Highway Safety Improvement Program

Data Driven Decisions

Missouri
Highway Safety Improvement Program
2015 Annual Report

Prepared by: MO

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

The Missouri Coalition for Roadway Safety and the Missouri Department of Transportation (MoDOT) are dedicated to improving safety of the motoring public through education, engineering, enforcement and emergency medical services initiatives. Safety is one of the Department's core values: "Be Safe." This message is also reinforced in the Department's Practical Design Guide that states, "Safety will not be compromised. Every project we do will make the facility safer after its completion." Additionally, "keeping our customers and ourselves safe" is a MoDOT Tangible Result.

In October 2012, Missouri introduced the updated Strategic Highway Safety Plan (SHSP) and established a highway safety goal of 700 or fewer fatalities by 2016. *Missouri's Blueprint to Save More Lives* guides the State's safety initiatives and addresses safety from a comprehensive standpoint including engineering, enforcement, education, emergency medical services, technology and public policy solutions. The Blueprint focuses on implementing strategies that will reduce both fatal and serious injuries on Missouri roadways. The Blueprint and the statewide fatality goal are considered in the development and implementation of each of the Department's highway safety plans.

Evidenced-based decision-making is paramount to a sound safety program. Data analysis is a critical part of identifying overrepresented crash types, locations, driver age, driver gender, and driver behaviors. These findings guide the deployment of effective and appropriate strategies to improve safety on the entire system. Efforts are made to analyze fatal and serious injury crashes to help discern where limited safety funding should be applied so that maximum safety improvements are attained.

Since 2005, Missouri has experienced a steady decline in both fatalities and serious injuries. During that time, fatalities decreased by 40 percent (1,257 in 2005 to 766 in 2014) and serious injuries decreased by 46 percent (8,621 in 2005 to 4,579 in 2014). The 5-year average for both fatalities and serious injuries has decreased each year since 2005. Additionally, Missouri has seen the lowest 1-year fatality rate recorded in 2014 (1.08).

Introduction

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

Program Structure

Program Administration

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

☐ Central

☒ District

☐ Other

If District, how are the HSIP funds allocated?

☒ Formula

☐ Crash Data

☐ Population

☐ Other

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

Our local roads are included in the crash data system analysis. We evaluate all roadways in the state and place emphasis on severe crashes. This analysis is performed for both intersections and non-intersection locations. To date we have used an analysis method, which places weight on the severe crashes and locations that have experienced a higher frequency of severe crashes and are often those that will find their way on our top priority lists. While most of the locations to date have been on the state system roadways, we have recently seen a few of the local roads locations make these high priority lists. While we continue to believe that the majority of the problem locations will be state system locations, we have evaluated non-state system severe crash locations and have determined that 50% of our non-state system fatalities are in 5 counties. Efforts are currently underway to address this finding as a consultant has been retained to provide detailed local roadway analysis for the top counties (currently Jackson County, Jefferson County, St. Louis City, Greene County, and St. Louis County are complete - these make up the top 5 counties). Franklin County and St. Charles County are currently underway and will be complete by fall of 2015 (this would allow each county in the St. Louis District to be complete - this would also address approximately 55% of our non-state system fatalities). A Local SHSP has been developed for these counties, which identifies systemic countermeasures and high priority projects. It is our goal also to begin using Safety Analyst to better analyze and identify the safety needs of Missouri roadways. To date we have communicated the problem locations to the planning entities like our Metropolitan Planning Organizations and Regional Planning Commissions. We also work with our LTAP center to continue to move safety forward in our state. Additionally, we have used the RSA process to better address local road issues on occasion, we have a Transportation Engineering Assistance Program (TEAP) to assist locals, and we also have a subcommittee from our SHSP that focuses on infrastructure improvement opportunities for local roads.

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

☒ Design

☒ Planning

☒ Maintenance

☒ Operations

☒ Governors Highway Safety Office

☐ Other:

Briefly describe coordination with internal partners.

