Highway Safety Improvement Program

Data Driven Decisions

Kentucky
Highway Safety Improvement Program
2016 Annual Report

Prepared by: KY

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

Kentucky's HSIP funds are administered from the Division of Traffic Operations in KYTC's Central Office. Each Highway District has an HSIP Coordinator that works closely with Central Office and District Personnel to conduct a Road Safety Audit (RSA) on potential improvement locations. The RSA teams are multi-disciplinary and represent the following highway functions; planning, highway design, traffic operations, maintenance, and construction. The Cabinet also requests that members from local Area Development Districts (ADDs) participate in the process. Highway Districts are encouraged to submit candidate projects after completing all established guidelines for funding consideration. Funding levels to date have been sufficient to implement projects submitted that meet the eligibility guidelines for the program**.**

The program methodology used by the Transportation Cabinet during the time period of this report was generally the same as in the previous years. With completion of the document titled, "Kentucky Roadway Departure Safety Implementation Plan" in July 2010, there has been significant reliance on the recommended approach to supplement the traditional process directed to high-crash locations with systematic application of low-cost, cost-effective countermeasures. More specifically, the systematic approach could be characterized as the reverse of the traditional approach in that low-cost, effective countermeasures are first identified and then the crash database is queried to identify highway sections that have targeted crashes at or above a crash threshold that would insure cost-effective deployment of these countermeasures.

The HSIP supports Kentucky's Strategic Highway Safety Plan (SHSP) and its vision of Toward Zero Deaths. The mission of the SHSP is, "to reduce Kentucky's highway fatalities and injuries." In conformance with program guidelines, the HSIP seeks to adhere to the SHSP through a data-driven approach for funding safety improvements.

Effectiveness evaluations were performed and benefit/costs were calculated, with results presented for the following three types of systemic improvements:

MEDIAN CABLE BARRIERS

Wilcoxon Signed-Rank Test for "before and after shift in proportions of cross-median or impacted object in median crashes" – significant reduction at 99% confidence level.

Empirical Bayes analysis of "before and after cross-median crashes" results indicated the change in crashes (effect of the treatment) was significant at the 95% confidence level.

Benefit/Cost analysis results using observed crashes; 12.25:1 based on Comprehensive Cost of motor vehicle collisions (National Safety Council).

RUMBLE STRIPS

Wilcoxon Signed-Rank Test for “before and after shift in proportions of lane departure crashes” – not a significant reduction at 95% confidence level.

Empirical Bayes analysis of “before and after lane departure crashes” results indicated the change in crashes (effect of the treatment) was significant at the 95% confidence level.

Benefit/Cost analysis results using expected crashes from empirical Bayes analysis; 65.71:1 based on Comprehensive Cost of motor vehicle collisions (National Safety Council).

HIGH-FRICTION SURFACE TREATMENTS

Wilcoxon Signed-Rank Test for “before and after shift in proportions of wet-weather lane departure crashes” – significant reduction at 99% confidence level.

Empirical Bayes analysis of “before and after wet-weather lane departure crashes” results indicated the change in crashes (effect of the treatment) was significant at the 95% confidence level.

Benefit/Cost analysis results using expected crashes from empirical Bayes analysis; 2.16:1 based on Comprehensive Cost of motor vehicle collisions (National Safety Council).

Introduction

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

Program Structure

Program Administration

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

Central

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

The Safety Circuit Rider program continues to function as the primary means of identifying and implementing projects on local roads through the HSIP. The focus of this program is to provide technical assistance to improve safety on local roads and streets. While the free technical advice offered by the Safety Circuit Rider is available to every community across the Commonwealth, the program selects counties with high crash rates on an annual cycle. The counties selected for 2015 were Pendleton, Taylor, Clay, McLean, Lincoln, and Powell. Typical improvements in these counties were clearing and correcting water runoff and drainage, repairing shoulder drop off and width, removing fixed objects such as trees and stumps, and clearing vegetation around signs and intersections. The 2016 selected counties are Anderson, Clark, Crittenden, Greenup, Perry, and Russell. Aside from these targeted counties, the Safety Circuit Rider Program develops one day training courses designed to provide communities with practical and effective ways to mainstream safety into their day-to-day activities and project development process. These courses are offered free at selected areas throughout Kentucky.

KYTC has begun preliminary work providing technical assistance and potential funding to Lexington-Fayette Urban County Government (LFUCG) in regards to the development of a Road Departure Safety Plan.

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

Design
Planning
Maintenance
Operations
Governors Highway Safety Office

Briefly describe coordination with internal partners.

Kentucky's HSIP funds are administered from the Division of Traffic Operations in KYTC's Central Office. Each Highway District has a HSIP Coordinator who works closely with the Central Office and other Highway District personnel to conduct Road Safety Audits (RSAs) of potential improvement locations. The RSA teams are multidisciplinary and represent the following highway functions; planning, design, traffic operations, maintenance, and construction. Highway districts are encouraged to submit candidate projects after completing all established guidelines for funding considerations.

HSIP projects are selected and prioritized based on their correlation with Kentucky's Strategic Highway Safety Plan. There are presently 11 emphasis areas within the SHSP and efforts are made to implement projects consistent with the goals and objectives of the SHSP.

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

Metropolitan Planning Organizations
Other-Kentucky Transportation Center

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

Other-No changes since last year

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

The Governor's Office of Highway Safety is responsible for the developing the SHSP. Efforts have been made to use data-driven analysis to identify appropriate emphasis areas to affect highway safety. The "Roadway Departure" and "Intersections" emphasis areas are the primary focus for HSIP infrastructure-related projects.

Program Methodology

Select the programs that are administered under the HSIP.

Median Barrier	Intersection	Skid Hazard
Roadway Departure	Low-Cost Spot Improvements	Sign Replacement And Improvement

Program: **Median Barrier**

Date of Program Methodology: 7/1/2011

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
All crashes	Volume	Median width
Fatal and serious injury crashes only		Functional classification
		Roadside features

What project identification methodology was used for this program?
Expected crash frequency with EB adjustment
Excess expected crash frequency with the EB adjustment

Are local roads (non-state owned and operated) included or addressed in this program?
No

How are highway safety improvement projects advanced for implementation?
selection committee

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

Available funding	2
Ranking based on net benefit	1

Program: Intersection
Date of Program Methodology: 9/1/2012

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
All crashes	Traffic	Functional classification
Fatal and serious injury crashes only	Volume	

What project identification methodology was used for this program?
Crash frequency
Crash rate

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

No

How are highway safety improvement projects advanced for implementation?
Other-Prioritized list

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

Available funding	2
Ranking based on net benefit	1

Program: **Skid Hazard**
Date of Program Methodology: **7/1/2011**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
All crashes	Volume	Horizontal curvature
Fatal and serious injury crashes only		Functional classification

What project identification methodology was used for this program?
Expected crash frequency with EB adjustment
Excess expected crash frequency with the EB adjustment

Are local roads (non-state owned and operated) included or addressed in this program?
No

How are highway safety improvement projects advanced for implementation?
Other-Prioritized list based on EB

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

Available funding	2
Ranking based on net benefit	1

Program: **Roadway Departure**
Date of Program Methodology: **7/1/2011**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
All crashes	Volume	Functional classification
Fatal and serious injury crashes only		

What project identification methodology was used for this program?
Crash frequency
Excess expected crash frequency with the EB adjustment
Probability of specific crash types

Are local roads (non-state owned and operated) included or addressed in this program?
No

How are highway safety improvement projects advanced for implementation?
Other-Prioritized list

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

Available funding	2
Ranking based on net benefit	1

Program: **Low-Cost Spot Improvements**
Date of Program Methodology: **7/1/2013**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
Other-Potential	Other-Potential	Other-Potential

What project identification methodology was used for this program?

Other-Potential

Are local roads (non-state owned and operated) included or addressed in this program?
Yes
If yes, are local road projects identified using the same methodology as state roads?
Yes

How are highway safety improvement projects advanced for implementation?
selection committee

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

Available funding	1

Program: **Sign Replacement And Improvement**
Date of Program Methodology: **7/1/2011**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
All crashes	Volume	Horizontal curvature
		Functional classification

What project identification methodology was used for this program?
Crash frequency
Probability of specific crash types
Excess proportions of specific crash types

Are local roads (non-state owned and operated) included or addressed in this program?
Yes
If yes, are local road projects identified using the same methodology as state roads?
Yes

How are highway safety improvement projects advanced for implementation?
Other-Prioritized list

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical

rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).
Rank of Priority Consideration

Available funding	2
Ranking based on net benefit	1

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

50%

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

Cable Median Barriers
Install/Improve Signing
Install/Improve Pavement Marking and/or Delineation
Upgrade Guard Rails
Clear Zone Improvements
Add/Upgrade/Modify/Remove Traffic Signal
Other-High-Friction Treatments at Curves

What process is used to identify potential countermeasures?

Engineering Study
Road Safety Assessment

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

Other-No changes since last reporting period

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

In 2016, Kentucky's HSIP continued developing projects that deployed both systemic and reactive countermeasures throughout most emphasis areas. Examples include:

Cable Median Barrier - Kentucky is systemically deploying Cable Median Barrier on all sections of Interstate that are currently void of median barrier. From year to year, the sections selected are those with the highest crossover crash rates.

Roadway Departure Corridor - Using historical crash data, corridors with high crash-rates are selected across the state. Reactive countermeasures, such as curve re-alignment, super-elevation improvements, and/or High Friction Surface Treatment are employed at high-crash curves along the corridors. Systemic improvements such as shouldering, signing, and improvements to create a consistent roadside are employed along the entire corridor.

Horizontal Alignment Signing - Crash data is utilized to determine curved sections of roadway with a high number of dry-weather crashes. Routes with one or more such sections, in a single county, are then evaluated for horizontal alignment signing along the whole route.

Diagonal Signal Spans - In 2016 Kentucky instituted a year-long initiative to replace 'Diagonal Signal Spans', spans where the signal heads crossed the intersection as a diagonal to the traditional 'box' arrangement. Kentucky's HSIP program perceived this as a necessary first step to future Intersection initiatives, Diagonal Signal Spans being seen as a potential immediate hazard given the possibility of a driver observing the signals for multiple approaches.

Progress in Implementing Projects

Funds Programmed

Reporting period for Highway Safety Improvement Program funding.

State Fiscal Year

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

Funding Category	Programmed*		Obligated	
HSIP (Section 148)	$29,286,005.00	100 %	$31,543,277.00	97 %
HRRRP (SAFETEA-LU)	$0.00	0 %	$910,000.00	3 %
Totals	$29,286,005.00	100%	$32,453,277.00	100%

How much funding is programmed to local (non-state owned and operated) safety projects?
$175,000.00
How much funding is obligated to local safety projects?
$175,000.00

How much funding is programmed to non-infrastructure safety projects?
$560,000.00
How much funding is obligated to non-infrastructure safety projects?
$560,000.00

How much funding was transferred in to the HSIP from other core program areas during the reporting period?
$0.00
How much funding was transferred out of the HSIP to other core program areas during the reporting period?
$1,000,000.00

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

Prior to MAP-21, the HSIP allotment Kentucky received was approximately $22 million. With its enactment in Oct. 2012, MAP-21 nearly doubled Kentucky's HSIP allotment to approximately $38 million. After the increase in funding, Kentucky struggled to produce a program of projects that

expended the approximate $38 million in HSIP allotment, and as a result a surplus of HSIP funds developed. To combat this, the HSIP staff utilized Kentucky's Strategic Highway Safety Plan to create a HSIP Investment Plan to guide transportation safety obligations and spending. The plan includes a set of initiatives with guidelines on general project selection methodology and countermeasure implementation. HSIP staff also developed and continually updates a project level status report with anticipated project funding needs to determine the best approach to program and invest the current fiscal year HSIP allotment as well as the surplus of unobligated funds from previous fiscal years. Kentucky has also established on-call contracts with 4 consulting firms to expedite the design and development of current, and future, HSIP projects to help expend the additional HSIP allotment.

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

No additional comments.

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
INSTALLATION OF A CABLE MEDIAN BARRIER ON I-24 FRO	Roadside Barrier - cable	18.554 Miles	2685110	2685110	HSIP (Section 148)	Rural Principal Arterial - Interstate	21230	70	State Highway Agency	Roadway Departure	
TRAFFIC SIGNAL REBUILDS AT THE INTERSECTIONS OF KY	Intersection traffic control Modify traffic signal - modernization/replacement	0.1000000000000001 Miles	232293	232293	HSIP (Section 148)		0	0	State Highway Agency	Intersections	
INTERSECTION IMPROVEMENTS AT VARIOUS LOCATIONS IN	Intersection geometry Intersection geometrics - miscellaneous/other/unspecified	5 Numbers	120000	120000	HSIP (Section 148)		0	0	State Highway Agency	Intersections	
PERFORM LOW COST SAFETY IMPROVEMENTS ON US 60	Roadway Roadway - other	7.371 Miles	250000	250000	HSIP (Section 148)	Rural Minor Arterial	1951	55	State Highway Agency	Roadway Departure	

FROM											
REPLACE TURNDOWN END TREATMENTS ON VARIOUS ROUTES	Roadside Barrier end treatments (crash cushions, terminals)	37.795 Miles	196796	196796	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
REPLACE TURNDOWN END TREATMENTS ON VARIOUS ROUTES	Roadside Barrier end treatments (crash cushions, terminals)	18.997 Miles	324685	324685	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
SIGNAL REBUILD AT KY 1007 @ WEST 15TH ST. IN CHRIS	Intersection traffic control Modify traffic signal - modernization/replacement	0.01 Miles	88787	88787	HSIP (Section 148)	Rural Major Collector	10400	35	State Highway Agency	Intersections	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 2127 FR	Roadway Roadway - other	5.762 Miles	1943393	1943393	HSIP (Section 148)	Rural Local Road or Street	744	55	State Highway Agency	Roadway Departure	
INTERSECTION IMPROVEMENTS AT VARIOUS LOCATIONS IN	Intersection geometry Intersection geometry - other	6 Numbers	120000	120000	HSIP (Section 148)		0	0	State Highway Agency	Intersections	
PERFORM LOW COST	Roadway Roadway - other	4.78 Miles	250000	250000	HSIP (Secti	Rural Major	4117	55	State Highwa	Roadway Departur	

SAFETY IMPROVEMENTS ON US 231 FRO					on 148)	Collector			y Agency	e	
INSTALL NEW GUARDRAIL AT UNPROTECTED BRIDGE ENDS A	Roadside Barrier- metal	11 Numbers	836244	836244	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
TRAFFIC SIGNAL REBUILDS AT THE INTERSECTIONS OF K	Intersection traffic control Modify traffic signal - modernization/replacement	0.1 Miles	292137	292137	HSIP (Section 148)		0	0	State Highway Agency	Intersections	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY-185 FRO	Roadway Roadway - other	0.428 Miles	50000	50000	HSIP (Section 148)	Rural Minor Arterial	8642	35	State Highway Agency	Various	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 2189 FR	Roadway Roadway - other	6.01 Miles	1959584	1959584	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
INTERSECTION IMPROVEMENTS AT THE INTERSECTION OF K	Intersection geometry Intersection geometrics - miscellaneous/other/unspecified	0.100000000000001 Miles	255000	255000	HSIP (Section 148)		0	0	State Highway Agency	Intersections	

INTERSECTION IMPROVEMENTS AT VARIOUS LOCATIONS IN	Intersection geometry Intersection geometry - other	9 Numbers	120000	120000	HSIP (Section 148)		0	0	State Highway Agency	Intersections	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 63 FROM	Roadway Roadway - other	6.827 Miles	250000	250000	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 710 FRO	Roadway Roadway - other	7.066 Miles	1125000	1125000	HSIP (Section 148)	Rural Minor Collector	1336	55	State Highway Agency	Roadway Departure	
INSTALL HIGH FRICTION SURFACE ON I-65 FROM 0.676 M	Roadway Pavement surface - high friction surface	1.5 Miles	75000	75000	HSIP (Section 148)	Rural Principal Arterial - Interstate	37481	70	State Highway Agency	Roadway Departure	
INSTALLATION OF CABLE MEDIAN BARRIER ON I-65 FROM	Roadside Barrier - cable	1.691 Miles	368532	368532	HSIP (Section 148)	Rural Principal Arterial - Interstate	48683	70	State Highway Agency	Roadway Departure	
INTERSECTION IMPROVEMENTS AT VARIOUS	Intersection geometry Intersection geometry - other	5 Numbers	120000	120000	HSIP (Section 148)		0	0	State Highway Agency	Intersections	

