



Highway Safety Improvement Program
Data Driven Decisions

Utah
Highway Safety Improvement Program
2015 Annual Report

Prepared by: UT

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

Utah has experienced long-term downward trends in overall serious and fatal injury crashes, but that trend leveled off in 2015. We noted in previous year HSIP annual reports that as fatalities continue to be reduced it would become more difficult to find projects that have a large impact on improving safety. It is possible that this phenomenon is coming to fruition and could partially explain why the downward trend of the previous 5 years seems to have leveled off. We are hopeful that our diligent efforts to prioritize future safety projects will lead to a resumption of previous year downward trends. We continue to use both crash analysis and systemic modeling to identify the projects most likely to reduce serious and fatal injury crashes.

Project delivery continues to be administered through the UDOT region offices. We work closely with our region counterparts to make sure safety projects are addressed in a timely manner through UDOT's standard federal environmental, design, and construction processes. For the past few years our biggest obstacle to obligating HSIP funds has been the addition of the Section 164 penalty transfer funds. It took a while to ramp up to the point where we could identify enough projects to use the available funds but this year we were finally able to obligate nearly all of the regular HSIP and SEC164 funds before the fiscal year end.

Several significant changes to Utah law took place during this annual reporting period. First, our legislature adopted a primary seat belt law. UDOT is working with counterparts at the Department of Public Safety to leverage this law into actual increases in seatbelt usage. Second, the law governing the use of DUI ignition interlock devices was updated such that it should result in Utah no longer being subject to the SEC164 penalty transfer.

UDOT continues to demonstrate high benefit-cost ratios for safety projects through three year before-after analysis. The aggregate benefit-cost ratio for past projects reported in this submittal is 22.

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 are eligible for HSIP funds if projects meet program requirements. UDOT currently lacks comprehensive data about local roads (non-State and non-Federal Aid) that would make it easier to compare relative safety needs on State roads and local roads, especially for systemic treatments. However, efforts are underway to work with other State agencies, local governments, and 911 operators to develop more complete roadway inventory data on local roads.

UDOT does perform crash analysis on non-State Federal Aid routes and accepts applications from local agencies for HSIP funding consideration on all public roads. We are also planning to apply the usRAP

safety protocol to select Federal Aid routes in FY16. This protocol is not dependent on an LRS or limited by UDOT's current roadway attribute databases.

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.

Planning

UDOT uses two methods to plan HSIP projects. For the first method, each UDOT region sends an annual submittal to the Traffic & Safety Division that identifies their priority projects for HSIP funding consideration. The Traffic & Safety Division then screens the crash data, traffic data, and input from the region offices. A meeting is then held with each region office to identify safety projects based on the screened data and the region submittals. Although the annual submittal is the primary mechanism by which the regions request HSIP funding, the regions may request other projects mid-year and the same process is conducted to analyze, prioritize, program, and implement them. For the second method, the Traffic & Safety Division employs a systemic approach to identify projects. This is done by looking at crash and roadway attribute data from a statewide perspective. UDOT has several efforts underway to identify projects systemically, including the usRAP model and BYU crash prediction model.

Design

After projects are programmed, project managers from the applicable UDOT region offices are assigned to each project. These project managers then shepherd the projects through UDOT's standard federal environmental, design, and construction processes. Project managers generally invite Central Traffic & Safety staff to attend scoping and design review meetings to make sure that the safety elements are properly incorporated into the project.

Maintenance & Operations

Each region office works with their maintenance and operations staff to give them an opportunity to suggest safety projects based on their experience maintaining the state roadway network every day. Periodic meetings are held between region traffic and safety engineers and maintenance crews. Their round of meetings in the fall is where engineers specifically solicit safety project ideas from maintenance staff. Following these meetings, region traffic and safety engineers submit safety project applications for projects they believe merit funding. These applications are then reviewed by Central Traffic & Safety as described above.

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

- Metropolitan Planning Organizations
- Governors Highway Safety Office
- Local Government Association
- Other: Other-SHSP Partners

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-None

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

UDOT focuses its infrastructure improvements primarily on the Roadway Departure Crashes, Drowsy Driving, Distracted Driving, and Intersection Safety emphasis areas. The other emphasis areas (Public

Outreach and Education, Use of Safety Restraints, Impaired Driving, Aggressive Driving, Teen Driving Safety, Motorcycle Safety, and Speed Management) are addressed primarily through non-infrastructure efforts such as education, media, and enforcement campaigns. UDOT partners with other state, local, and federal agencies to implement the non-infrastructure components of the SHSP. A "Zero Fatalities" goal (ut.zerofatalities.com) is also part of the SHSP. UDOT began displaying weekly safety messages on variable message signs during the summer of 2015 to encourage safe driving behaviors such as seatbelt use.

Program Methodology

Select the programs that are administered under the HSIP.

- | | | |
|--|--|---|
| <input type="checkbox"/> Median Barrier | <input type="checkbox"/> Intersection | <input type="checkbox"/> Safe Corridor |
| <input type="checkbox"/> Horizontal Curve | <input type="checkbox"/> Bicycle Safety | <input type="checkbox"/> Rural State Highways |
| <input type="checkbox"/> Skid Hazard | <input type="checkbox"/> Crash Data | <input type="checkbox"/> Red Light Running Prevention |
| <input type="checkbox"/> Roadway Departure | <input checked="" type="checkbox"/> Low-Cost Spot Improvements | <input type="checkbox"/> Sign Replacement And Improvement |
| <input type="checkbox"/> Local Safety | <input type="checkbox"/> Pedestrian Safety | <input type="checkbox"/> Right Angle Crash |
| <input type="checkbox"/> Left Turn Crash | <input type="checkbox"/> Shoulder Improvement | <input type="checkbox"/> Segments |
| <input checked="" type="checkbox"/> Other: Other-Reduce Serious & Fatal Injuries | | |

Program: Low-Cost Spot Improvements

Date of Program Methodology: 3/5/2014

What data types were used in the program methodology?

Crashes

Exposure

Roadway

- | | | |
|---|--|---|
| <input checked="" type="checkbox"/> All crashes | <input checked="" type="checkbox"/> Traffic | <input checked="" type="checkbox"/> Median width |
| <input type="checkbox"/> Fatal crashes only | <input checked="" type="checkbox"/> Volume | <input checked="" type="checkbox"/> Horizontal curvature |
| <input checked="" type="checkbox"/> Fatal and serious injury crashes only | <input type="checkbox"/> Population | <input checked="" type="checkbox"/> Functional classification |
| <input type="checkbox"/> Other | <input checked="" type="checkbox"/> Lane miles | <input checked="" type="checkbox"/> Roadside features |
| | <input type="checkbox"/> Other | <input type="checkbox"/> 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-Hierarchical Bayesian Model

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

If no, describe the methodology used to identify local road projects as part of this program.

We accept safety project applications from local government agencies that submit them through their respective region offices.

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 20

Available funding 20

Incremental B/C

Ranking based on net benefit 20

Other

Time to Completion 20

Coordination with other 20

Projects

Program: Other-Reduce Serious & Fatal Injuries

Date of Program Methodology: 3/5/2014

What data types were used in the program methodology?

Crashes

- All crashes
- Fatal crashes only
- Fatal and serious injury crashes only
- Other

Exposure

- Traffic
- Volume
- Population
- Lane miles
- Other

Roadway

- Median width
- Horizontal curvature
- Functional classification
- Roadside features
- 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-Hierarchical Bayesian
- Other-usRAP model

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

If no, describe the methodology used to identify local road projects as part of this program.

We accept safety project applications from local government agencies that submit them through their respective region offices. We are also working on applying the usRAP systemic model to federal aid routes in counties across the state.

How are highway safety improvement projects advanced for implementation?

- Competitive application process
- selection committee
- Other-usRAP model outputs

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 20

Available funding 20

Incremental B/C

Ranking based on net benefit 20

Other

Timeline to completion 20

Coordination with other projects 20

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

27

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

Cable Median Barriers

Rumble Strips

Traffic Control Device Rehabilitation

Pavement/Shoulder Widening

Install/Improve Signing

Install/Improve Pavement Marking and/or Delineation

Upgrade Guard Rails

Clear Zone Improvements

Safety Edge

Install/Improve Lighting

Add/Upgrade/Modify/Remove Traffic Signal

Other Other-Structure Protection on Interstate

Freeways

The systemic percentage was calculated by dividing the amount of funding currently dedicated to projects selected systemically by the total amount of currently funded projects (including non-infrastructure projects).

What process is used to identify potential countermeasures?

- Engineering Study
- Road Safety Assessment
- Other: Other-Systemic modeling

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.

Non-Infrastructure Projects

UDOT uses some of its HSIP funding for non-infrastructure projects that aid roadway safety efforts. Such projects include:

Educational Campaigns

Zero Fatalities is a mutual effort between various state safety partners to address the top behaviors that lead to fatalities on Utah's roads. The program targets behaviors such as drowsy driving, distracted driving, aggressive driving, impaired driving, and lack of seat belt usage. UDOT successfully achieved a goal of getting Utah to institute a primary seat belt law when the State legislature passed the measure in spring 2015.

Integrating Safety Into Planning

UDOT Traffic & Safety Division personnel work internally with other UDOT divisions to integrate safety planning into their core processes. UDOT also works with MPOs and other safety partners across the state to supply them with needed data and tools so they can better integrate safety into their internal planning processes. UDOT continues to partner with the MPOs in order to provide them with tools to incorporate safety into their transportation planning efforts. Integrating safety into UDOT and MPO planning processes helps all agencies proactively address safety. A "Safety Boot Camp" was held with the MPOs in May 2015 to aid in these efforts.

Improving Crash Data Analysis

HSIP funding is also used to improve UDOT's crash database. The ability to accurately locate crashes and understand crash characteristics is vital to programming HSIP funds.

University & Consultant Support

The Traffic & Safety Division uses HSIP funding to contract with universities and consultants who assist with various HSIP functions. The functions include items such as program management, project management, crash data mapping, statistical analysis, safety modeling, report preparation, SPF/CMF development, training, and HSM analysis.

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)	36997179	75 %	31827680	72 %
HRRRP (SAFETEA-LU)	270954	1 %	142853	0 %
HRRR Special Rule				
Penalty Transfer - Section 154				
Penalty Transfer - Section 164	7150520	14 %	7419080	17 %
Incentive Grants - Section 163				
Incentive Grants (Section 406)				
Other Federal-aid Funds (i.e. STP, NHPP)				
State and Local Funds	5223387	11 %	4860320	11 %

Totals	49642040	100%	44249933	100%
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How much funding is programmed to local (non-state owned and maintained) safety projects?

\$2,744,126.00

How much funding is obligated to local safety projects?

\$1,705,101.00

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

\$13,771,992.00

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

\$13,771,992.00

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

\$7,419,080.00

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.

For the past few years our biggest obstacle to obligating HSIP funds has been the addition of the Section 164 penalty transfer funds. It took a while to ramp up to the point where we were capable of identifying enough projects to use the available funds but we are finally to the point where we are better able to keep up. There are two primary ways in which we are addressing the issue. The first is that we are setting up as many of the projects as we can a few months before the new fiscal year and seeding them with enough current year money to begin design. This allows the regions to begin design early enough to comfortably advertise the projects before the end of the following fiscal year, thereby achieving higher obligated percentages. The second way is continuing the development of systemic models that will allow us to identify projects for multiple years in advance so that there is always a list of projects the regions can choose from and we don't have to scramble each year to find projects.

Another ongoing obstacle is scope changes that result in some projects either being cancelled or advertised with estimates far below the funded amounts. We are working with the regions to get them more involved in up-front scoping of their safety projects so that initial concept estimates are closer in line with the amounts of funding we place in the projects.

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

Project delivery is administered through the UDOT region offices. We are working closely with our region counterparts to make sure safety projects are addressed in a timely manner. After projects are programmed, project managers from the applicable UDOT region offices are assigned to each project. These project managers then shepherd the projects through UDOT's standard federal environmental, design, and construction processes.

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
Evaluation of Lateral Pile Resistance (PIN 11075)	Non-infrastructure Transportation safety planning	1 Numbers	10000	312000	HSIP (Section 148)	n/a	0	0	State Highway Agency	Study	Statewide Safety Planning Support
SR-71/Ft. Union Blvd Int. Dual Lefts (PIN 11407)	Intersection traffic control Modify traffic signal timing - left-turn phasing (permissive to protected-only)	4 Numbers	200000	200000	HSIP (Section 148)	Urban Principal Arterial - Other	51040	45	State Highway Agency	Intersections	Intersection Signalization
SR-266 (4500 South); State Street to 700 East (PIN 11409)	Access management Raised island - install new	1 Miles	110500	110500	HSIP (Section 148)	Urban Principal Arterial - Other	33975	40	State Highway Agency	Intersections	Intersection Signalization
US-189 RWIS and	Speed management Speed management -	11	10000	10000	HSIP (Section 148)	Rural Principal	9835	55	State Highway	Lane	Speed Management

VMS, MP 8.00 - 19.4 (PIN 11410)	other	Miles	00	00	n 148)	Arterial - Other Freeways and Expressways			Agency	Departure	ent
US-6; Barrier MP (192.56-192.82) (PIN 11411)	Roadside Barrier - concrete	0.26 Miles	125000	125000	HSIP (Section 148)	Rural Principal Arterial - Other Freeways and Expressways	7425	40	State Highway Agency	Roadway Departure	Concrete Barrier
US-89; Improve Shoulders (MP 69-75) (PIN 11412)	Shoulder treatments - other	6 Miles	250000	250000	HSIP (Section 148)	Rural Principal Arterial - Other	3110	60	State Highway Agency	Roadway Departure	Widen and Pave Shoulders
SR-18; MP 34.40 - 39.10, Install Guardrail (PIN 11413)	Roadside Barrier- metal	5 Miles	459990	459990	HSIP (Section 148)	Rural Minor Arterial	1605	50	State Highway Agency	Roadway Departure	Guardrail