MoDOT has focused for some time on system-wide safety solutions. We have worked with our Design Division to address our Engineering Policy, we have worked with our Operations and Maintenance staff to improve the roadsides, we have worked with the Planning staff to better evaluate and select safety needs for improvements. We have also worked with the previously mentioned internal partners on the training and use of the Highway Safety Manual (HSM). Additionally, we work daily with the Highway Safety office to evaluate and monitor the crash types. It is vital that all areas in our department work together and focus on safety improvements. We have begun efforts to improve our safety situation on the local roads and are currently developing local SHSPs for our top counties. We are also working with our Design Division to administer safety projects that may originate as a result of the local SHSPs.

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

☒Metropolitan Planning Organizations

☒Governors Highway Safety Office

☒Local Government Association

☒Other: Other-Law Enforcement

☒Other: Other-Emergency services, Department of Revenue, Universities, etc.

☒Other: Other-Federal Highway Administration

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

☐Multi-disciplinary HSIP steering committee

☒Other: Other-High need systemic initiatives have been identified and information provided to districts.

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

Safety initiatives continue to be driven by the State SHSP. The State SHSP includes numerous safety initiatives that are data driven.

Program Methodology

Select the programs that are administered under the HSIP.

☒ Median Barrier	☒ Intersection	☐ Safe Corridor
☒ Horizontal Curve	☐ Bicycle Safety	☐ Rural State Highways
☒ Skid Hazard	☐ Crash Data	☐ Red Light Running Prevention
☒ Roadway Departure	☐ Low-Cost Spot Improvements	☐ Sign Replacement And Improvement
☒ Local Safety	☐ Pedestrian Safety	☐ Right Angle Crash
☐ Left Turn Crash	☐ Shoulder Improvement	☐ Segments
☐ Other:		

Program: **Median Barrier**

Date of Program Methodology: **9/27/2002**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☒ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☒ Volume	☒ Horizontal curvature
☒ Fatal and serious injury crashes only	☐ Population	☒ Functional classification
☐ Other	☐ Lane miles	☒ Roadside features
	☐ Other	☐ Other

What project identification methodology was used for this program?

☒ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☐ Probability of specific crash types

☒ Excess proportions of specific crash types

☐ Other

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

☒Yes

☐No

If yes, are local road projects identified using the same methodology as state roads?

☒Yes

☐No

How are highway safety improvement projects advanced for implementation?

☐Competitive application process

☐selection committee

☒Other-Systemic evaluation

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

☐Relative Weight in Scoring

☒Rank of Priority Consideration

☐Ranking based on B/C

☐Available funding

☐Incremental B/C

☐Ranking based on net benefit

☐Other

☒Systemic safety initiative 1

Program: **Intersection**

Date of Program Methodology: **1/21/2009**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☒ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☒ Volume	☐ Horizontal curvature
☒ Fatal and serious injury crashes only	☐ Population	☐ Functional classification
☐ Other	☐ Lane miles	☐ Roadside features
	☐ Other	☐ Other

What project identification methodology was used for this program?

☒ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☐ Probability of specific crash types

☒Excess proportions of specific crash types

☐Other

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

☒Yes

☐No

If yes, are local road projects identified using the same methodology as state roads?

☒Yes

☐No

How are highway safety improvement projects advanced for implementation?

☐Competitive application process

☐selection committee

☒Other-Systemic evaluation

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

☐Relative Weight in Scoring

☒Rank of Priority Consideration

☐Ranking based on B/C

☐Available funding

☐Incremental B/C

☐Ranking based on net benefit

☐ Other

☒ Systemic safety initiative 1

Program: **Horizontal Curve**

Date of Program Methodology: **2/8/2013**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☒ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☒ Volume	☒ Horizontal curvature
☒ Fatal and serious injury crashes only	☐ Population	☐ Functional classification
☐ Other	☐ Lane miles	☐ Roadside features
	☐ Other	☐ Other

What project identification methodology was used for this program?

☒ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☐ Probability of specific crash types

☒ Excess proportions of specific crash types

☐ Other

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

☒ Yes

☐ No

If yes, are local road projects identified using the same methodology as state roads?

☒ Yes

☐ No

How are highway safety improvement projects advanced for implementation?

