Highway Safety Improvement Program

Data Driven Decisions

Massachusetts
Highway Safety Improvement Program
2016 Annual Report

Prepared by: MA

Disclaimer

Protection of Data from Discovery & Admission into Evidence

23 U.S.C. 148(h)(4) states "Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for any purpose relating to this section [HSIP], shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location identified or addressed in the reports, surveys, schedules, lists, or other data."

23 U.S.C. 409 states "Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data."

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2. Executive Summary

In 2009, under Safetea-LU, Massachusetts began obligating funds from the HSIP funding category, only after an HSIP Task Force was developed and HSIP guidelines were implemented. Through MAP-21 and now, through FAST Act, this program continues. HSIP projects and programs were, and continue to be, identified through our Strategic Highway Safety Plan (SHSP) and consist of a combination of high crash locations, systemic projects and programs identified through the various emphasis areas of the SHSP. The program funds projects on all public roadways, not just State Highways, and it uses a data driven process to identify and select the projects and programs. The HSIP is a much needed program to bring down our fatalities and injuries in order to achieve our Towards Zero Death goal. This report summarizes the HSIP management and structure in Massachusetts as well as describing the selected HSIP programs and projects.

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

3. How are Highway Safety Improvement Program funds administered in the State?

Other-The STIP provided for approximately $33 million in 2015 HSIP funds ($29.8M Federal funds). $18.9M administered in HQ and $14.2M was allocated to the regions (by MARPA formula) through MPO project selection process.

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

The HSIP project selection criteria were based on locations being identified as top crash locations (based on the number and severity of crashes) regardless of road ownership. Additionally, programs were established to reduce injuries and fatalities based on several key focus areas based on our Strategic Highway Safety Plan, regardless of roadway jurisdiction. There is an ongoing Bicycle - Pedestrian safety program that works at the community level to address enforcement, education, awareness and infrastructure and in most cases, these areas are focused on locally owned roads. There were HSIP projects that addressed the specific needs of locally owned roadways based on the data showing that a high percentage of the fatality and injury lane departure crashes occurred on locally owned roadways. Finally, other eligible projects / programs were selected based on HSIP-eligible criteria such as statewide improvements to data or assistance with SHSP. These programs impact safety on all roadways regardless of roadway jurisdiction. This resulted in over $7 million HSIP dollar spent on local roads projects.

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

Design
Planning
Maintenance
Operations
Other-Please note that while the Governors Highway Safety Office is a partner with the HSIP, the agency is not internal to MassDOT

6. Briefly describe coordination with internal partners.

The HSIP Task Force consists of seven members: 2 FHWA representatives (one from Massachusetts Division Office in Planning and one from the Massachusetts Division Office in Safety), 2 representatives from MassDOT Highway Division (Chief Engineer and Safety Engineer), one from MassDOT Office of Transportation Planning and two representatives from the Regional Planning Agencies (RPAs), the technical arm of the Metropolitan Planning Organizations (MPOs). The initial role of the Task Force was to establish HSIP guidelines based on input and feedback from others. The continuing role of the Task Force is to meet annually or as needed, ("meetings" could be via email or in person) to review and update the HSIP guidelines. The HSIP Task Force does not select the individual projects / programs. Program and project selection occurs both in MassDOT HQ and at the regional MPO level (MassDOT District and MassDOT Planning sit on the MPOs). There is funding set aside for each MPO. The statewide HSIP, administered through MassDOT HQ, involves systemic projects and high crash locations as well as programs and strategies based on the SHSP. The programs and strategies from the SHSP are developed through the SHSP Emphasis Area teams with input from many.

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

Metropolitan Planning Organizations
Governors Highway Safety Office
Local Government Association
Other-FHWA
Other-SHSP Emphasis area team members

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

Other-none known

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

None

Program Methodology

10. Select the programs that are administered under HSIP.

Median Barrier	Intersection	Bicycle Safety
Crash Data	Pedestrian Safety	Left Turn Crash

11. Program: Median Barrier

Date of Program Methodology: 10/1/2014

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
Other-cross median fatal and incapacitating injury crashes		

What project identification methodology was used for this program?

Equivalent property damage only (EPDO Crash frequency)
Other-Road Safety audit

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-RSA

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 often these improvements are tied with larger components of a project	1 2

11. Program: Intersection

Date of Program Methodology: 10/1/2014

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
Other-CRASH SEVERITY WEIGHTING		

What project identification methodology was used for this program?
Equivalent property damage only (EPDO Crash frequency)

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-MPO

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

PROJECT READINESS	1

11. Program: Bicycle Safety

Date of Program Methodology: 10/1/2014

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
Fatal and serious injury crashes only	Population Other-percent commuting by biking	

What project identification methodology was used for this program?
Other-proportion of non-motorist crashes, EMS non-motorist crashes, percent commuting by bike

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-participating communities based on data driven process

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
project readiness	1

11. Program: Crash Data

Date of Program Methodology: 10/1/2014

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
All crashes	Other-HSM Methodology using	
Fatal crashes only	SPF	
Fatal and serious injury crashes only		

What project identification methodology was used for this program?
Other-This is for crash data inprovement so covers all crashes statewide

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-Need based on CDIP, MIRE FDE and HSM

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

Data needs	1

11. Program: Pedestrian Safety

Date of Program Methodology: 10/1/2014

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
Fatal and serious injury crashes	Population	

only
Other-ratio of ped crashes to all crashes by town

Other-commuting by walking (journey to work census data)

What project identification methodology was used for this program?
Other-EMS data on pedestrians, ratio of pedestrian crashes to all crashes, commuting rates of pedestrians by towns

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-based on priority of towns selected by above criteria

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
project readiness	1

11. Program: Left Turn Crash

Date of Program Methodology: 10/1/2014

What data types were used in the program methodology?

Crashes

Exposure

Roadway
Other-Systemic approach for all State signals with left turn lanes and protected-permissive phasing to install FYA

What project identification methodology was used for this program?
Probability of specific crash types
Other-using systemic approach for all eligible state signals

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-SHSP emphasis area strategy

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	
working on all state signals where the flashing yellow arrow can be added easily (no new mast arms, no R-O-W, etc)	1

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

34%

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

Cable Median Barriers
Add/Upgrade/Modify/Remove Traffic Signal
Other-bicycle and pedestrian safety

13. What process is used to identify potential countermeasures?

Engineering Study
Road Safety Assessment
Other-Systemic

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

Other-None have changed. We had used RSAs and systemic approaches in the past and continue to do so. WE are still testing HSM methodologies

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

Nothing

Progress in Implementing Projects

Funds Programmed

16. Reporting period for Highway Safety Improvement Program funding.

Federal Fiscal Year

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

Funding Category	Programmed*		Obligated	
	Amount	Percentage	Amount	Percentage
HSIP (Section 148)	$29,778,810.00	39 %	$23,360,095.99	33 %
Other Federal-aid Funds (i.e. STP, NHPP)	$34,000,000.00	45 %	$34,231,682.28	49 %
State and Local Funds	$11,808,754.00	16 %	$12,639,362.78	18 %
Totals	$75,587,564.00	100%	$70,231,141.05	100%

18. How much funding is programmed to local (non-state owned and operated) safety projects?
21 %
How much funding is obligated to local safety projects?
28 %

19. How much funding is programmed to non-infrastructure safety projects?
0 %
How much funding is obligated to non-infrastructure safety projects?
7 %

Massachusetts uses a placeholder on our STIP entitled "Various Safety Strategies To Be Determined Based on SHSP updates" in which we draw down as needed and can be shorter term in nature. Many of these strategies can and are for projects / programs that are non-infrastructure, that are on locally

owned roads or for low cost systemic processes. This is why there is a discrepancy in what was programmed vs. what was obligated. For the response to the question, "Various Safety Strategies To Be Determined Based on SHSP updates" does not count as being programmed specifically for non-infrastructure, local or low cost systemic processes.

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

0 %

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

0 %

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

We have a difficult time with low cost systemic projects because we are now required to include surveys to verify no work is being done outside the public way. Requiring survey for low cost systemic projects removes the low cost part. We are working with FHWA (and are piloting it for some 2016 projects) to come up with a process that allows work to continue for elements that are clearly within the right of way, removing elements that are clearly outside the right of way and obtaining survey for the elements in questions.