SR-173; Redwood Rd. to State Street (PIN 11494)	Intersection traffic control Modify traffic signal timing - left-turn phasing (permissive to protected-only)	1 Numbers	14290 00	54111 15	HSIP (Section 148)	Urban Principal Arterial - Other	3810 0	40	State Highway Agency	Intersecti ons	Intersecti on Signalizati on
SR-24; MP 69.40 - MP 73.25 Shoulder Improvements (PIN 12204)	Roadway delineation Roadway delineation - other	4 Miles	68778 3	68778 3	Penalty Transfer - Section 164	Rural Minor Arterial	1225	55	State Highway Agency	Roadway Departure	Widen and Pave Shoulders
Safety Campaigns, Education, & Enforcement FY15 (PIN 12210)	Non-infrastructure Educational efforts	1 Numbers	31000 00	31000 00	Penalty Transfer - Section 164	n/a	0	0	State Highway Agency	Increasing driver safety awarenes s	Education
Traffic & Safety Program Management Support FY15 (PIN 12211)	Non-infrastructure Transportation safety planning	1 Numbers	17400 00	17400 00	Penalty Transfer - Section 164	n/a	0	0	State Highway Agency	Creating more effective processes and safety managem ent	Statewide Safety Planning Support

										systems	
Safety Campaigns and Education FY16 (PIN 12212)	Non-infrastructure Educational efforts	1 Numbers	2600000	2600000	Penalty Transfer – Section 164	n/a	0	0	State Highway Agency	Increasing driver safety awareness	Education
Traffic & Safety Program Management Support FY16 (PIN 12213)	Non-infrastructure Transportation safety planning	1 Numbers	2000000	2000000	Penalty Transfer – Section 164	n/a	0	0	State Highway Agency	Creating more effective processes and safety management systems	Statewide Safety Planning Support
500 W/4800 S; Signal Upgrades (PIN 12218)	Intersection traffic control Modify traffic signal timing - left-turn phasing (permissive to protected-only)	2 Numbers	4100000	4100000	HSIP (Section 148)	Urban Major Collector	18060	35	City of Municipal Highway Agency	Intersections	Intersection Signalization
SR-36; Canyon Rd Intersection Improvement	Intersection geometry Auxiliary lanes - add right-turn lane	1 Numbers	6000000	7500000	HSIP (Section 148)	Rural Principal Arterial - Other Freeways	19010	60	State Highway Agency	Intersections	Turn Lanes

nts (PIN 12223)						and Expressways					
4100 S; 4000 W, 2700 W & 1300 W Signal Imps (PIN 12225)	Intersection traffic control Modify traffic signal - miscellaneous/other/unspecified	3 Numbers	240000	240000	HSIP (Section 148)	Urban Minor Collector	25365	40	City of Municipal Highway Agency	Intersections	Intersection Signalization
US-89; VARIOUS LOCATIONS (PIN 12361)	Intersection geometry Intersection geometrics - modify skew angle	2 Numbers	200000	2108704	HSIP (Section 148)	Urban Principal Arterial - Other	32650	40	State Highway Agency	Lane Departure	Intersection Realignment
GIS / Enterprise Data Management Support (PIN 12668)	Non-infrastructure Data/traffic records	1 Numbers	200000	385000	HSIP (Section 148)	n/a	0	0	State Highway Agency	Data	Crash Mapping and Analysis
SR-71 & 3900 South, Traffic Signal Reconstruction	Intersection traffic control Modify traffic signal timing - left-turn phasing (permissive to protected-only)	2 Numbers	447000	922000	Penalty Transfer - Section 164	Urban Principal Arterial - Other	54790	45	State Highway Agency	Intersections	Intersection Signalization

t (PIN 12714)											
2014 Statewide Pavement Condition Data Collection (PIN 12761)	Non-infrastructure Data/traffic records	1 Numbers	850000	2032403	Penalty Transfer – Section 164	n/a	0	0	State Highway Agency	Data	Crash Mapping and Analysis
I-15; Interstate Structure Protection (PIN 12985)	Roadside Barrier - concrete	1 Numbers	297000	297000	HSIP (Section 148)	Urban Principal Arterial - Interstate	118455	70	State Highway Agency	Roadway Departure	Concrete Barrier
Telegraph Rd; Guardrail & Rumble Strips (PIN 13024)	Roadside Barrier- metal	1.7 Miles	800000	800000	HSIP (Section 148)	Rural Principal Arterial - Other	5745	45	City of Municipal Highway Agency	Roadway Departure	Guardrail and Rumble Strips
SR-24; MP 16.01-24.13, Roadside Improvements (PIN	Roadside Barrier- metal	8 Miles	800000	898000	HSIP (Section 148)	Rural Minor Arterial	1240	65	State Highway Agency	Roadway Departure	Guardrail

13041)											
Statewide SRTS SNAP Program FY15 (PIN 13167)	Non-infrastructure Educational efforts	1 Miles	69900 0	71000 0	HSIP (Section 148)	n/a	0	0	State Highway Agency	Child Safety	Education
SR-71; MP 9.7-11.7, Raised Medians (PIN 13223)	Access management Raised island - install new	2 Miles	50000 0	50000 0	HSIP (Section 148)	Urban Principal Arterial - Other	2838 0	40	State Highway Agency	Intersections	Access Management
I-15, I-80, I-215; P2-Structure Barrier (PIN 13309)	Roadside Barrier - concrete	1 Numbers	27500 00	27660 00	HSIP (Section 148)	Urban Principal Arterial - Interstate	0	70	State Highway Agency	Roadway Departure	Concrete Barrier
BYU Traffic Safety Data Research 2015-2016 (PIN 13403)	Non-infrastructure Transportation safety planning	1 Numbers	12000 0	12000 0	Penalty Transfer – Section 164	n/a	0	0	State Highway Agency	Safety modeling	Crash Mapping and Analysis
I-15 & I-70; Interstate Structure	Roadside Barrier - concrete	1 Numb	20000 00	20000 00	HSIP (Section 148)	Rural Principal Arterial -	0	80	State Highway Agency	Roadway Departure	Concrete Barrier

Protection Ph. 2 (PIN 13483)		ers			n 148)	Interstate			Agency		
I-15; MP 28.13-29.30, Install Guardrail (PIN 13484)	Roadside Barrier- metal	1 Miles	500000	500000	HSIP (Section 148)	Rural Principal Arterial - Interstate	21915	75	State Highway Agency	Roadway Departure	Guardrail
SRTS SNAP Program FY16 (PIN 13571)	Non-infrastructure Educational efforts	1 Numbers	300000	300000	HSIP (Section 148)	n/a	0	0	State Highway Agency	Child Safety	Education
High Risk Rural Roads Project Scoping (PIN 13579)	Non-infrastructure Transportation safety planning	3 Numbers	40000	40000	HRRRP (SAFET EA-LU)	Rural Major Collector	0	0	County Highway Agency	Roadway Departure	Guardrail and Rumble Strips
I-80; MP 138.7 - 141.1, Shoulder Barrier & Lighting (PIN	Roadside Barrier - concrete	2.4 Miles	195000	195000	HSIP (Section 148)	Rural Principal Arterial - Interstate	51360	65	State Highway Agency	Roadway Departure	Concrete Barrier

13596)											
Safety Partner Programs FY15 (PIN 13646)	Non-infrastructure Enforcement	1 Numbers	1000000	1000000	HSIP (Section 148)	n/a	0	0	State Highway Agency	Enforcement	Enforcement
US-191; MP 138-146, Shoulder & Curve Improvements (PIN 13665)	Shoulder treatments Shoulder grading	8 Miles	200000	458852	HSIP (Section 148)	Rural Principal Arterial - Other Freeways and Expressways	6040	65	State Highway Agency	Roadway Departure	Widen and Pave Shoulders
SR-186; Beck Street to North Temple	Intersection traffic control Systemic improvements - signal-controlled	1 Numbers	572000	282700	HSIP (Section 148)	Urban Principal Arterial - Other	15440	50	State Highway Agency	Intersections	Intersection Signalization

The funding source chosen for a given project listing is the source that represents the majority of project funding. Many projects are funded with both regular HSIP and SEC164 HSIP.

Progress in Achieving Safety Performance Targets

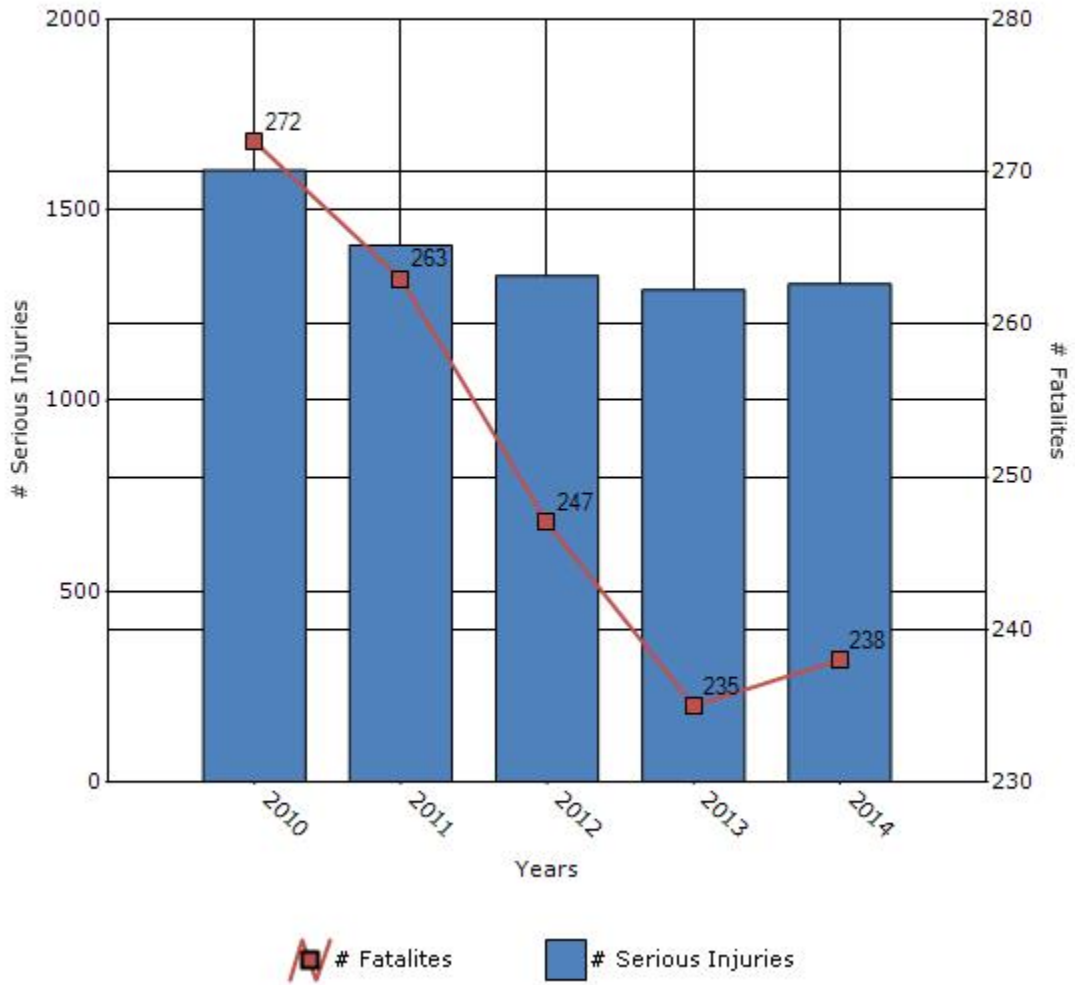
Overview of General Safety Trends

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

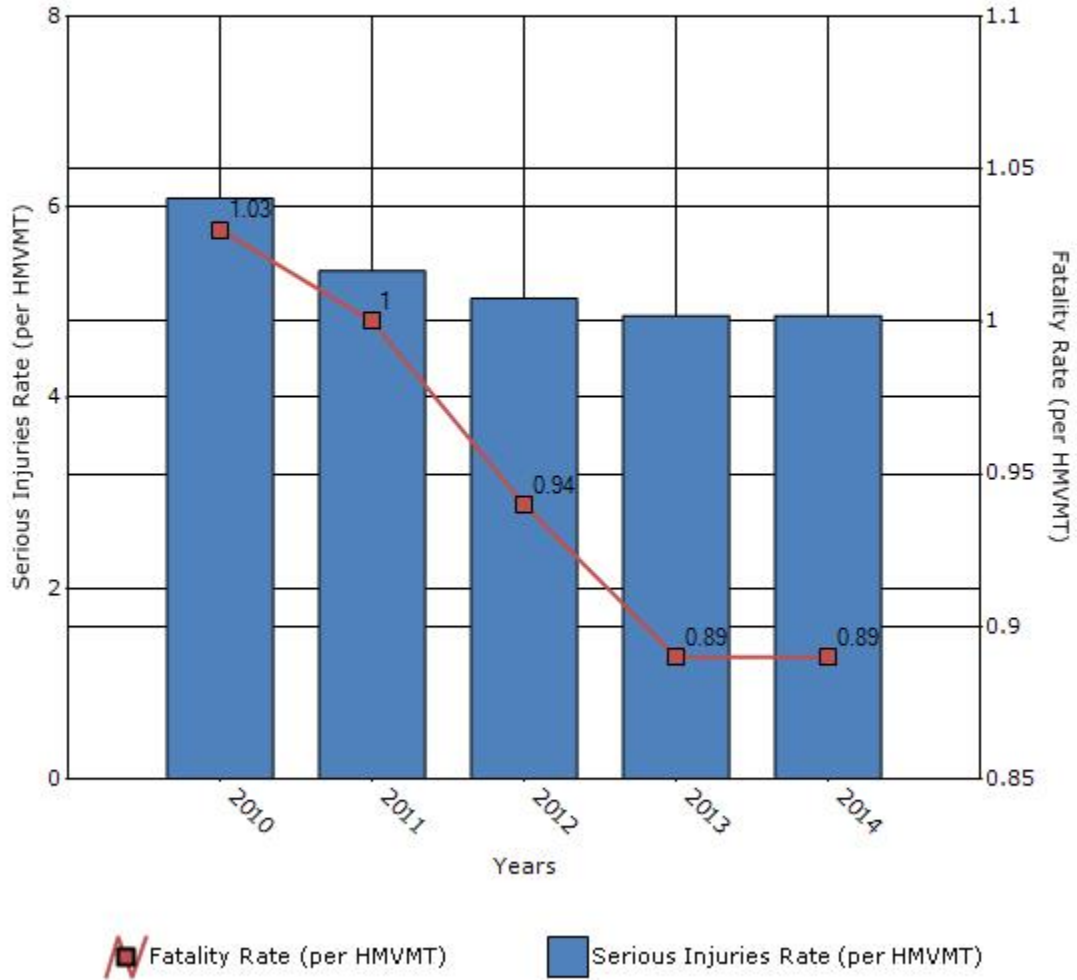
Performance Measures*	2010	2011	2012	2013	2014
Number of fatalities	272	263	247	235	238
Number of serious injuries	1604	1407	1328	1291	1306
Fatality rate (per HMVMT)	1.03	1	0.94	0.89	0.89
Serious injury rate (per HMVMT)	6.09	5.33	5.04	4.86	4.86