LOCATIONS IN											
PERFORM LOW COST SAFETY IMPROVEMENTS ON US 62 FROM	Roadway Roadway - other	6.865 Miles	250000	250000	HSIP (Section 148)	Rural Major Collector	4055	55	State Highway Agency	Roadway Departure	
REPLACE TURNDOWN AND OTHER DEFICIENT END TREATMENT	Roadside Barrier end treatments (crash cushions, terminals)	30.75 Miles	328536	328536	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
REPLACE TURNDOWN AND OTHER DEFICIENT END TREATMENT	Roadside Barrier end treatments (crash cushions, terminals)	59.125 Miles	417065	417065	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
REPLACE TURNDOWN AND OTHER DEFICIENT END TREATMENT	Roadside Barrier end treatments (crash cushions, terminals)	69.759 Miles	460748	460748	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 480 FRO	Roadway Roadway - other	8.431 Miles	135000	135000	HSIP (Section 148)	Rural Minor Collector	661	55	State Highway Agency	Roadway Departure	
INTERSECTIO	Intersection geometry	6 Numbers	12000	12000	HSIP		0	0	State	Intersecti	

N IMPROVEMENTS AT VARIOUS LOCATIONS IN	Intersection geometry - other		0	0	(Section 148)				Highway Agency	ons	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 44 FROM	Roadway Roadway - other	7.542 Miles	250000	250000	HSIP (Section 148)	Rural Minor Arterial	3233	55	State Highway Agency	Roadway Departure	
IMPLEMENTATION OF HIGH FRICTION SURFACE ON VARIOUS	Roadway Pavement surface - high friction surface	0.395 Miles	8267	8267	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
INSTALLATION OF A CABLE MEDIAN BARRIER ON I-275 FR	Roadside Barrier - cable	1.39999999999999 Miles	301940	301940	HSIP (Section 148)	Rural Principal Arterial - Interstate	80914	65	State Highway Agency	Roadway Departure	
TRAFFIC SIGNAL REBUILD AT THE INTERSECTIONS OF KY	Intersection traffic control Modify traffic signal - modernization/replacement	1 Numbers	255280	255280	HSIP (Section 148)		0	0	State Highway Agency	Intersections	
REPLACE TURNDOWN AND OTHER DEFICIENT END	Roadside Barrier end treatments (crash cushions, terminals)	19.954 Miles	515211	515211	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	

TREATMENT											
REPLACE TURNDOWN AND OTHER DEFICIENT END TREATMENT	Roadside Barrier end treatments (crash cushions, terminals)	2.1 Miles	133990	133990	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
REPLACE TURNDOWN AND OTHER DEFICIENT END TREATMENT	Roadside Barrier end treatments (crash cushions, terminals)	29.55 Miles	580000	580000	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
PERFORM LOW COST SAFETY IMPROVEMENTS ON US 42 FROM	Roadway Roadway - other	5.673 Miles	25000	25000	HSIP (Section 148)	Rural Minor Arterial	9187	55	State Highway Agency	Roadway Departure	
INTERSECTION IMPROVEMENTS AT VARIOUS LOCATIONS IN	Intersection geometry Intersection geometry - other	5 Numbers	120000	120000	HSIP (Section 148)		0	0	State Highway Agency	Intersections	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 17 FROM	Roadway Roadway - other	4.995 Miles	250000	250000	HSIP (Section 148)	Rural Major Collector	2720	55	State Highway Agency	Roadway Departure	

IMPROVE SUPERELEVATION, ADD EMBANKMENT, IMPROVE SI	Roadway Superelevation / cross slope	2.495 Miles	75000	75000	HSIP (Section 148)	Rural Major Collector	2320	55	State Highway Agency	Roadway Departure	
IMPLEMENTATION OF HIGH FRICTION SURFACE ON VARIOUS	Roadway Pavement surface - high friction surface	1.394 Miles	29416	29416	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
INSTALL GUARDRAIL ALONG KY 3433 FROM 0.054 MILES E	Roadside Barrier- metal	0.081 Miles	681	681	HSIP (Section 148)	Rural Minor Collector	4023	35	State Highway Agency	Roadway Departure	
SIGNAL REBUILDS AT THE INTERSECTION OF KY 627 & KY	Intersection traffic control Modify traffic signal - modernization/replacement	2 Numbers	195470	195470	HSIP (Section 148)		0	0	State Highway Agency	Intersections	
PERFORM LOW COST SAFETY IMPROVEMENTS ON US 460 FRO	Roadway Roadway - other	6.83 Miles	95000	95000	HSIP (Section 148)	Rural Minor Arterial	5040	55	State Highway Agency	Roadway Departure	
INTERSECTION IMPROVEMENTS AT VARIOUS	Intersection geometry Intersection geometry - other	6 Numbers	120000	120000	HSIP (Section 148)		0	0	State Highway Agency	Intersections	

LOCATIONS IN											
PERFORM LOW COST SAFETY IMPROVEMENTS ON US 421 FRO	Roadway Roadway - other	7.299 Miles	250000	250000	HSIP (Section 148)	Rural Minor Arterial	5040	55	State Highway Agency	Roadway Departure	
APPLICATION OF HIGH FRICTION SURFACE ON KY 90 FROM	Roadway Pavement surface - high friction surface	0.389999999999999 Miles	5000	5000	HSIP (Section 148)	Rural Minor Arterial	9530	55	State Highway Agency	Roadway Departure	
REPLACE SUBSTANDARD END TREATMENTS AND GUARDRAIL,	Roadside Barrier end treatments (crash cushions, terminals)	6.266 Miles	1050000	1050000	HSIP (Section 148)	Rural Principal Arterial - Other	3333	45	State Highway Agency	Roadway Departure	
REPLACE TURNDOWN END TREATMENTS ON US 127 FROM KY	Roadside Barrier end treatments (crash cushions, terminals)	7.578 Miles	575338	575338	HSIP (Section 148)	Rural Principal Arterial - Other	3330	55	State Highway Agency	Roadway Departure	
INSTALL HIGH FRICTION SURFACE AND DELINEATORS ON E	Roadway Pavement surface - high friction surface	0.8 Miles	194544	194544	HSIP (Section 148)	Rural Major Collector	1018	55	State Highway Agency	Roadway Departure	
INSTALL HIGH FRICTION	Roadway Pavement surface - high friction	3.158 Miles	516428	516428	HSIP (Secti	Rural Local	1350	45	State Highwa	Roadway Departur	

SURFACE (MP 0.7-1.0), ENHANC	surface				on 148)	Road or Street			y Agency	e	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 1194 FR	Roadway Roadway - other	6.602 Miles	1648174	1648174	HSIP (Section 148)	Rural Minor Collector	2172	55	State Highway Agency	Roadway Departure	
INTERSECTION IMPROVEMENTS AT VARIOUS LOCATIONS IN	Intersection geometry Intersection geometry - other	5 Numbers	120000	120000	HSIP (Section 148)		0	0	State Highway Agency	Intersections	
REALIGN THE INTERSECTION OF KY 76 AND KY 80 (MP 7.	Intersection geometry Intersection geometry - other	0.7 Miles	20000	20000	HSIP (Section 148)	Rural Major Collector	1735	55	State Highway Agency	Intersections	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 192 FRO	Roadway Roadway - other	6.359 Miles	250000	250000	HSIP (Section 148)	Rural Major Collector	992	55	State Highway Agency	Roadway Departure	
INSTALL GUARDRAIL ALONG KY 1012 FROM 250 FEET NORT	Roadside Barrier- metal	0.28 Miles	33067	33067	HSIP (Section 148)	Rural Major Collector	1917	45	State Highway Agency	Roadway Departure	

INSTALL GUARDRAIL ALONG KY 1459 FROM 450 FEET NORT	Roadside Barrier- metal	0.197 Miles	20392	20392	HSIP (Section 148)	Rural Minor Collector	733	55	State Highway Agency	Roadway Departure	
INSTALL GUARDRAIL ALONG US 60 FROM 700 FEET WEST O	Roadside Barrier- metal	1.449 Miles	320200	320200	HSIP (Section 148)	Rural Major Collector	1149	55	State Highway Agency	Roadway Departure	
SIGNAL REBUILD AT KY 168 @ 29TH STREET IN BOYD COU	Intersection traffic control Modify traffic signal - modernization/replacement	0.024999999999995 Miles	56000	56000	HSIP (Section 148)	Rural Minor Arterial	5420	35	State Highway Agency	Intersections	
TRAFFIC SIGNAL REBUILD AT THE INTERSECTION OF KY 1	Intersection traffic control Modify traffic signal - modernization/replacement	0.151999999999999 Miles	209029	209029	HSIP (Section 148)	Rural Minor Arterial	13603	35	State Highway Agency	Intersections	
INTERSECTION IMPROVEMENTS AT VARIOUS LOCATIONS IN	Intersection geometry Intersection geometry - other	7 Numbers	120000	120000	HSIP (Section 148)		0	0	State Highway Agency	Intersections	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 32	Roadway Roadway - other	5.1 Miles	250000	250000	HSIP (Section 148)	Rural Major Collector	1149	55	State Highway Agency	Roadway Departure	

FROM											
INTERSECTION IMPROVEMENTS AT KY 80 AND JUSTICE DRI	Intersection geometry Intersection geometrics - miscellaneous/other/unspecified	0.199999999999999 Miles	360000	160000	HSIP (Section 148)	Rural Principal Arterial - Other	12038	55	State Highway Agency	Intersections	
INTERSECTION AND SIGHT DISTANCE IMPROVEMENTS ON KY	Intersection geometry Intersection geometrics - miscellaneous/other/unspecified	0.100000000000001 Miles	501667	501667	HSIP (Section 148)	Rural Minor Collector	336	55	State Highway Agency	Intersections	
TRAFFIC SIGNAL REBUILDS AT THE INTERSECTIONS OF KY	Intersection traffic control Modify traffic signal - modernization/replacement	2 Numbers	261534	261534	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
INTERSECTION IMPROVEMENTS AT KY 15 AND KY 11 IN PO	Intersection geometry Intersection geometrics - realignment to align offset cross streets	0.120000000000001 Miles	70000	70000	HSIP (Section 148)	Rural Major Collector	2140	55	State Highway Agency	Intersections	
INSTALL GUARDRAIL ALONG KY 11 FROM 0.331 MILES NOR	Roadside Barrier- metal	0.337999999999999 Miles	79368	79368	HSIP (Section 148)	Rural Major Collector	2981	55	State Highway Agency	Roadway Departure	
PERFORM LOW COST SAFETY IMPROVEME	Roadway Roadway - other	4.068 Miles	25000	25000	HSIP (Section 148)	Rural Minor Arterial	2609	55	State Highway Agency	Roadway Departure	

NTS ON KY 11 FROM											
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 11 FROM	Roadway Roadway - other	3.598 Miles	250000	250000	HSIP (Section 148)	Rural Minor Arterial	1767	55	State Highway Agency	Roadway Departure	
INTERSECTION IMPROVEMENTS AT KY 15 (MP 8.976-9.376	Intersection geometry Intersection geometrics - realignment to align offset cross streets	0.399999999999999 Miles	35000	35000	HSIP (Section 148)	Rural Principal Arterial - Other	5919	55	State Highway Agency	Intersections	
INTERSECTION IMPROVEMENTS AT KY 52 (MP 6.548-6.948	Roadway Roadway - restripe to revise separation between opposing lanes and/or shoulder widths	0.4 Miles	40000	40000	HSIP (Section 148)	Rural Minor Arterial	9314	55	State Highway Agency	Intersections	
INTERSECTION IMPROVEMENTS AT KY 11 (MP 14.791-15.1	Intersection geometry Intersection geometrics - realignment to align offset cross streets	0.4 Miles	15000	15000	HSIP (Section 148)	Rural Minor Arterial	8066	35	State Highway Agency	Intersections	
CURVE IMPROVEMENTS ON US 421 FROM MP 20.4 TO MP 20	Alignment Horizontal curve realignment	0.5 Miles	120000	120000	HSIP (Section 148)	Rural Minor Arterial	2470	55	State Highway Agency	Roadway Departure	
CURVE	Alignment Horizontal	0.30000000000	15000	15000	HSIP	Rural	153	55	State	Intersecti	

REALIGNMENT ON KY 638 FROM 0.063 MI WEST OF	curve realignment	0001 Miles	0	0	(Section 148)	Major Collector	6		Highway Agency	ons	
LOWER EXISTING CURVE GRADE TO INCREASE INTERSECTIO	Alignment Horizontal curve realignment	0.100000000000001 Miles	49879 6	49879 6	HSIP (Section 148)	Rural Minor Arterial	610 7	55	State Highway Agency	Roadway Departure	
INSTALL RIGHT TURN LANE TO NORTH LAUREL HIGH SCHOO	Intersection geometry Auxiliary lanes - add right-turn lane	1 Miles	33890 0	33890 0	HSIP (Section 148)	Rural Principal Arterial - Other	789 9	55	State Highway Agency	Intersections	
INSTALL LEFT TURN LANE ON HR 9006 FROM 0.03 MI EAS	Intersection geometry Auxiliary lanes - add left-turn lane	2 Miles	38000	38000	HSIP (Section 148)	Rural Principal Arterial - Other	789 9	55	State Highway Agency	Intersections	
INSTALLATION OF HORIZONTAL ALIGNMENT SIGNING ON VA	Roadway signs and traffic control Curve-related warning signs and flashers	5 Numbers	75474 2	75474 2	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
INSTALL GUARDRAIL ALONG KY 11 FROM BRIDGE OVER COL	Roadside Barrier- metal	4.245 Miles	14843 2	14843 2	HSIP (Section 148)	Rural Major Collector	124 7	55	State Highway Agency	Roadway Departure	

INSTALL GUARDRAIL ALONG KY 1064 FROM 0.075 MILES N	Roadside Barrier- metal	1.83 Miles	180908	180908	HSIP (Section 148)	Rural Minor Collector	902	55	State Highway Agency	Roadway Departure	
INSTALL GUARDRAIL ALONG KY 204 FROM 0.208 MILES SO	Roadside Barrier- metal	0.602 Miles	97625	97625	HSIP (Section 148)	Rural Minor Collector	1066	55	State Highway Agency	Roadway Departure	
INSTALL GUARDRAIL ALONG KY 188 FROM 0.7 MILES EAST	Roadside Barrier- metal	0.6 Miles	106601	106601	HSIP (Section 148)	Rural Minor Collector	845	55	State Highway Agency	Roadway Departure	
INSTALL GUARDRAIL ALONG KY 522 FROM US 119 (MP 0.0	Roadside Barrier- metal	6 Miles	152198	152198	HSIP (Section 148)	Rural Local Road or Street	1059	55	State Highway Agency	Roadway Departure	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 1304 FR	Roadway Roadway - other	6.11 Miles	25000	25000	HSIP (Section 148)	Rural Major Collector	3707	35	State Highway Agency	Roadway Departure	
INTERSECTION IMPROVEMENTS AT VARIOUS	Intersection geometry Intersection geometry - other	5 Numbers	120000	120000	HSIP (Section 148)		0	0	State Highway Agency	Intersections	

LOCATIONS IN											
PERFORM LOW COST SAFETY IMPROVEMENTS ON US 421 FRO	Roadway Roadway - other	5.921 Miles	250000	250000	HSIP (Section 148)	Rural Major Collector	1163	55	State Highway Agency	Roadway Departure	
CURVE REVISION ON KY 979 FROM KY 122 (MP 0.00) TO	Alignment Horizontal curve realignment	0.25 Miles	283500	283500	HSIP (Section 148)	Rural Major Collector	1108	55	State Highway Agency	Roadway Departure	
INSTALLATION OF HORIZONTAL ALIGNMENT SIGNING ON VA	Roadway signs and traffic control Curve-related warning signs and flashers	236.781 Miles	1241152	1241152	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
INSTALLATION OF HORIZONTAL ALIGNMENT SIGNING ON VA	Roadway signs and traffic control Curve-related warning signs and flashers	32.696 Miles	131266	131266	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
INSTALL GUARDRAIL ALONG KY 2545 FROM 459 FEET SOUT	Roadside Barrier- metal	0.248 Miles	33284	33284	HSIP (Section 148)	Rural Minor Collector	990	55	State Highway Agency	Roadway Departure	
INSTALL GUARDRAIL	Roadside Barrier- metal	0.171000000000001 Miles	28739	28739	HSIP (Secti	Rural Major	2073	55	State Highwa	Roadway Departur	

ALONG KY 1428 FROM 0.037 MILES W					on 148)	Collector			y Agency	e	
INSTALL GUARDRAIL ALONG KY 1439 FROM 4.333 MILES N	Roadside Barrier- metal	0.516 Miles	66360	66360	HSIP (Section 148)	Rural Minor Collector	484	55	State Highway Agency	Roadway Departure	
SIGNAL REBUILD AT KY 40 @ KY 1428 IN JOHNSON COUNT	Intersection traffic control Modify traffic signal - modernization/replacement	1 Numbers	40000	40000	HSIP (Section 148)	Rural Major Collector	8220	35	State Highway Agency	Intersections	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 160 FRO	Roadway Roadway - other	8.155 Miles	75000	75000	HSIP (Section 148)	Rural Minor Arterial	2903	55	State Highway Agency	Roadway Departure	
INTERSECTION IMPROVEMENTS AT VARIOUS LOCATIONS IN	Intersection geometry Intersection geometry - other	5 Numbers	120000	120000	HSIP (Section 148)		0	0	State Highway Agency	Intersections	
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY	Roadway Roadway - other	7 Miles	250000	250000	HSIP (Section 148)	Rural Minor Arterial	2837	55	State Highway Agency	Roadway Departure	