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

None

General Listing of Projects

23. List the projects obligated using HSIP funds for 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
HSI-002S(782)X, District 1 & 2 - Traffic Signal Re	Intersection traffic control Modify traffic signal - add flashing yellow arrow	52 Numbers	575300	575300	HSIP (Section 148)	varies	0	0	State Highway Agency	Intersections	Incorporate safety elements into intersection desi
HSI-002S(783)X, District 3 - Traffic Signal Retrof	Intersection traffic control Modify traffic signal - add flashing yellow arrow	59 Numbers	536540	536540	HSIP (Section 148)	varies	0	0	State Highway Agency	Intersections	Incorporate safety elements into intersection desi
HSI-002S(784)X, District 4 - Traffic Signal Retrof	Intersection traffic control Modify traffic signal - add flashing yellow arrow	88 Numbers	1125240	1125240	HSIP (Section 148)	varies	0	0	State Highway Agency	Intersections	Incorporate safety elements into intersection desi
HSI-002S(785)X,	Intersection traffic control Modify traffic	71 Numb	726650	726650	HSIP (Sectio	varies	0	0	State Highwa	Intersections	Incorporate

District 5 & 6 - Traffic Signal Re	signal - add flashing yellow arrow	ers			n 148)				y Agency		safety element s into intersect ion desi
HSI-002S(799)X, Statewide - SHSP Support for Traff	Work Zone	0 Numb ers	8637.31	8637.31	HSIP (Sectio n 148)	varies	0	0	State Highwa y Agency	Work Zones	Ensure work zones and other traffic incident set-u
HSI-002S(799)X, Statewide - SHSP Support for Traff	Work Zone	0 Numb ers	91362.6 9	91362.69	HSIP (Sectio n 148)	varies	0	0	State Highwa y Agency	Work Zones	Ensure work zones and other traffic incident set-u
HSI-002S(809), Statewide - City of Boston for Cras	Non-infrastructure Data/traffic records	1 Numb ers	77408	77408	HSIP (Sectio n 148)	varies	0	0	Other Local Agency	Data	Identify data needs and improve data for use in SH
HSI/STP-002S(816)X, 608025. Brockton - Roadway Rec	Intersection geometry Intersection geometrics - realignment to align offset cross streets	2 Numb ers	561747. 6	4089090. 1	HSIP (Sectio n 148)	Urban Principal Arterial - Other	245 66	40	State Highwa y Agency	Intersecti ons	Incorpor ate safety element s into

											intersection desi
HSI/CM/STP-002S(808)X - Intersection Improvements	Intersection geometry Intersection geometrics - miscellaneous/other/unspecified	0.165 Miles	375561.26	630419.75	HSIP (Section 148)	Urban Minor Arterial	8500	40	State Highway Agency	Intersections	Incorporate safety elements into intersection desi
HISP/STP/TE-002S(863)X - Millbury / Sutton Median	Roadside Barrier - concrete	2.742 Miles	3111408.3	6402688.19	HSIP (Section 148)	Urban Principal Arterial - Other Freeways and Expressways	44200	55	State Highway Agency	Lane Departure	Incorporate safety elements into roadway design
HSI/STP-002S(796)X, Sturbridge - Work along a Sect	Roadway Roadway narrowing (road diet, roadway reconfiguration)	1.6 Miles	1199551.66	3345280.81	HSIP (Section 148)	Urban Principal Arterial - Other	0	50	State Highway Agency	Lane Departure	Incorporate safety elements into roadway design
HSIP - 002S(875)X - Statewide - Technical services t	Pedestrians and bicyclists Miscellaneous pedestrians and bicyclists	18 Numbers	388888.89	388888.89	HSIP (Section 148)	varies	0	0	City of Municipal Highway Agency	Pedestrians	Provide training and technical assistance to impro
HSIP-002S(876)X -	Non-infrastructure Transportation safety	1 Numb	555555.56	555555.56	HSIP (Sectio	varies	0	0	City of Municip	Data	Identify data

Contract to furnish engineering,	planning	ers			n 148)				al Highway Agency		needs and improve data for use in SH
HSIP-002S(838)X, Lenox - Intersection Improvements	Intersection geometry Auxiliary lanes - extend existing left-turn lane	1 Numbers	501067.5	501067.5	HSIP (Section 148)	Urban Principal Arterial - Other	16700	45	State Highway Agency	Intersections	Incorporate safety elements into intersection desi
CM/HSI/STP/TAP-002S(837) - Medway - Related Work a	Roadway Roadway - other	1.501 Miles	3272815.54	15565993.61	HSIP (Section 148)	Urban Principal Arterial - Other	21300	30	Town or Township Highway Agency	Lane Departure	Incorporate safety elements into roadway design
HSIP-002S(849) - STATEWIDE-IMPLEMENTATION OF FYA,	Intersection traffic control Modify traffic signal - add flashing yellow arrow	24 Numbers	1209592.5	1209592.5	HSIP (Section 148)	varies	0	0	State Highway Agency	Intersections	Incorporate safety elements into intersection desi
HSIP-0002S(855), DISTRICT 4-DISTRICT 6-IMPLEMENT	Intersection traffic control Modify traffic signal - add flashing yellow arrow	11 Numbers	350056.88	350056.88	HSIP (Section 148)	varies	0	0	State Highway Agency	Intersections	Incorporate safety elements into intersection desi

HSIP-002S(874)X, Statewide Conversion of Interstat	Miscellaneous	0 Numbers	2573260	350056.88	HSIP (Section 148)	varies	0	0	State Highway Agency	Data	Identify data needs and improve data for use in SH
STP/TAP/CM/HSI-002S(818), BARNSTABLE-INTERSECTION	Intersection geometry Intersection geometry - other	3 Numbers	599229.36	7742540.85	HSIP (Section 148)	Urban Principal Arterial - Other	15542	35	State Highway Agency	Intersections	Incorporate safety elements into intersection desi
HSIP/STP-002S(842)X, TAUNTON-RECONSTRUCTION ON CO	Roadway Roadway - other	0.262 Miles	1527321.16	4497292.47	HSIP (Section 148)	Urban Minor Arterial	22300	40	State Highway Agency	Intersections	Incorporate safety elements into intersection desi
CM/HSIP/STP/TAP-002S(848)X, LAWRENCE-INTERSECTION	Intersection geometry Intersection geometrics - realignment to increase cross street offset	1 Numbers	454156.22	1225919.17	HSIP (Section 148)	Urban Minor Arterial	12445	30	Town or Township Highway Agency	Intersections	Incorporate safety elements into intersection desi
HSIP-002S(869)X, DISTRICT 4, 6 - HIGH FRICTION SUR	Roadway Pavement surface - high friction surface	3 Numbers	2528535.7	2528535.7	HSIP (Section 148)	varies	0	0	State Highway Agency	Lane Departure	Incorporate safety elements into

											roadway design
HSIP-002S(879)X, Statewide - Marketing and Adverti	Pedestrians and bicyclists Miscellaneous pedestrians and bicyclists	1 Numbers	555555.56	555555.56	HSIP (Section 148)	varies	0	0	City of Municipal Highway Agency	Pedestrians	Educate the public on pedestrian safety
CM/HSI/STP-002S(826)X, SALEM-RECONSTRUCTION ON CA	Roadway Roadway - other	1.339 Miles	1840925.34	12187037.72	HSIP (Section 148)	Urban Minor Arterial	19776	35	City of Municipal Highway Agency	Lane Departure	Incorporate safety elements into roadway design
CM/HSI/STP-002S(829)X, HADLEY-SIGNAL & INTERSECTI	Intersection geometry Intersection geometry - other	1 Numbers	1209295.2	4523577.01	HSIP (Section 148)	Urban Principal Arterial - Other	25000	45	State Highway Agency	Intersections	Incorporate safety elements into intersection desi

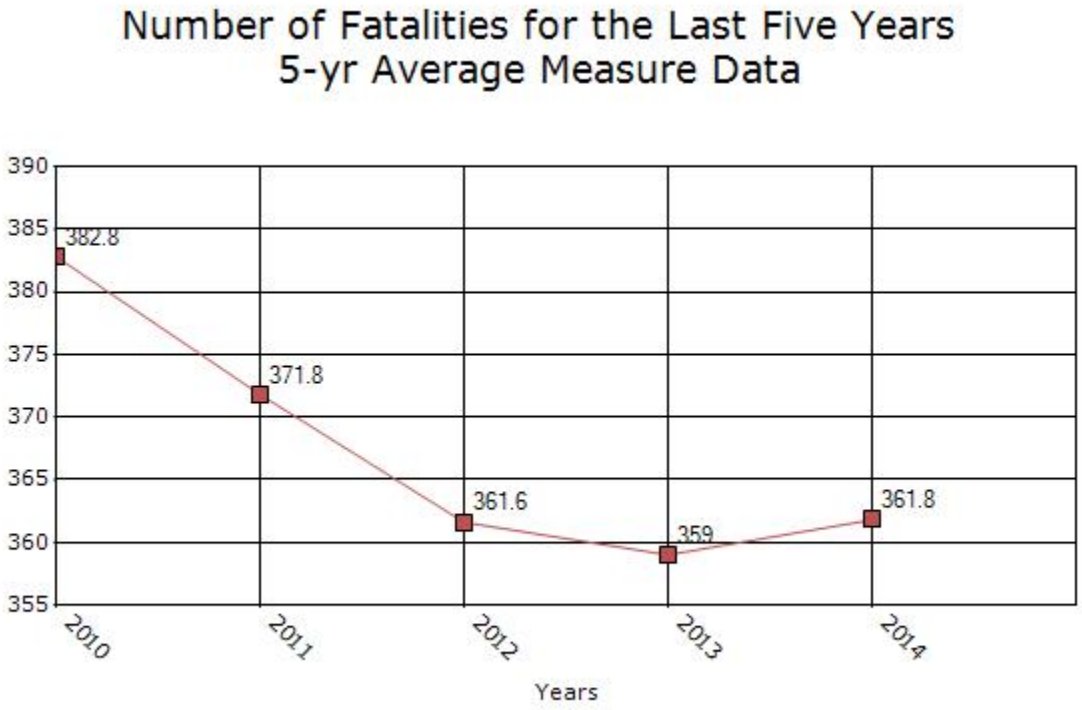
Progress in Achieving Safety Performance Targets

Overview of General Safety Trends

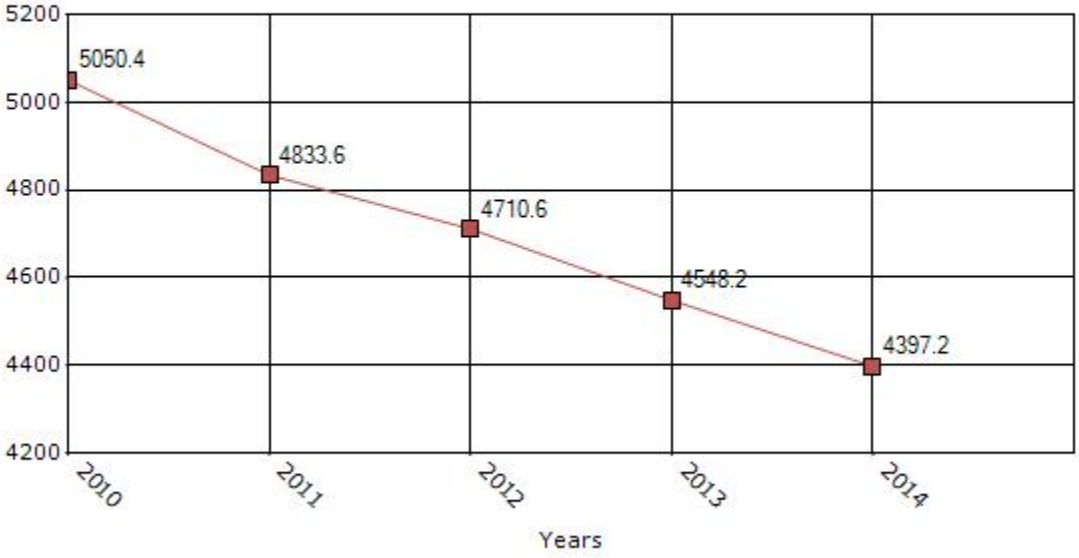
24. Present data showing the general highway safety trends in the state for the past five years.