*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



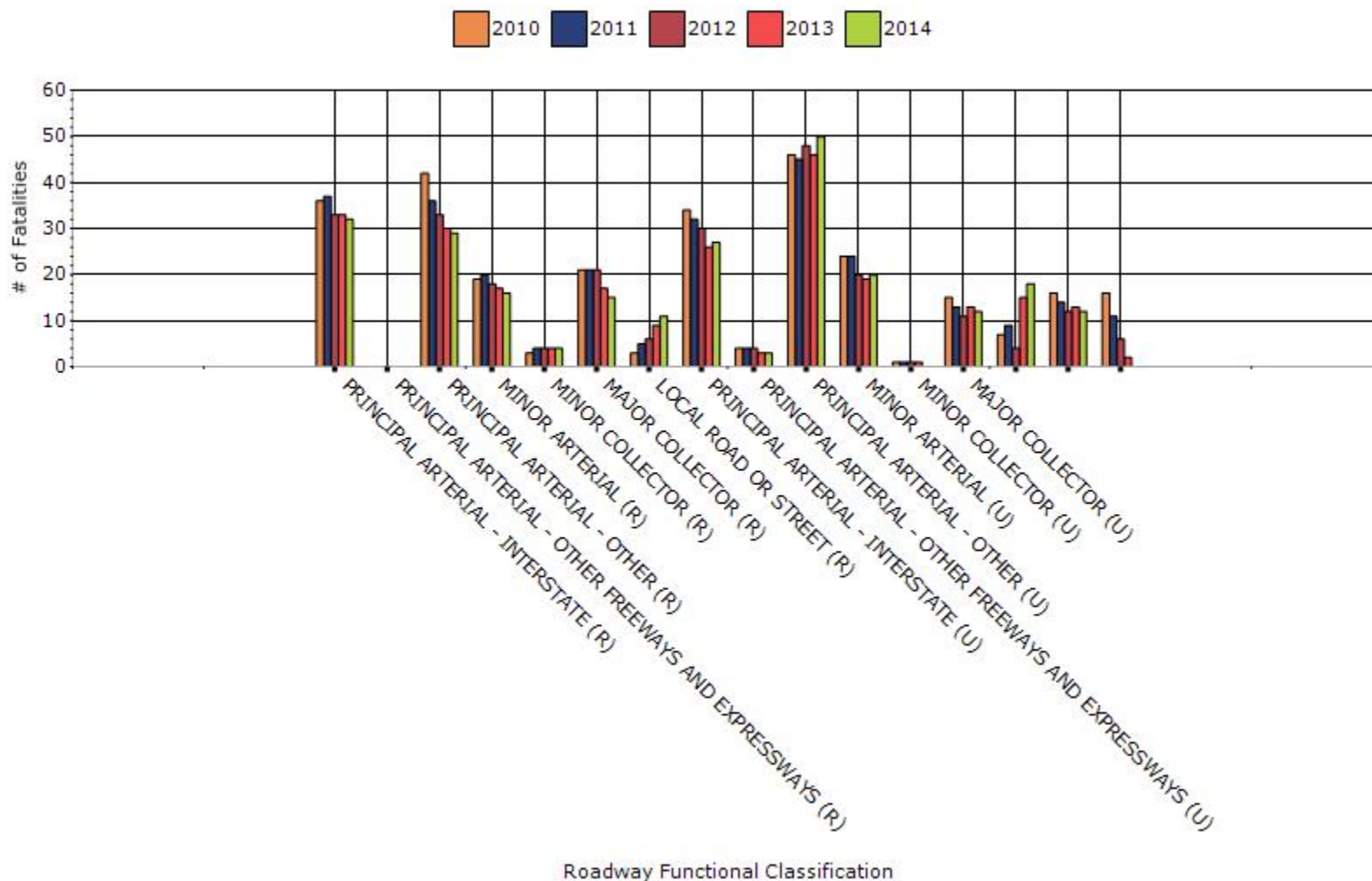
To the maximum extent possible, present performance measure* data by functional classification and ownership.

Year - 2014

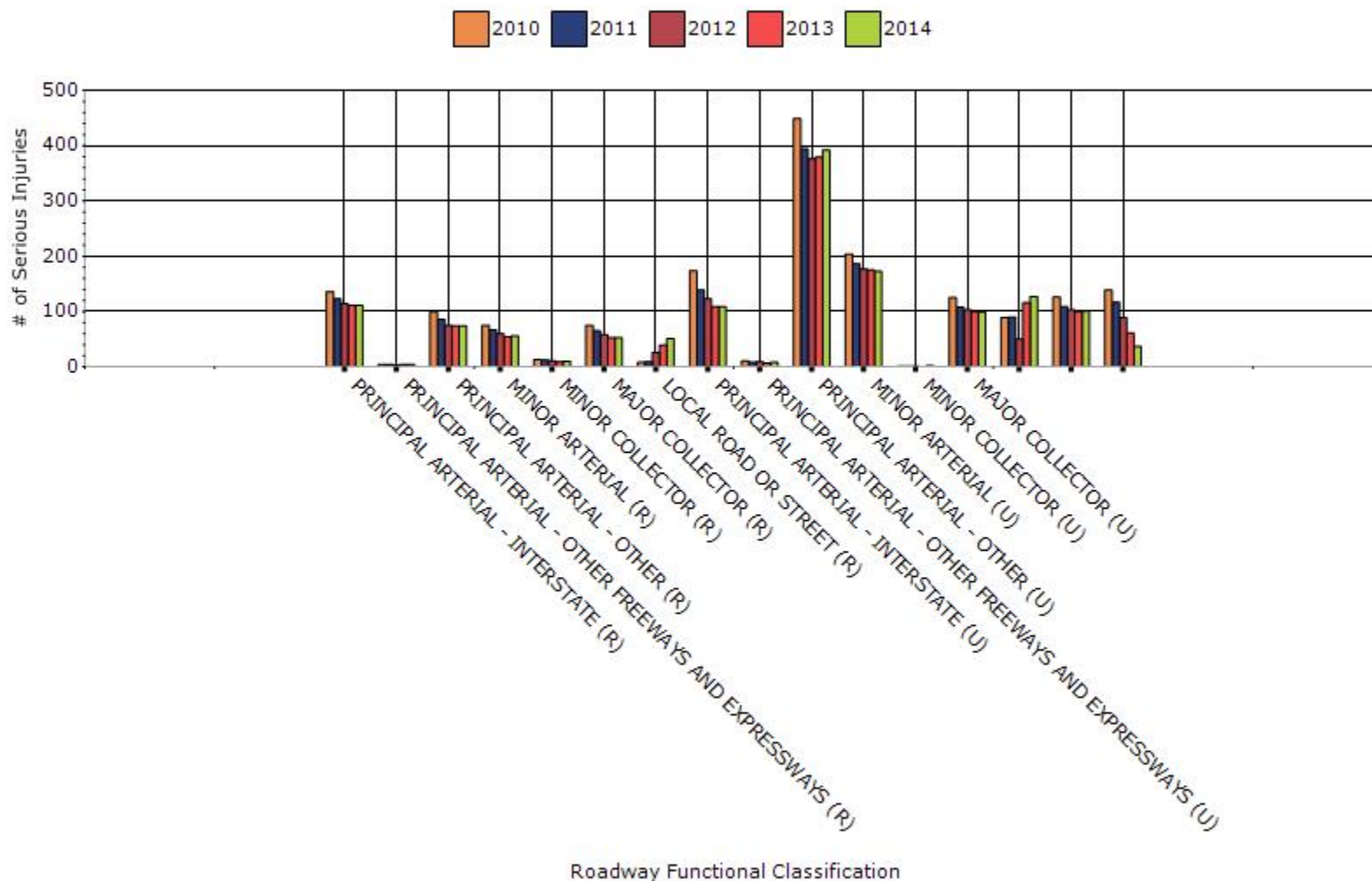
Function Classification	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
RURAL PRINCIPAL ARTERIAL - INTERSTATE	32	111	1.05	3.67
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	0	4	0	0
RURAL PRINCIPAL ARTERIAL - OTHER	29	74	1.7	4.38
RURAL MINOR ARTERIAL	16	56	2.1	7.25
RURAL MINOR COLLECTOR	4	10	1.57	3.92
RURAL MAJOR COLLECTOR	15	53	1.72	6.04
RURAL LOCAL ROAD OR STREET	11	51	1	4.65
URBAN PRINCIPAL	27	109	0.42	1.68

ARTERIAL - INTERSTATE				
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	3	8	1.1	2.75
URBAN PRINCIPAL ARTERIAL - OTHER	50	392	1.22	9.66
URBAN MINOR ARTERIAL	20	173	0.72	6.22
URBAN MINOR COLLECTOR	0	2	1.09	8.74
URBAN MAJOR COLLECTOR	12	99	0.81	6.63
URBAN LOCAL ROAD OR STREET	18	127	0.58	4.03
URBAN COLLECTOR (MINOR + MAJOR)	12	101	0.82	6.65
UNKNOWN	0	37	0	0

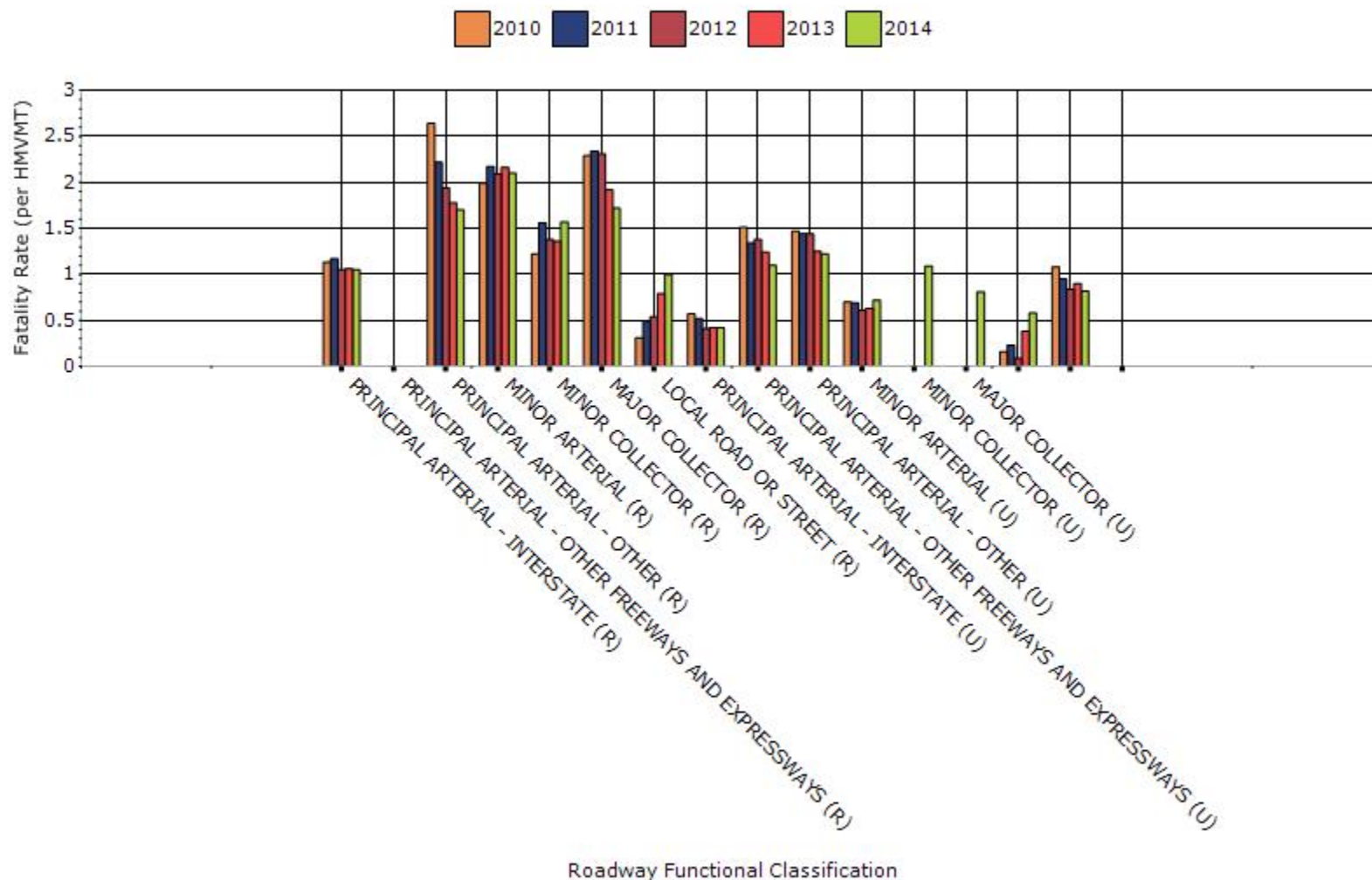
Fatalities by Roadway Functional Classification



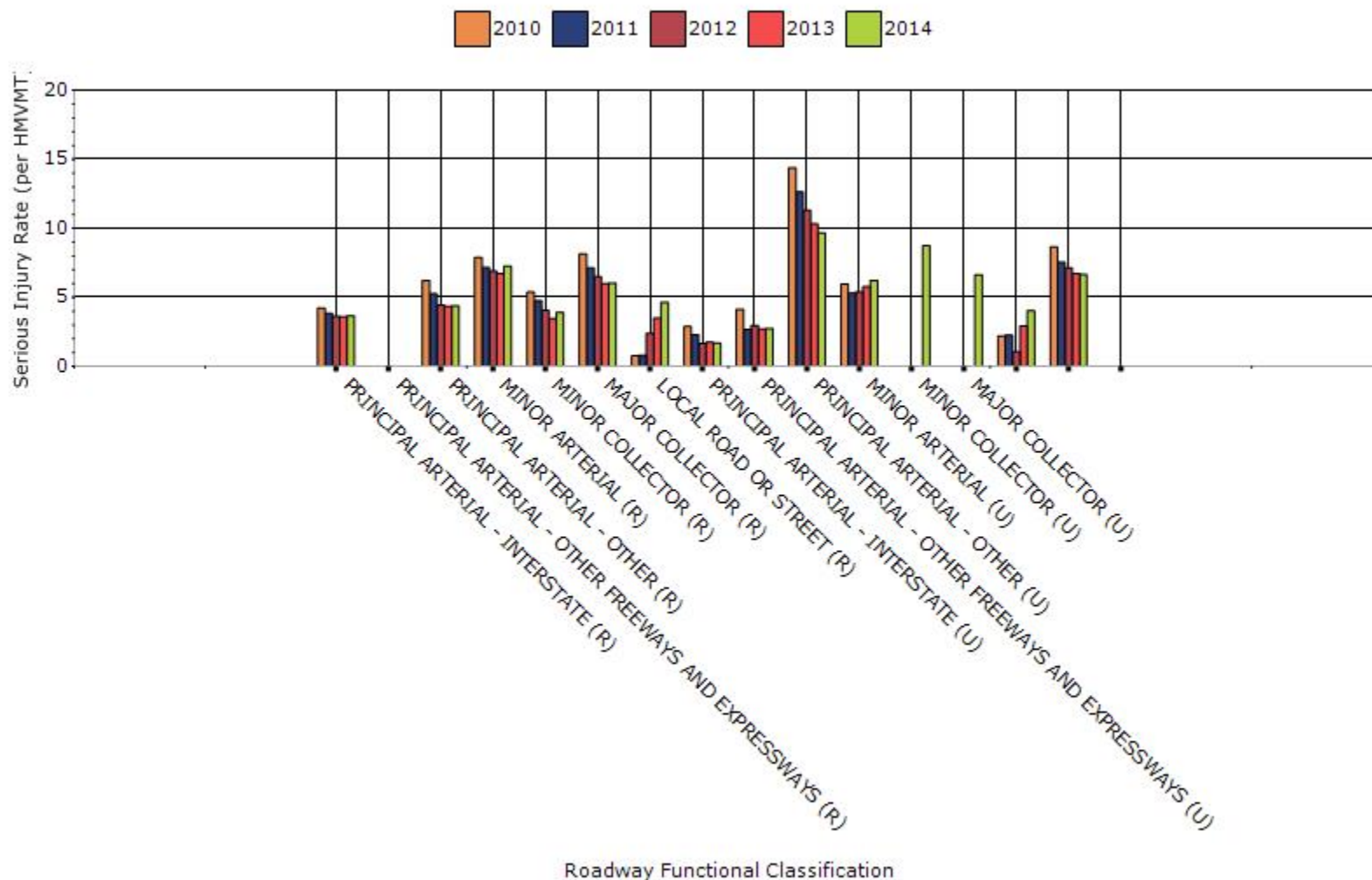
Serious Injuries by Roadway Functional Classification



