, OR 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	3	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	7	50	0	0
OTHER	7	50	0	0


Number of Fatalities by Roadway Ownership
2008
2009
2010
2011
2012
50
40
30
20
10
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
300
250
200
150
100
50
0
# 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

Note that the data for Town or Township Highway Agency also include numbers for City of Municipal Highway Agency. Also note that HMVTMs by Roadway Ownership are not available for years prior to 2010 and that five-years rolling average cannot be computed yet, since we have only three years of data.

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

The crash data analysis reviewed included reported crashes from the five-year periods between the years 2004 and 2012. Major crashes are defined as crashes that either resulted in a fatal injury or in an incapacitating injury.

The number of major crashes five-year average has declined from 433 major crashes for the 2004-2008 period to 375 for the 2008-2012 period. This represents a 13% reduction in the five-year average.

Over the years, leaving the road and crashes taking place at intersections have been the two crash types that have typically accounted for a large proportion of major crashes. For the latest five-year period, these proportions represented 50% and 21% of all major crashes respectively. Small reductions in these crash types have taken place. The five-year average for the number of major crashes in which a vehicle left the roadway passed from a high of 202.8 crashes for the 2004-2008 period to a low of 186.6 crashes during the 2008-2012 period. Similarly, crashes at intersections went down from 87.8 to 80.2 over the same two periods.

Drivers aged less than 21 and those aged more than 64 years of age were involved in 18% and 16% of all major crashes. Significant improvements were achieved in the realm of young drivers as the five-year average for the number of major crashes involving a young driver went down from 96.8 to 69.6. In contrast, the five-year average for older drivers remained relatively stable (63.2 to 61.4).

Impaired driving remains an important contributing factor in the occurrence of major crashes. The five-year average for the number of major crashes involving an impaired driver went from 107.6 crashes per year to 101.6 crashes per year between the 2004-2008 period and the 2008-2012 period. During the same periods, the number of major crashes in which car occupants were not wearing a seat belt decreased from 116.8 crashes to 98.0.

Aggressive driving, distracted driving, crashes involving trucks and those involving motorcycles have shown downwards trends between the 2004-2008 period and the 2008-2012 one.

Non-motorist crashes account for a very small proportion of major crashes. Non-motorists include pedestrians and bicyclists. The five-year average for the number of major crashes involving a pedestrian remained stable at around 27.2 crashes per year between the 2004-2008 period and the 2008-2012 period. On the other hand, the five-year average for the number of major crashes in which a bicyclist was involved slightly increased from 10.2 crashes per year to 12.2 over the same two periods.

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	0.09	0.1	0.09	0
Serious injury rate (per capita)	0	0.25	0.27	0.27	0
Fatality and serious injury rate (per capita)	0	0.4	0.4	0.3	0

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

The Injury A, Incapacitating Injury, category was use to represent Serious Injuries.

The number of people 65 years of age and older (per 1,000 total population) for each year was obtained from Attachment 2 of Section 142: Older Drivers and Pedestrians Special Rule Interim Guidance dated February 13, 2013.

The five year average Fatal (F) and Serious Injuries (SI) per capita for Drivers and Pedestrians 65 years of age and older for year ending in 2011 and 2009 was calculated for the following periods respectively, 2011 (2011, 2010, 2009, 2008, 2007) and 2009 (2009, 2008, 2007, 2006, 2005).

For each period, the rate was calculated by summing up the fatal and serious injuries for a given year and dividing the total for that year by the population figure for the year. The rates for the period were then summed up and divided by 5 to obtain the five year average for the two ending year (2009 and 2011).

All rates were calculated to the hundredths after the decimal point and then rounded to the nearest tenths.

The 2009 rate was 0.4 and the 2011 rate was 0.3. There is no increase and therefore the rule does not apply.

The calculations are shown below.

	Fatalities	
	Drivers	Peds
2005	8	2

2006	15	0
2007	13	1
2008	7	0
2009	14	2
2010	14	2
2011	7	3

Serious Inj

2005	30	4
2006	31	3
2007	37	7
2008	27	5
2009	29	7
2010	38	3
2011	21	5

Five Year Average

Total F+SIPop

2005	44	128
2006	49	133
2007	58	135
2008	39	140
2009	52	144
2010	57	146
2011	36	149

5 Yr Avg

2005-2009	0.4
2007-2011	0.3

Note: Disregard the tables below. They are duplicates of the ones above and do not format well in the final

report. Not able to delete them.