Performance Measures*	2010 (5-yr avg)	2011 (5-yr avg)	2012 (5-yr avg)	2013 (5-yr avg)	2014 (5-yr avg)
Number of fatalities	382.8	371.8	361.6	359	361.8
Number of serious injuries	5050.4	4833.6	4710.6	4548.2	4397.2
Fatality rate (per HMVMT)	0.7	0.68	0.66	0.65	0.65
Serious injury rate (per HMVMT)	9.22	8.84	8.59	8.24	7.9

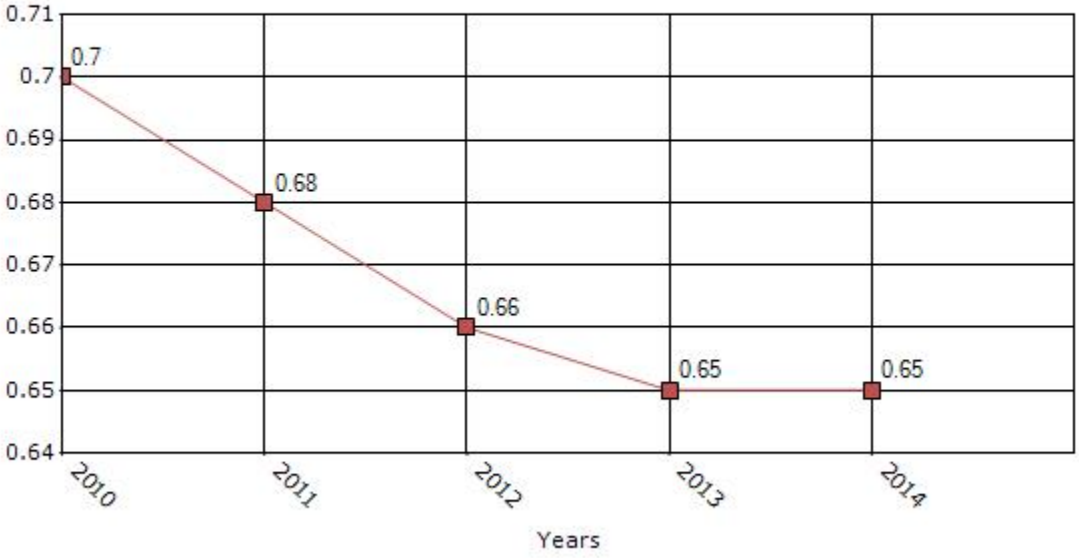
*Performance measure data is presented using a five-year rolling average.

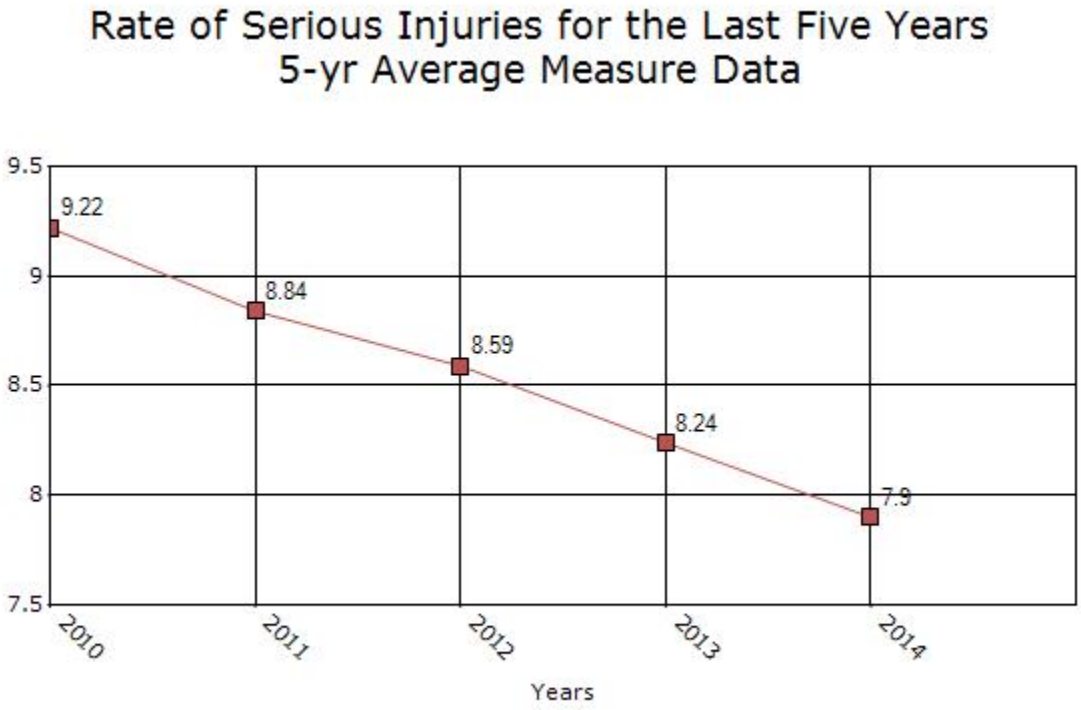


Number of Serious Injuries for the Last Five Years
5-yr Average Measure Data



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





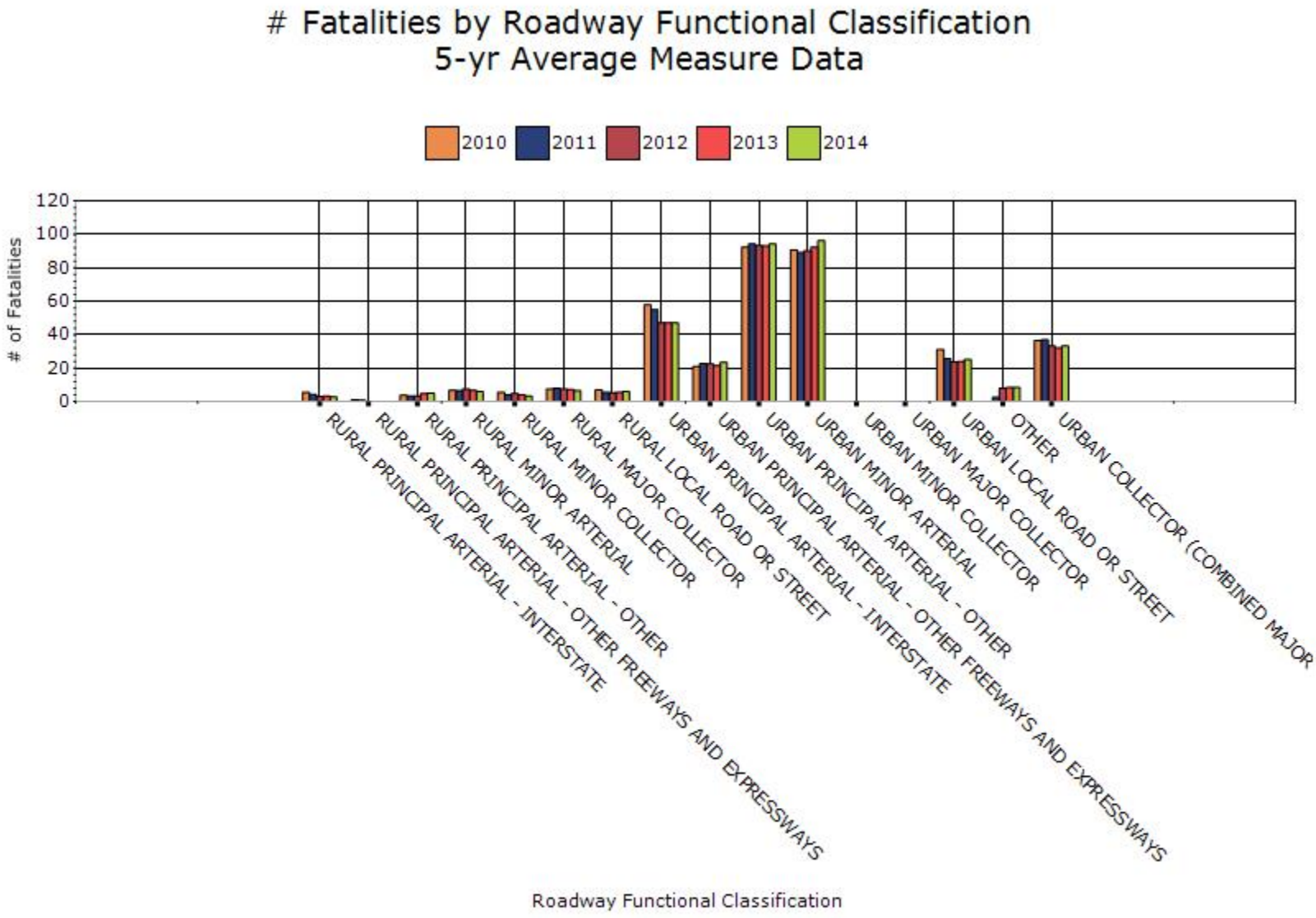
FARS data and injury data are not yet finalized for 2015. Therefore, 2014 is the most recent year.