632 FRO											
STATEWIDE REPLACEMENT OF RAISED PAVEMENT MARKERS O	Roadway delineation Raised pavement markers	189 Numbers	225857	225857	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
STATEWIDE REPLACEMENT OF RAISED PAVEMENT MARKERS O	Roadway delineation Raised pavement markers	246 Numbers	1203884	1203884	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
STATEWIDE IMPLEMENTATION OF HIGH FRICTION SURFACE	Roadway Pavement surface - high friction surface	0.285 Miles	13672	13672	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
IMPLEMENTATION OF HIGH FRICTION SURFACE ON VARIOUS	Roadway Pavement surface - high friction surface	0.3 Miles	59455	59455	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	
STATEWIDE INTERSECTION SIGNAL REBUILDS.	Intersection traffic control Modify traffic signal - modernization/replacement	1 Numbers	35000	35000	HSIP (Section 148)		0	0	State Highway Agency	Intersections	
TECHNICAL SUPPORT FOR THE CABINET'S HIGHWAY	Non-infrastructure Data/traffic records	1 Numbers	360000	360000	HSIP (Section 148)		0	0	State Highway Agency	Data	

SAFETY											
DATA COLLECTION TO FACILIATE IMPROVING THE RAILROA	Non-infrastructure Data/traffic records	1 Numbers	200000	200000	HSIP (Section 148)		0	0	State Highway Agency	Data	
STATEWIDE PLANNING FUNDS (ZS30)	Non-infrastructure Transportation safety planning	1 Numbers	500000	500000	HSIP (Section 148)		0	0	State Highway Agency	Planning	

Progress in Achieving Safety Performance Targets

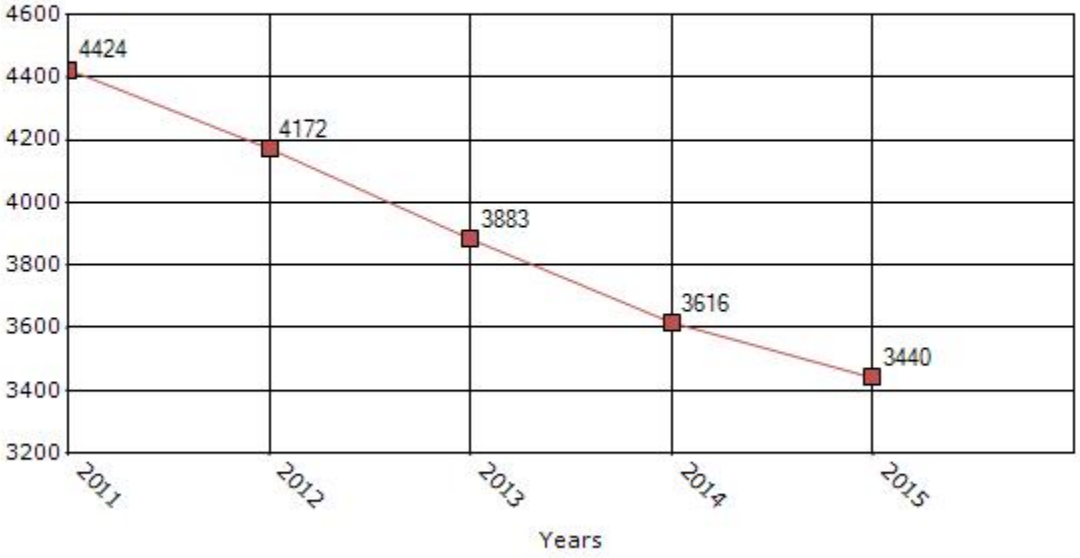
Overview of General Safety Trends

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

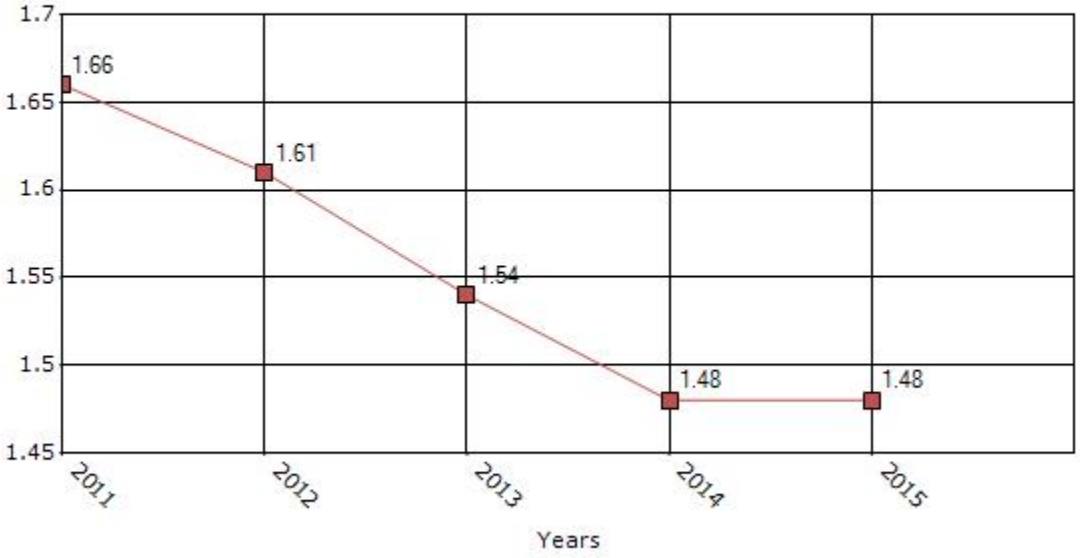
Performance Measures*	2011	2012	2013	2014	2015
Number of fatalities	792	768	730	707	708
Number of serious injuries	4424	4172	3883	3616	3440
Fatality rate (per HMVMT)	1.66	1.61	1.54	1.48	1.48
Serious injury rate (per HMVMT)	9.27	8.77	8.16	7.57	7.19

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

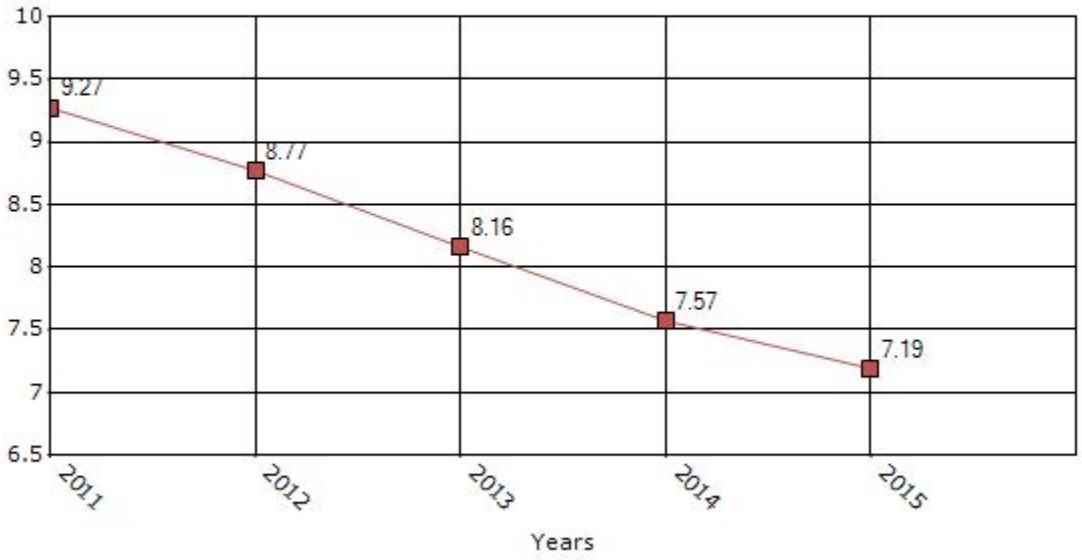
Number of Serious Injuries for the Last Five Years
5-yr Average Measure Data



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



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

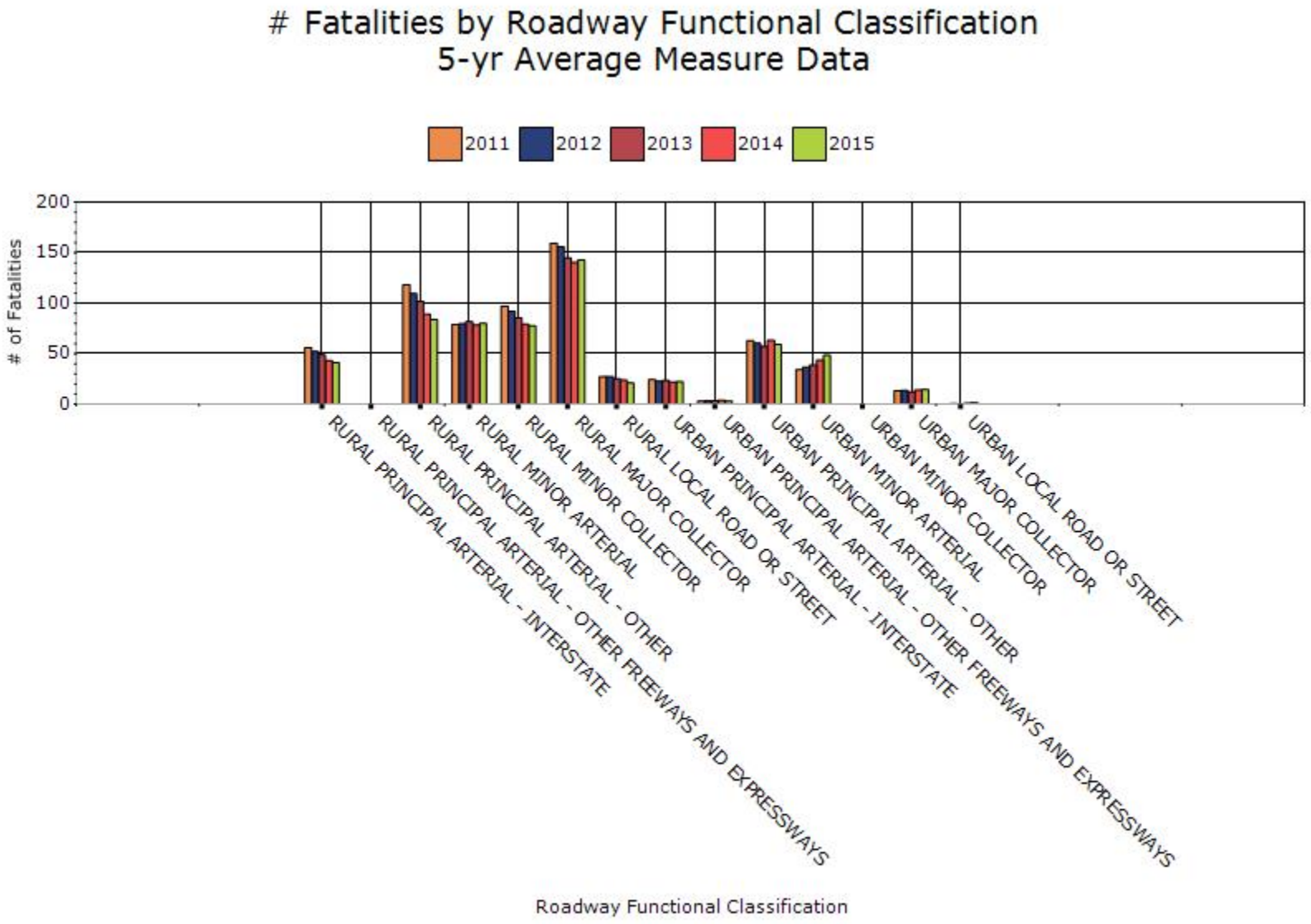


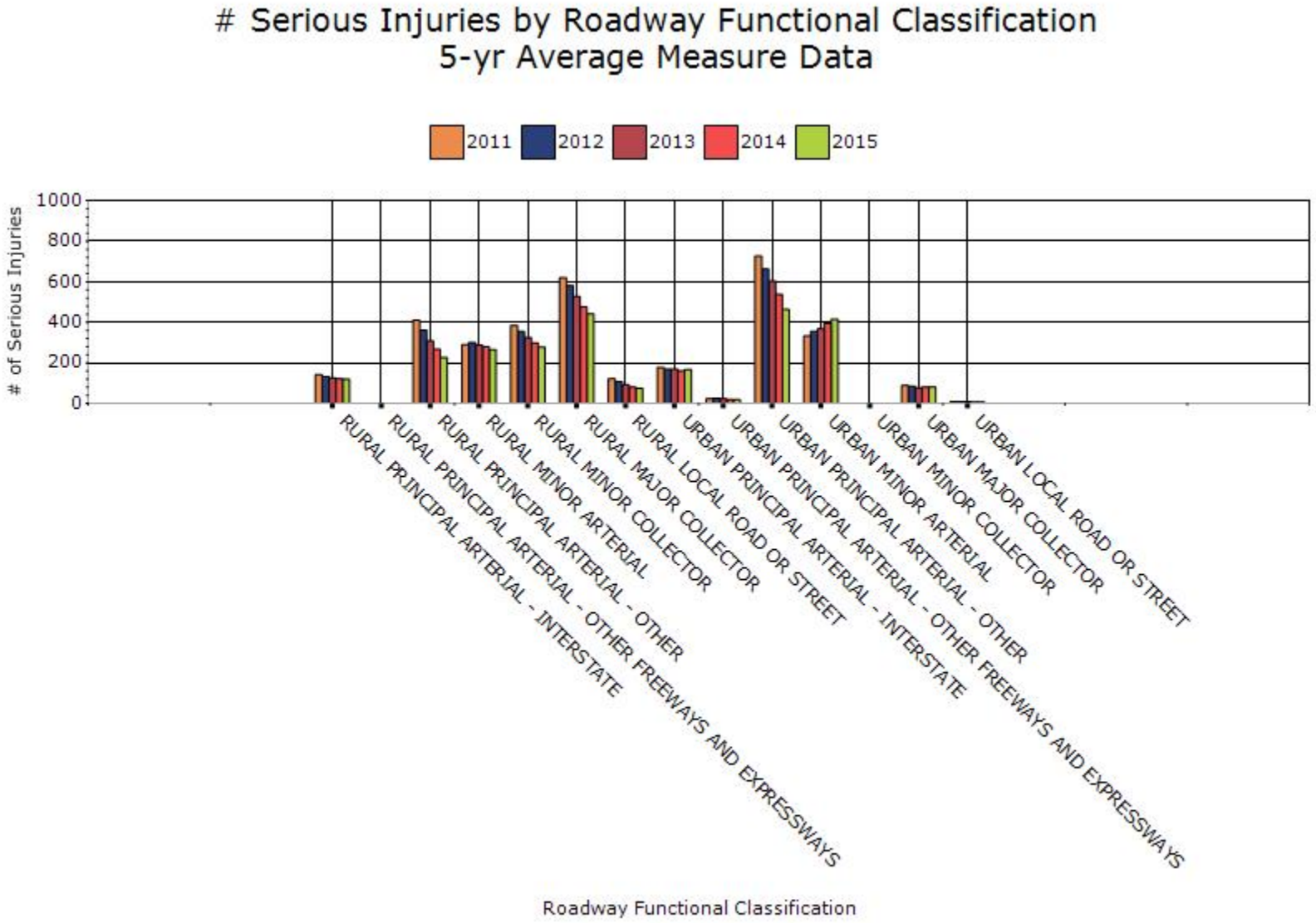
To the maximum extent possible, present performance measure* data by functional classification and ownership.