Fatalities

Fatalities

	Peds	Total
2005	2	10
2006	0	15
2007	1	14
2008	0	7
2009	2	16
2010	2	16
2011	3	10

Serious Inj

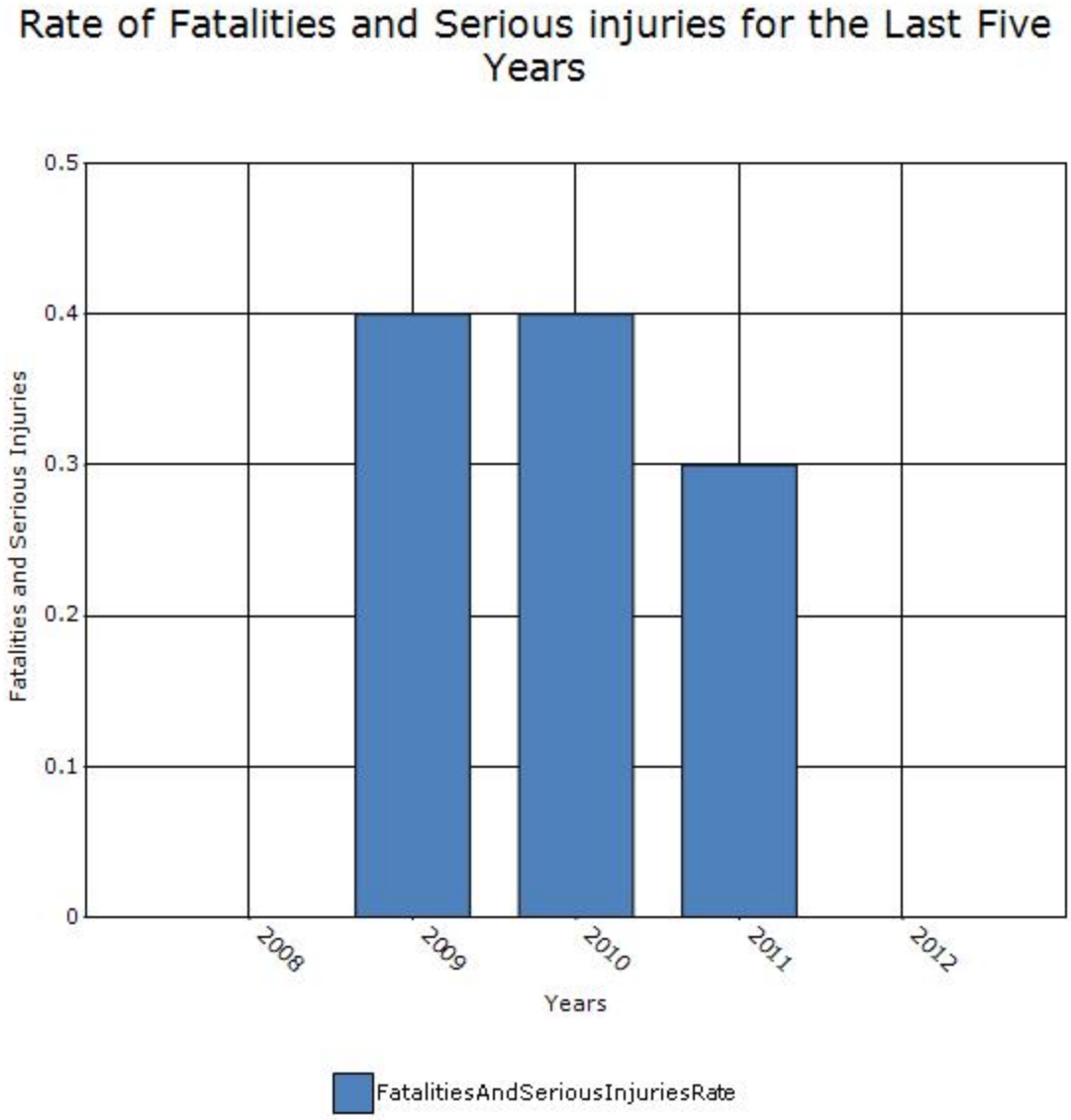
2005	4	34
2006	3	34
2007	7	44

2008	5	32
2009	7	36
2010	3	41
2011	5	26

Five Year Average

	Pop	Rate 100ths	Rate 10ths
2005	128	0.34	0.3
2006	133	0.37	0.4
2007	135	0.43	0.4
2008	140	0.28	0.3
2009	144	0.36	0.4
2010	146	0.39	0.4
2011	149	0.24	0.2

2005-2009	
2007-2011	



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-Overall reduction in certain type of crashes such as at intersections or leaving off the road.

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-Formation of the Vermont Safety Alliance to oversee the SHSP

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

A number of programmatic changes have taken place since the last reporting period.

The Vermont Highway Safety Alliance was created in August 2012 and oversees the development of the Strategic Highway Safety Plan. It is a partnership whose make-up is a diversity of organizations and agencies, public and private that are committed to Highway Safety. The primary goal is to reduce major highway crashes with major crashes defined as those resulting in a fatality or incapacitating injury. Through greatly enhanced communication and cooperation with a combination of resources, the VHSA hopes to achieve this goal at a faster pace than when our partners were working individually. The Alliance is made up of partners from the 4 Es of Highway Safety: Education, Engineering, Enforcement, and Emergency Services.

A dedicated position was created among the agency of transportation to assist with the coordination of the strategic highway safety plan and its implementation.

A new strategic highway safety plan was adopted in March 2013.

SHSP Emphasis Areas

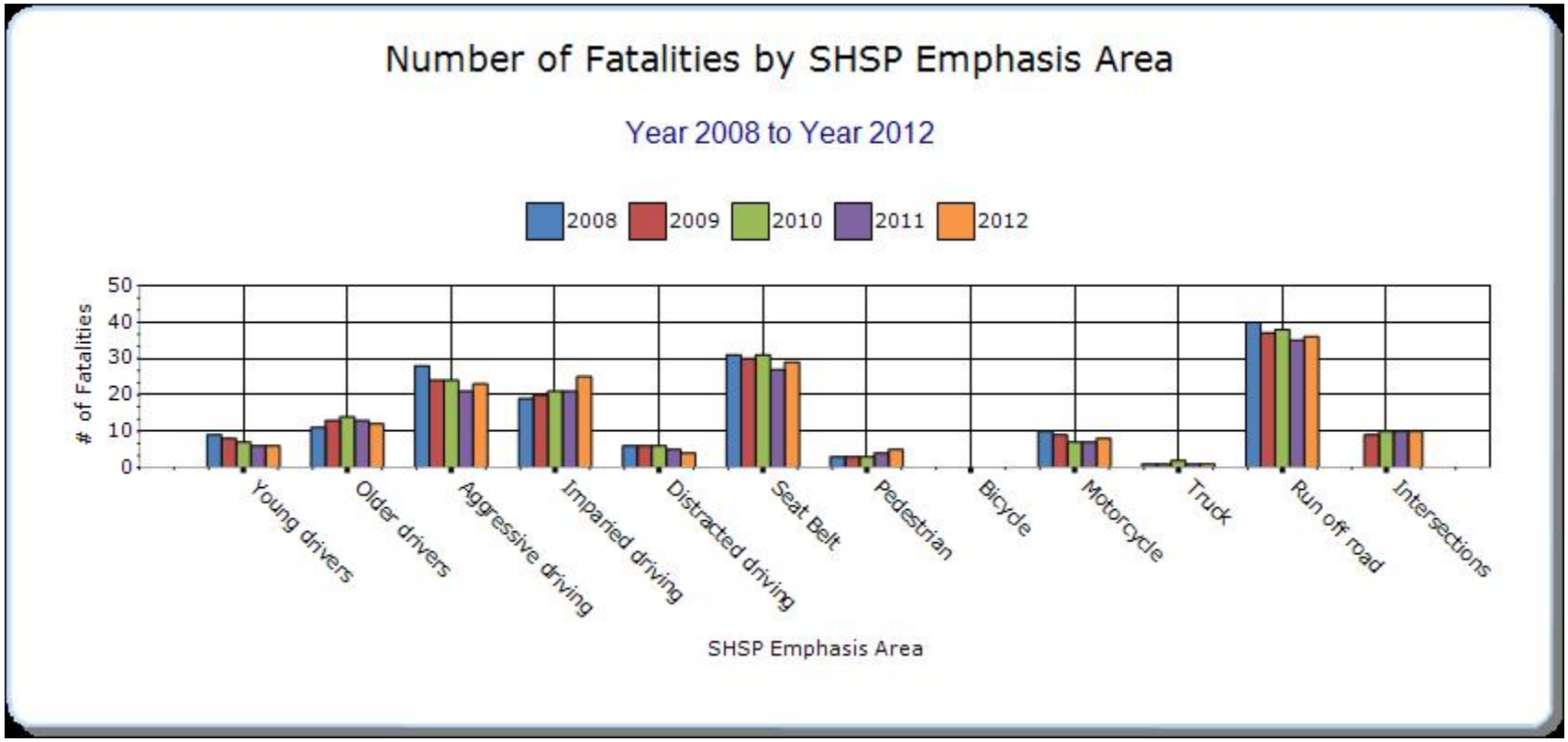
For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.