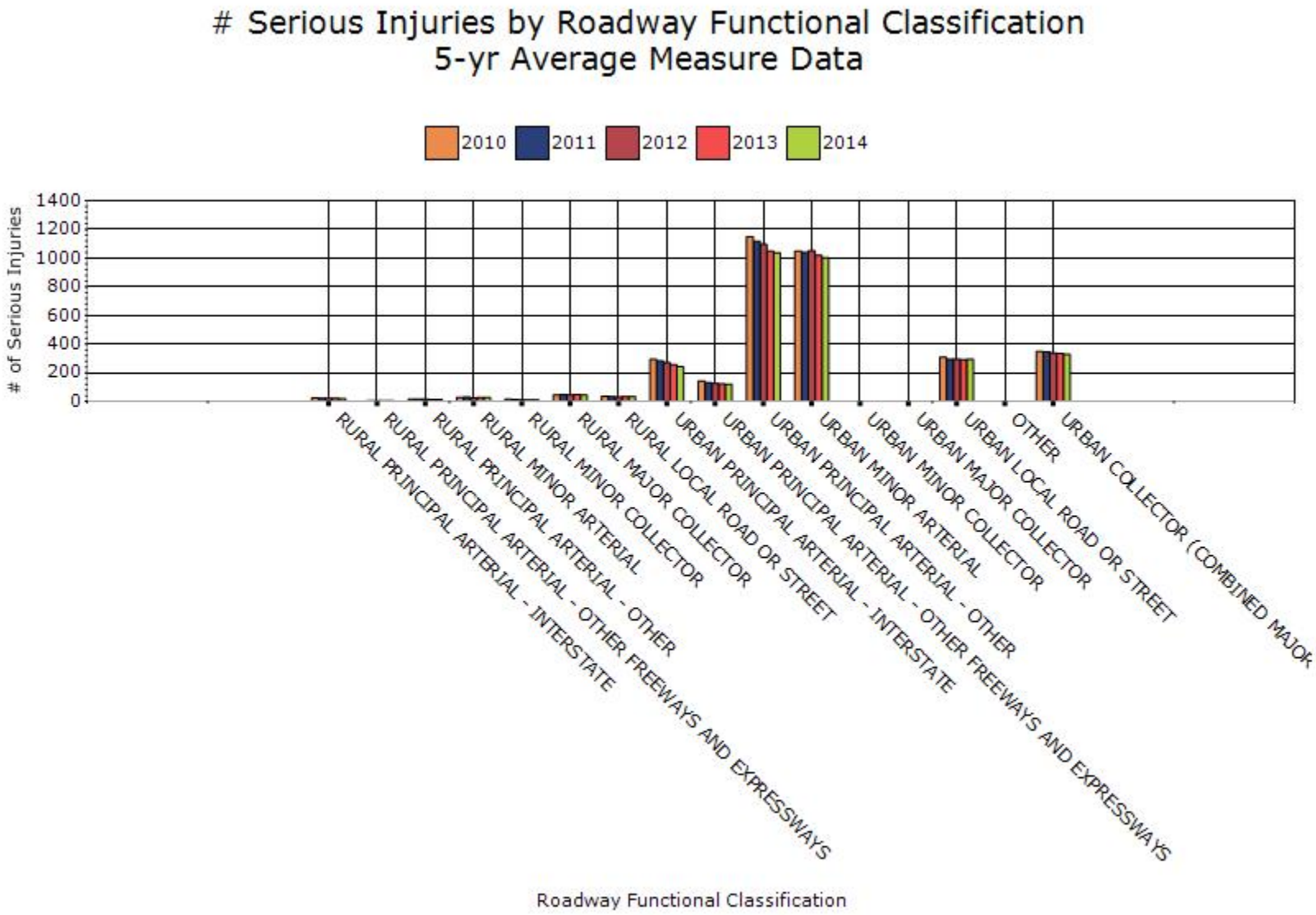
25. To the maximum extent possible, present performance measure data by functional classification and ownership.