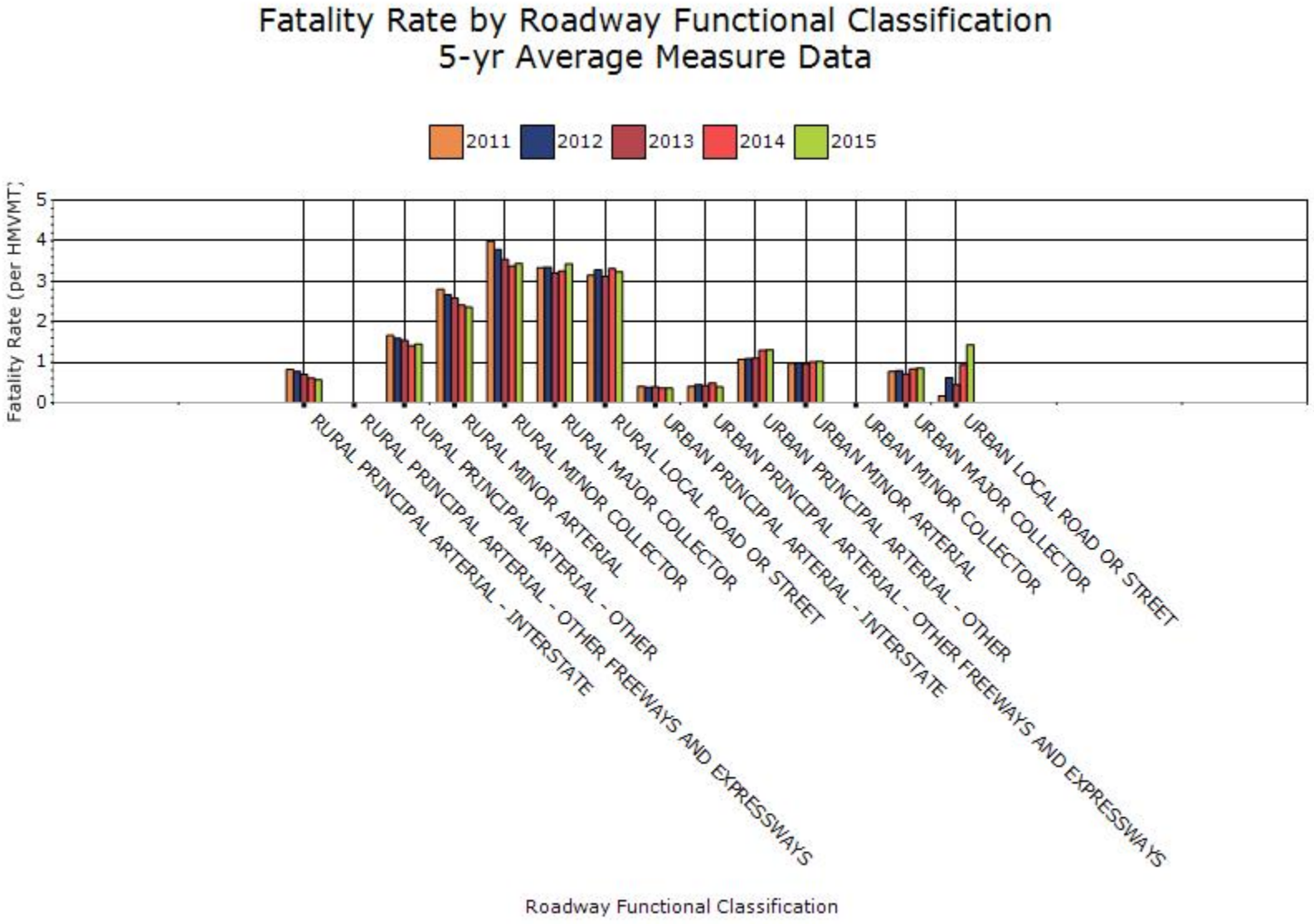
Year - 2015

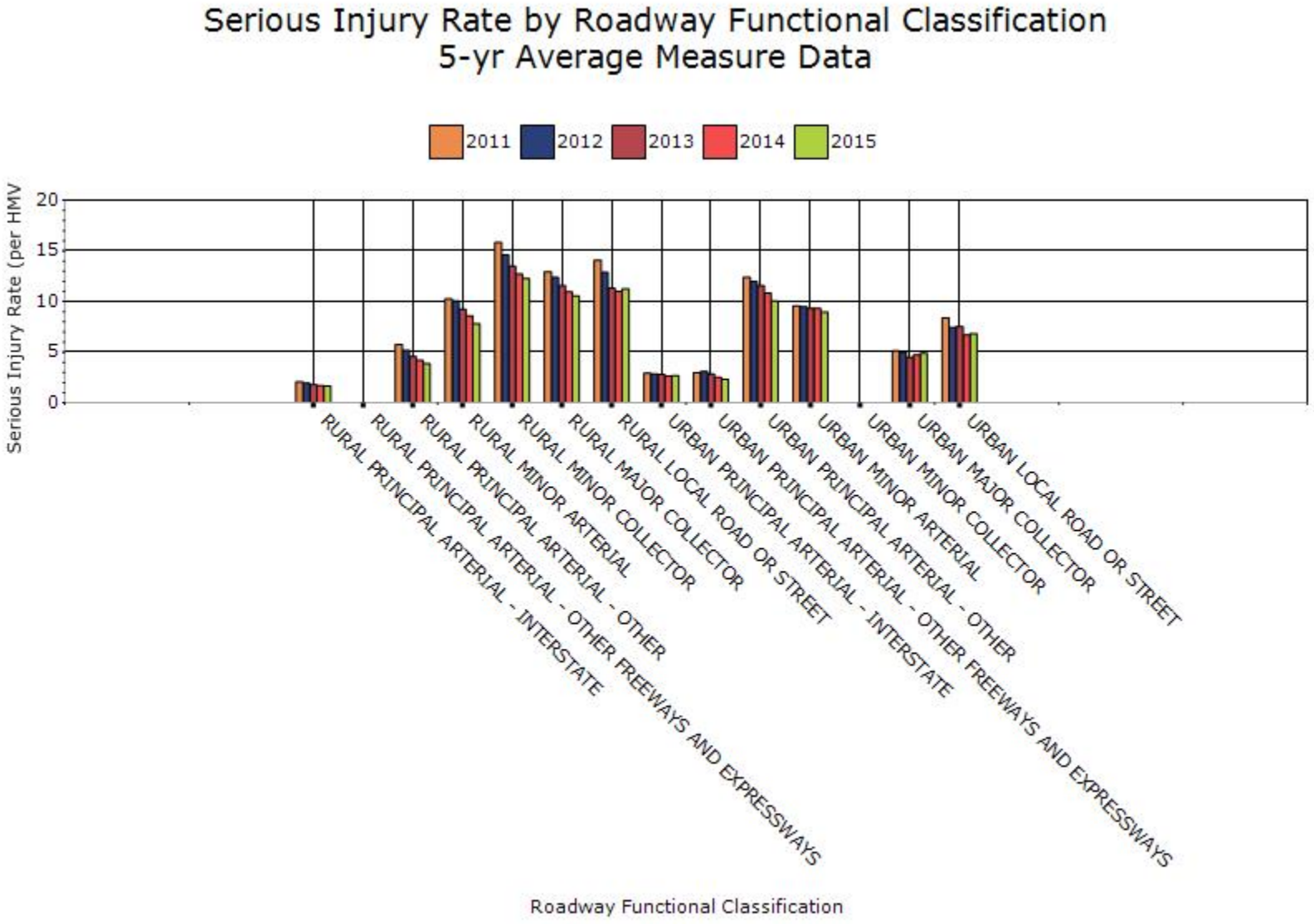
Function Classification	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
RURAL PRINCIPAL ARTERIAL - INTERSTATE	41.2	119.2	0.57	1.64
RURAL PRINCIPAL ARTERIAL - OTHER	83.8	226.2	1.45	3.86
RURAL MINOR ARTERIAL	80	265.4	2.36	7.81
RURAL MINOR COLLECTOR	77.6	277.8	3.44	12.27
RURAL MAJOR COLLECTOR	142.8	440.6	3.43	10.55
RURAL LOCAL ROAD OR STREET	21.2	75.6	3.23	11.24
URBAN PRINCIPAL ARTERIAL - INTERSTATE	22.2	167.6	0.36	2.7
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	3.2	18.6	0.39	2.31

URBAN PRINCIPAL ARTERIAL - OTHER	59.2	463.4	1.31	10.05
URBAN MINOR ARTERIAL	48.4	414.2	1.02	8.96
URBAN MAJOR COLLECTOR	14.4	81.8	0.86	4.88
URBAN LOCAL ROAD OR STREET	1.6	7.4	1.43	6.83


Fatalities by Roadway Functional Classification
5-yr Average Measure Data
2011
2012
2013
2014
2015
# of Fatalities
200
150
100
50
0
RURAL PRINCIPAL ARTERIAL - INTERSTATE
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS
RURAL PRINCIPAL ARTERIAL - OTHER
RURAL MINOR ARTERIAL
RURAL MINOR COLLECTOR
RURAL MAJOR COLLECTOR
RURAL LOCAL ROAD OR STREET
URBAN PRINCIPAL ARTERIAL - INTERSTATE
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS
URBAN PRINCIPAL ARTERIAL - OTHER
URBAN MINOR ARTERIAL
URBAN MINOR COLLECTOR
URBAN MAJOR COLLECTOR
URBAN LOCAL ROAD OR STREET
Roadway Functional Classification

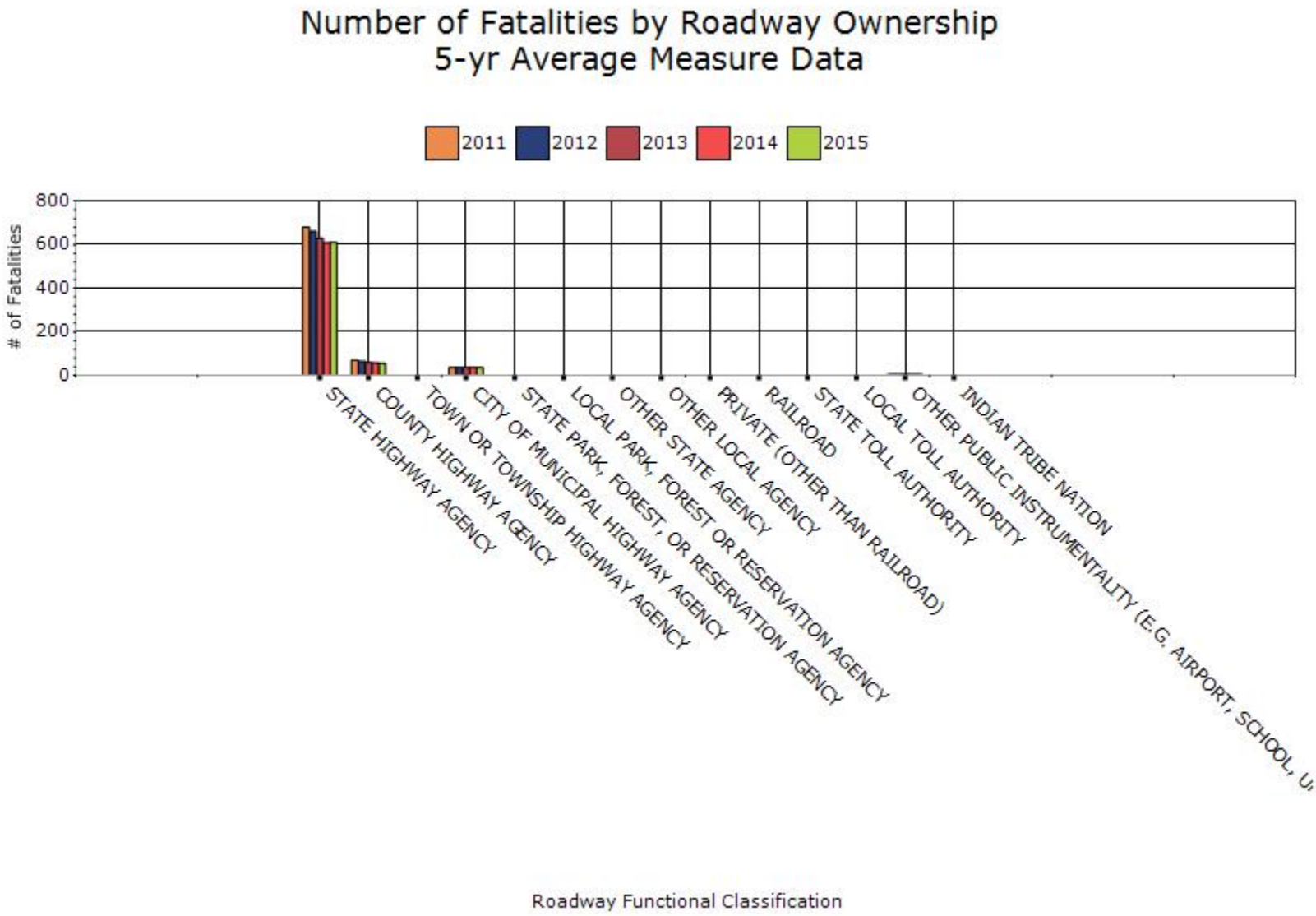

Serious Injuries by Roadway Functional Classification
5-yr Average Measure Data
2011
2012
2013
2014
2015
# of Serious Injuries
1000
800
600
400
200
0
RURAL PRINCIPAL ARTERIAL - INTERSTATE
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS
RURAL PRINCIPAL ARTERIAL - OTHER
RURAL MINOR ARTERIAL
RURAL MINOR COLLECTOR
RURAL MAJOR COLLECTOR
RURAL LOCAL ROAD OR STREET
URBAN PRINCIPAL ARTERIAL - INTERSTATE
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS
URBAN PRINCIPAL ARTERIAL - OTHER
URBAN MINOR ARTERIAL
URBAN MINOR COLLECTOR
URBAN MAJOR COLLECTOR
URBAN LOCAL ROAD OR STREET
Roadway Functional Classification

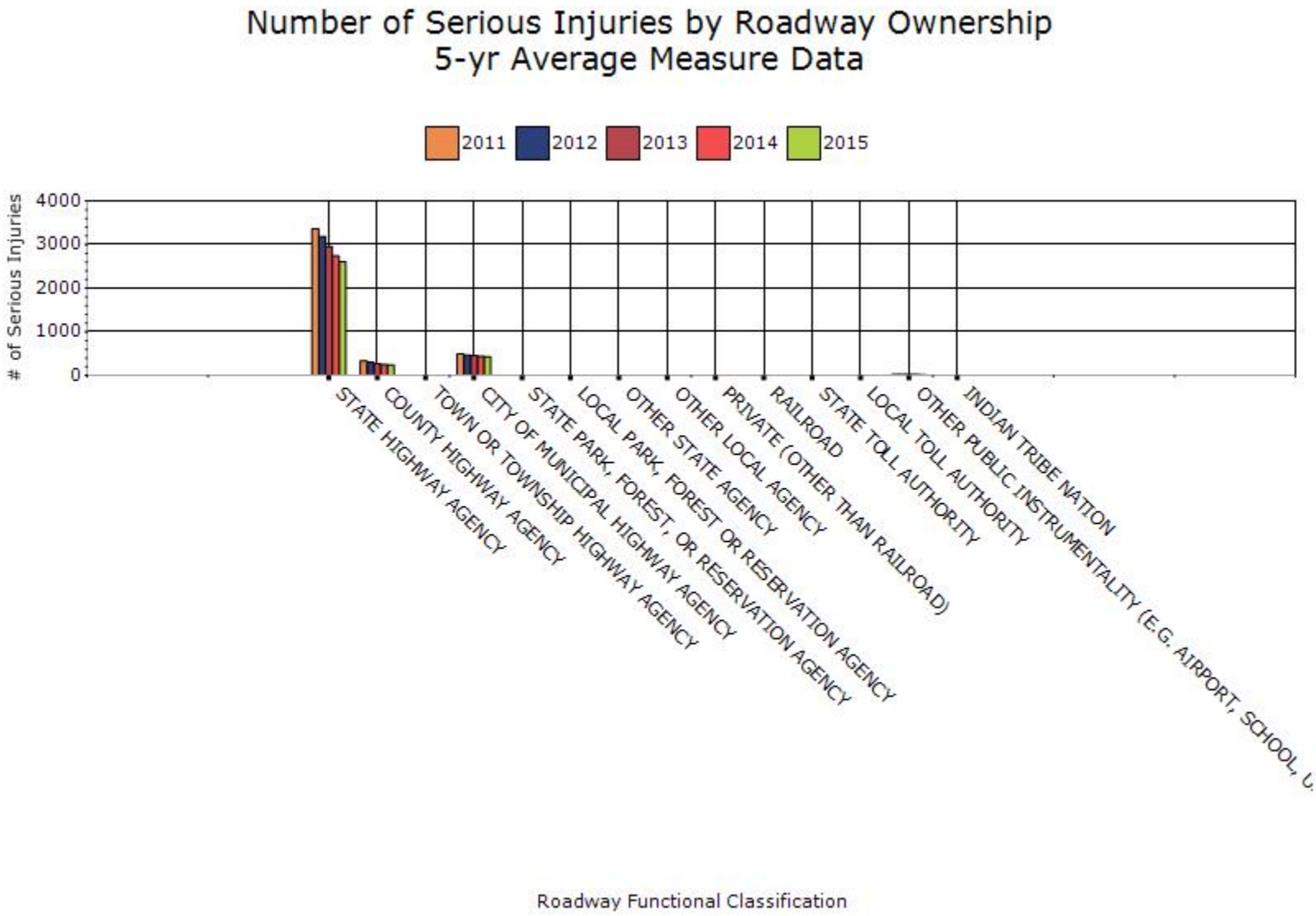

Fatality Rate by Roadway Functional Classification
5-yr Average Measure Data
2011
2012
2013
2014
2015
Fatality Rate (per HMVMT)
0
1
2
3
4
5
RURAL PRINCIPAL ARTERIAL - INTERSTATE
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS
RURAL PRINCIPAL ARTERIAL - OTHER
RURAL MINOR ARTERIAL
RURAL MINOR COLLECTOR
RURAL MAJOR COLLECTOR
RURAL LOCAL ROAD OR STREET
URBAN PRINCIPAL ARTERIAL - INTERSTATE
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS
URBAN PRINCIPAL ARTERIAL - OTHER
URBAN MINOR ARTERIAL
URBAN MINOR COLLECTOR
URBAN MAJOR COLLECTOR
URBAN LOCAL ROAD OR STREET
Roadway Functional Classification