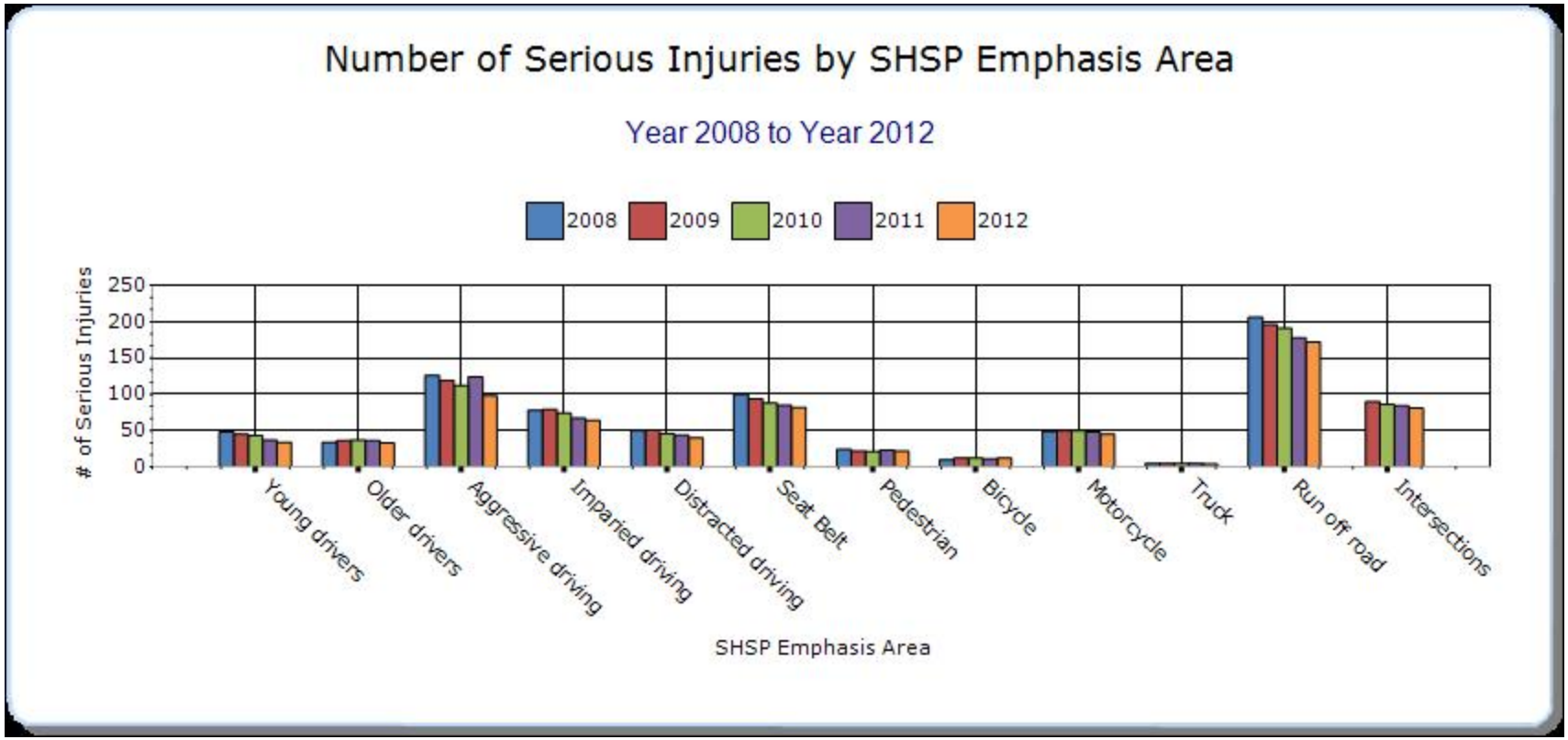
Year - 2012

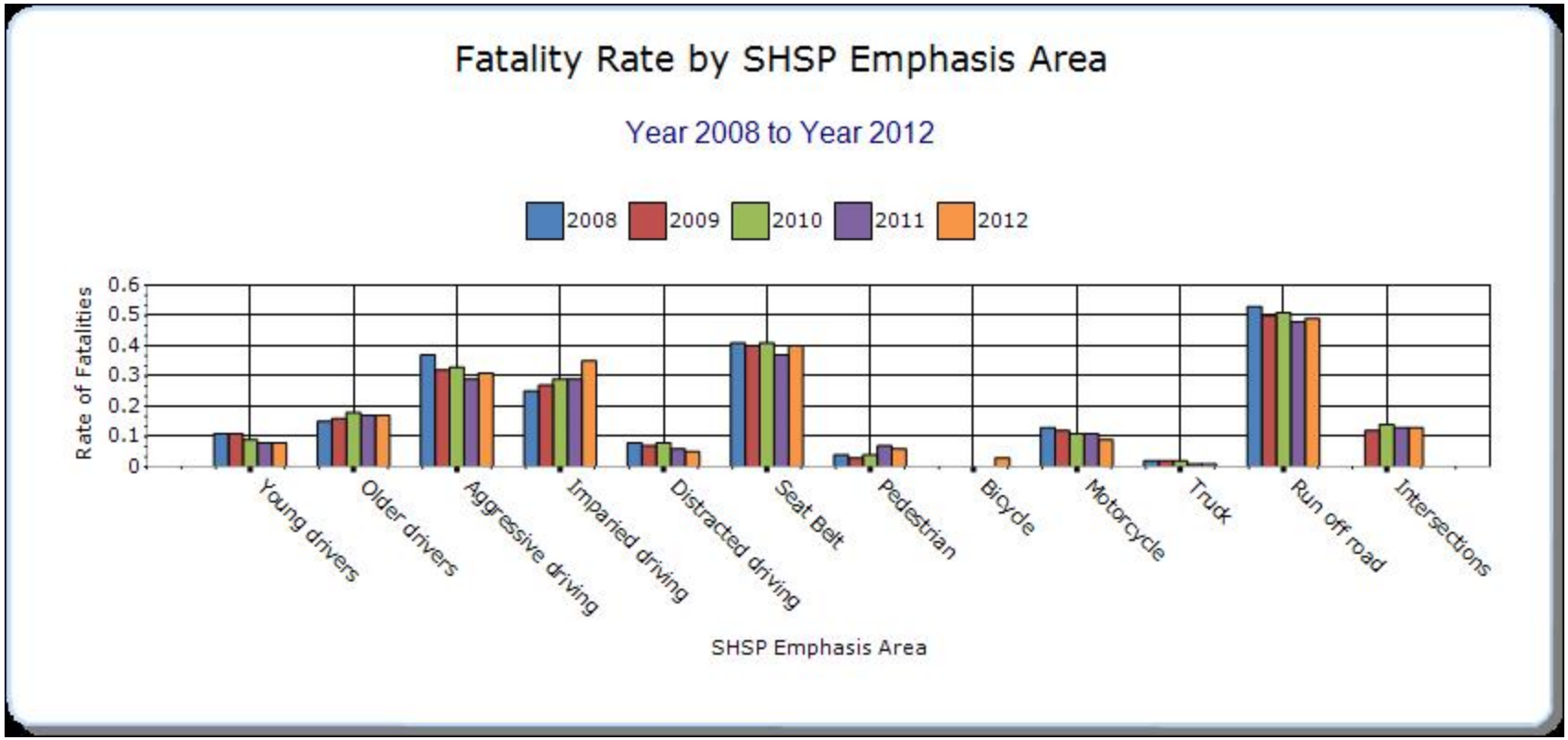
HSIP-related SHSP Emphasis Areas	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Instituting graduated licensing for younger drivers	**Drivers aged 20 years old or less in major crashes**	**6**	**34**	**0.08**	**0.47**	**69.6**	**0**	**0**
Sustaining proficiency in older drivers	Drivers aged 65 years old or older in major crashes	12	33	0.17	0.45	61.4	0	0
Curbing aggressive driving	Major crashes with erratic maneuver, above speed limit or too fast	23	98	0.31	1.35	94	0	0
Reducing impaired driving	Major Crashes alcohol & drugs	25	64	0.35	0.88	101.6	0	0
Keeping drivers alert	Major Crashes with distraction, inattention,	4	40	0.05	0.55	24.6	0	0