☐ Competitive application process

☐ selection committee

☒ Other-Systemic evaluation

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

☐ Relative Weight in Scoring

☒ Rank of Priority Consideration

☐ Ranking based on B/C

☐ Available funding

☐ Incremental B/C

☐ Ranking based on net benefit

☐ Other

☒ Systemic safety initiative 1

Program: **Skid Hazard**

Date of Program Methodology: **2/8/2013**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☒ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☐ Volume	☐ Horizontal curvature
☒ Fatal and serious injury crashes only	☐ Population	☐ Functional classification
☐ Other	☐ Lane miles	☐ Roadside features
	☐ Other	☐ Other

What project identification methodology was used for this program?

☒ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☐ Probability of specific crash types

☒ Excess proportions of specific crash types

☐ Other

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

☒ Yes

☐ No

If yes, are local road projects identified using the same methodology as state roads?

☒ Yes

☐ No

How are highway safety improvement projects advanced for implementation?

☐ Competitive application process

☐ selection committee

☒ Other-Systemic evaluation

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

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

☐ Relative Weight in Scoring

☒ Rank of Priority Consideration

- ☐ Ranking based on B/C
- ☐ Available funding
- ☐ Incremental B/C
- ☐ Ranking based on net benefit
- ☐ Other
- ☒ Systemic safety initiative 1

Program: **Roadway Departure**

Date of Program Methodology: **10/1/2004**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☒ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☒ Volume	☐ Horizontal curvature
☒ Fatal and serious injury crashes only	☐ Population	☐ Functional classification
☐ Other	☐ Lane miles	☐ Roadside features
	☐ Other	☐ Other

What project identification methodology was used for this program?

☒ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☐ Probability of specific crash types

☒ Excess proportions of specific crash types

☐ Other

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

☒ Yes

☐ No

If yes, are local road projects identified using the same methodology as state roads?

☒ Yes

☐ No

How are highway safety improvement projects advanced for implementation?

☐ Competitive application process

☐ selection committee

☒ Other-Systemic evaluation

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

☐ Relative Weight in Scoring

☒ Rank of Priority Consideration

- ☐ Ranking based on B/C
- ☐ Available funding
- ☐ Incremental B/C
- ☐ Ranking based on net benefit
- ☐ Other
- ☒ Systemic safety initiative 1

Program: **Local Safety**

Date of Program Methodology: **2/8/2013**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☒ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☒ Volume	☒ Horizontal curvature

☒ Fatal and serious injury crashes only	☐ Population	☒ Functional classification
☐ Other	☐ Lane miles	☒ Roadside features
	☐ Other	☐ Other

What project identification methodology was used for this program?

☒ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☐ Probability of specific crash types

☒ Excess proportions of specific crash types

☐ Other

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

☒ Yes

☐ No

If yes, are local road projects identified using the same methodology as state roads?

☒Yes

☐No

How are highway safety improvement projects advanced for implementation?

☐Competitive application process

☐selection committee

☒Other-Systemic evaluation

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

☐Relative Weight in Scoring

☒Rank of Priority Consideration

☐Ranking based on B/C

☐Available funding

☐Incremental B/C

☐Ranking based on net benefit

☐Other

☒Systemic safety initiatives 1

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

80

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

- ☒ Cable Median Barriers
- ☐ Traffic Control Device Rehabilitation
- ☐ Install/Improve Signing
- ☐ Upgrade Guard Rails
- ☒ Safety Edge
- ☐ Add/Upgrade/Modify/Remove Traffic Signal
- ☒ Rumble Strips
- ☒ Pavement/Shoulder Widening
- ☐ Install/Improve Pavement Marking and/or Delineation
- ☐ Clear Zone Improvements
- ☐ Install/Improve Lighting
- ☒ Other Other-Intersection improvments, wrong-way driving countermeasures, high friction surface treatments, and local safety initiatives. Other initiatives implemented due to policy change.

What process is used to identify potential countermeasures?