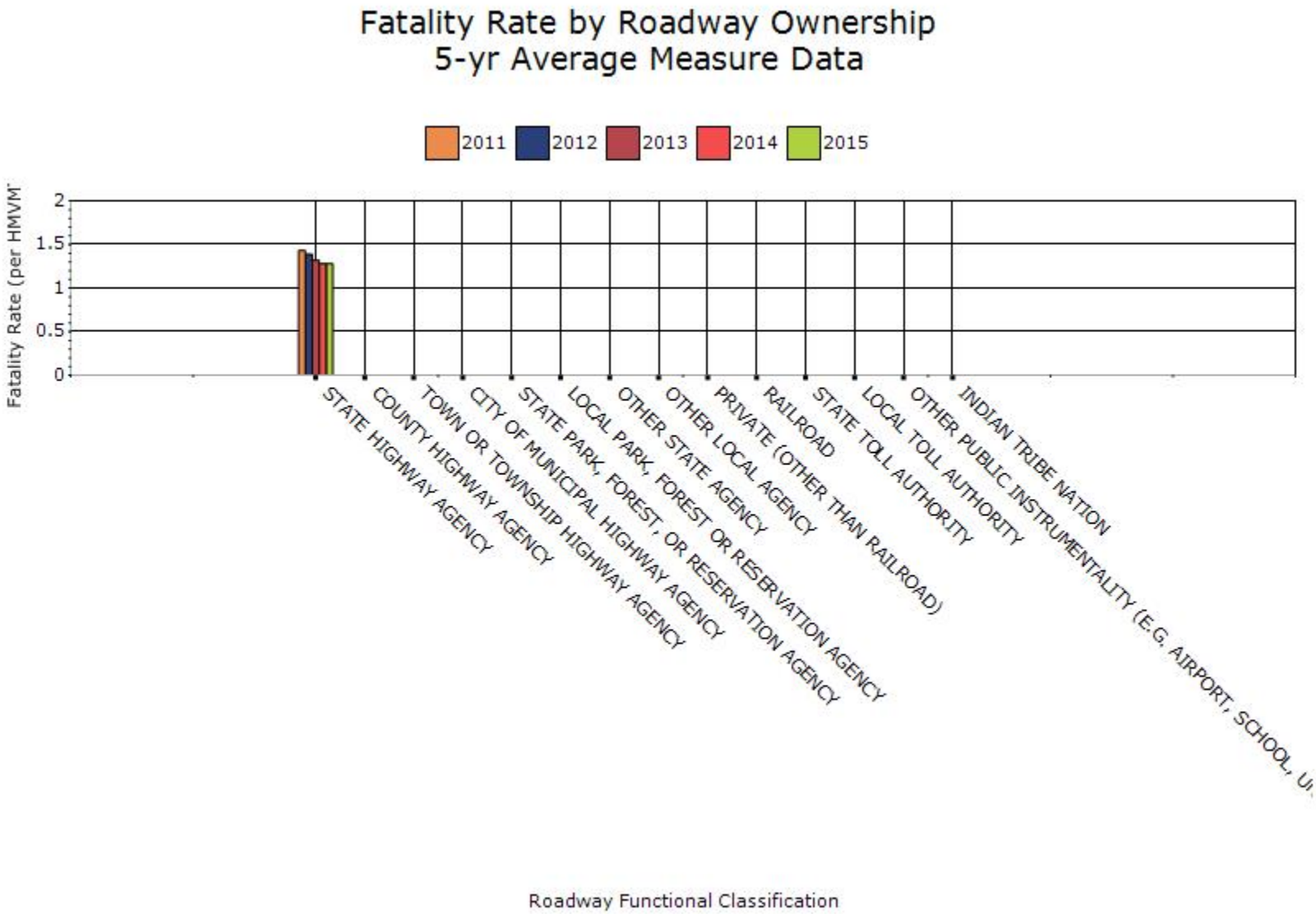

Serious Injury Rate by Roadway Functional Classification
5-yr Average Measure Data
2011
2012
2013
2014
2015
Serious Injury Rate (per HMV
20
15
10
5
0
RURAL PRINCIPAL ARTERIAL - INTERSTATE
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS
RURAL PRINCIPAL ARTERIAL - OTHER
RURAL MINOR ARTERIAL
RURAL MINOR COLLECTOR
RURAL MAJOR COLLECTOR
RURAL LOCAL ROAD OR STREET
URBAN PRINCIPAL ARTERIAL - INTERSTATE
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS
URBAN PRINCIPAL ARTERIAL - OTHER
URBAN MINOR ARTERIAL
URBAN MINOR COLLECTOR
URBAN MAJOR COLLECTOR
URBAN LOCAL ROAD OR STREET
Roadway Functional Classification

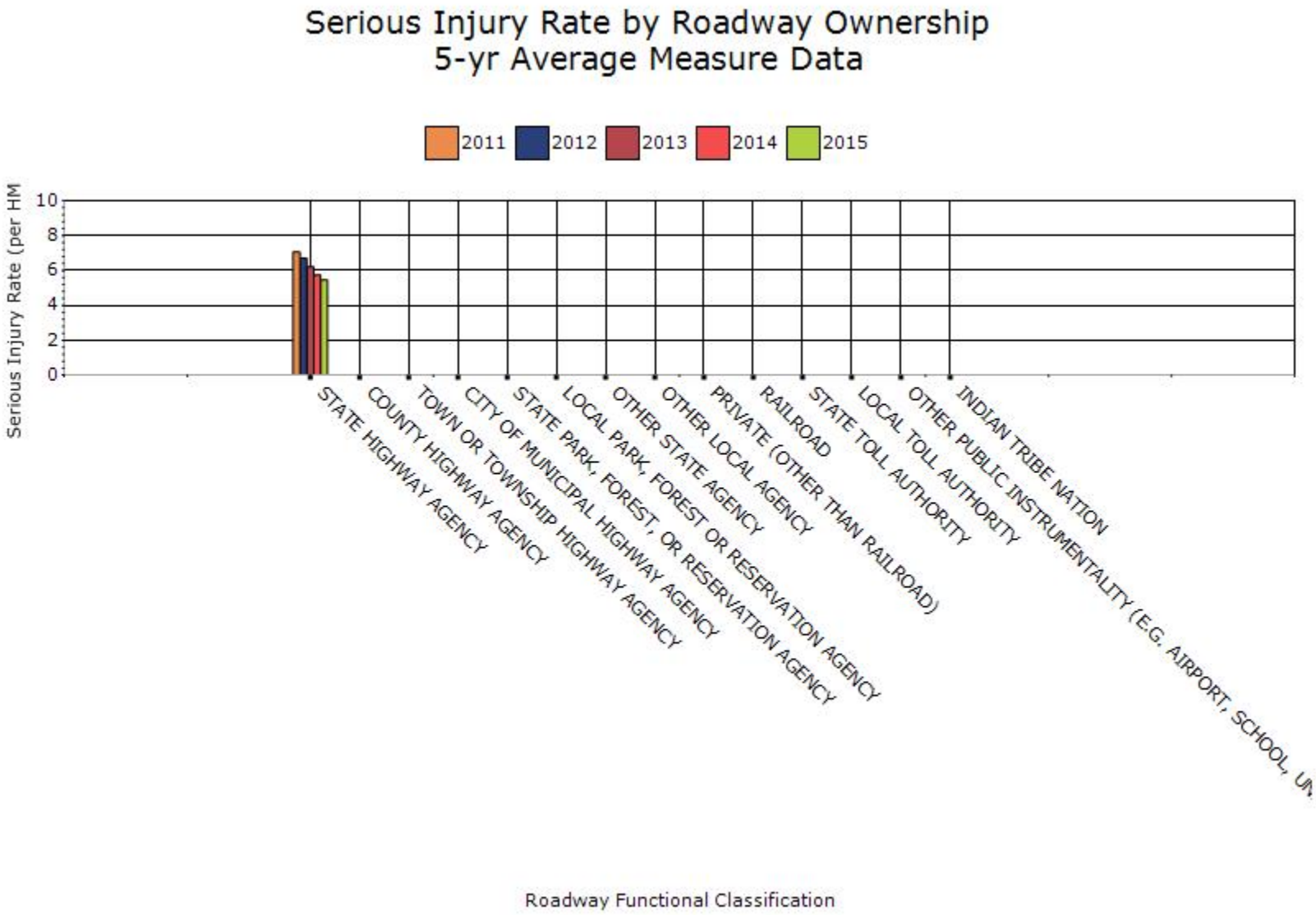
Year - 2015

Roadway Ownership	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
STATE HIGHWAY AGENCY	611.2	2604.6	1.28	5.45
COUNTY HIGHWAY AGENCY	55.2	236.2		
CITY OF MUNICIPAL HIGHWAY AGENCY	37	427		
OTHER PUBLIC INSTRUMENTALITY (E.G. AIRPORT, SCHOOL, UNIVERSITY)	4.2	15.8		


Number of Fatalities by Roadway Ownership
5-yr Average Measure Data
2011
2012
2013
2014
2015
# of Fatalities
800
600
400
200
0
STATE HIGHWAY AGENCY
COUNTY HIGHWAY AGENCY
TOWN OR TOWNSHIP HIGHWAY AGENCY
CITY OF MUNICIPAL HIGHWAY AGENCY
STATE PARK, FOREST, OR RESERVATION AGENCY
LOCAL PARK, FOREST OR RESERVATION AGENCY
OTHER STATE AGENCY
OTHER LOCAL AGENCY
PRIVATE (OTHER THAN RAILROAD)
RAILROAD
STATE TOLL AUTHORITY
LOCAL TOLL AUTHORITY
OTHER PUBLIC INSTRUMENTALITY (E.G. AIRPORT, SCHOOL, U
INDIAN TRIBE NATION
Roadway Functional Classification


Number of Serious Injuries by Roadway Ownership
5-yr Average Measure Data
2011
2012
2013
2014
2015
# of Serious Injuries
4000
3000
2000
1000
0
STATE HIGHWAY AGENCY
COUNTY HIGHWAY AGENCY
TOWN OR TOWNSHIP HIGHWAY AGENCY
CITY OF MUNICIPAL HIGHWAY AGENCY
STATE PARK, FOREST, OR RESERVATION AGENCY
LOCAL PARK, FOREST OR RESERVATION AGENCY
OTHER STATE AGENCY
OTHER LOCAL AGENCY
PRIVATE (OTHER THAN RAILROAD)
RAILROAD
STATE TOLL AUTHORITY
LOCAL TOLL AUTHORITY
OTHER PUBLIC INSTRUMENTALITY (E.G. AIRPORT, SCHOOL, U
INDIAN TRIBE NATION
Roadway Functional Classification


Fatality Rate by Roadway Ownership
5-yr Average Measure Data
2011
2012
2013
2014
2015
Fatality Rate (per HMVM
2
1.5
1
0.5
0
STATE HIGHWAY AGENCY
COUNTY HIGHWAY AGENCY
TOWN OR TOWNSHIP HIGHWAY AGENCY
CITY OF MUNICIPAL HIGHWAY AGENCY
STATE PARK, FOREST, OR RESERVATION AGENCY
LOCAL PARK, FOREST OR RESERVATION AGENCY
OTHER STATE AGENCY
OTHER LOCAL AGENCY
PRIVATE (OTHER THAN RAILROAD)
RAILROAD
STATE TOLL AUTHORITY
LOCAL TOLL AUTHORITY
OTHER PUBLIC INSTRUMENTALITY (E.G. AIRPORT, SCHOOL, U
INDIAN TRIBE NATION
Roadway Functional Classification


Serious Injury Rate by Roadway Ownership
5-yr Average Measure Data
2011
2012
2013
2014
2015
Serious Injury Rate (per HM
10
8
6
4
2
0
STATE HIGHWAY AGENCY
COUNTY HIGHWAY AGENCY
TOWN OR TOWNSHIP HIGHWAY AGENCY
CITY OF MUNICIPAL HIGHWAY AGENCY
STATE PARK, FOREST, OR RESERVATION AGENCY
LOCAL PARK, FOREST OR RESERVATION AGENCY
OTHER STATE AGENCY
OTHER LOCAL AGENCY
PRIVATE (OTHER THAN RAILROAD)
RAILROAD
STATE TOLL AUTHORITY
LOCAL TOLL AUTHORITY
OTHER PUBLIC INSTRUMENTALITY (E.G. AIRPORT, SCHOOL, UN
INDIAN TRIBE NATION
Roadway Functional Classification

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

No additional comments.

Application of Special Rules

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

Older Driver Performance Measures	2010	2011	2012	2013	2014
Fatality rate (per capita)	271.276	248.266	239.536	241.152	227.634
Serious injury rate (per capita)	1155.1	1064.16	1013.82	972.04	906.36
Fatality and serious injury rate (per capita)	1428.98	1315.02	1255.94	1215.78	1136.58

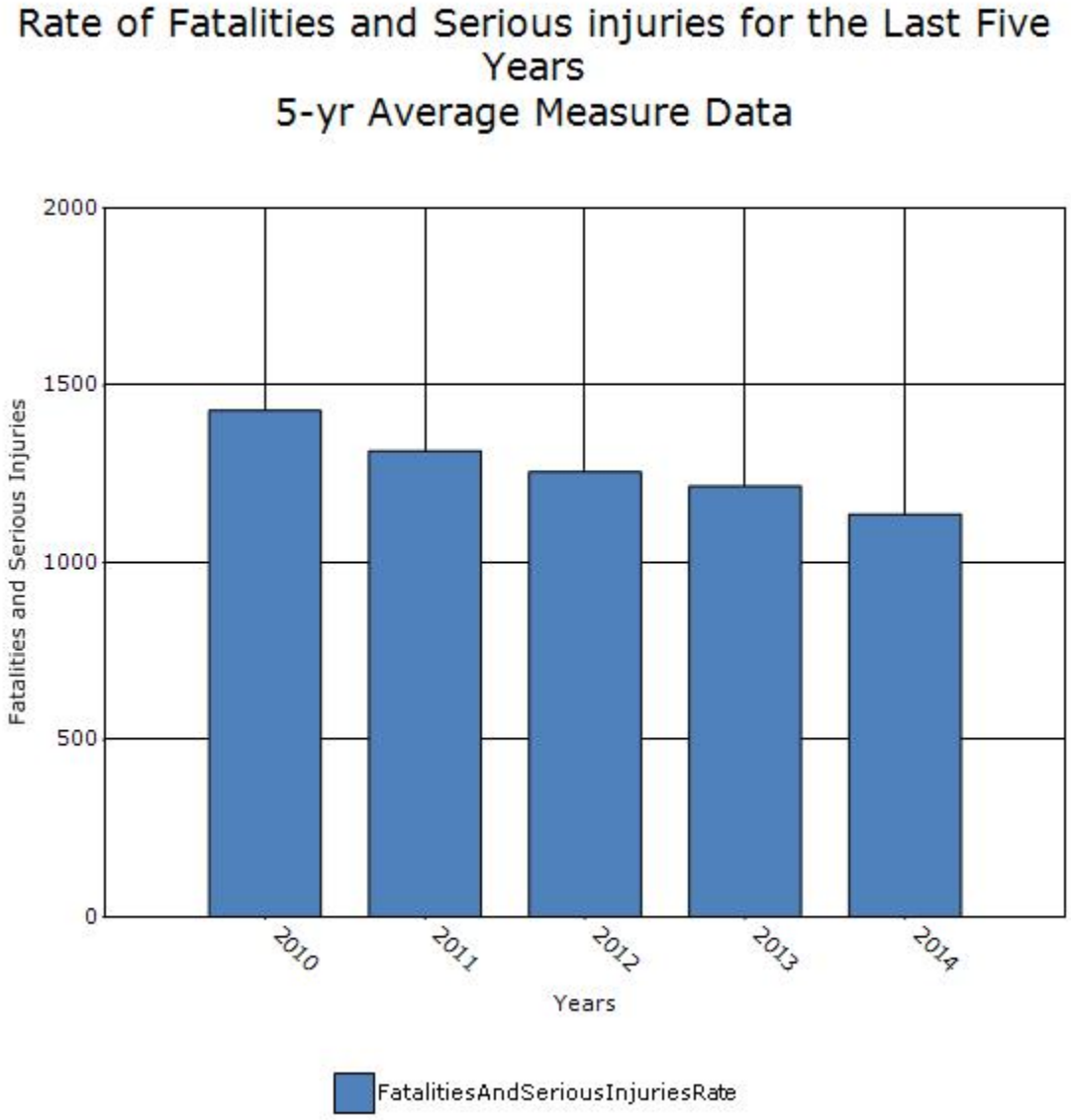
*Performance measure data is presented using a five-year rolling average.