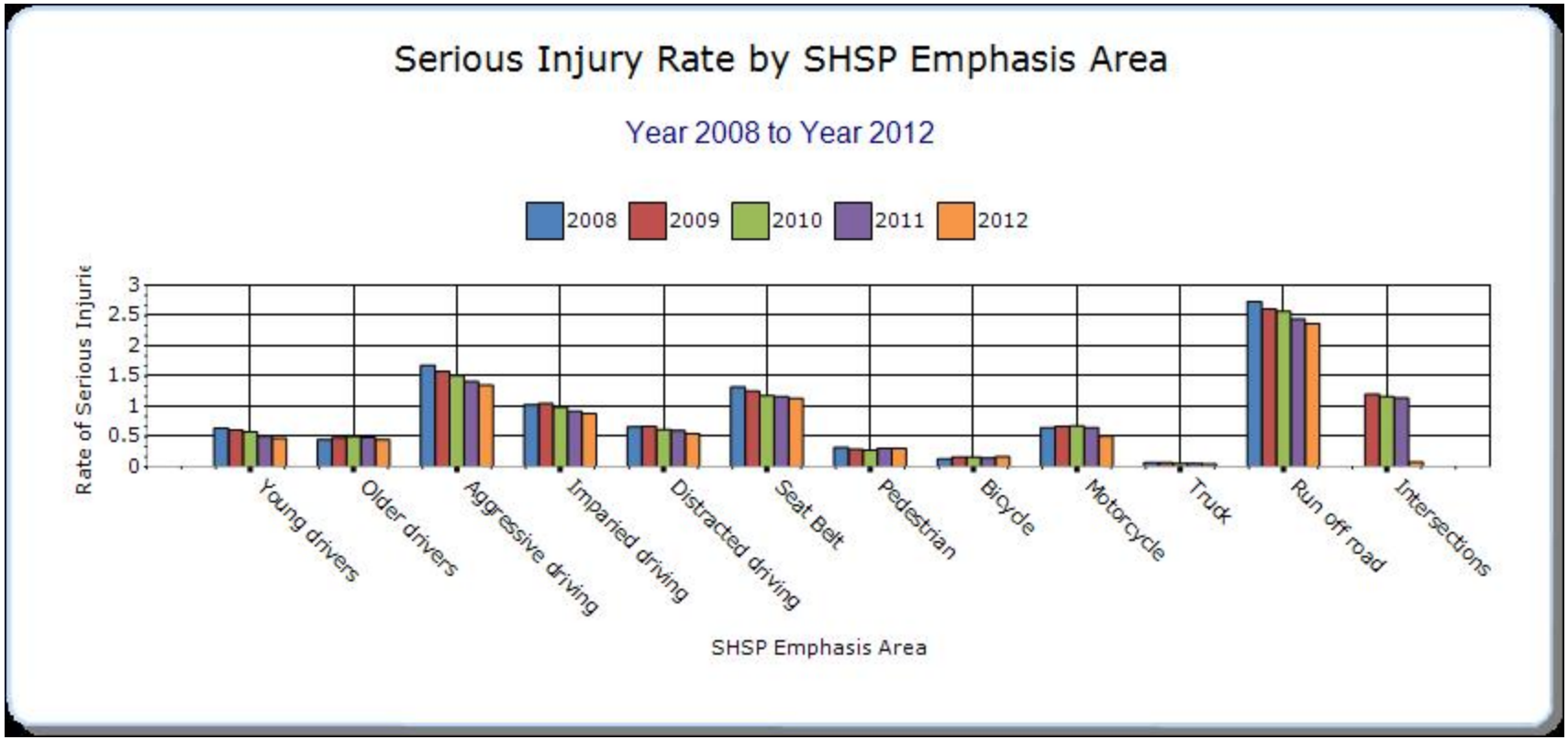
	fatigue							
Increasing seat belt use and improving airbag effectiveness	Major crashes with F or SI No Restraint or Helmet Used	29	82	0.4	1.13	91	0	0
Making walking and street crossing easier	Major crashes with Ped involved	5	22	0.06	0.31	27.2	0	0
Ensuring safer bicycle travel	Major crashes with Bike involved	0	12	0.03	0.17	12.2	0	0
Improving motorcycle safety and increasing motorcycle awareness	Major crashes with Moto involved	8	45	0.09	0.51	50.6	0	0
Making truck travel safer	Major crashes with Truck involved	1	4	0.01	0.05	19.6	0	0
Keeping vehicles in the roadway	Major crashes Overturned, GuardRail/Curb, Tree, Pole/Sign, Ledge/Boulder, Other Fixed	36	172	0.49	2.37	186.6	0	0

	Object, ROR							
Improving the design and operation of highway intersections	Major crashes at intersections	10	81	0.13	0.08	80.2	0	0




Number of Serious Injuries by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
# of Serious Injuries
250
200
150
100
50
0
Young drivers
Older drivers
Aggressive driving
Impaired driving
Distracted driving
Seat Belt
Pedestrian
Bicycle
Motorcycle
Truck
Run off road
Intersections
SHSP Emphasis Area


Fatality Rate by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Fatalities
0.6
0.5
0.4
0.3
0.2
0.1
0
Young drivers
Older drivers
Aggressive driving
Impaired driving
Distracted driving
Seat Belt
Pedestrian
Bicycle
Motorcycle
Truck
Run off road
Intersections
SHSP Emphasis Area

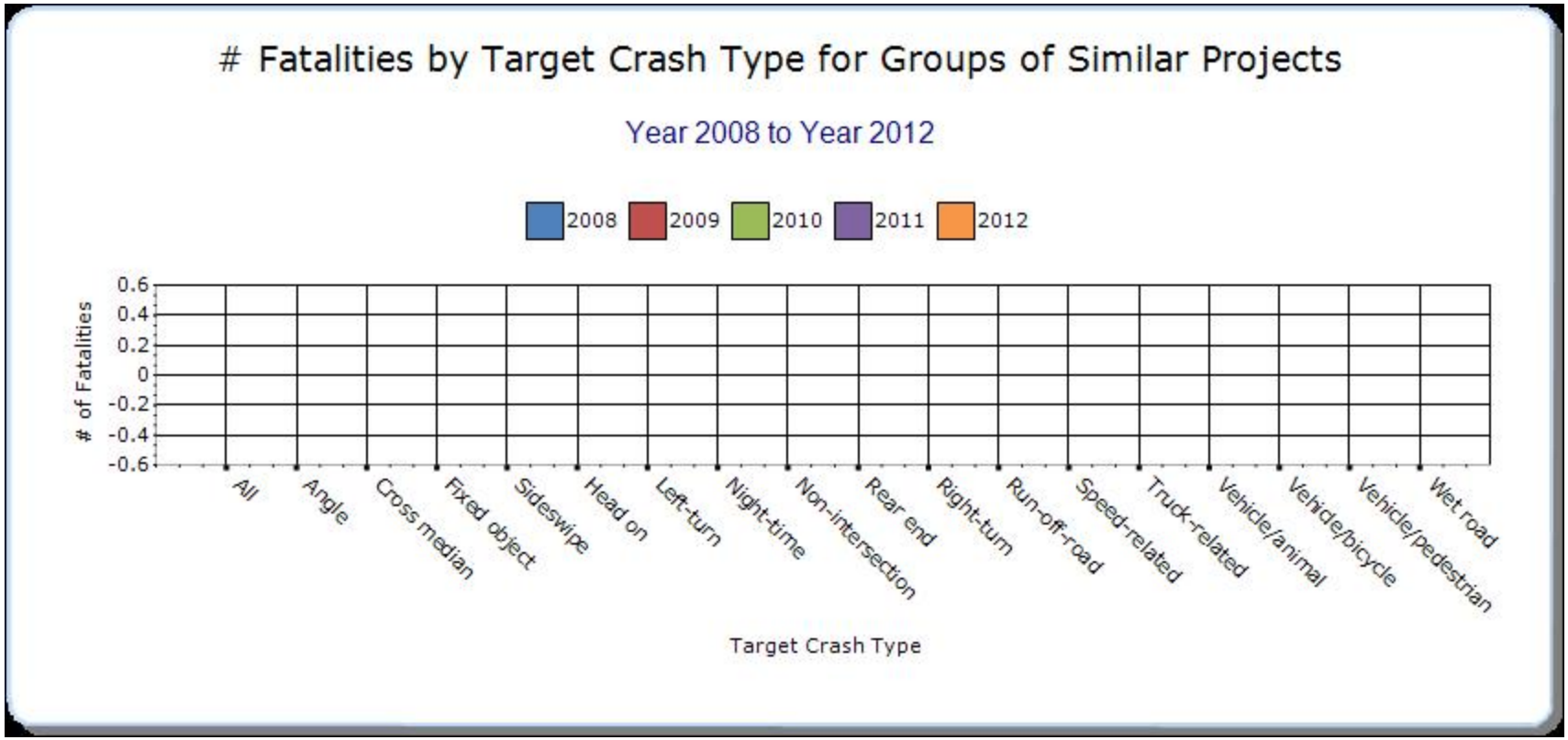

Serious Injury Rate by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Serious Injurie
3
2.5
2
1.5
1
0.5
0
Young drivers
Older drivers
Aggressive driving
Impaired driving
Distracted driving
Seat Belt
Pedestrian
Bicycle
Motorcycle
Truck
Run off road
Intersections
SHSP Emphasis Area