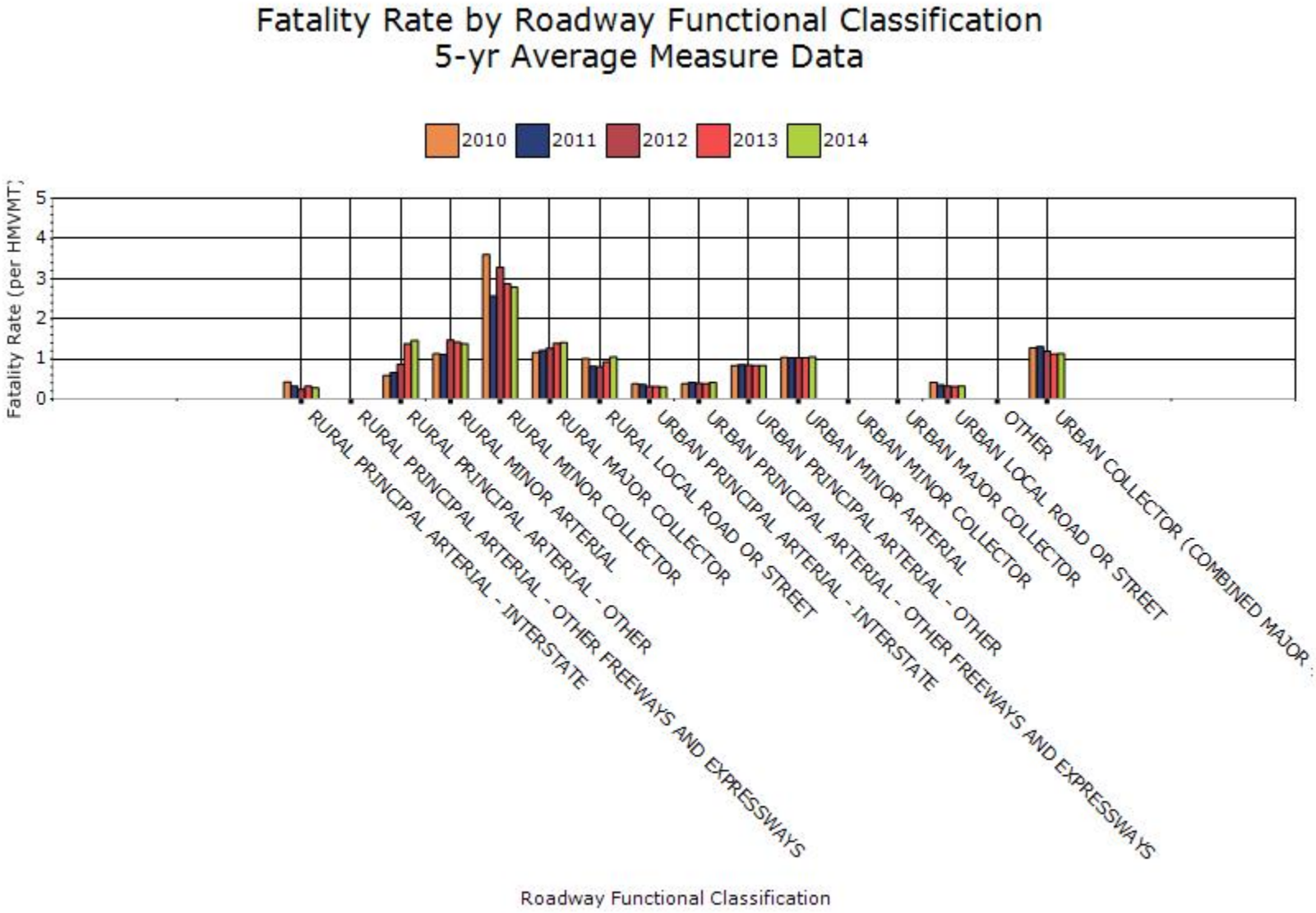
Year - 2014

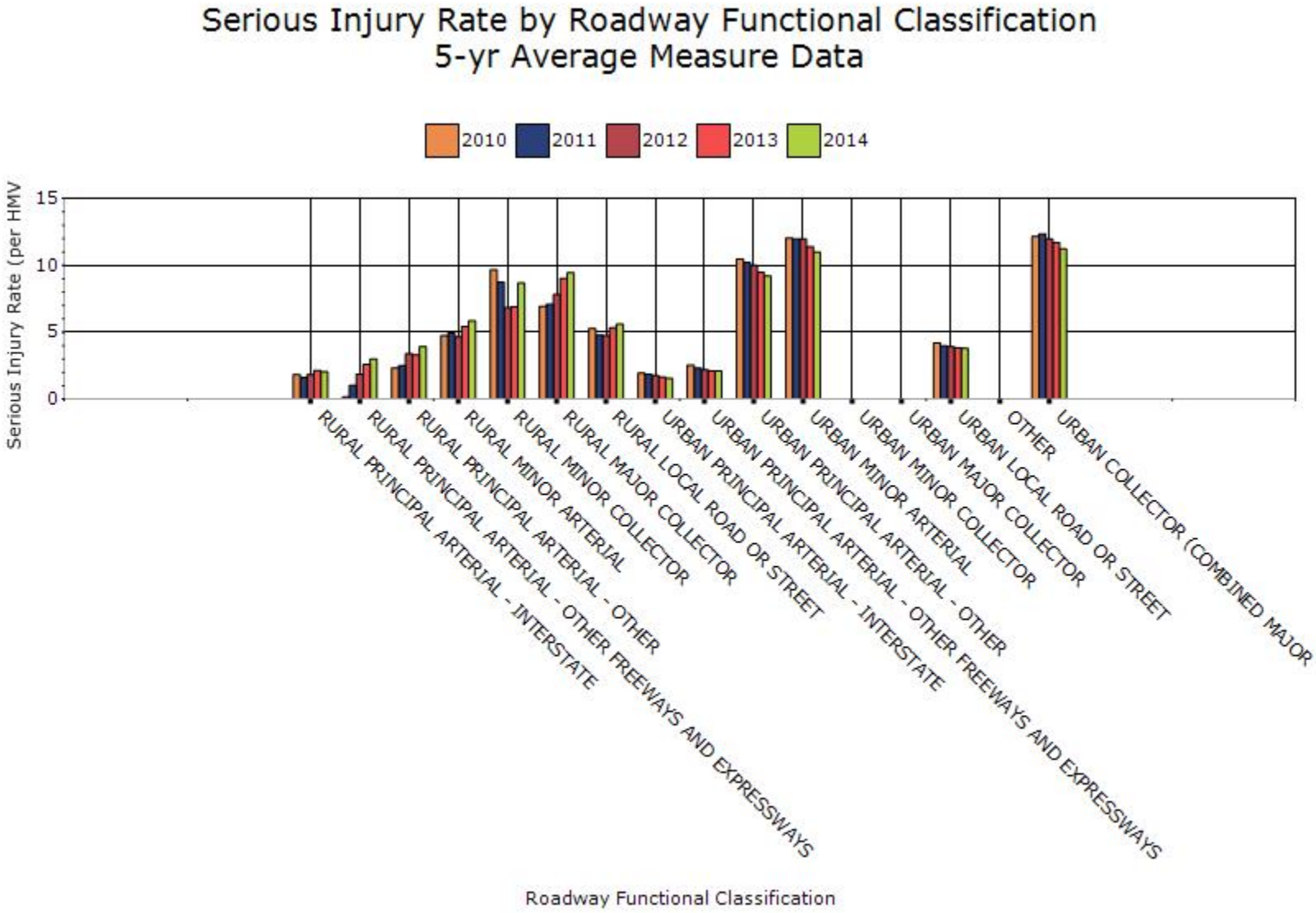
Function Classification	Number of fatalities (5-yr avg)	Number of serious injuries (5-yr avg)	Fatality rate (per HMVMT) (5-yr avg)	Serious injury rate (per HMVMT) (5-yr avg)
RURAL PRINCIPAL ARTERIAL - INTERSTATE	2.8	19.2	0.28	2.05
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS		4.4		2.99
RURAL PRINCIPAL ARTERIAL - OTHER	5	13.6	1.46	3.93
RURAL MINOR ARTERIAL	6	26.2	1.38	5.85
RURAL MINOR COLLECTOR	3.4	10.4	2.79	8.67
RURAL MAJOR COLLECTOR	6.6	45.8	1.41	9.44
RURAL LOCAL ROAD OR STREET	6	32.4	1.05	5.6
URBAN PRINCIPAL ARTERIAL - INTERSTATE	47	241	0.3	1.54
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	23.4	120.4	0.41	2.09
URBAN PRINCIPAL ARTERIAL - OTHER	94.2	1036.6	0.84	9.2
URBAN MINOR ARTERIAL	96.2	1003.6	1.05	10.98

URBAN LOCAL ROAD OR STREET	25.2	293.8	0.32	3.8
OTHER	8.4			
URBAN COLLECTOR (COMBINED MAJOR + MINOR)	33.2	328	1.13	11.22


Fatalities by Roadway Functional Classification
5-yr Average Measure Data
2010
2011
2012
2013
2014
# of Fatalities
120
100
80
60
40
20
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
OTHER
URBAN COLLECTOR (COMBINED MAJOR
Roadway Functional Classification

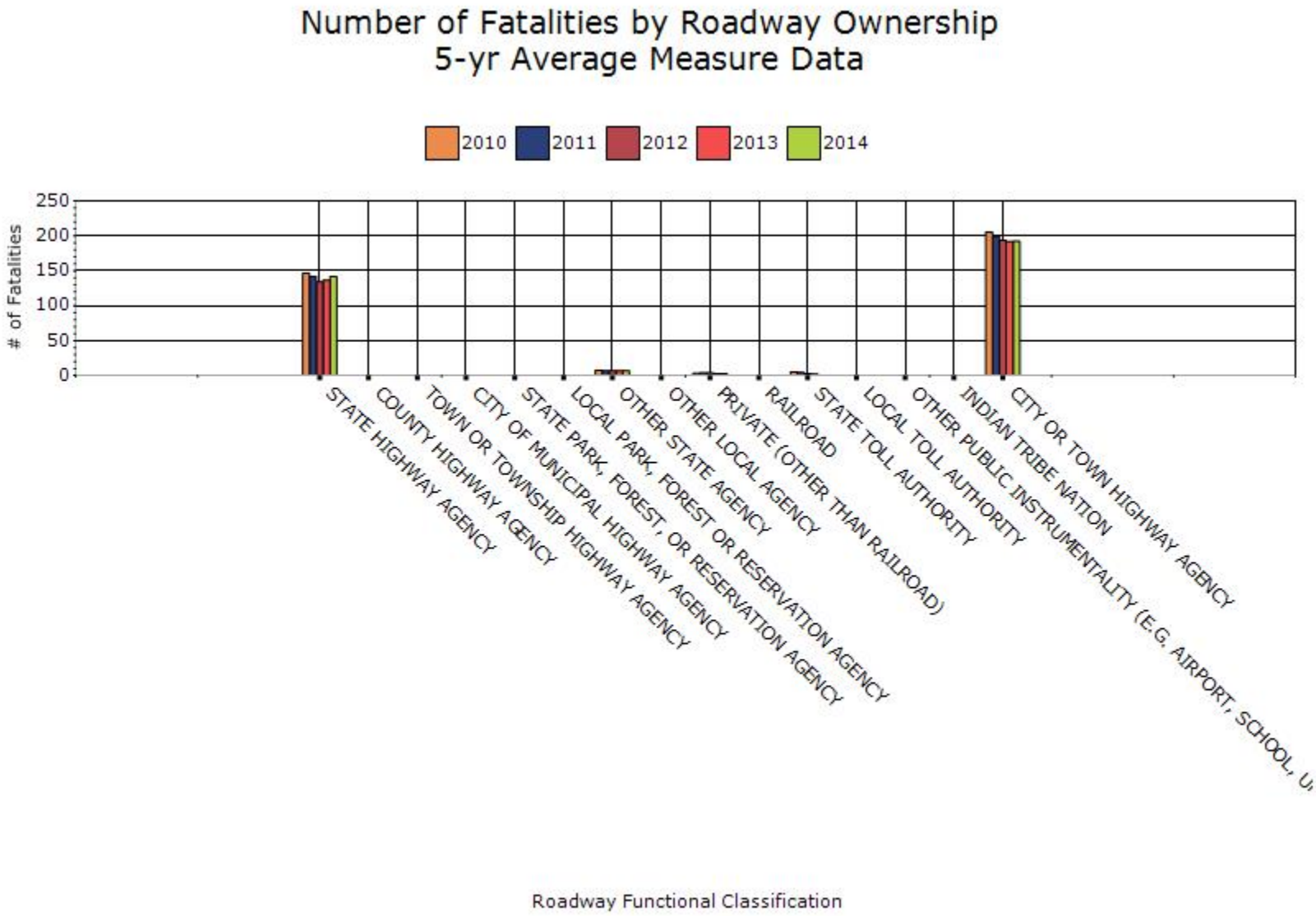

Serious Injuries by Roadway Functional Classification
5-yr Average Measure Data
2010
2011
2012
2013
2014
# of Serious Injuries
1400
1200
1000
800
600
400
200
0
RURAL PRINCIPAL ARTERIAL - INTERSTATE
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS
RURAL PRINCIPAL ARTERIAL - OTHER
RURAL MINOR 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
OTHER
URBAN COLLECTOR (COMBINED MAJOR
Roadway Functional Classification