Sum of 5-year rolling averages of fatalities + serious injuries for 2008-2012 per population of KY residents age 65 and older, as compared to sum of 5-year rolling averages of fatalities + serious injuries for 2010-2014 per population of KY residents age 65 and older.

2008-2012 Rate = 1256.0

2010-2014 Rate = 1136.6

Rate for most recent 5-year period is less than previous 5-year period and therefore, Special Rule does not apply.



Does the older driver special rule apply to your state?

No

Assessment of the Effectiveness of the Improvements (Program Evaluation)

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

Benefit/cost

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

Rumble Stripes B/C = 65.7:1; High-Friction Surface Treatments B/C = 2.2:1; Median Cable Barriers B/C = 12.3:1:

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

None

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

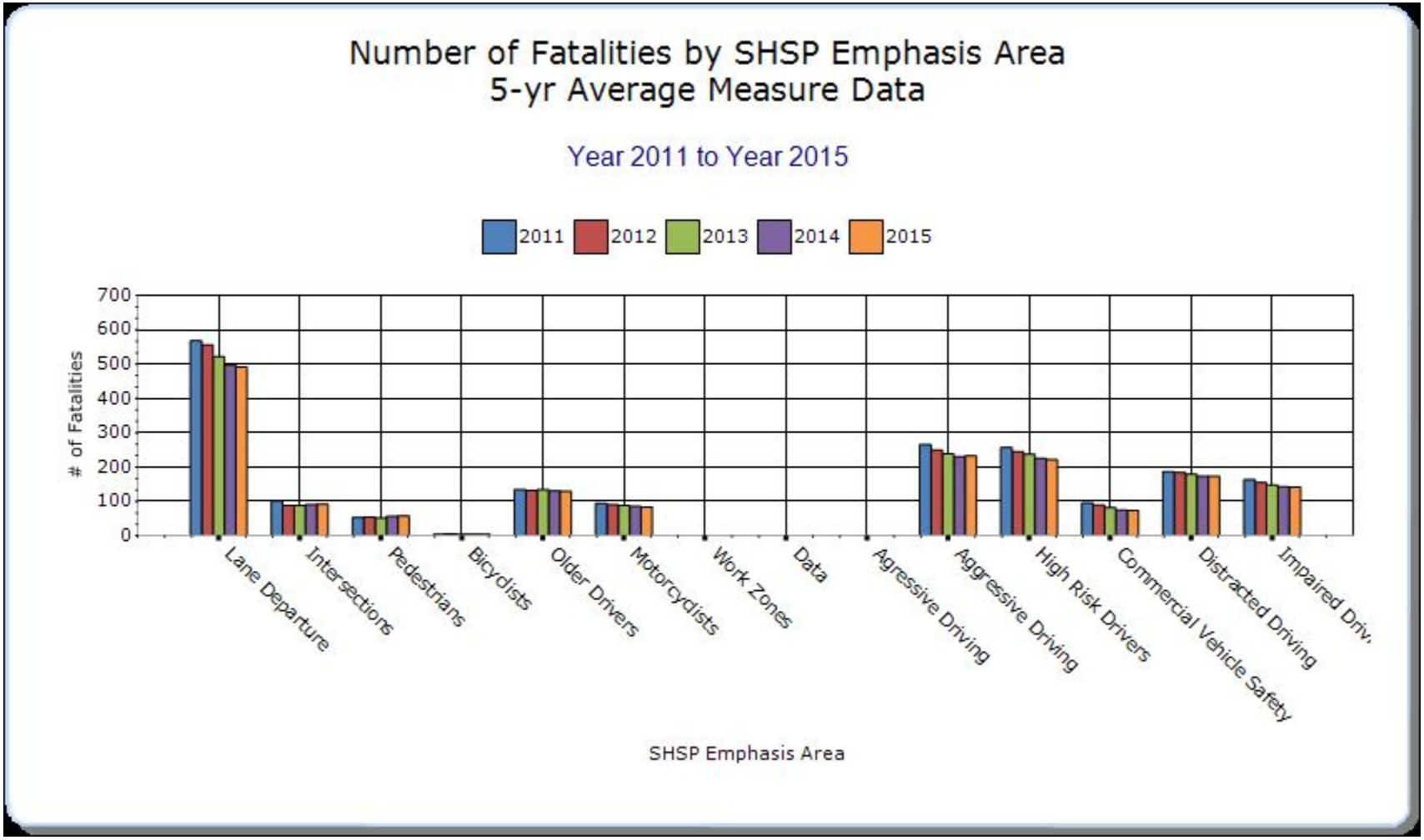
No significant program changes have occurred since the last reporting period.

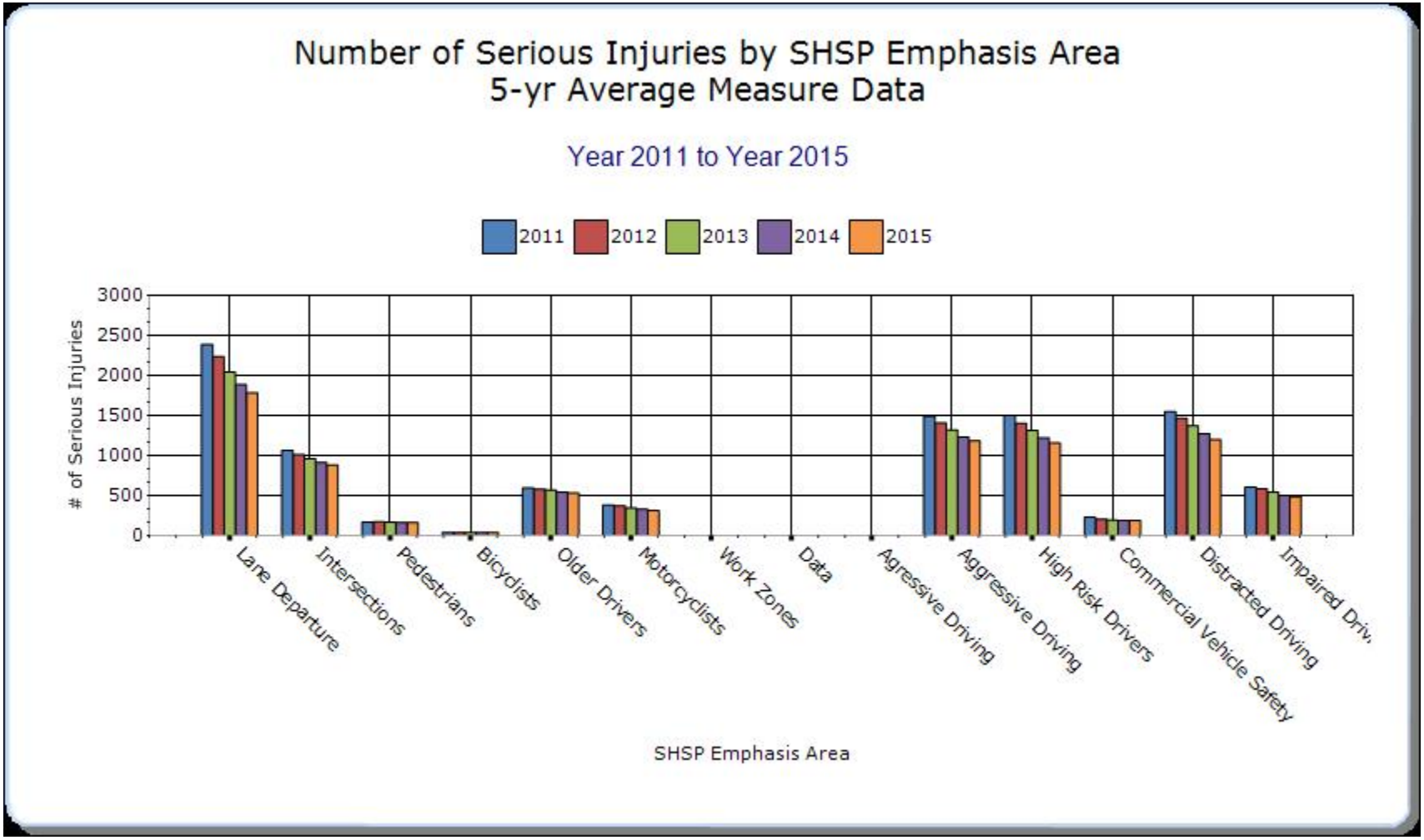
SHSP Emphasis Areas

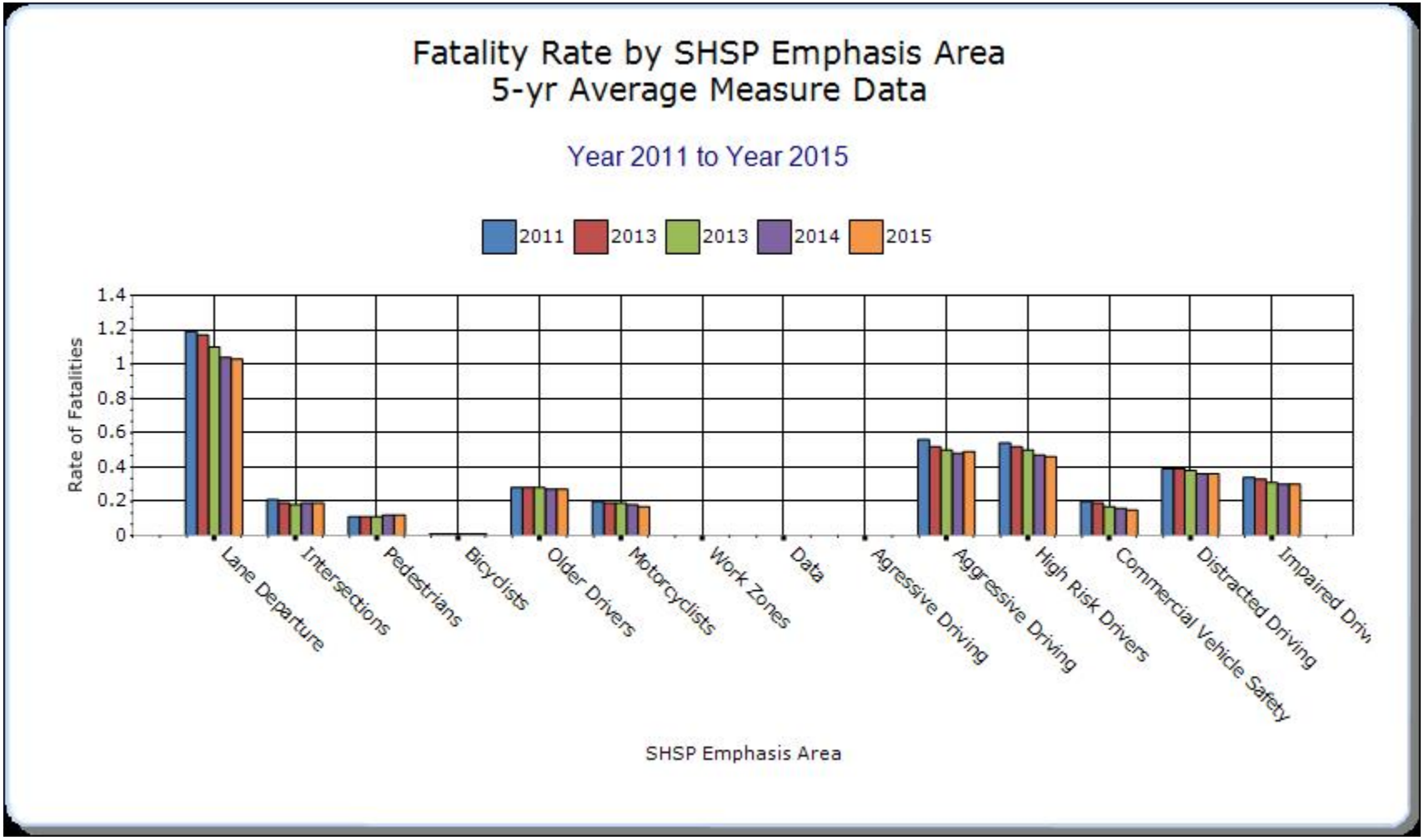
For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.

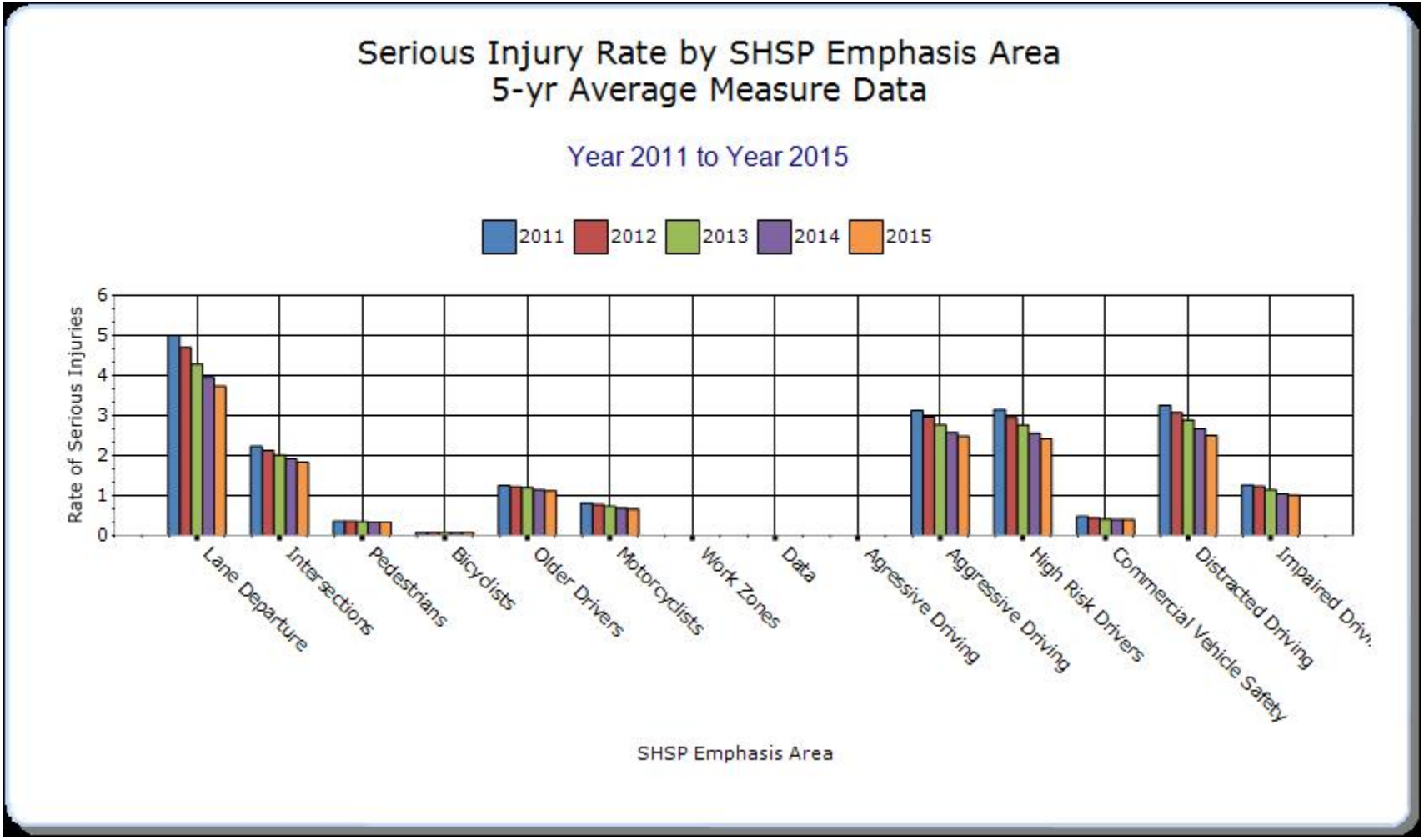
Year - 2015

HSIP-related SHSP Emphasis Areas	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Lane Departure	Lane Departure	491	1785.8	1.03	3.73			
Intersections	Intersections	91.6	881.6	0.19	1.84			
Pedestrians	Vehicle/pedestrian	58.2	161.6	0.12	0.34			
Bicyclists	Vehicle/bicycle	4.2	37.8	0.01	0.08			
Motorcyclists	Motorcycle Involved	83.6	314.4	0.17	0.66			
Aggressive Driving	Aggressive Human Factors	232.2	1186.8	0.49	2.48			
High Risk Drivers	Young & Older Drivers	221.4	1156.6	0.46	2.42			
Commercial Vehicle Safety	Truck-related	73.8	189	0.15	0.4			
Distracted Driving	Distraction Related	173.2	1199.8	0.36	2.51			
Impaired Driving	Alcohol or Drug Related	142	489	0.3	1.02			