Fatality Rate by Roadway Functional Classification



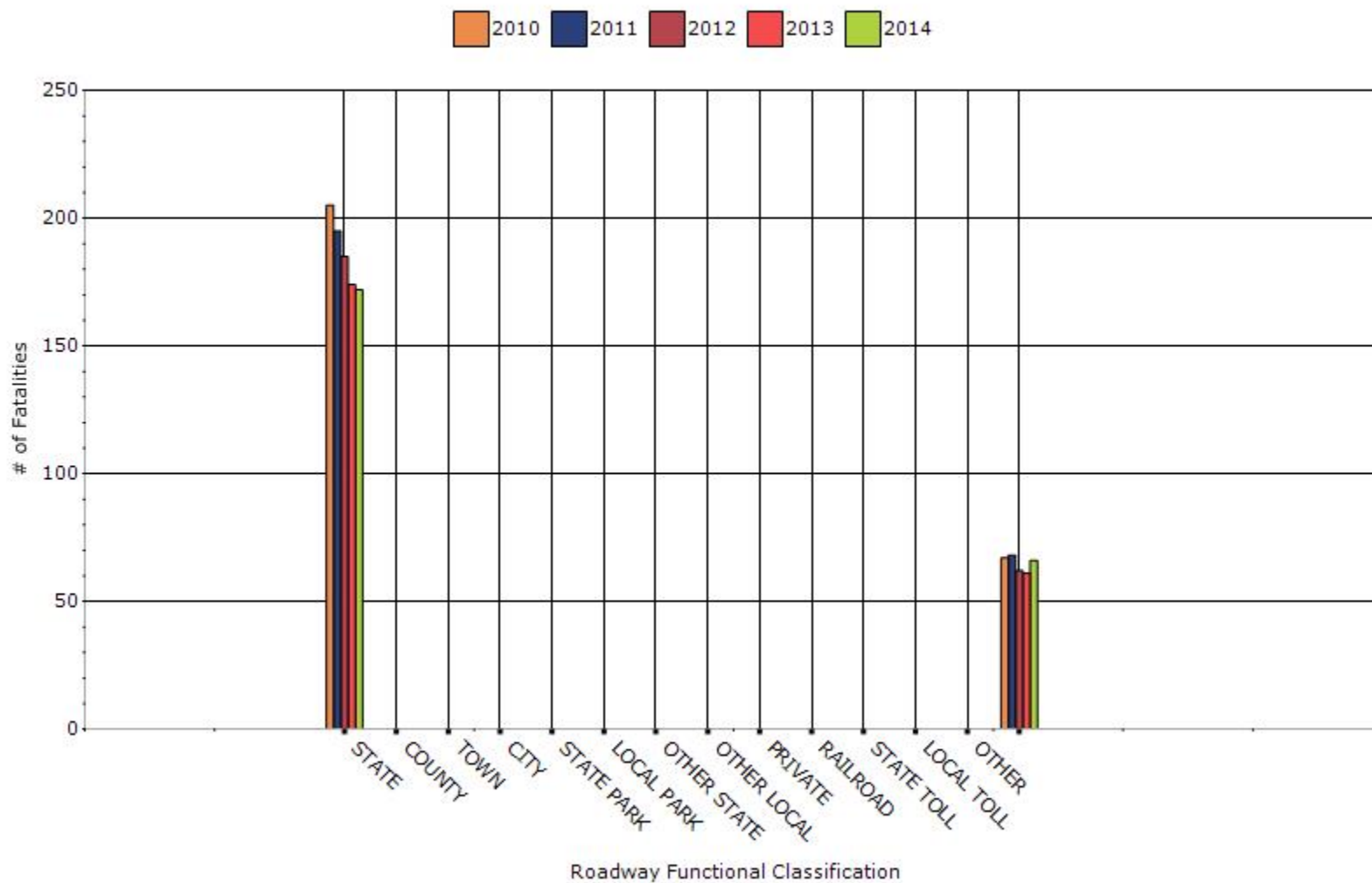
Serious Injury Rate by Roadway Functional Classification



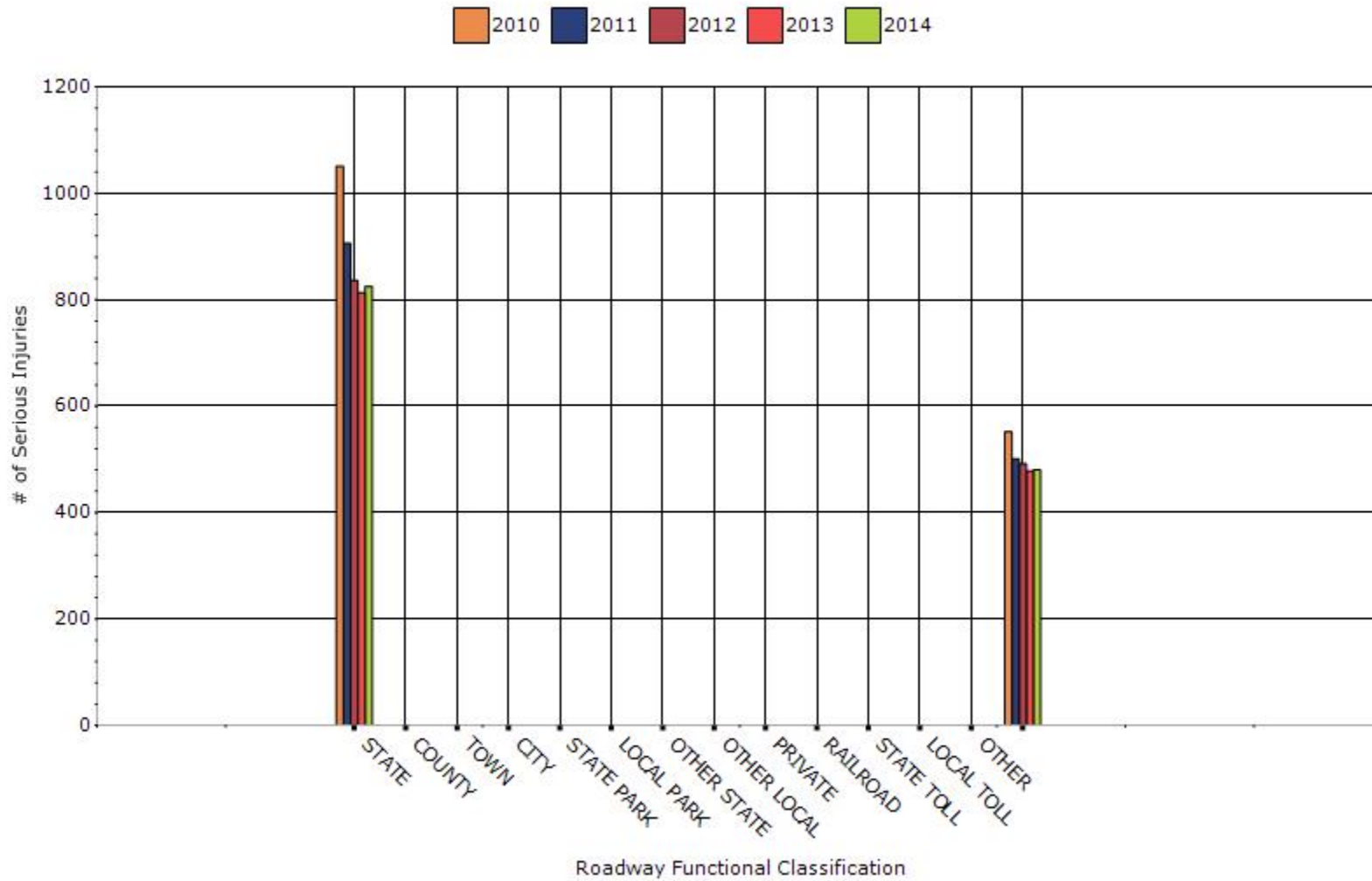
Year - 2014

Roadway Ownership	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
STATE HIGHWAY AGENCY	172	825	0.96	5.84
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
ALL OTHER	66	480	0.74	6.69

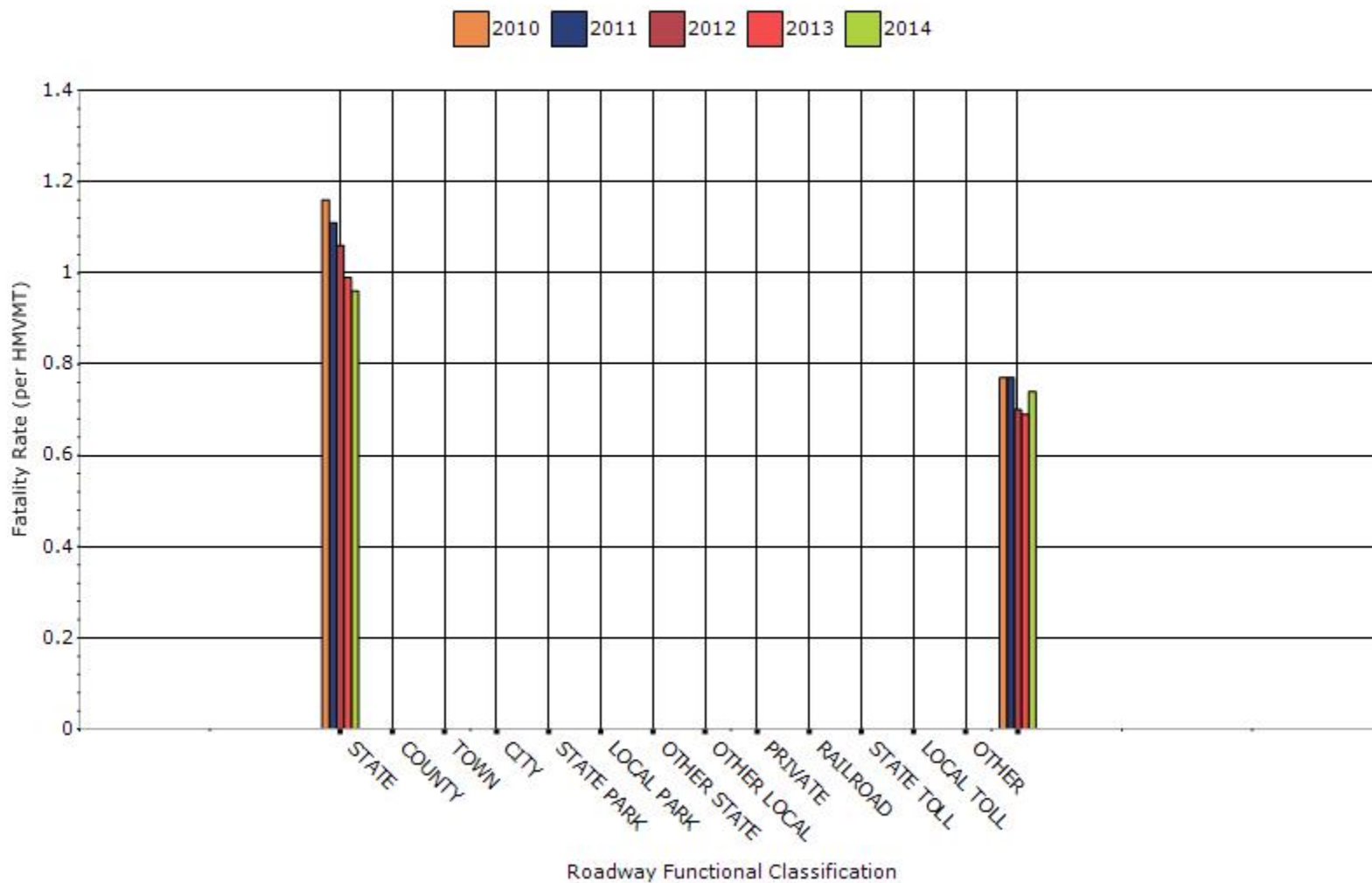
Number of Fatalities by Roadway Ownership