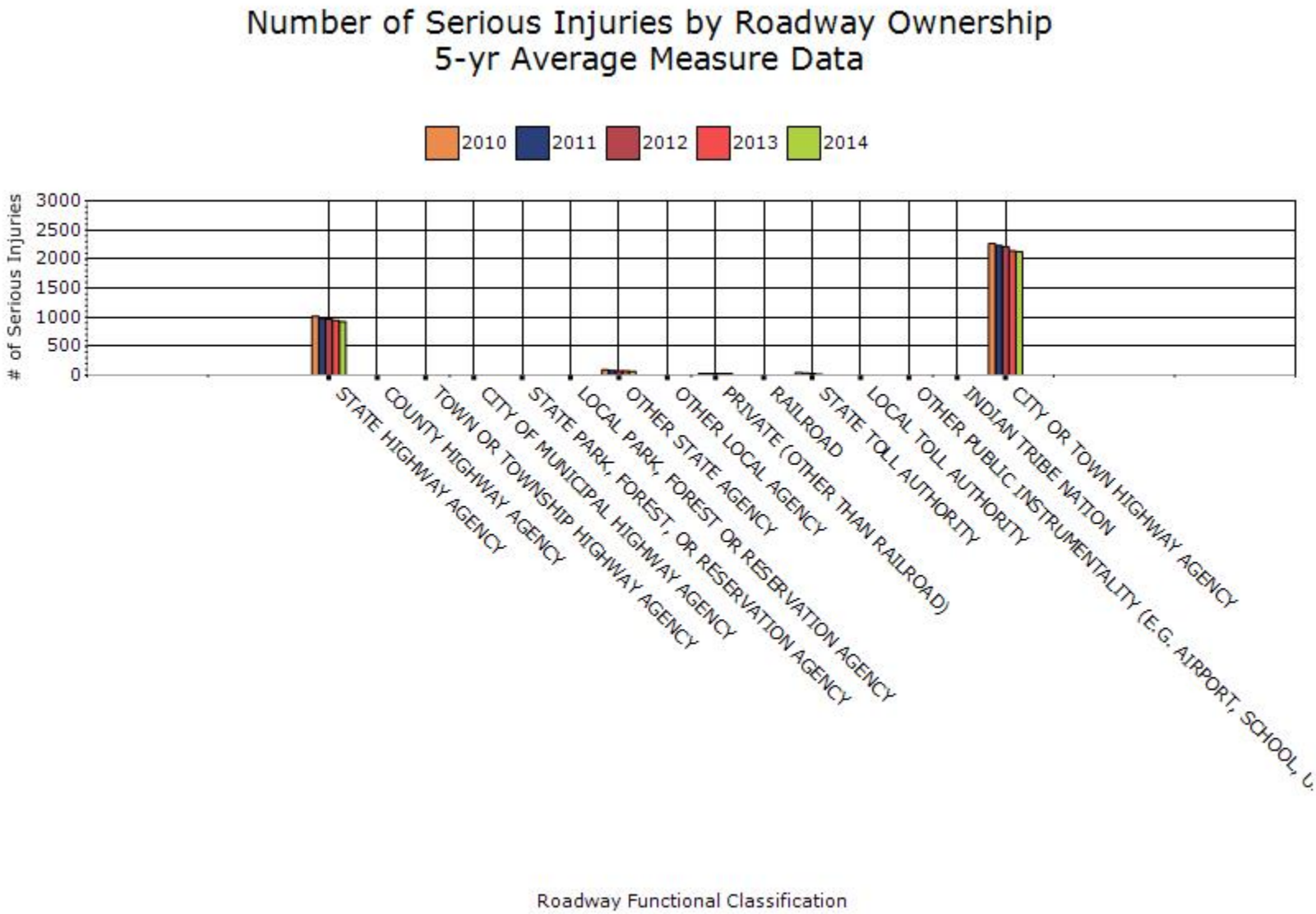

Fatality Rate by Roadway Functional Classification
5-yr Average Measure Data
2010
2011
2012
2013
2014
Fatality Rate (per HMVMT)
0
1
2
3
4
5
RURAL PRINCIPAL ARTERIAL - INTERSTATE
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS
RURAL PRINCIPAL ARTERIAL - OTHER
RURAL MINOR ARTERIAL
RURAL MINOR 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
OTHER
URBAN COLLECTOR (COMBINED MAJOR
Roadway Functional Classification


Serious Injury Rate by Roadway Functional Classification
5-yr Average Measure Data
2010
2011
2012
2013
2014
Serious Injury Rate (per HMV
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
OTHER
URBAN COLLECTOR (COMBINED MAJOR
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	141.8	923.8		
STATE PARK, FOREST, OR RESERVATION AGENCY	0.4	1.4		
OTHER STATE AGENCY	6.8	69.4		
PRIVATE (OTHER THAN RAILROAD)	2.8	33.2		
STATE TOLL AUTHORITY	0.4	4.8		
OTHER PUBLIC INSTRUMENTALITY (E.G. AIRPORT, SCHOOL, UNIVERSITY)		0.6		
CITY OR TOWN HIGHWAY AGENCY	192.4	2126.6		


Number of Fatalities by Roadway Ownership
5-yr Average Measure Data
2010
2011
2012
2013
2014
# of Fatalities
250
200
150
100
50
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
CITY OR TOWN HIGHWAY AGENCY
Roadway Functional Classification


Number of Serious Injuries by Roadway Ownership
5-yr Average Measure Data
2010
2011
2012
2013
2014
# of Serious Injuries
3000
2500
2000
1500
1000
500
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
CITY OR TOWN HIGHWAY AGENCY
Roadway Functional Classification

FARS data and injury data are not yet finalized for 2015. Therefore, 2014 is the most recent year.

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

None

Application of Special Rules

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

Older Driver Performance Measures	2010 (5-yr avg)	2011 (5-yr avg)	2012 (5-yr avg)	2013 (5-yr avg)	2014 (5-yr avg)
Fatality rate (per capita)	0.07	0.07	0.07	0.07	0.07
Serious injury rate (per capita)	0.72	0.7	0.68	0.66	0.65
Fatality and serious injury rate (per capita)	0.79	0.76	0.75	0.73	0.72

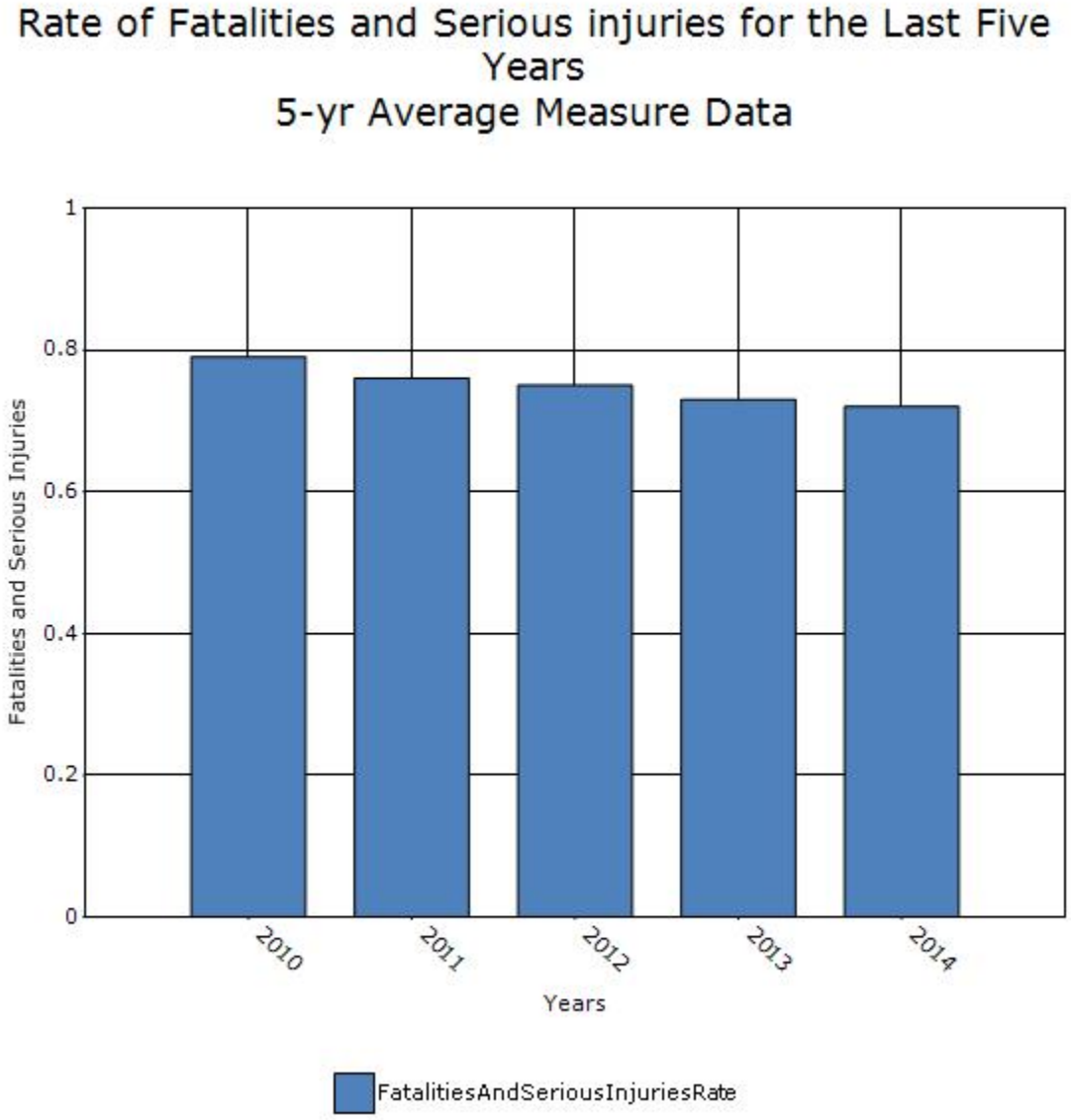
*Performance measure data is presented using a five-year rolling average.

source of fatalities (sample 2014 below): Person Type 1,5 and Injury Severity = 4 and state = 25 and age 65+

source of serious injuries: Data Sources: MA Hospital Inpatient Discharge and MA Outpatient Observation Stay Databases, MA Center for Health Information and Analysis

source of population: http://www.fhwa.dot.gov/map21/guidance/guideolder.cfm

Process = By year, add fatalities and injuries of Age 65+ drivers and pedestrians and divide by the population. Take five year rolling average



28. Does the older driver special rule apply to your state?

No

Assessment of the Effectiveness of the Improvements (Program Evaluation)

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

Other-We are moving towards evaluation to measure effectiveness of specific projects. We already have a qualitative measure of effectiveness for our Bicycle - pedestrian Safety Program that was prepared through the Department of Public Health.