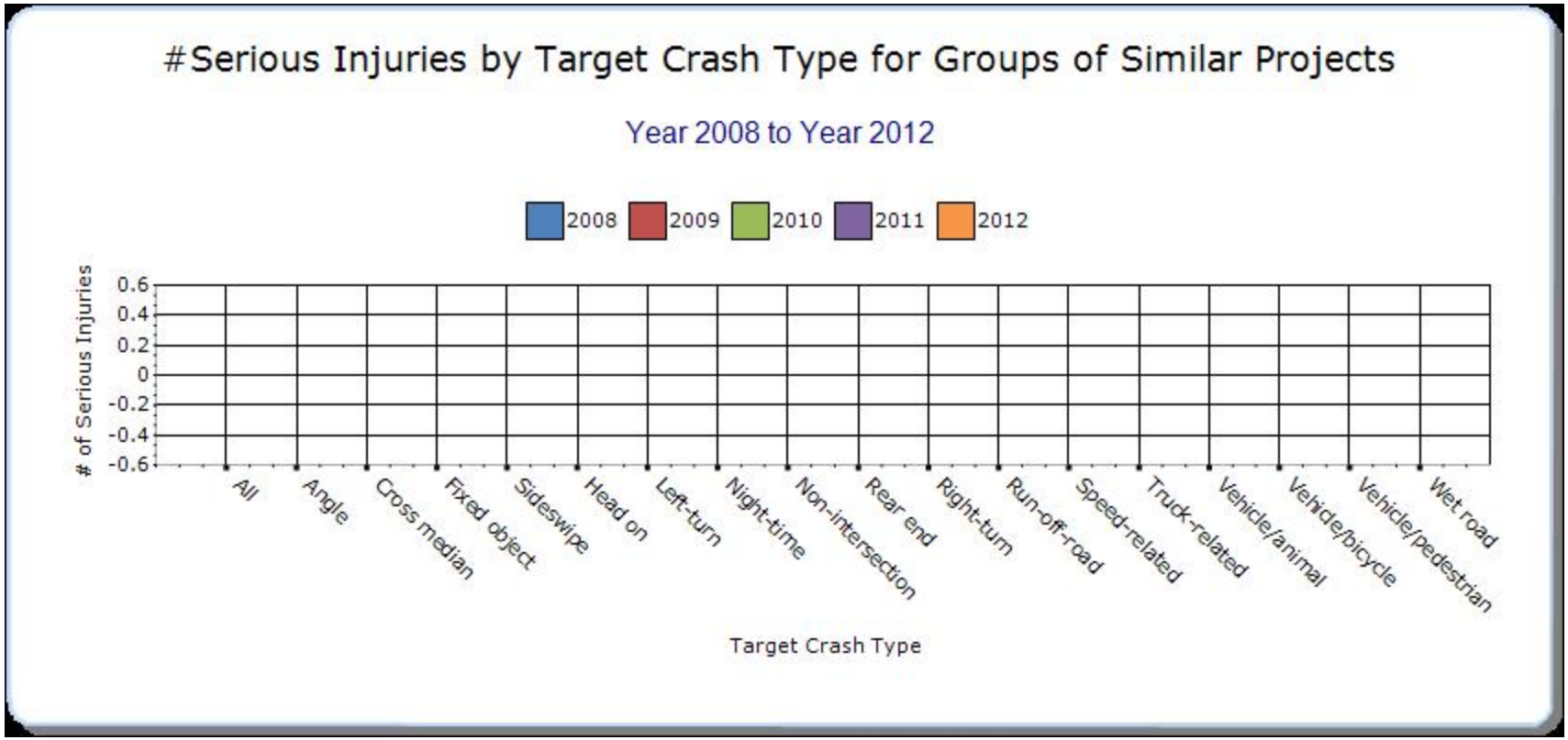
Groups of similar project types

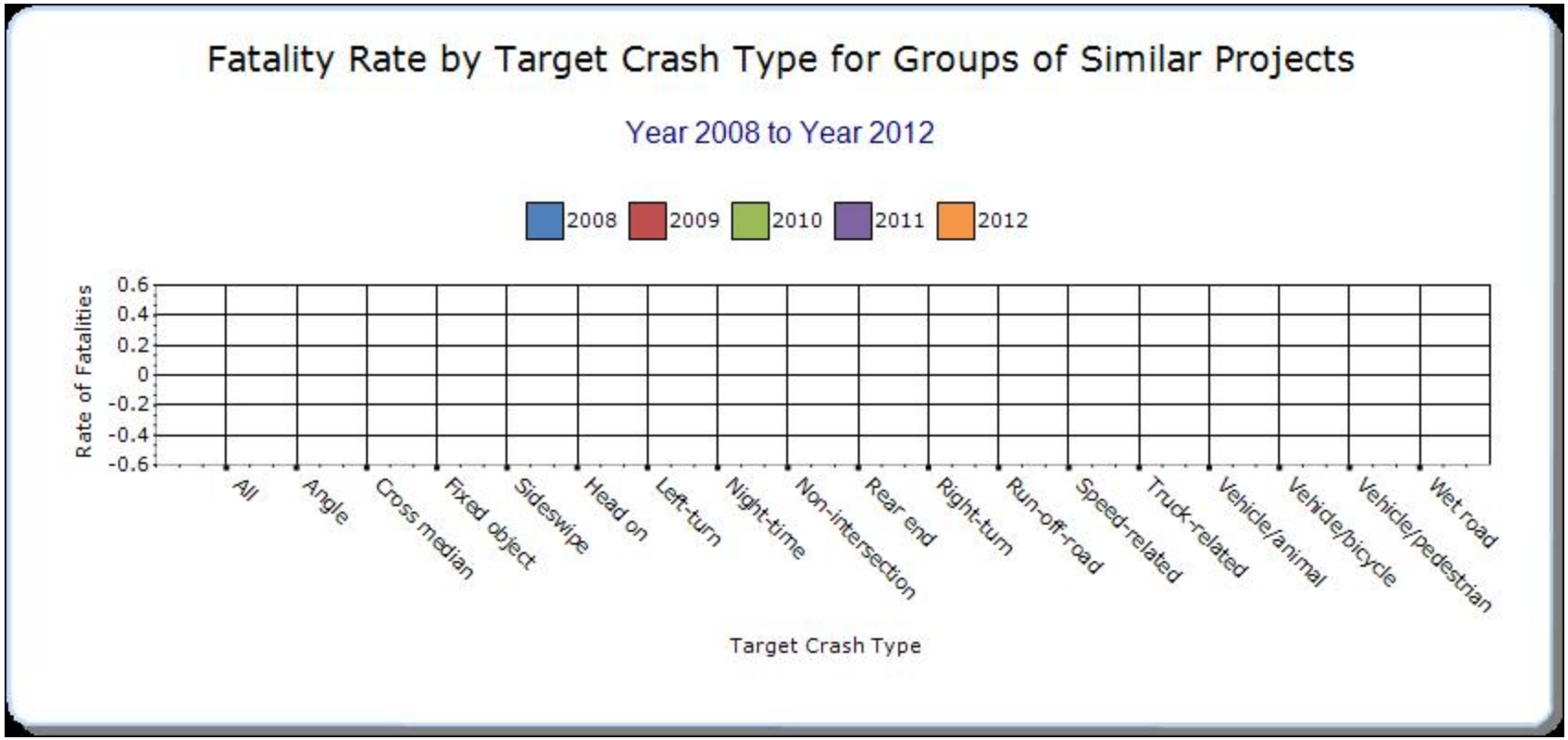
Present the overall effectiveness of groups of similar types of projects.