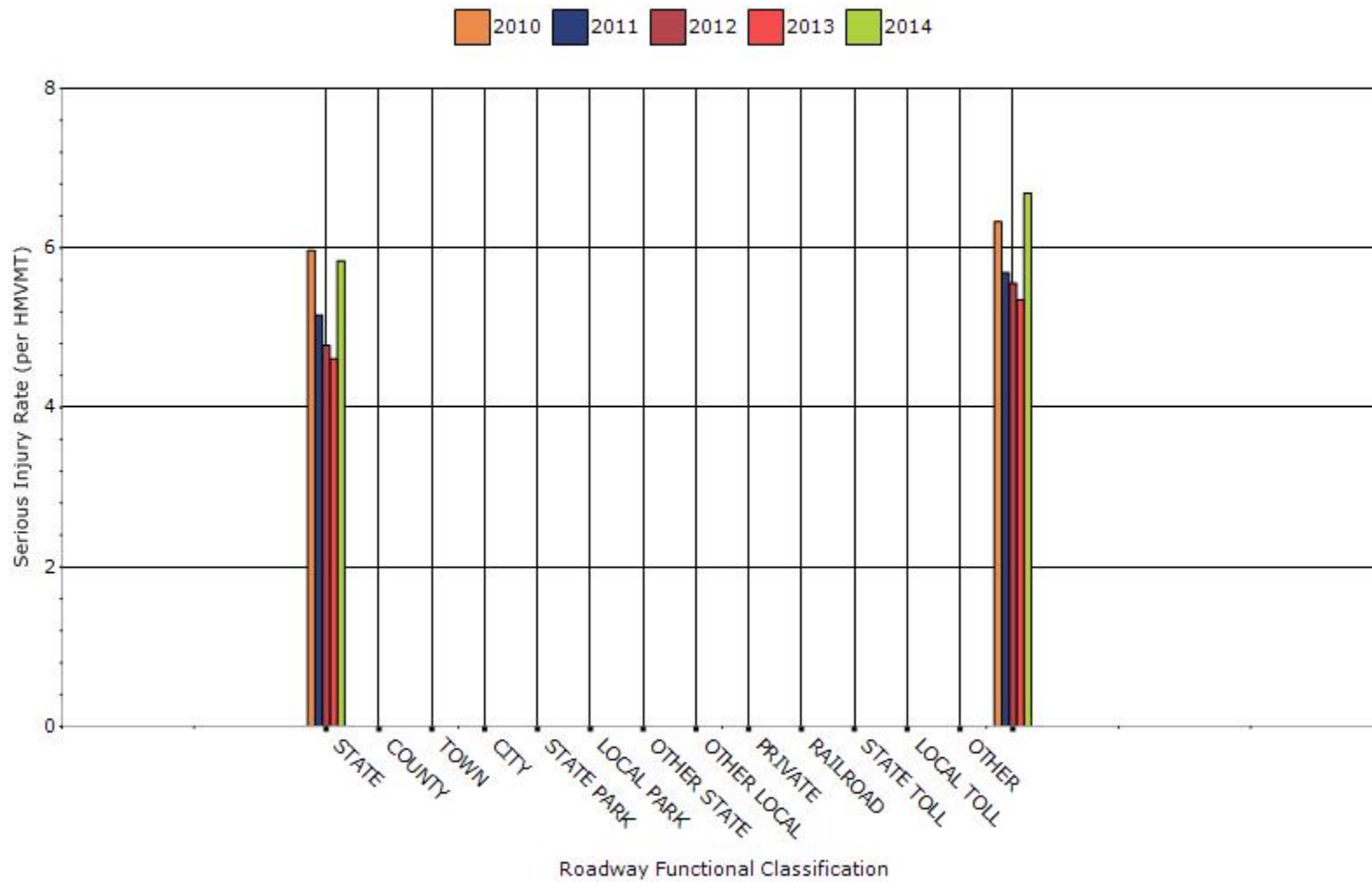
Number of Serious Injuries by Roadway Ownership



Fatality Rate by Roadway Ownership



Serious Injury Rate by Roadway Ownership



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

In general, the 5-year averages for the crash number and rate categories tracked by UDOT are trending down or remaining nearly even. Overall fatalities and serious injuries increased slightly as compared to 2013 figures but the rates remained exactly the same due to an increase in VMT that compensated for the crash increases.

A few functional class trends are worth mentioning. First, the "unknown" category of serious and fatal injuries has been decreasing sharply over the past few years. This is due to UDOT's ability to now locate every crash geospatially. Second, the reduction in unknown crashes has led to a corresponding increase in crashes attributed to the "rural local road or street" category because most of the crashes we were previously unable to locate were on rural local roads. We believe that the increases shown in this report for local road crashes can be properly attributed to this phenomenon and not on an actual increase in crashes occurring around the state on local roads.

Application of Special Rules

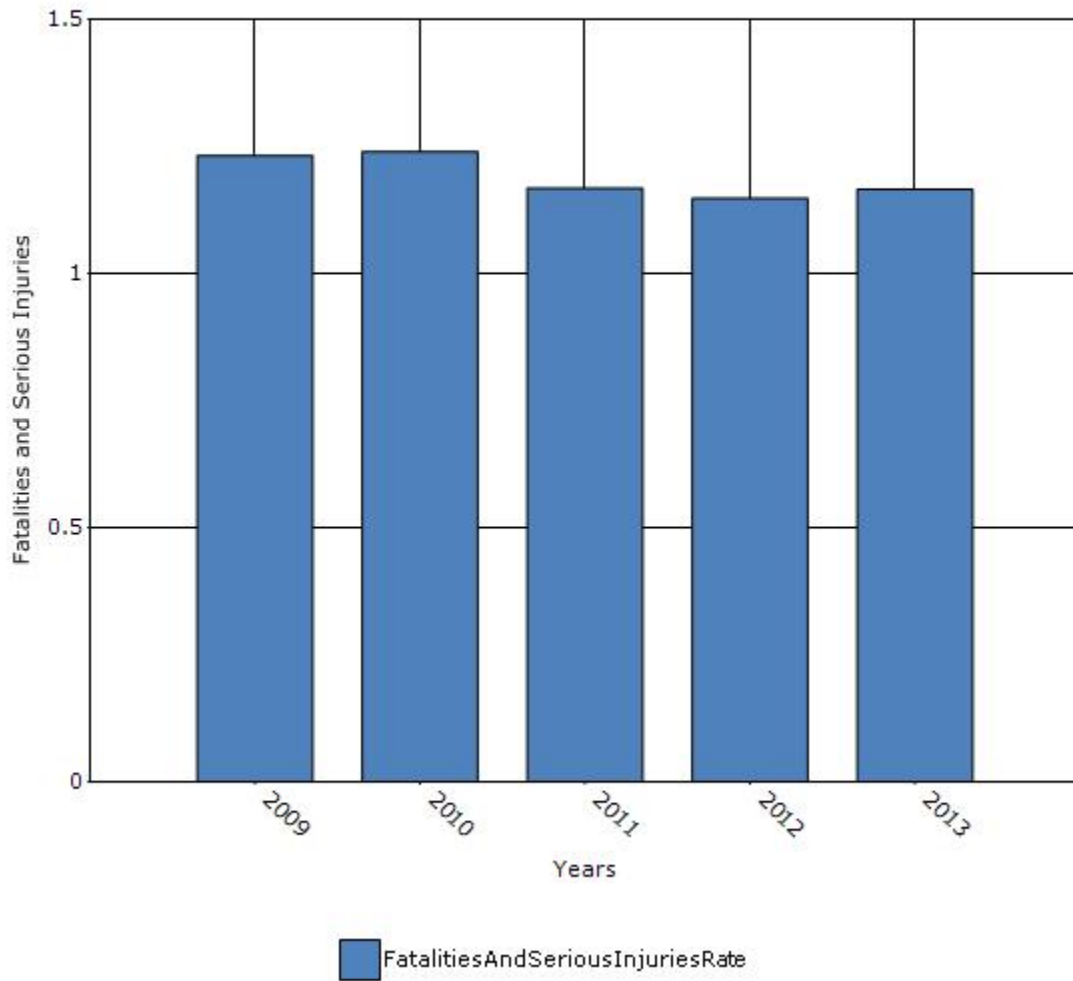
Present the rate of traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65.

Older Driver Performance Measures	2009	2010	2011	2012	2013
Fatality rate (per capita)	0.31	0.338	0.338	0.32	0.326
Serious injury rate (per capita)	0.924	0.908	0.832	0.83	0.84
Fatality and serious injury rate (per capita)	1.232	1.24	1.168	1.148	1.166

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

Each year's fatalities and serious injuries were divided by the "Number of People 65 Years of Age and Older (per 1,000 total population)" figures for each of the respective years, as instructed in Interim Guidance for the Older Driver Rule provided on the FHWA website. Those are the values we entered in the spreadsheet above. Then the system calculated the 5-yr rolling averages automatically. This method is in line with the instructions on the FHWA website.

Rate of Fatalities and Serious injuries for the Last Five Years



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-High obligation rate

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

- Shift Focus to Fatalities and Serious Injuries
- Include Local Roads in Highway Safety Improvement Program
- Organizational Changes
- None
- Other:

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

There have not been any significant program changes within this reporting period.

SHSP Emphasis Areas

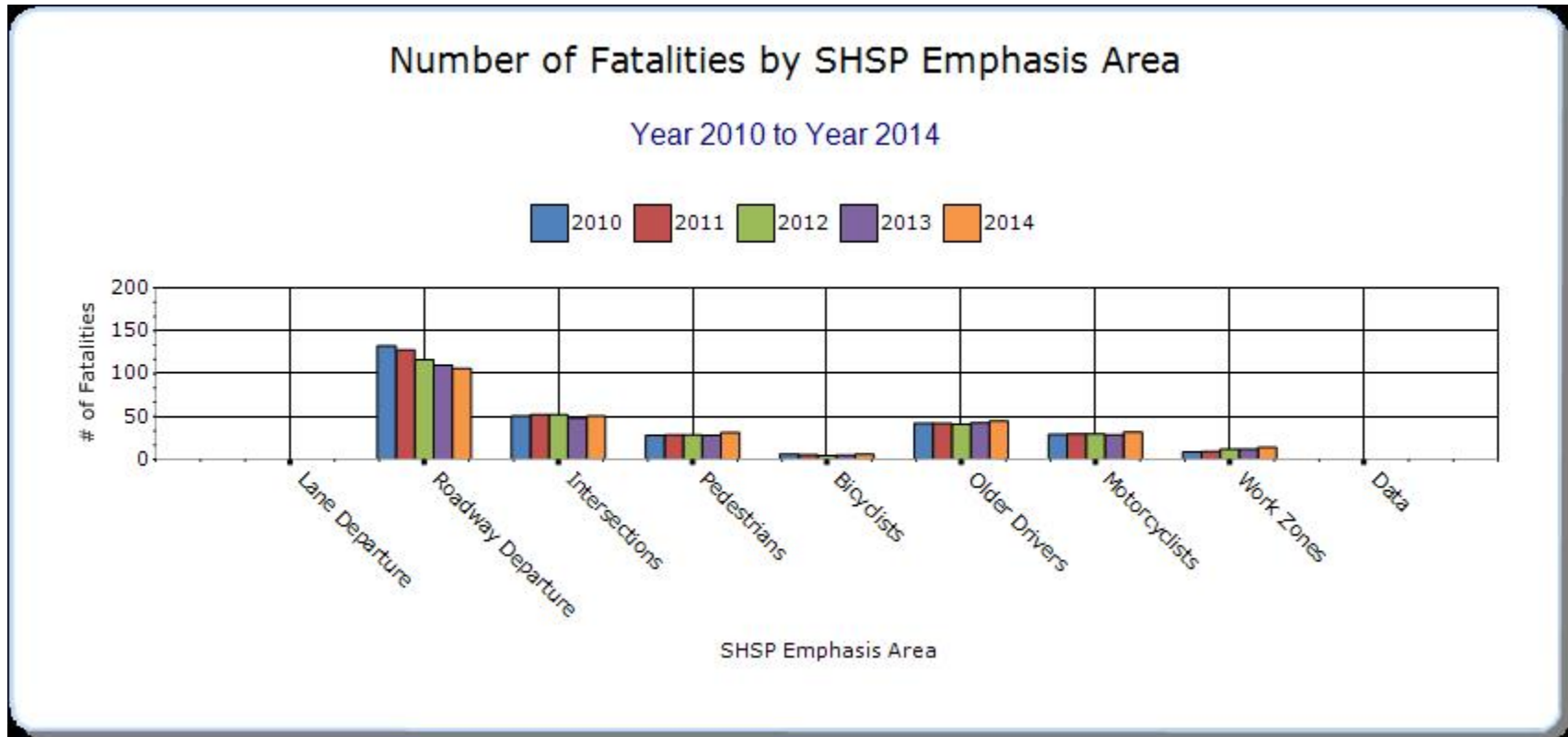
For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.