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

None

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

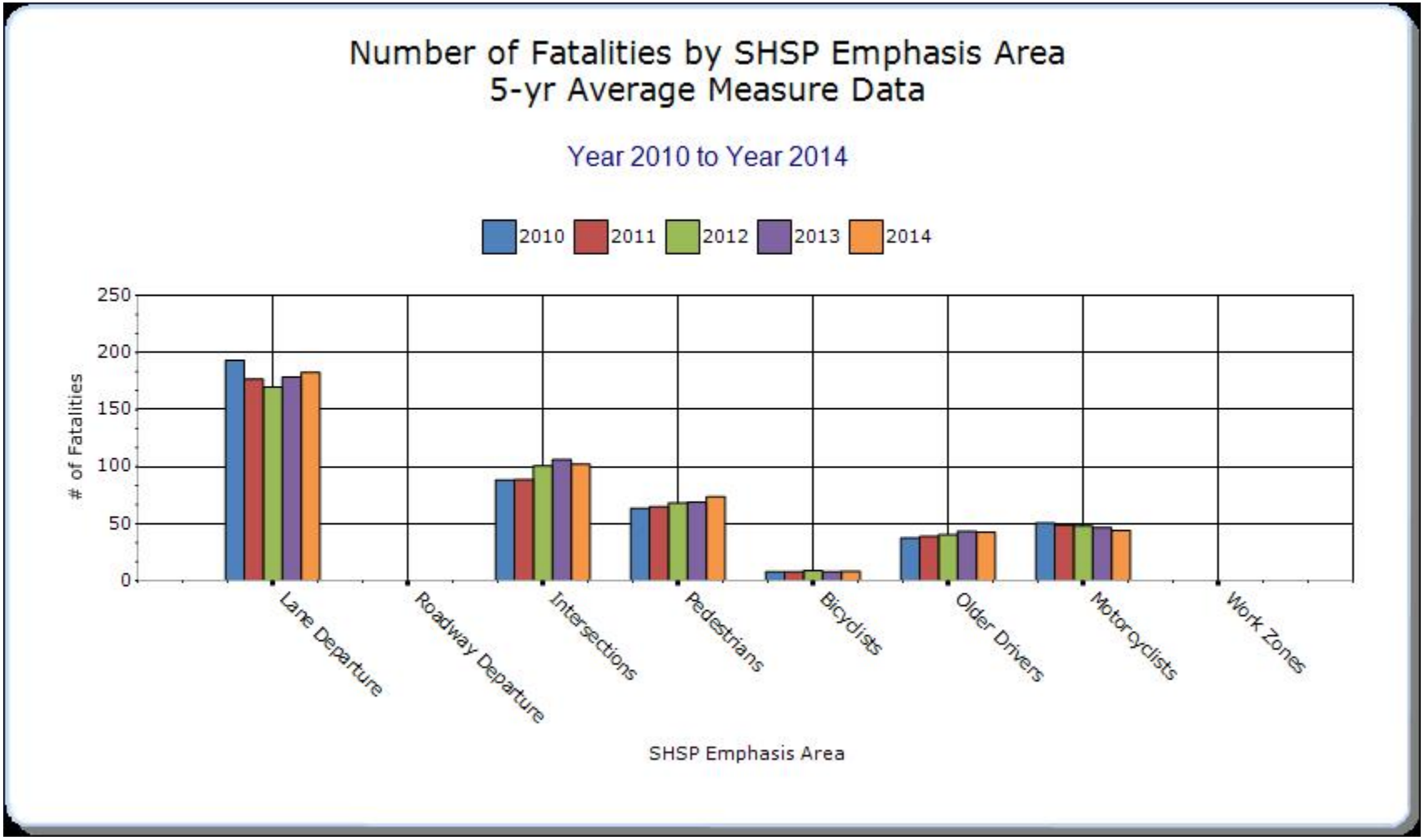
Based on Fast Act, we are no longer allowed to use HSIP funds for non-infrastructure programs so our successful Bicycle-Pedestrian Safety Program could not continue in the same manner it has for the previous two years (which included the awareness and enforcement components).