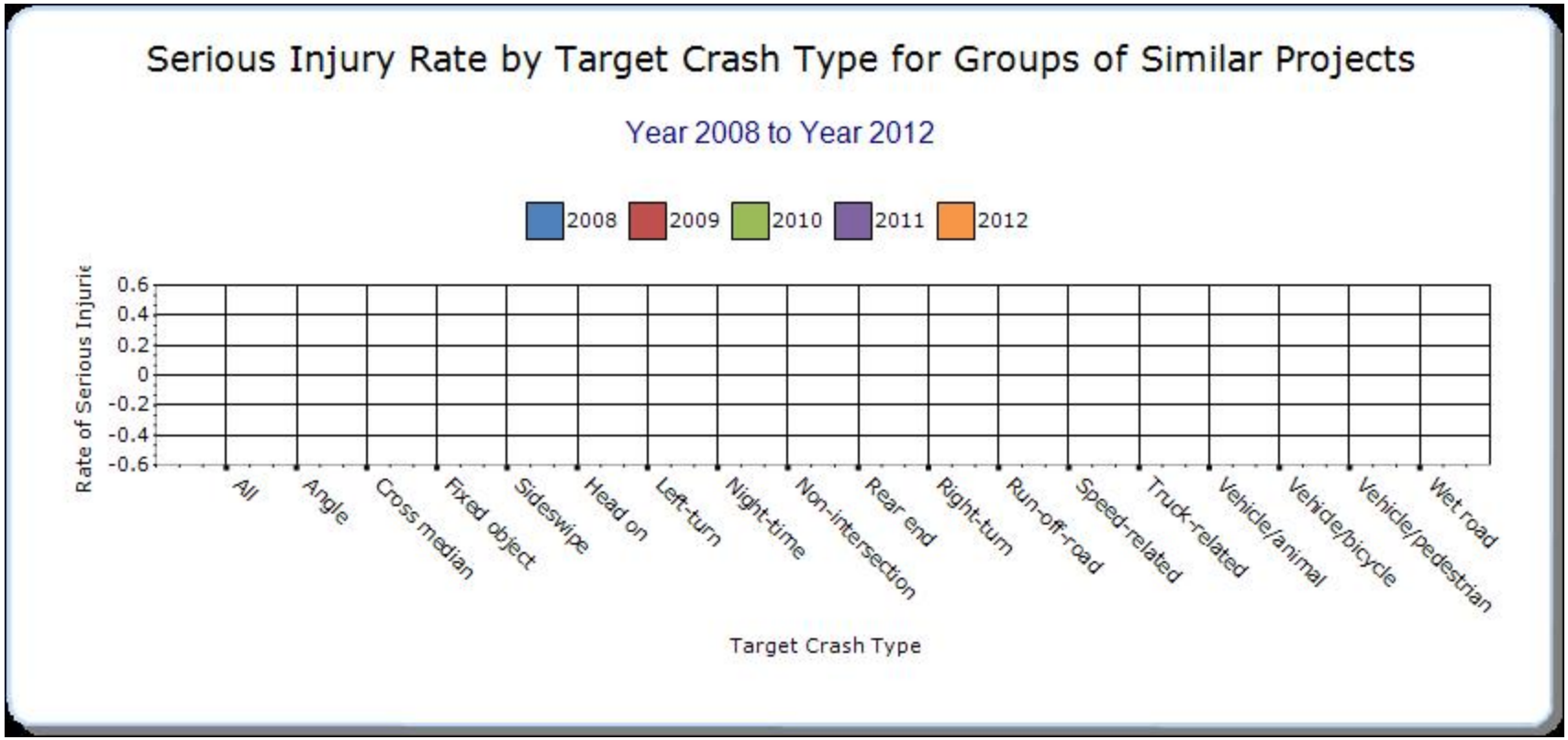
Year - 2012

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
Rural State Highways	All Rural Road Major Crashes (AOT Groups 3,4,6)	17	89	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

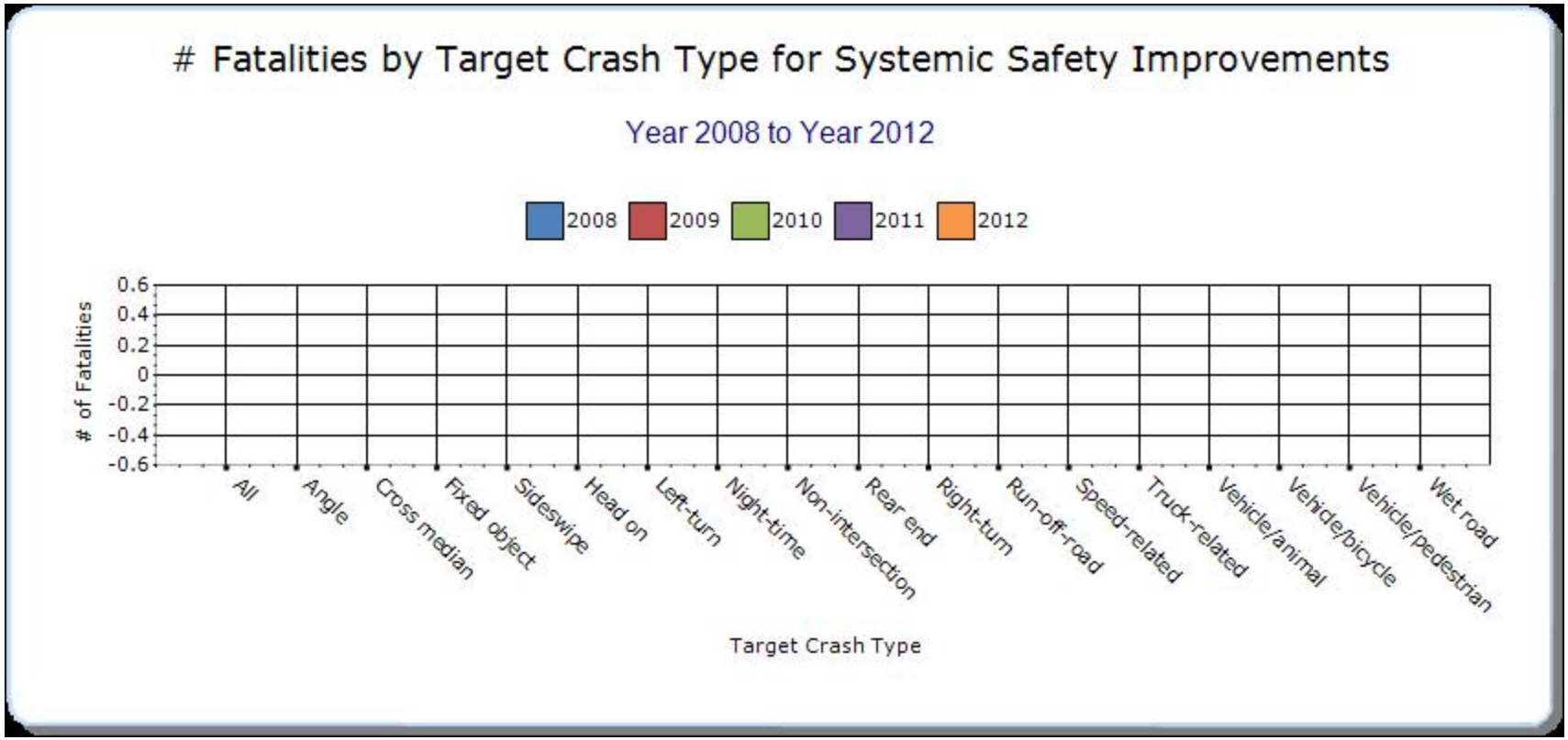

Serious Injury Rate by Target Crash Type for Groups of Similar Projects
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Serious Injurie
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related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