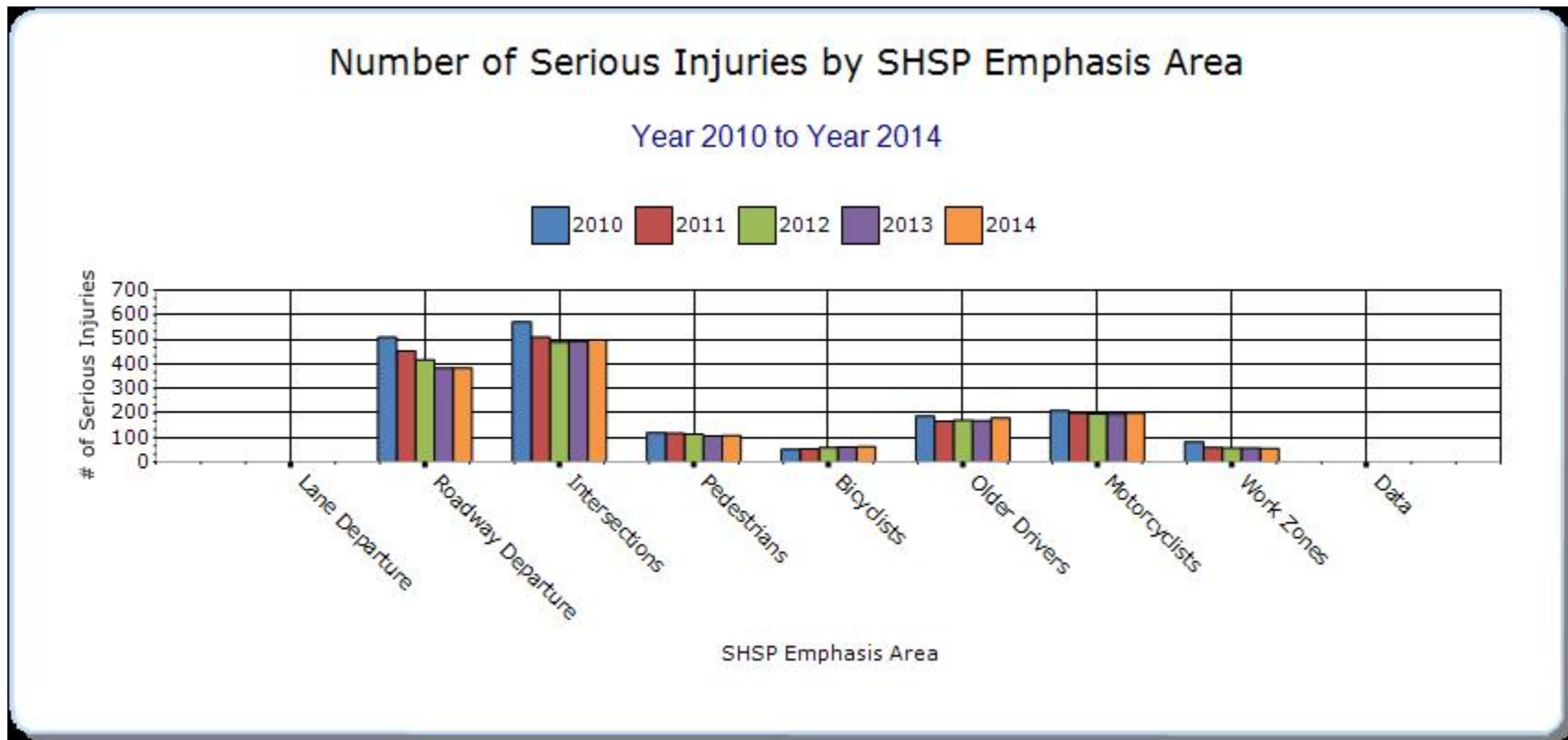
Year - 2014

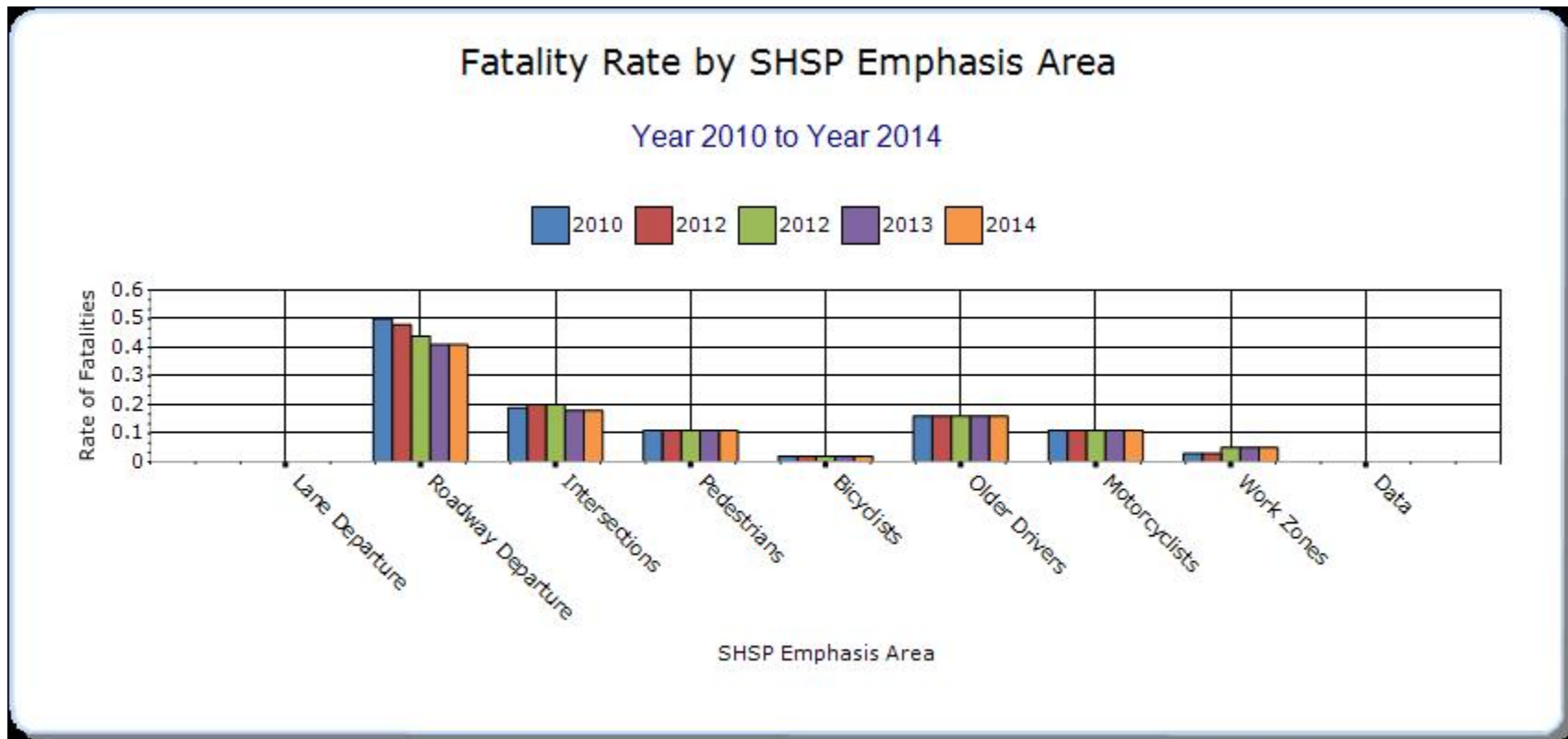
HSIP-related SHSP Emphasis Areas	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Roadway Departure		106	383.2	0.41	1.4	0	0	0
Intersections		50.6	496.8	0.18	1.85	0	0	0
Pedestrians		31.4	109	0.11	0.41	0	0	0
Bicyclists		6	62.2	0.02	0.24	0	0	0
Older Drivers		44.8	180.4	0.16	0.65	0	0	0
Motorcyclists		31.8	200.2	0.11	0.73	0	0	0
Work Zones		14	55.8	0.05	0.21	0	0	0
Adverse Roadway Surface Condition		33	217.6	0.13	0.82	0	0	0
Adverse Weather		21.2	119.6	0.08	0.44	0	0	0
Aggressive Driving		10.8	46.8	0.04	0.17	0	0	0
Collision with Fixed Object		58.8	253	0.21	0.91	0	0	0

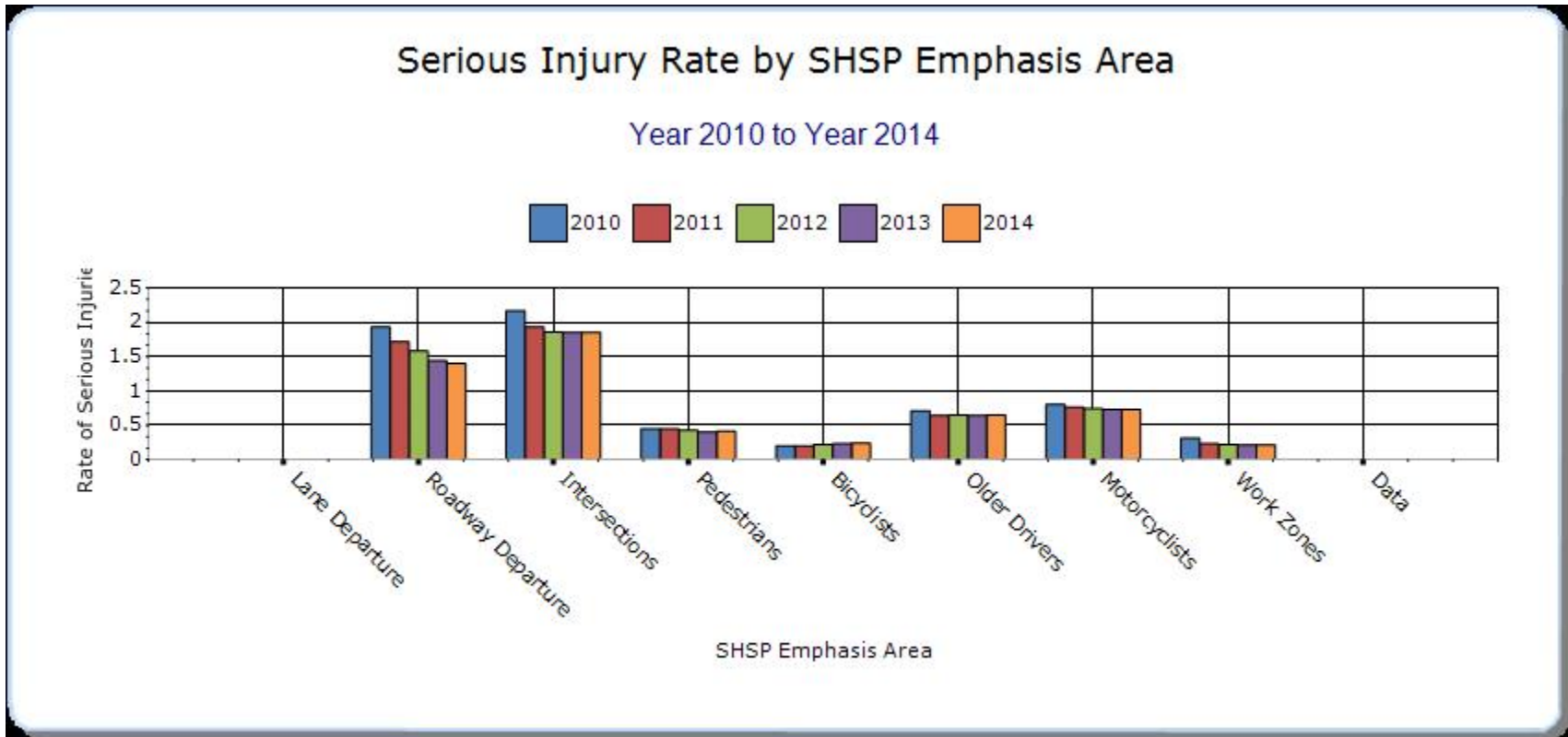
Commercial Motor Vehicle		29.4	90	0.11	0.33	0	0	0
Distracted Driving		19	134.4	0.07	0.49	0	0	0
Domestic Animal Related		0.4	6	0	0.02	0	0	0
Drowsy Driving		10.8	55	0.04	0.2	0	0	0
DUI		49.4	158.2	0.18	0.57	0	0	0
Interstate Highway		58.6	219.2	0.21	0.8	0	0	0
Night/Dark Condition		84.2	352.4	0.31	1.29	0	0	0
Overturn/Rollover		88.6	349.8	0.33	1.31	0	0	0
Railroad Crossing		1.4	5	0.01	0.02	0	0	0
Roadway Geometry Related		106.4	442.4	0.4	1.63	0	0	0
State Route		171.8	825.2	0.64	3.04	0	0	0
Single Vehicle		132.6	621.4	0.49	2.31	0	0	0
Speed Related		58.6	233.8	0.22	0.87	0	0	0
Teenage Driver Involved		32	210.2	0.12	0.78	0	0	0
Train Involved		1.6	4.2	0.01	0.02	0	0	0
Transit Vehicle Involved		4.4	14	0.02	0.05	0	0	0

Urban County		136.6	926.6	0.5	3.41	0	0	0
Wild Animal Related		2.6	17.8	0.01	0.07	0	0	0
Improper Restraint		25.8	74	0.09	0.27	0	0	0
Rural Non-State		20.8	107.8	0.07	0.41	0	0	0
Unrestrained		49.4	129.6	0.19	0.48	0	0	0