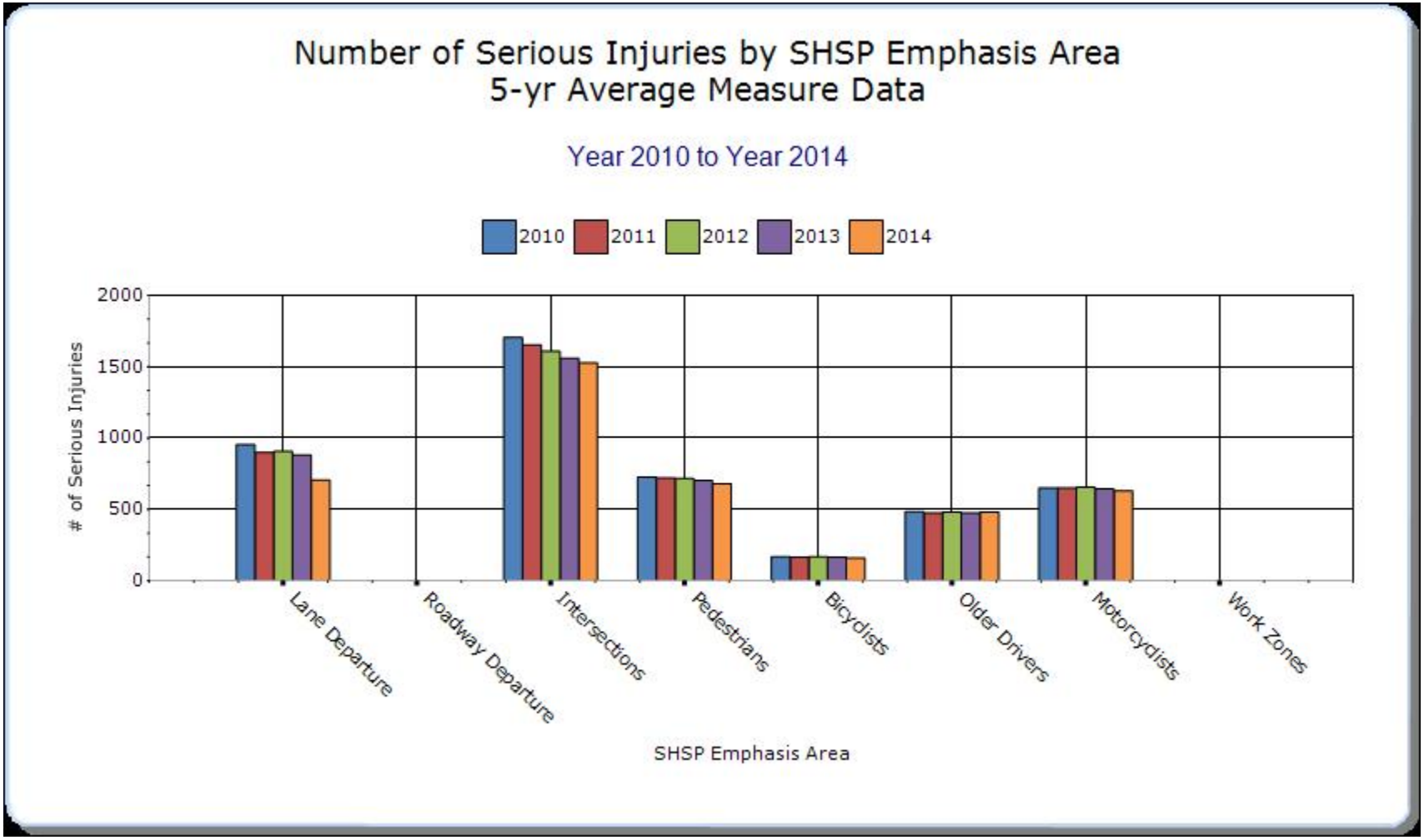
SHSP Emphasis Areas

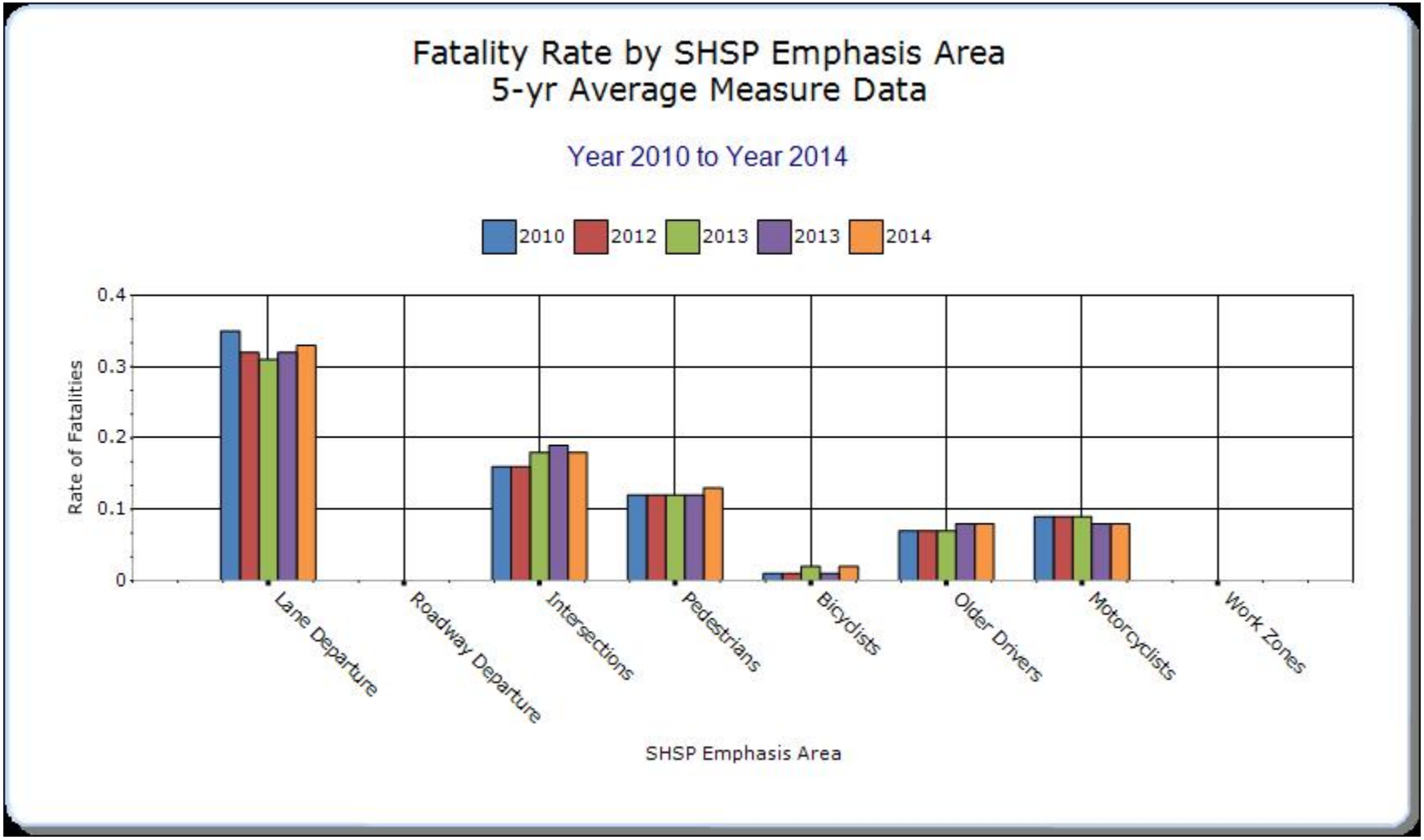
32. Present and describe trends in SHSP emphasis area performance measures.

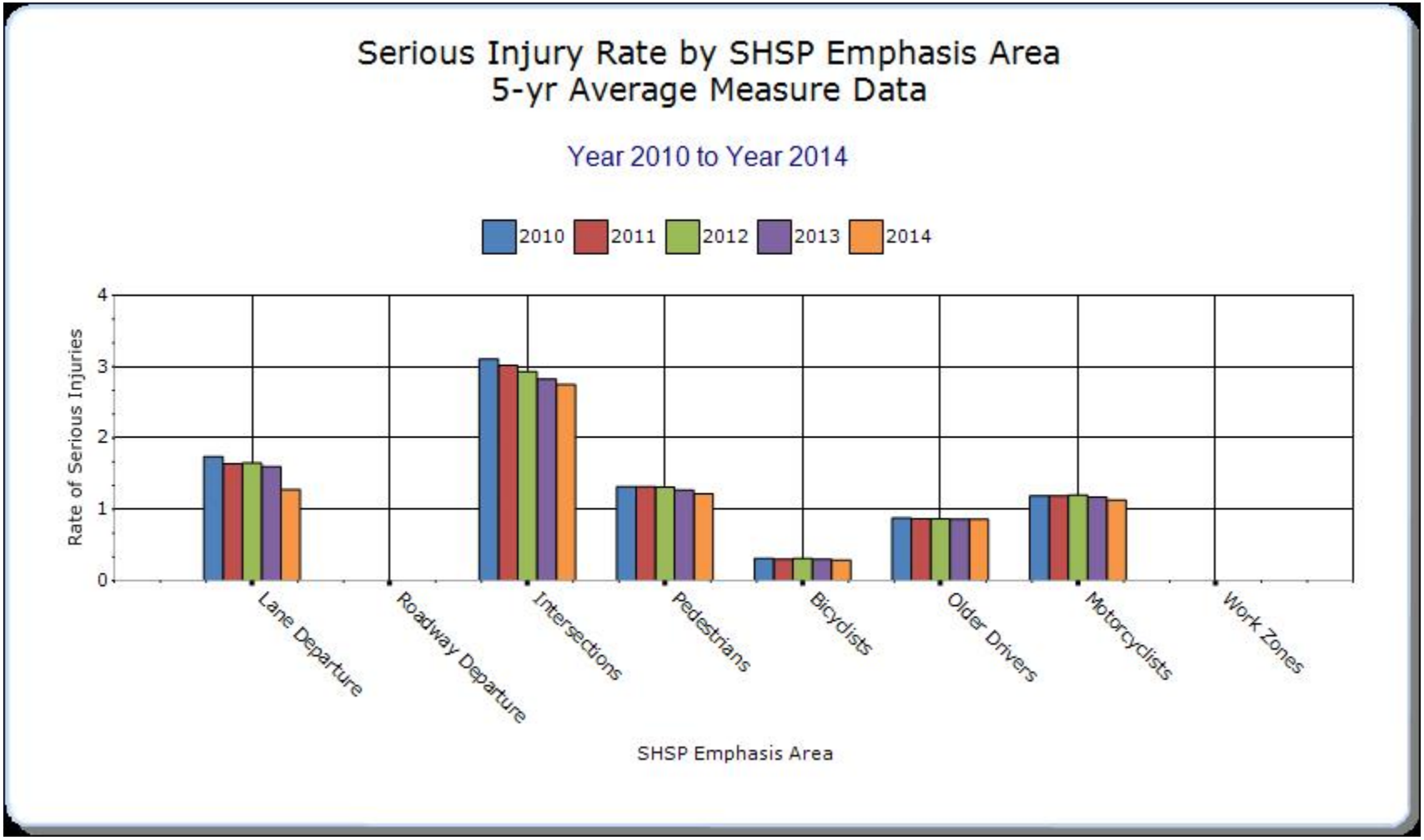
Year - 2014

HSIP-related SHSP Emphasis Areas	Target Crash Type	Number of fatalities (5-yr avg)	Number of serious injuries (5-yr avg)	Fatality rate (per HMVMT) (5-yr avg)	Serious injury rate (per HMVMT) (5-yr avg)	Other-1 (5-yr avg)	Other-2 (5-yr avg)	Other-3 (5-yr avg)
Lane Departure		182.6	705.8	0.33	1.28			
Intersections		102.2	1527.6	0.18	2.75			
Pedestrians		73.6	681.2	0.13	1.22			
Bicyclists		8.4	160.2	0.02	0.29			
Older Drivers		42.4	481.2	0.08	0.86			
Motorcyclists		44	630.4	0.08	1.13			


Number of Fatalities by SHSP Emphasis Area
5-yr Average Measure Data
Year 2010 to Year 2014
2010
2011
2012
2013
2014
250
200
150
100
50
0
# of Fatalities
Lane Departure
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
SHSP Emphasis Area


Number of Serious Injuries by SHSP Emphasis Area
5-yr Average Measure Data
Year 2010 to Year 2014
2010
2011
2012
2013
2014
2000
1500
1000
500
0
# of Serious Injuries
Lane Departure
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
SHSP Emphasis Area


Fatality Rate by SHSP Emphasis Area
5-yr Average Measure Data
Year 2010 to Year 2014
2010
2012
2013
2013
2014
Rate of Fatalities
0.4
0.3
0.2
0.1
0
Lane Departure
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
SHSP Emphasis Area



Groups of similar project types

33. Present the overall effectiveness of HSIP subprograms.

Year - 2014

HSIP Sub-program Types	Target Crash Type	Number of fatalities (5-yr avg)	Number of serious injuries (5-yr avg)	Fatality rate (per HMVMT) (5-yr avg)	Serious injury rate (per HMVMT) (5-yr avg)	Other-1 (5-yr avg)	Other-2 (5-yr avg)	Other-3 (5-yr avg)
Left Turn Crash		5	167.4	0.01	0.3			
Bicycle Safety		8.4	160.2	0.02	0.29			
Median Barrier		3.4	17.4	0.01	0.03			
Pedestrian Safety		73.6	681.2	0.13	1.22			
Intersection		102.2	1527.6	0.18	2.75			

The "median barrier" crashes are actually the cross median crashes on divided roadways with unprotected median .

Systemic Treatments

34. Present the overall effectiveness of systemic treatments.

Year - 2014

Systemic improvement	Target Crash Type	Number of fatalities (5-yr avg)	Number of serious injuries (5-yr avg)	Fatality rate (per HMVMT) (5-yr avg)	Serious injury rate (per HMVMT) (5-yr avg)	Other-1 (5-yr avg)	Other-2 (5-yr avg)	Other-3 (5-yr avg)
Other-bicycle and pedestrian safety		82	841.4	0.15	1.51			
Cable Median Barriers		3.2	17.2	0.01	0.03			
Add/Upgrade/Modify/Remove Traffic Signal		0.6	44.2		0.08			

The add/upgrade/modify/remove traffic signal is the systemic program of installing flashing yellow arrow at State-owned signals

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

Starting next year (due to the lag in crash data), we will be able to start evaluating the effectiveness of the first few HSIP projects by comparing pre- and post-construction crashes (not just looking at crash modification factors). We are also in the process of testing evaluations using HSM methodologies.

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.