Number of Fatalities by SHSP Emphasis Area
5-yr Average Measure Data
Year 2011 to Year 2015
2011
2012
2013
2014
2015
# of Fatalities
700
600
500
400
300
200
100
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
Agressive Driving
Aggressive Driving
High Risk Drivers
Commercial Vehicle Safety
Distracted Driving
Impaired Driv.
SHSP Emphasis Area


Number of Serious Injuries by SHSP Emphasis Area
5-yr Average Measure Data
Year 2011 to Year 2015
2011
2012
2013
2014
2015
# of Serious Injuries
3000
2500
2000
1500
1000
500
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
Agressive Driving
Aggressive Driving
High Risk Drivers
Commercial Vehicle Safety
Distracted Driving
Impaired Driv.
SHSP Emphasis Area


Fatality Rate by SHSP Emphasis Area
5-yr Average Measure Data
Year 2011 to Year 2015
2011
2013
2013
2014
2015
Rate of Fatalities
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
Agressive Driving
Aggressive Driving
High Risk Drivers
Commercial Vehicle Safety
Distracted Driving
Impaired Driv
SHSP Emphasis Area

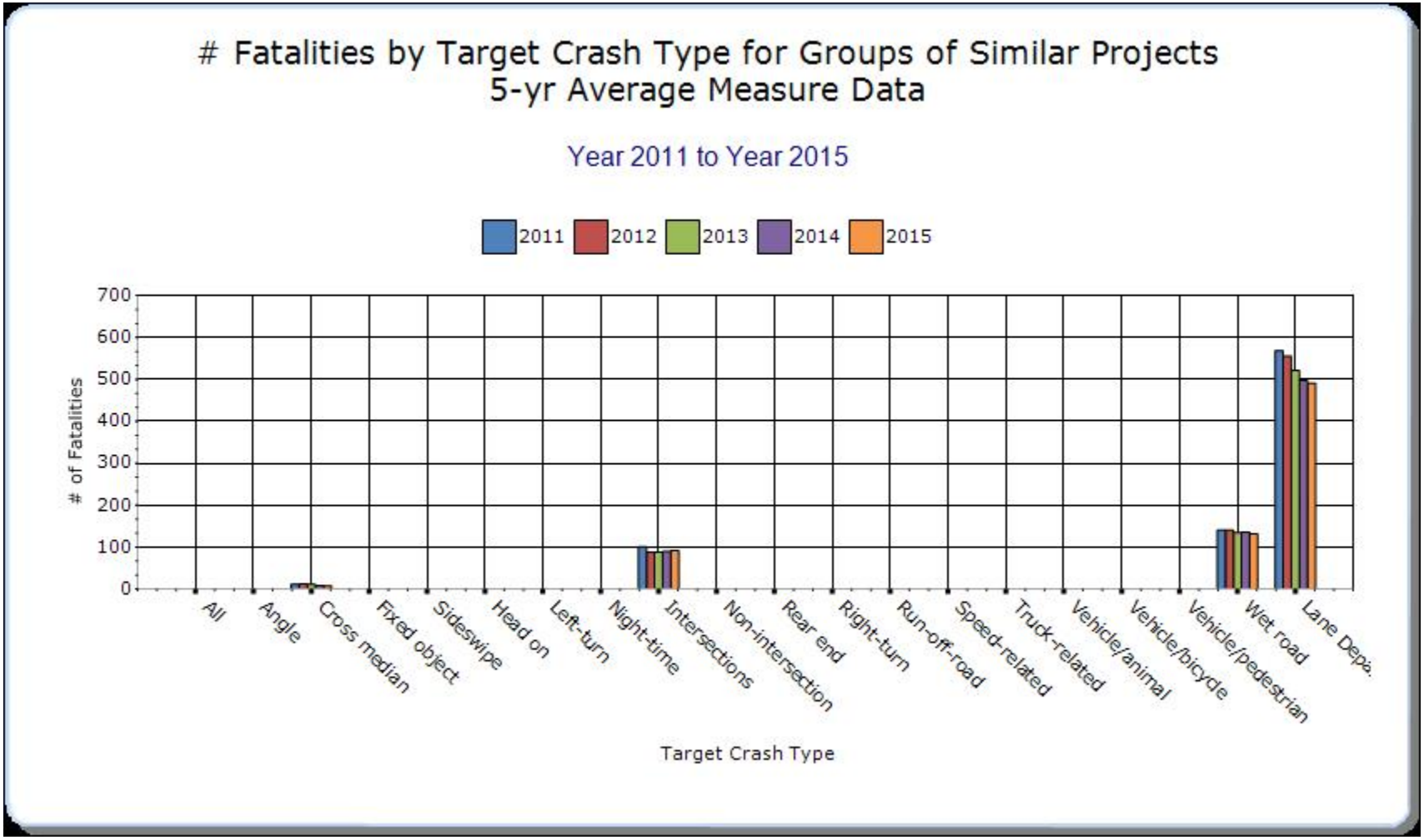


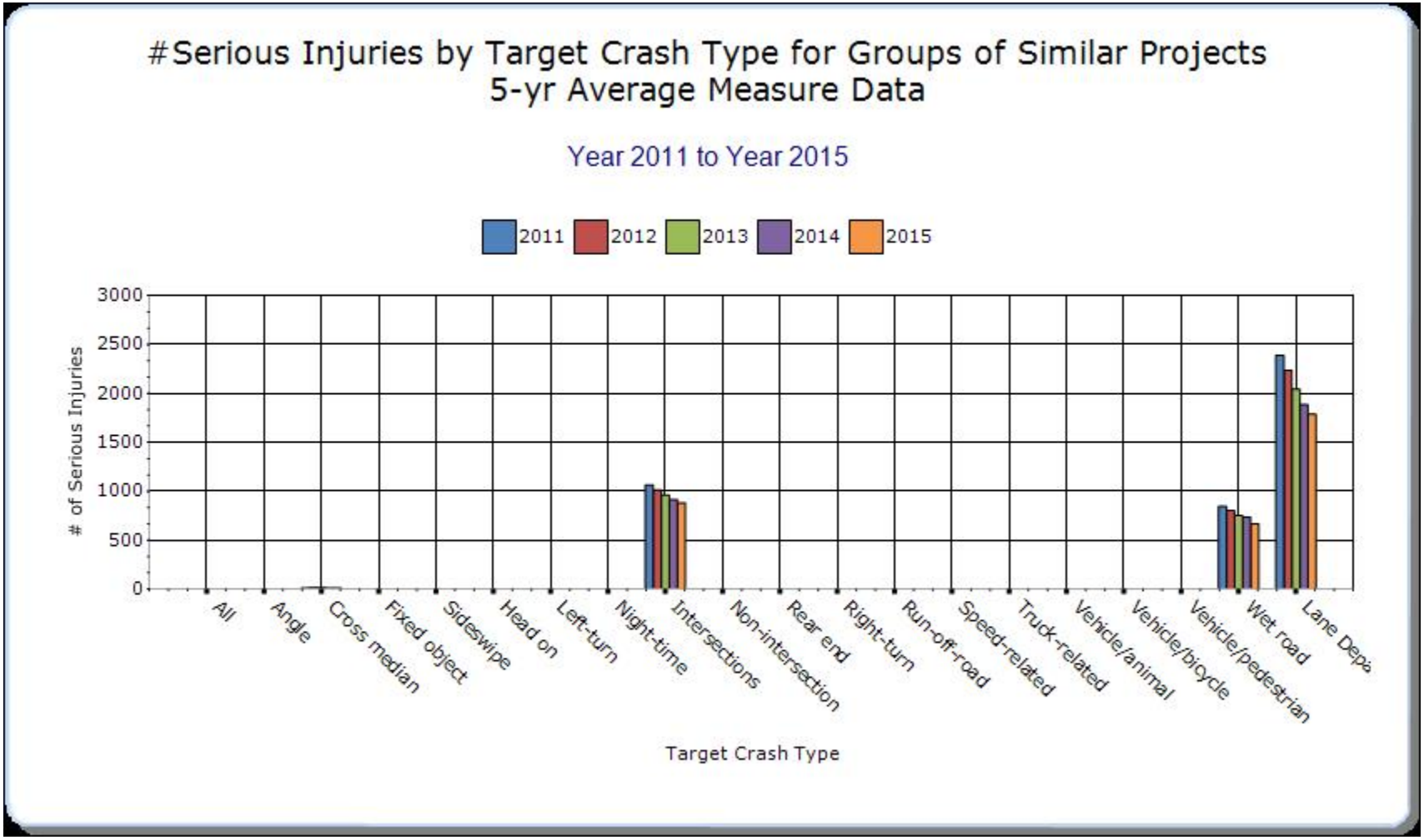
Groups of similar project types

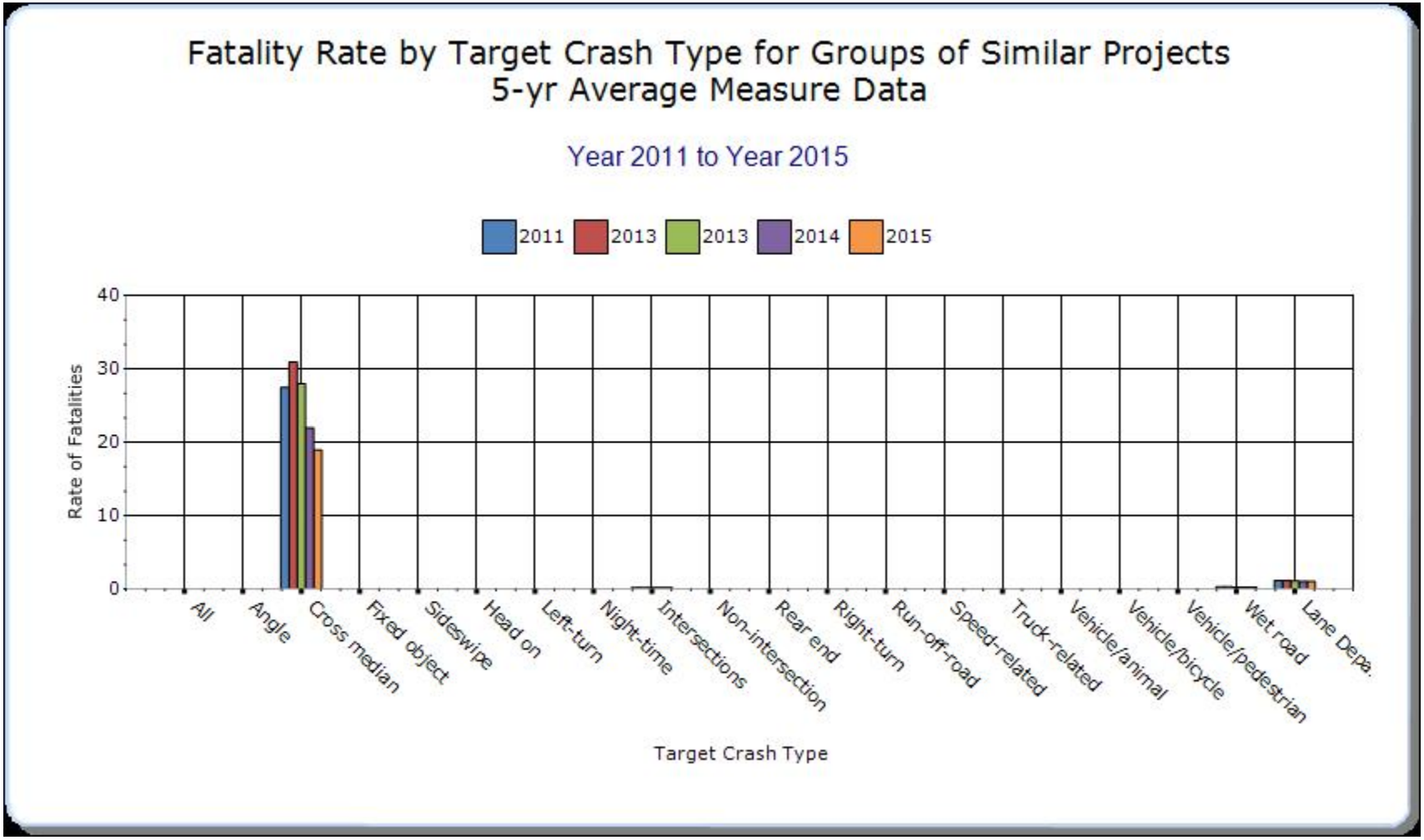
Present the overall effectiveness of groups of similar types of projects.

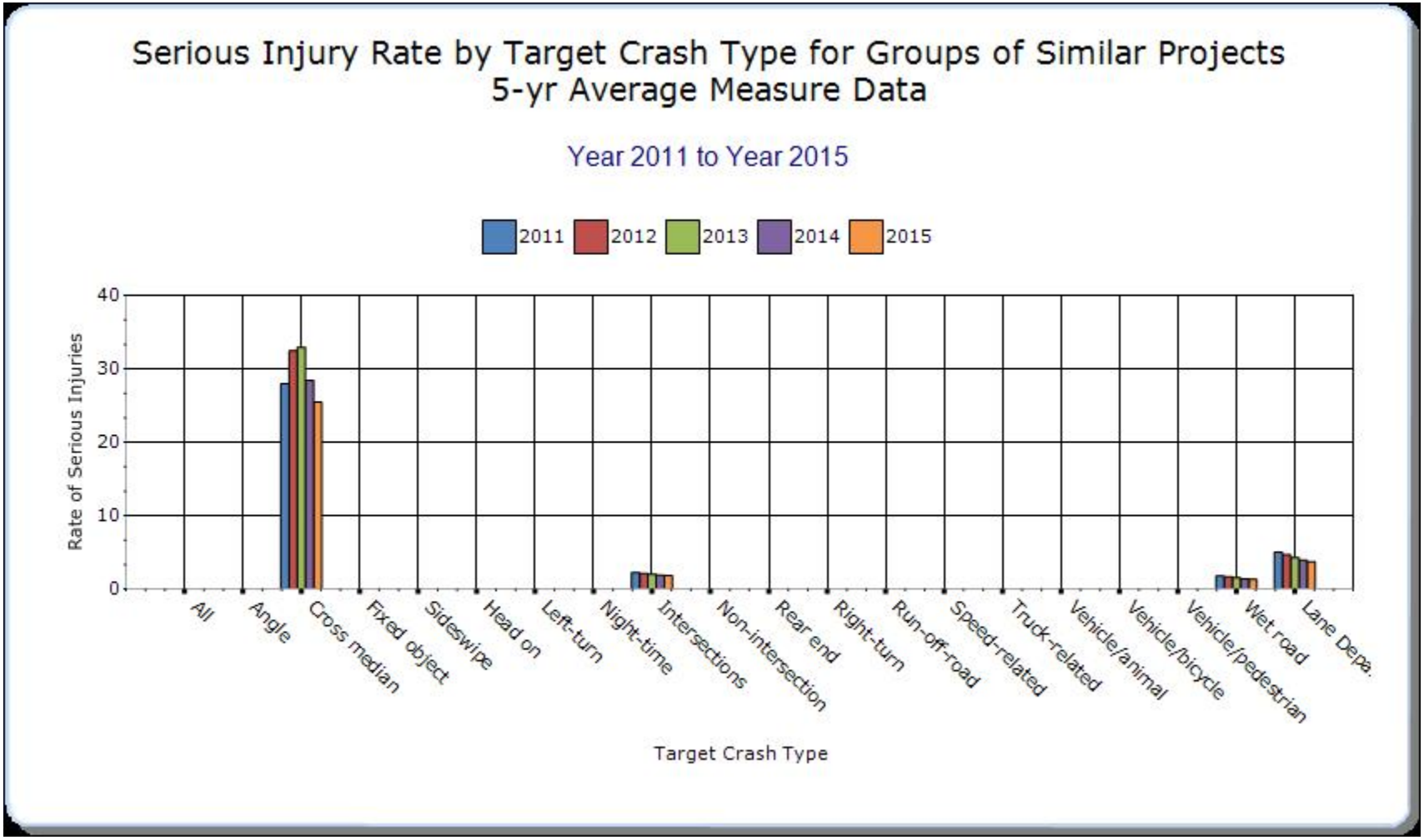
Year - 2015

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
Intersection	Intersections	91.6	881.6	0.19	1.84			
Skid Hazard	Wet road	131.6	668.8	0.28	1.35			
Roadway Departure	Lane Departure	491	1785.8	1.03	3.73			
Median Barrier	Cross median	7.6	10.2	18.97	25.46			


Fatalities by Target Crash Type for Groups of Similar Projects
5-yr Average Measure Data
Year 2011 to Year 2015
2011
2012
2013
2014
2015
# of Fatalities
700
600
500
400
300
200
100
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Lane Depa
Target Crash Type