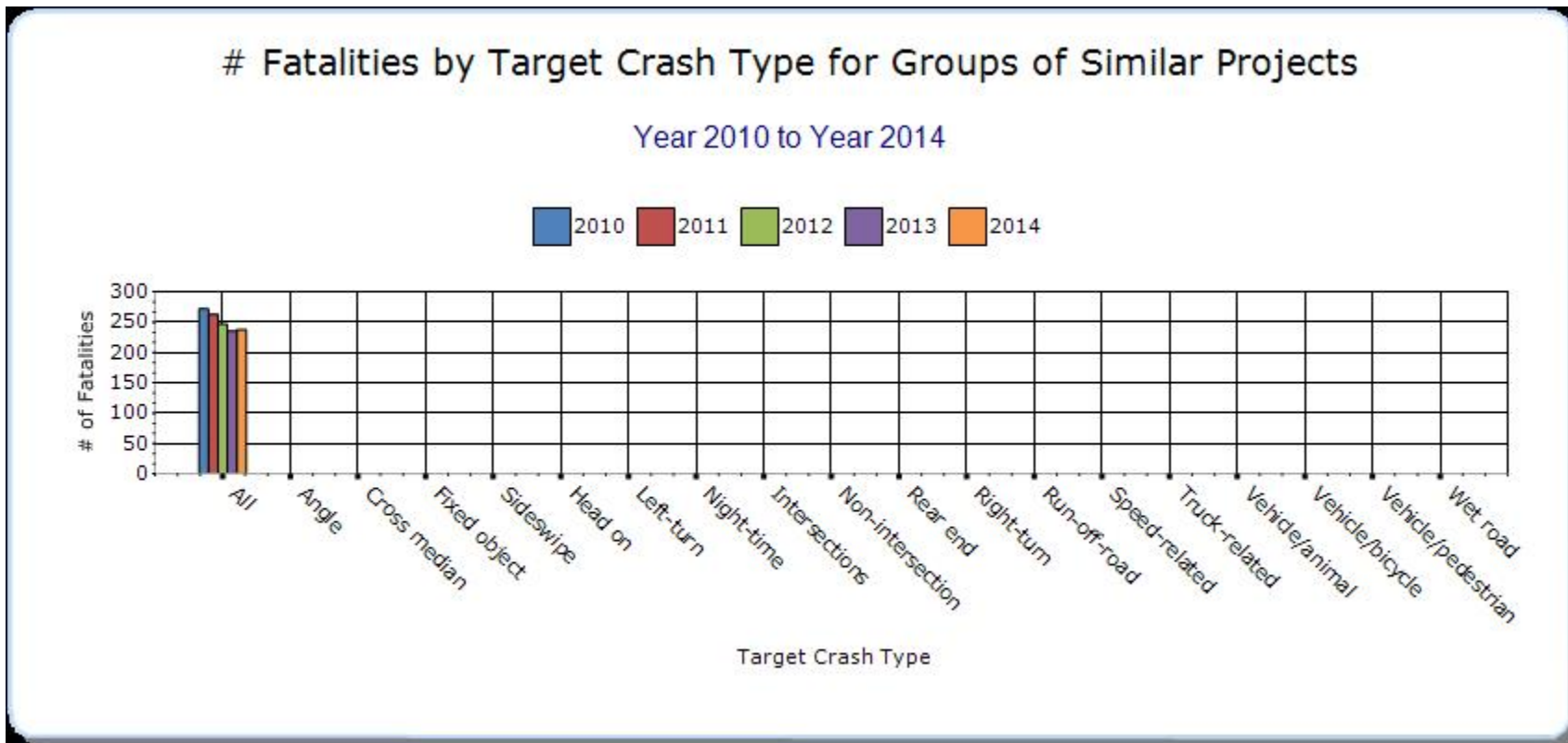


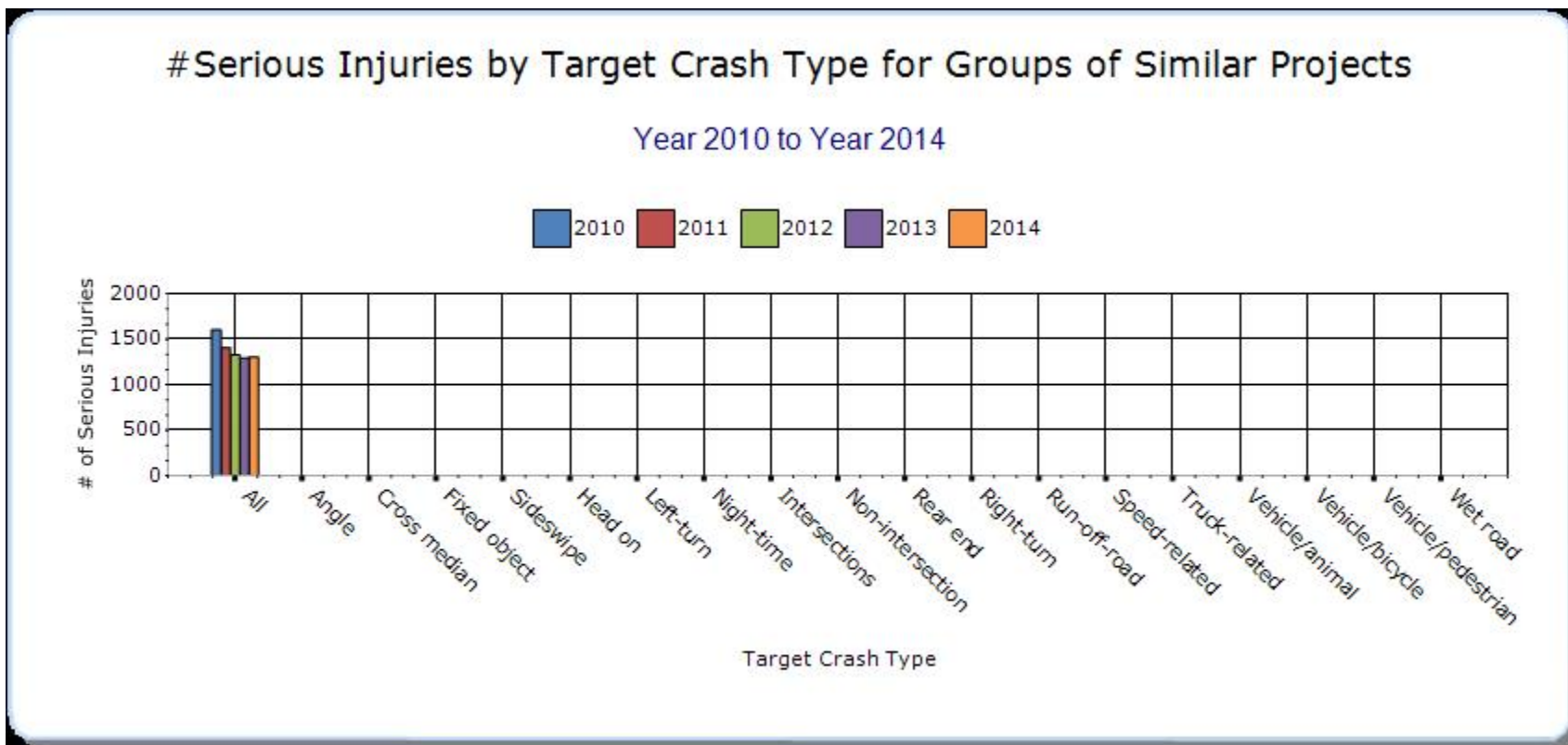
Groups of similar project types

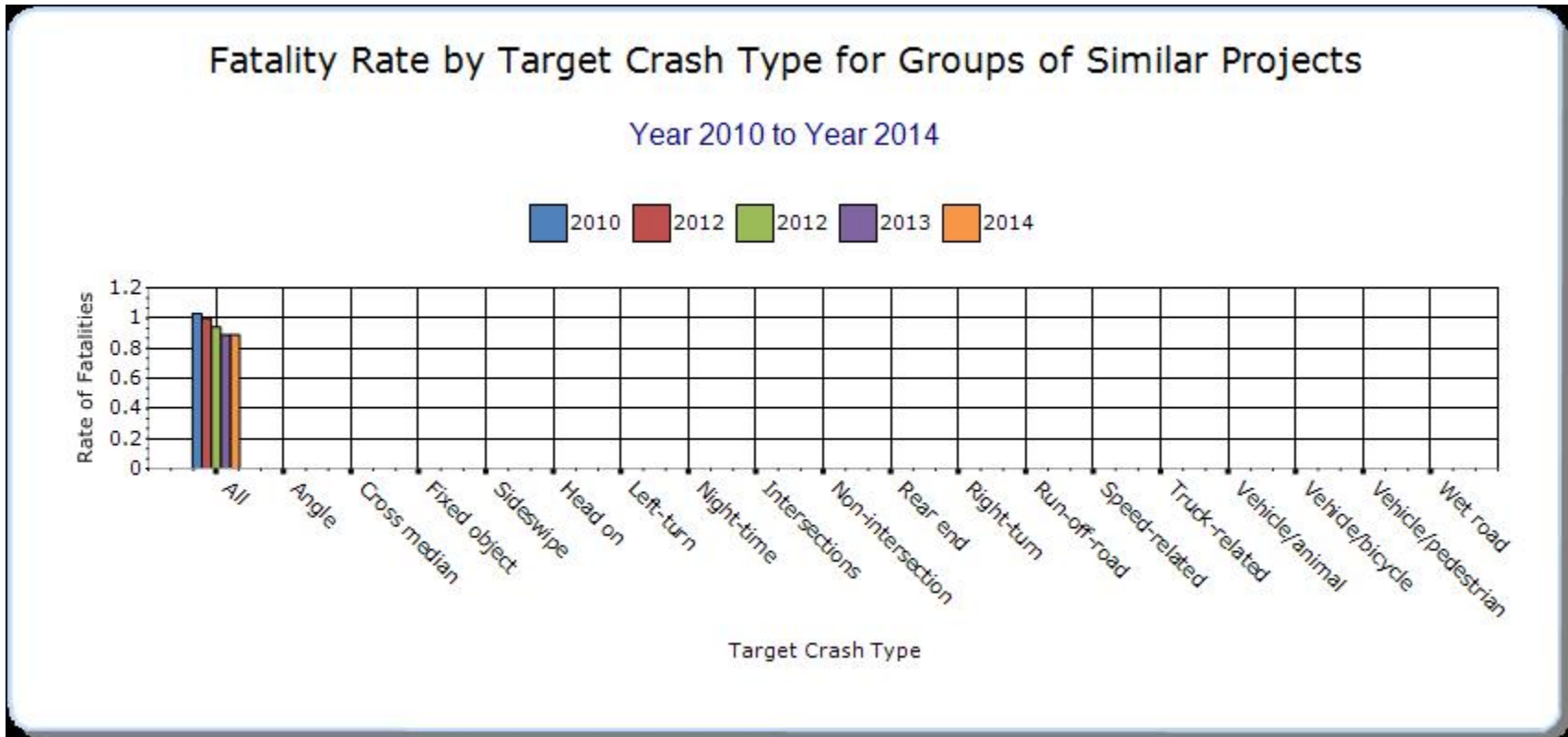
Present the overall effectiveness of groups of similar types of projects.

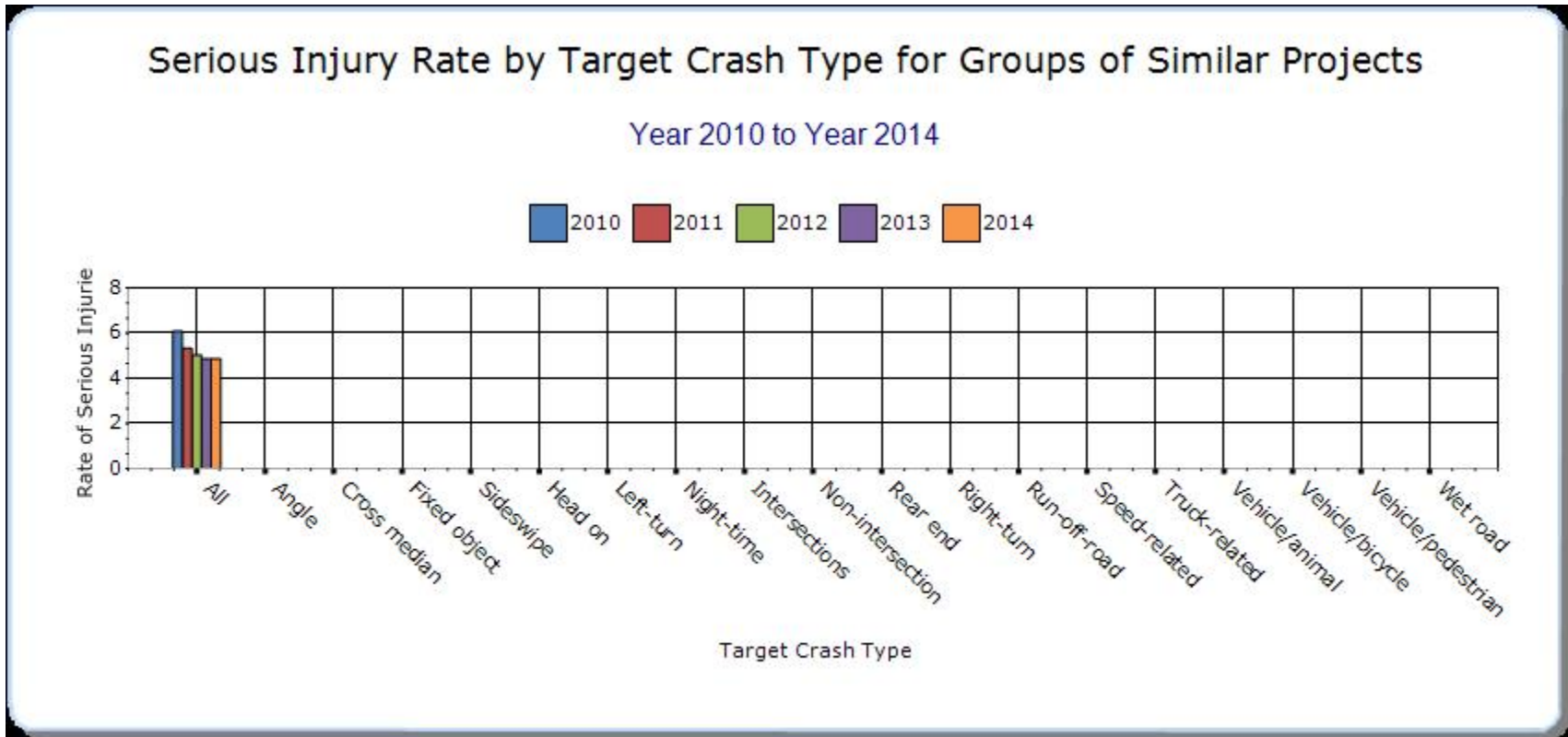
Year - 2014

HSIP Sub-program Types	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Other-Reduce Serious & Fatal Injuries	All	237.8	1305.6	0.89	4.86	0	0	0
Low-Cost Spot Improvements	Roadway Departure	106	383.2	0.4	1.43	1	1	1