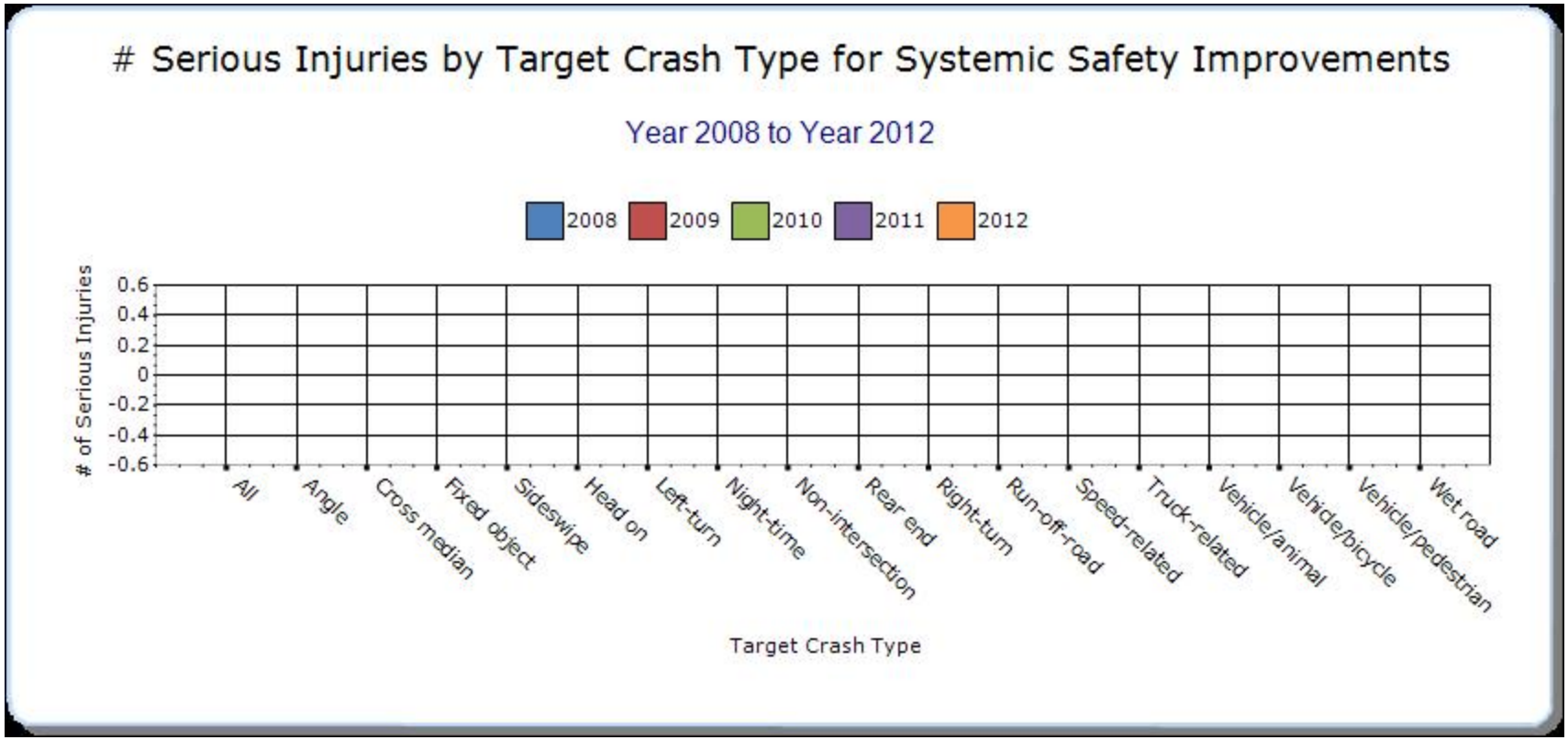
Systemic Treatments

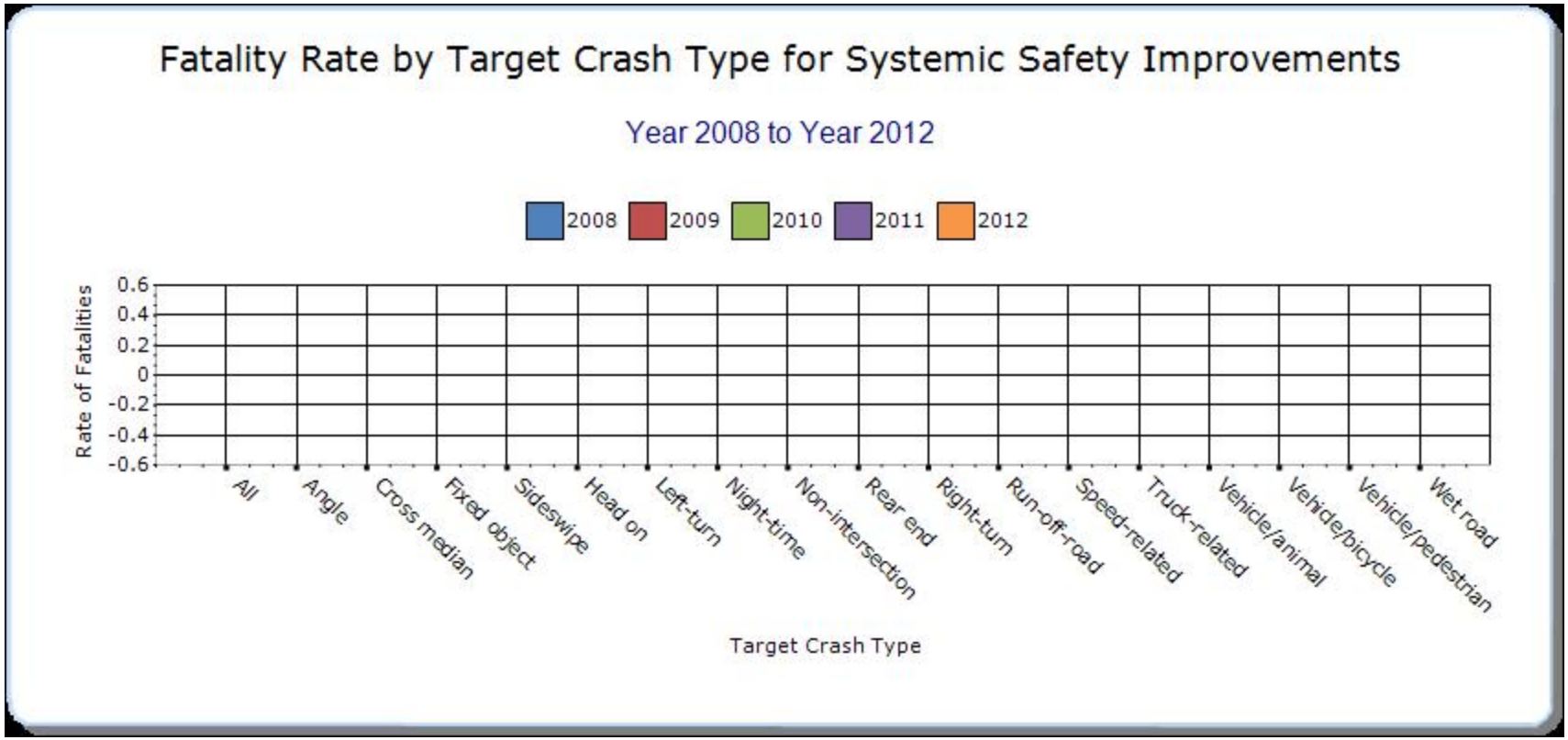
Present the overall effectiveness of systemic treatments..