#Serious Injuries by Target Crash Type for Groups of Similar Projects
5-yr Average Measure Data
Year 2011 to Year 2015
2011
2012
2013
2014
2015
# of Serious Injuries
3000
2500
2000
1500
1000
500
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Lane Depa
Target Crash Type


Fatality Rate by Target Crash Type for Groups of Similar Projects
5-yr Average Measure Data
Year 2011 to Year 2015
2011
2013
2013
2014
2015
Rate of Fatalities
40
30
20
10
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Lane Depa
Target Crash Type

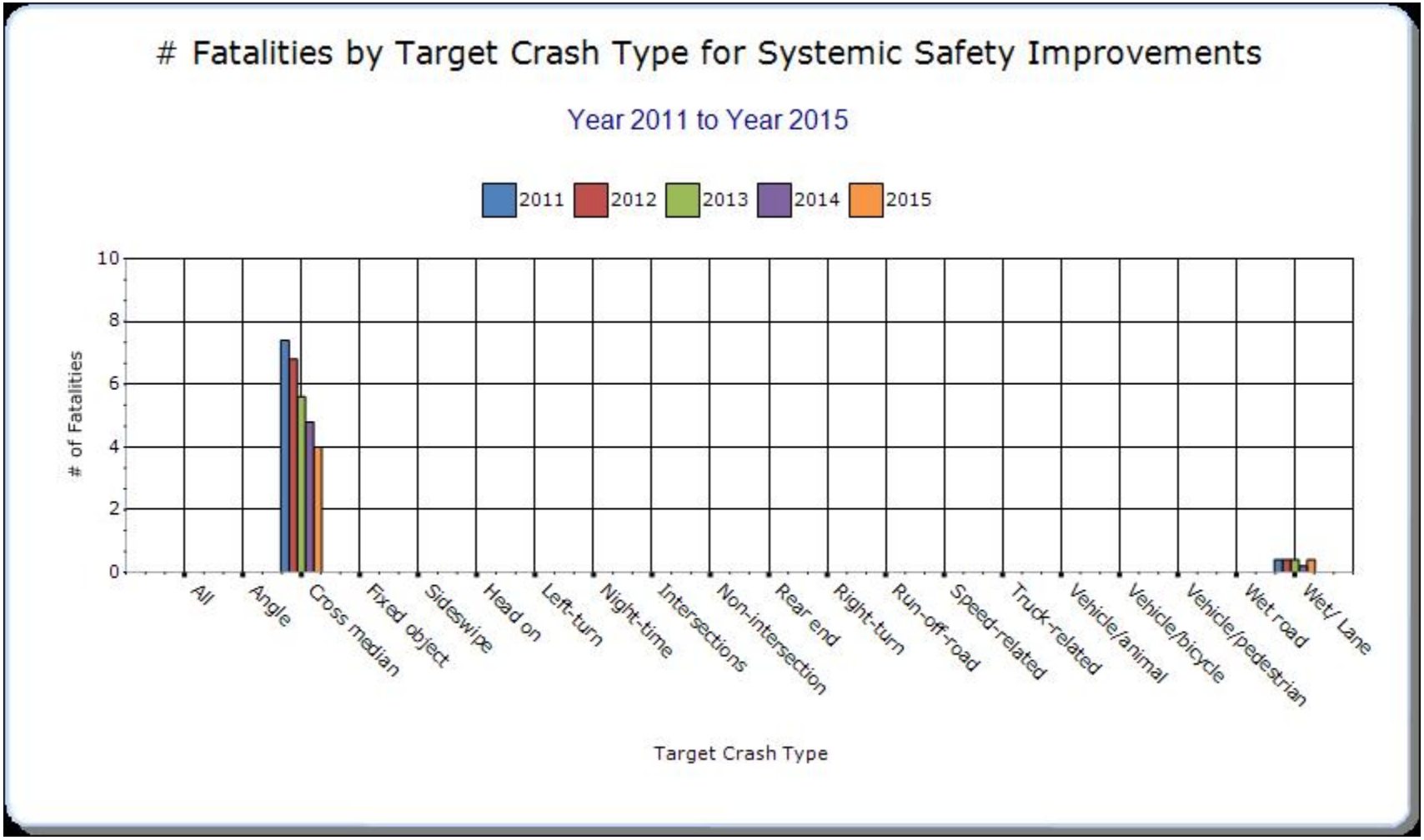


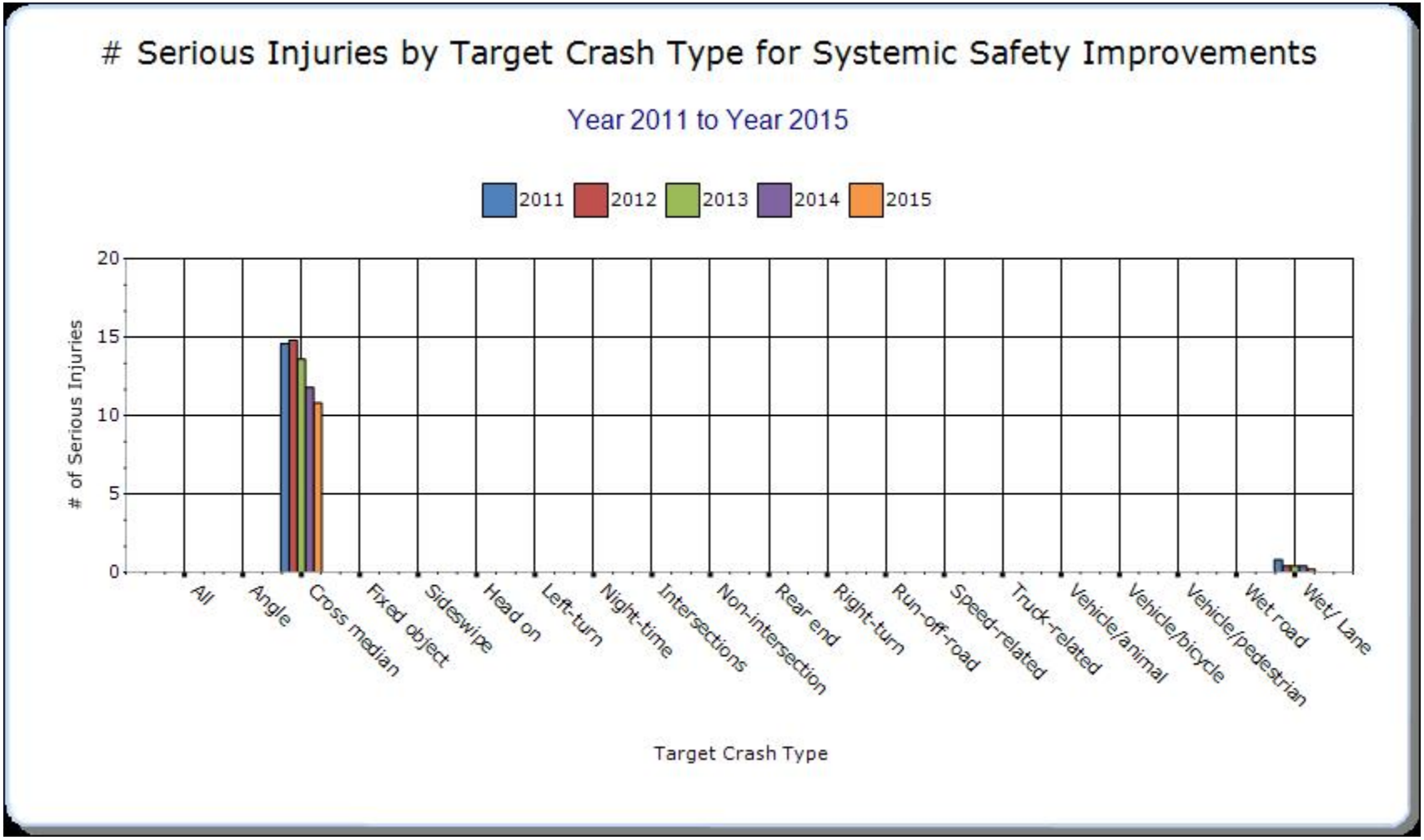
Systemic Treatments

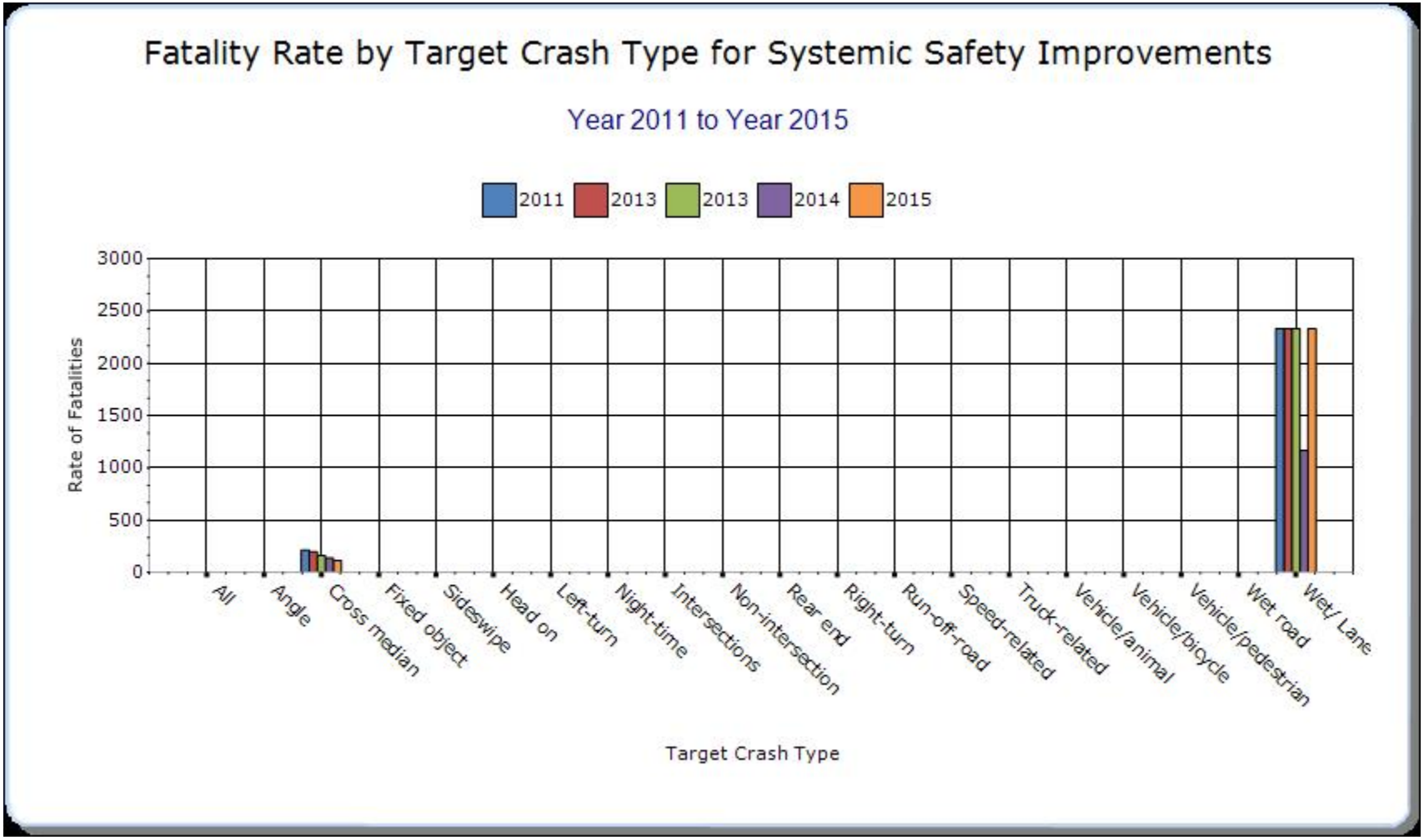
Present the overall effectiveness of systemic treatments.

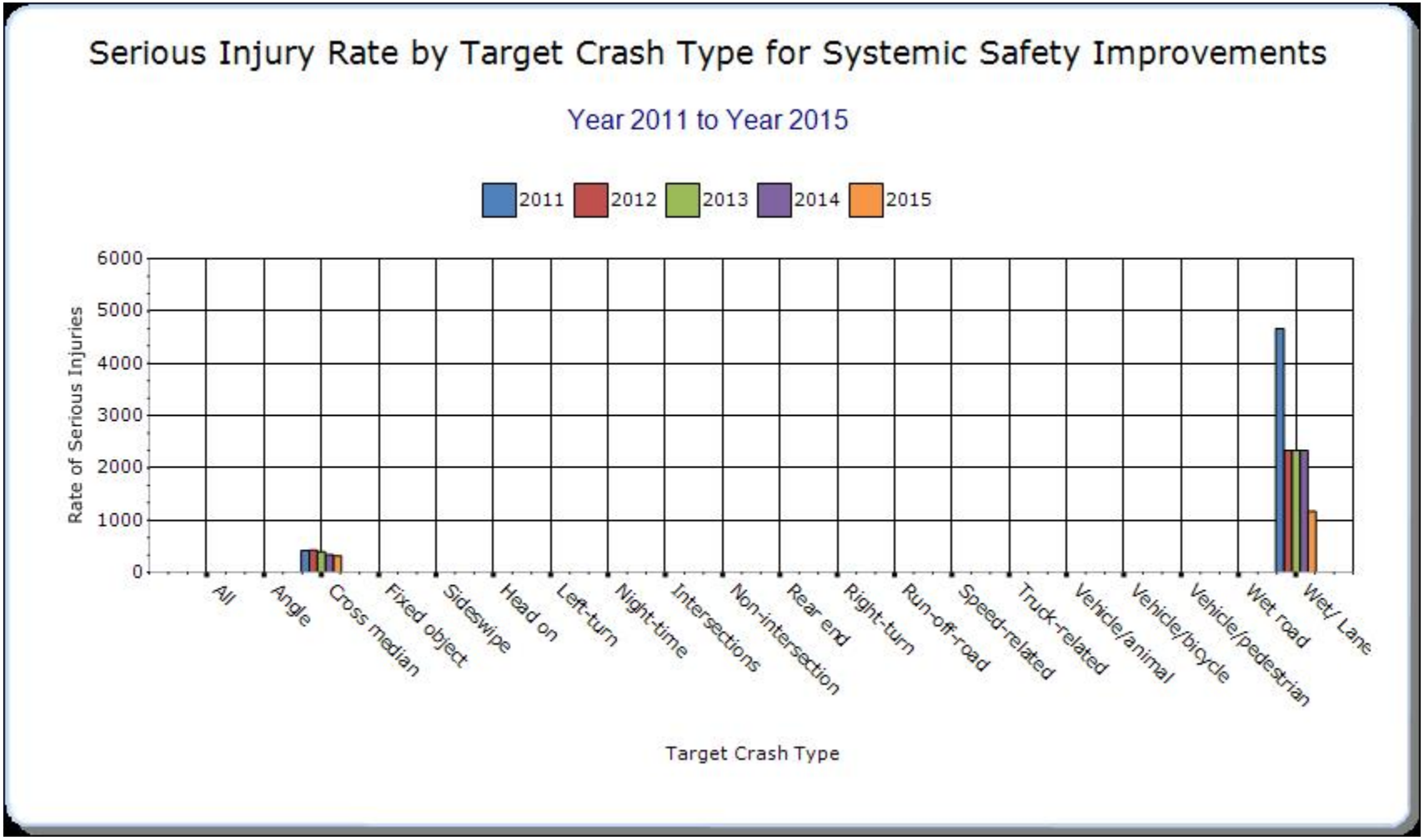
Year - 2015

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
Cable Median Barriers	Cross median	4	10.8	115.5	311.86			
Other-High-Friction Treatments at Curves	Wet/ Lane Departure	0.4	0.2	2332.13	1166.06			


Fatalities by Target Crash Type for Systemic Safety Improvements
Year 2011 to Year 2015
2011
2012
2013
2014
2015
# of Fatalities
10
8
6
4
2
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Wet/ Lane
Target Crash Type


Serious Injuries by Target Crash Type for Systemic Safety Improvements
Year 2011 to Year 2015
2011
2012
2013
2014
2015
# of Serious Injuries
20
15
10
5
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Wet/ Lane
Target Crash Type


Fatality Rate by Target Crash Type for Systemic Safety Improvements
Year 2011 to Year 2015
2011
2013
2013
2014
2015
Rate of Fatalities
3000
2500
2000
1500
1000
500
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Wet/ Lane
Target Crash Type


Serious Injury Rate by Target Crash Type for Systemic Safety Improvements
Year 2011 to Year 2015
2011
2012
2013
2014
2015
Rate of Serious Injuries
6000
5000
4000
3000
2000
1000
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Wet/ Lane
Target Crash Type

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

No additional comments.

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)
None														

Optional Attachments

Sections	Files Attached

Glossary

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