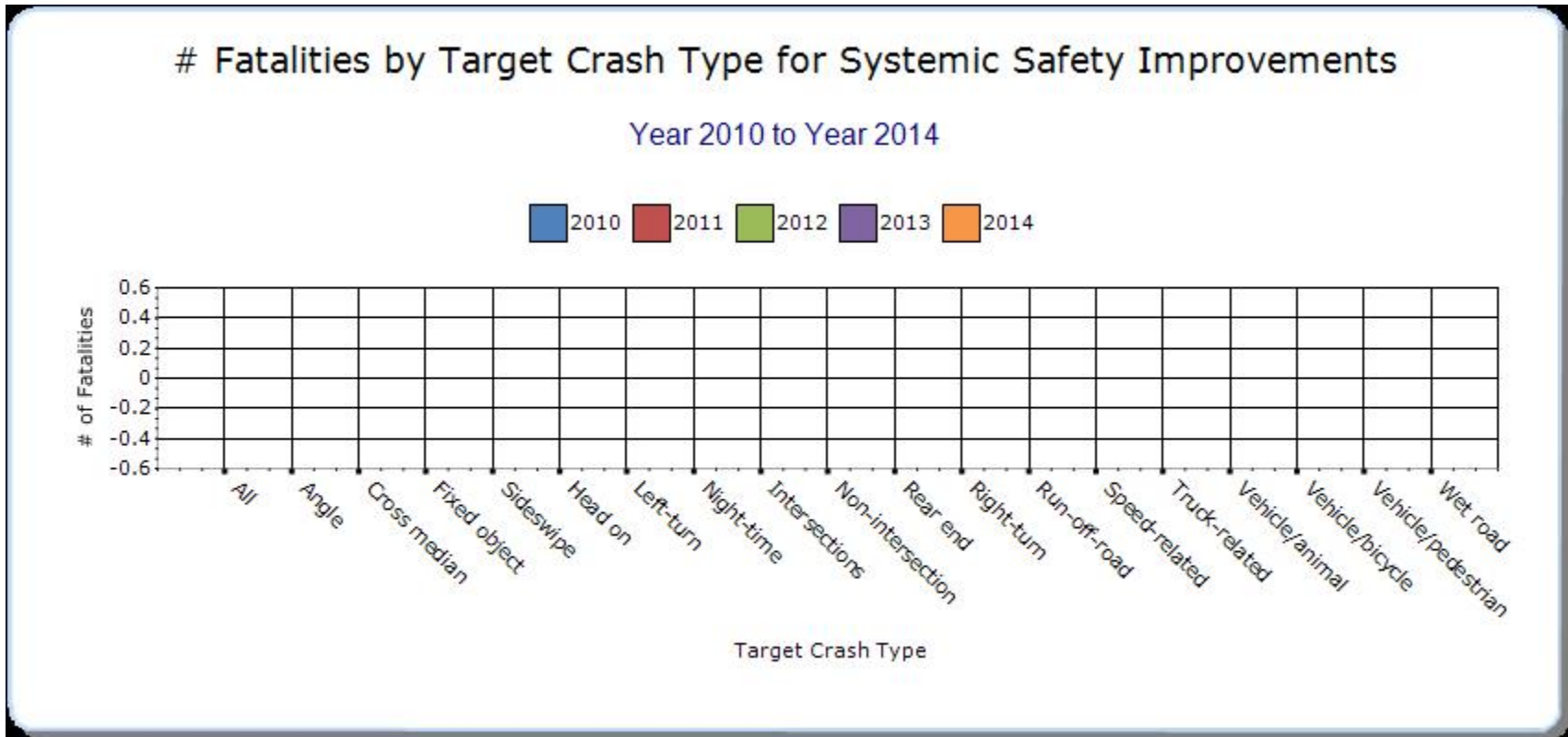


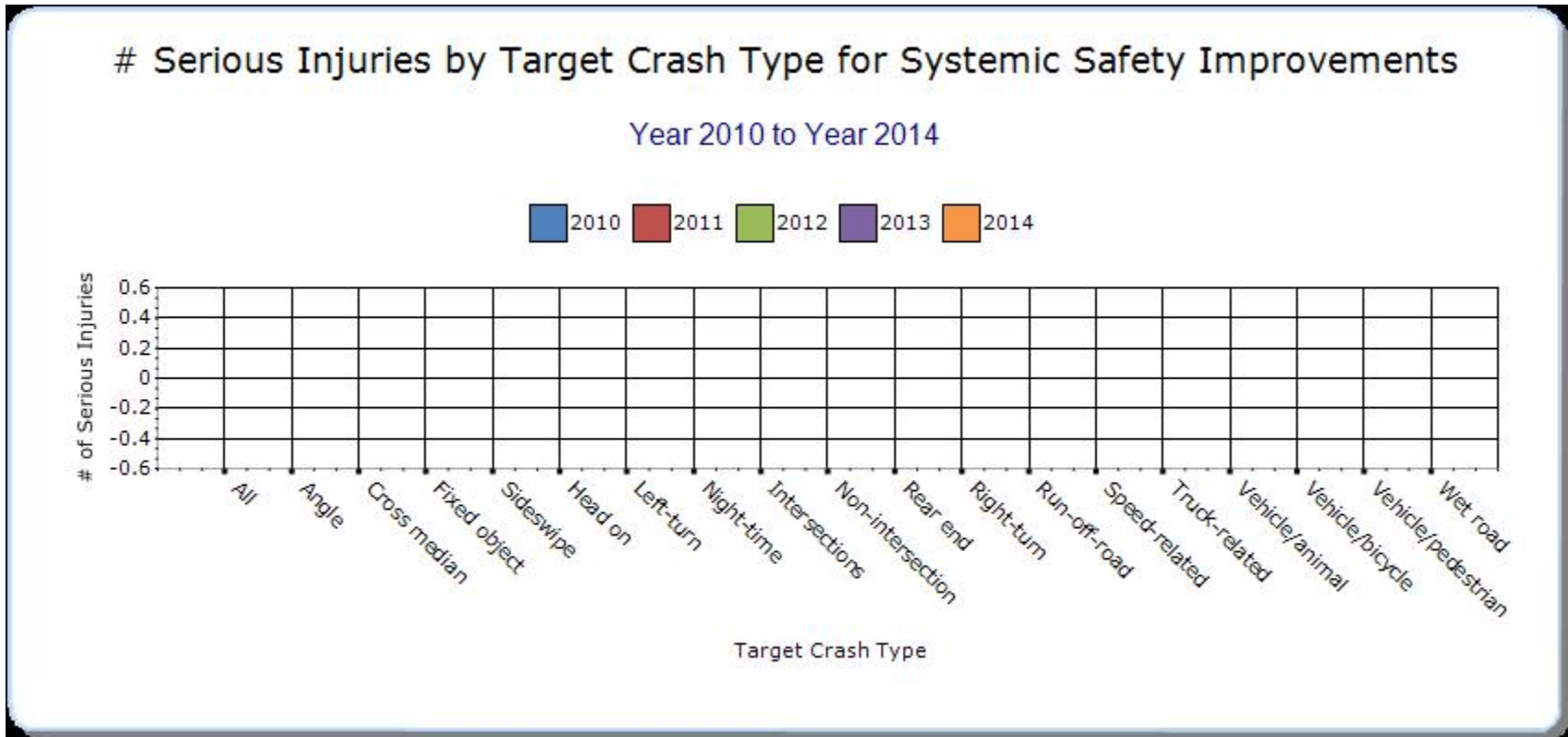
Systemic Treatments

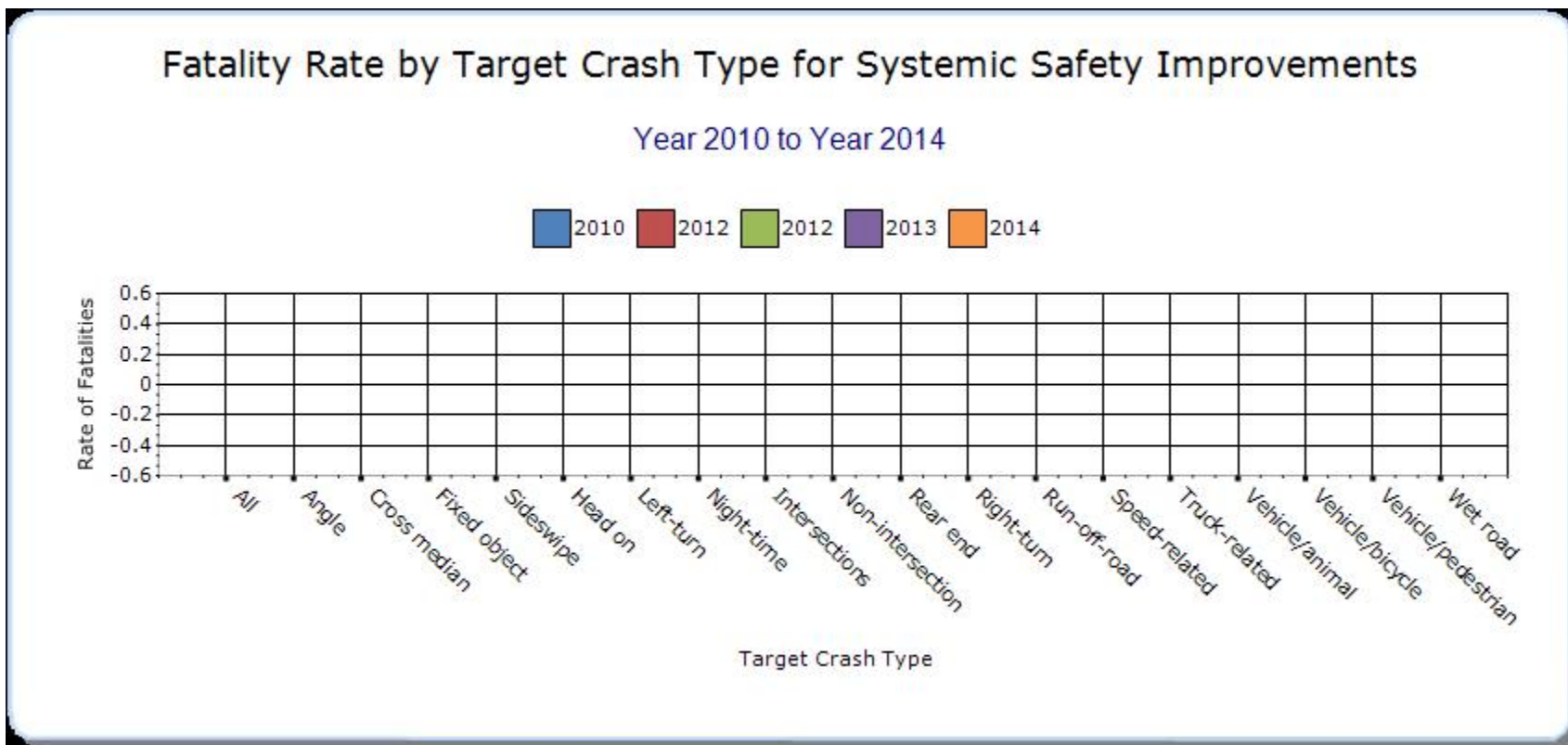
Present the overall effectiveness of systemic treatments.

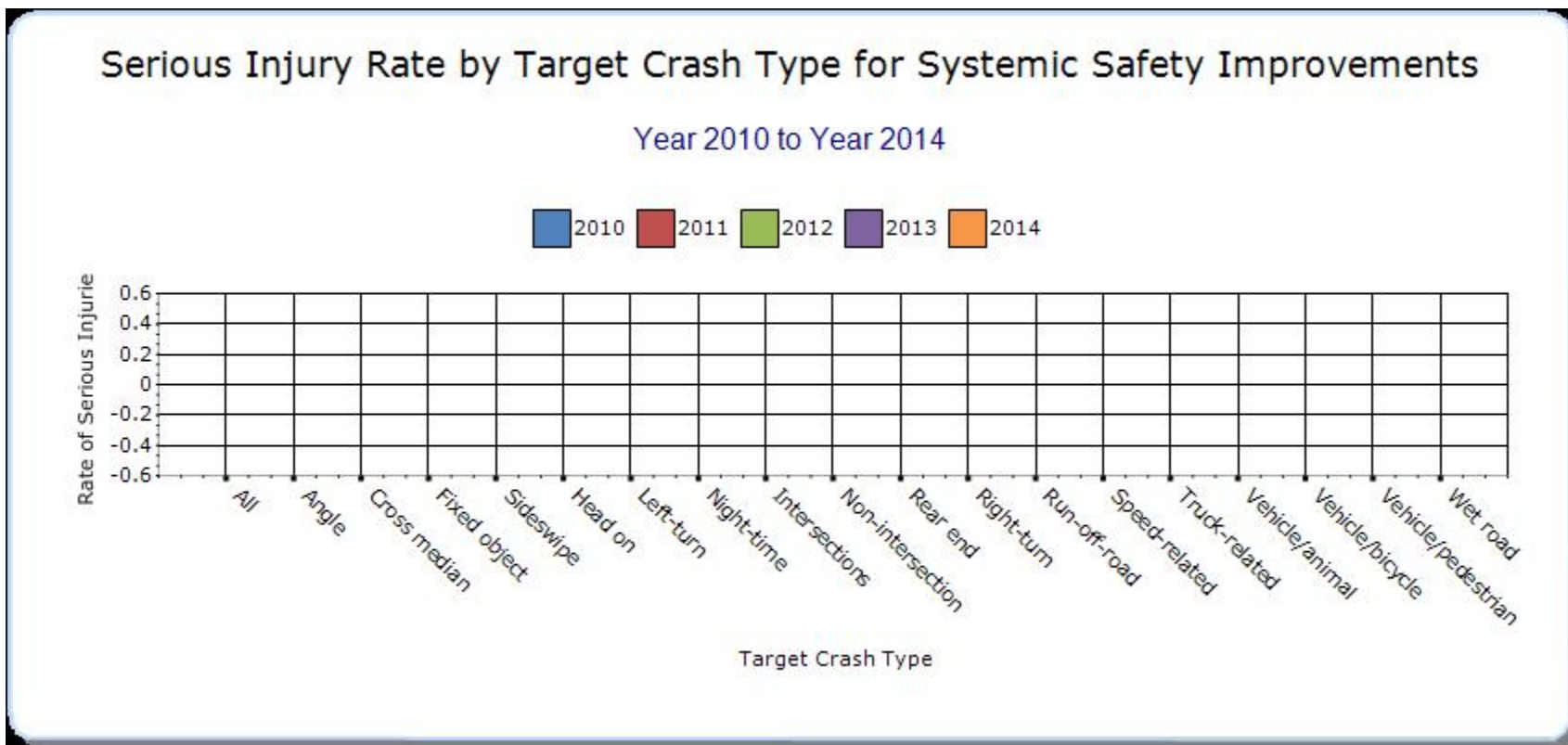
Year - 2014

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
Median Barriers, Rumble Strips, Guardrails	Roadway Departure	106	383.2	0.4	1.43	0	0	0









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

As has been demonstrated in the other questions, Utah has experienced long-term downward trends in overall serious and fatal injury crashes, but that trend leveled off in 2015. It will be interesting to see whether future years resume the downward trend, exhibit stability, or continue to increase.

Also, nearly all individual crash categories (whether broken down by crash type, road ownership, SHSP emphasis area, etc) have experienced declines in recent years. Most of those declines continued this year (for rates, if not actual numbers) or the numbers remained fairly stable. One notable exception is pedestrian crashes, which have been trending upward. We have created a multi-disciplinary task force to address pedestrian safety.

We noted in previous year HSIP annual reports that as fatalities continue to be reduced it will become more difficult to find projects that have a large impact on improving safety. It is possible that this phenomenon is coming to fruition and could partially explain why the downward trend of the previous 5 years seems to have currently leveled off. UDOT will need to be vigilant about continuing to identify ways to further reduce serious and fatal injury crashes. Our gradual shift towards using systemic methods continues and we will be dependent upon projects identified through systemic means to resume our downward trends.

Project Evaluation

Provide project evaluation data for completed projects (optional).

Location	Functional Class	Improvement Category	Improvement Type	Bef-Fatal	Bef-Serious Injury	Bef-All Injuries	Bef-PDO	Bef-Total	Aft-Fatal	Aft-Serious Injury	Aft-All Injuries	Aft-PDO	Aft-Total	Evaluation Results (Benefit/Cost Ratio)
I-84 Median Cable Barrier (PIN 8659)	Rural Principal Arterial - Interstate	Roadside	Barrier - cable	1	1	7	26	35	1	0	6	21	28	11.8
US-89; MP 71.5-72.5, Kanab Canyon Reconstruct Intersection and Add Turn Lanes (PIN 7484)	Rural Principal Arterial - Other	Intersection geometry	Auxiliary lanes - add left-turn lane	0	0	0	2	2	0	0	1	0	1	-0.99
I-80; MP 143-196, Install Median Cable	Rural Principal Arterial - Interstate	Roadside	Barrier - cable	2	5	37	76	120	0	4	21	63	88	17.91

Barrier (PIN 8237)														
I-15; MP 354.6-372.65, Install Median Cable Barrier (PIN 8288)	Rural Principal Arteria - Interstate	Roadside	Barrier - cable	4	5	97	236	342	5	5	63	215	288	2.85
I-15; MP 38-184 & I-70; MP 0-75.2; Install Median Cable Barrier (PIN 8297)	Rural Principal Arteria - Interstate	Roadside	Barrier - cable	4	11	43	85	143	3	7	33	122	165	13.54
Region 4; Various Locations, Install Rumble Strips (PIN 8222)	Various	Roadway	Rumble strips - edge or shoulder	9	22	82	146	259	6	9	42	103	160	127.81
SR-143; MP 12, Runaway	Rural Principal Arterial -	Speed management	Speed management -	1	0	0	0	1	0	0	0	0	0	23.74

Truck Ramp (PIN 9623)	Other		Other											

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.