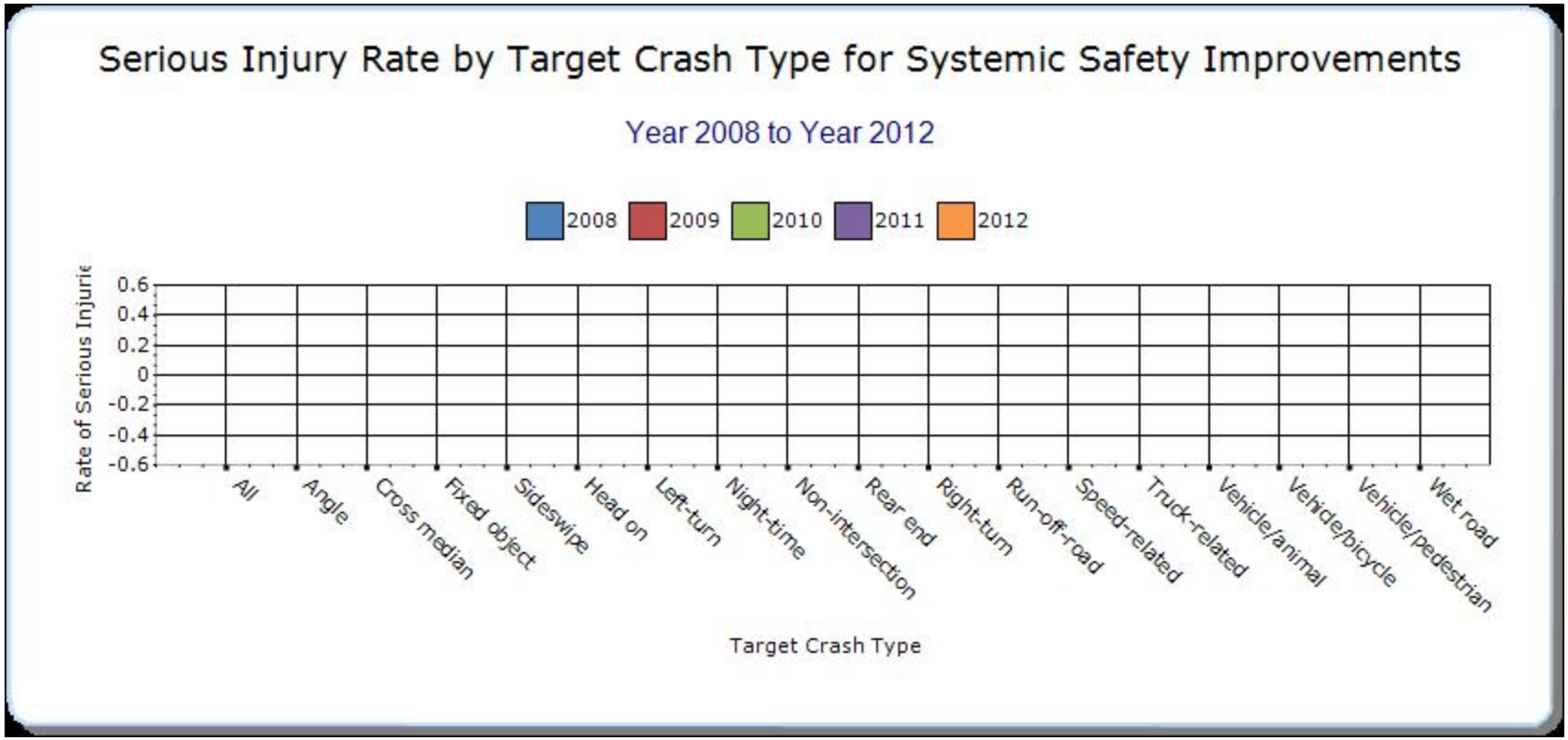
Year - 2012

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
Add/Upgrade/Modify/Remove Traffic Signal	**Major Crashes Signalized Intersections State Roads**	**1**	**22**	**0.02**	**0.31**	**0**	**0**	**0**
Install/Improve Pavement Marking and/or Delineation	Major Crashes Lane Departure	36	172	0.49	2.37	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.

Of the seven emphasis areas identified in the SHSP, run-off-the-road crashes and intersection crashes are the two areas that specifically relate to engineering and the HSIP.

The first version of the SHSP suggested to reduce, by 2010, the number of intersection related major crashes by 3% and runoff- the road major crashes by 5% compared to 2004 levels.

Since the implementation of the SHSP in 2006, major crashes at intersections have been below the 105 crashes per year target set by the SHSP. Similarly, the SHSP target for the number of major run-off-the-road crashes was set to 205 crashes per year and the number of major crashes in each of the last four years has been below this target.

The five year-average of fatal and serious injury crashes passed from 433 crashes for the 2004-2008 period to 375 crashes for the 2008-2012 period. The five-year average is trending downwards and is getting closer to the 350 target set as a goal in the original SHSP.

The newly adopted version of the SHSP (March 2013) sets new targets for the coming years. The target reduction for the 5-year rolling average for both intersection and run-off-the-road crashes is now10% by 2016, For intersection crashes, this translates into a 5-year average target of 72 crashes. For run-off-the road crashes, the target is 186 crashes.

Overall, the new target reduction for major crashes is also a 10% reduction in the 5-year rolling average for the 2008-2012 period when compared to the 2012-2016 one.

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)
HSIP05004,S01061304,3.68	Rural Major Collector	Roadway	Pavement surface - high friction surface	0	0	1	3	4	1	0	0	0	1	0.17
HSIP03009,U302-1202,2.55	Rural Principal Arterial - Other	Intersection traffic control	Modify control - all-way stop to roundabout	0	1	2	4	7	0	0	0	1	1	-0.0247
HSIP03012,V120-0607,8.21	Rural Major Collector	Intersection geometry	Intersection geometrics - modify skew angle	0	0	0	0	0	0	0	0	0	0	0.2117
HSIP04028,V116-0407,4.56	Rural Minor Arterial	Intersection traffic control	Intersection traffic control - other	0	2	1	1	4	0	0	0	2	2	-0.357
HSIP04028,V116-0407,4.41	Rural Minor	Intersection geometry	Auxiliary lanes - add	0	0	1	1	2	0	0	0	1	1	0.5351

	Arterial		right-turn lane											
HSIP04045,V078-0615,7.68	Rural Major Collector	Intersection geometry	Auxiliary lanes - add left-turn lane	0	0	0	2	2	0	0	0	1	1	1.3417
HSIP03004,V063-1202,0.95	Rural Minor Arterial	Intersection geometry	Auxiliary lanes - add left-turn lane	0	3	4	11	18	0	0	6	5	11	-0.75
HSIP00722, V015-0805,1.827	Rural Minor Arterial	Intersection traffic control	Modify control - all-way stop to roundabout	0	0	1	5	6	0	0	0	0	0	0.1311
STP5800(2),U007-0410,5.88	Rural Minor Arterial	Intersection geometry	Auxiliary lanes - add left-turn lane	0	0	3	0	3	0	0	0	0	0	0.0783

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.