- ☒ Engineering Study
- ☒ Road Safety Assessment
- ☒ Other: Other-Enforcement and other stakeholders input.
- ☒ Other: Other-Peer Exchange - lessons learned

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

☐ Highway Safety Manual

☐ Road Safety audits

☐ Systemic Approach

☒ Other: Other-No Change

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

MoDOT uses a systemic approach to safety project implementation. The top crash types have been determined and focus strategies have been identified for implementation for each district. The strategies are listed in our Engineering Policy Guide located at:
http://epg.modot.org/index.php?title=907.1_Safety_Program_Guidelines

Progress in Implementing Projects

Funds Programmed

Reporting period for Highway Safety Improvement Program funding.

☐ Calendar Year

☒ State Fiscal Year

☐ Federal Fiscal Year

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

Funding Category	Programmed*		Obligated	
HSIP (Section 148)	36169000	67 %	37118000	66 %
HRRRP (SAFETEA-LU)	44000	0 %	970000	2 %
HRRR Special Rule				
Penalty Transfer - Section 154	15904000	29 %	18171000	32 %
Penalty Transfer – Section 164	1696000	3 %	0	0 %
Incentive Grants - Section 163				
Incentive Grants (Section 406)				
Other Federal-aid Funds (i.e. STP, NHPP)	404000	1 %	207000	0 %
State and Local Funds				

Totals	54217000	100%	56466000	100%

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

0 %

How much funding is obligated to local safety projects?

0 %

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

0 %

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

0 %

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 %

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

The largest impediment to fully obligating HSIP funding at MoDOT relates to overall transportation funding. Due to limited state funding, this is creating an issue with fully programming the HSIP funding on safety projects. This practice is then causing a growth in unobligated HSIP funding.

With a shrinking construction budget, MoDOT has also been limited on the number of systemic safety improvements that can be implemented (an example is the adding of a paved shoulder with rumble strips - less paving projects also means fewer shoulder improvements).

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

MoDOT has identified numerous safety initiatives that can further reduce fatal and serious injury crashes on Missouri highways. MoDOT is also looking at opportunities to fund necessary safety efforts at the local level. With the completion of our local strategic highway safety plans, we are now seeing some local safety initiatives in regards to identified needs (an example is curve improvements related to curve warning signs).

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
US 136 in Harrison County (project 1P2225)	Roadway Rumble strips - edge or shoulder	15.7 Miles	837000	3220000	Penalty Transfer - Section 154	Rural Minor Arterial	1840	55	State Highway Agency	Roadway Departure	Milled rumble strips
MO 6 in Grundy County (project 2P0782)	Roadway Rumble strips - edge or shoulder	25.4 Miles	1836000	7222000	HSIP (Section 148)	Urban Principal Arterial - Other	1453	55	State Highway Agency	Roadway Departure	Milled rumble strips
Various Interstate Routes in the Northwest District (project 1P3091)	Work Zone	1 Numbers	3000	3000	HSIP (Section 148)	Rural Principal Arterial - Interstate	10000	70	State Highway Agency	Work Zones	Work zone speeding

RT H in Lincoln County (project 2L1500 M)	Roadway Pavement surface - high friction surface	0.25 Miles	63000	76000	Other Federal-aid Funds (i.e. STP, NHPP)	Rural Major Collector	1000	55	State Highway Agency	Roadway Departure	Improve surface friction
MO 6 in Adair County (project 7P0782C)	Roadway Rumble strips - edge or shoulder	6.1 Miles	2305000	2869000	Other Federal-aid Funds (i.e. STP, NHPP)	Rural Principal Arterial - Other	3590	55	State Highway Agency	Roadway Departure	Milled rumble strips
MO 6 in Lewis County (project 3P2151B)	Roadway Rumble strips - edge or shoulder	23.7 Miles	27000	1974000	HSIP (Section 148)	Rural Principal Arterial - Other	2664	55	State Highway Agency	Roadway Departure	Milled rumble strips
BU 61 in Pike County (project 3L1500B)	Shoulder treatments Widen shoulder - paved or other	3.6 Miles	652000	815000	Other Federal-aid Funds (i.e. STP, NHPP)	Urban Minor Arterial	4915	35	State Highway Agency	Roadway Departure	Shoulder widening
RT U in Lincoln County	Roadway Rumble strips - edge or	5.1 Miles	955000	2325000	Penalty Transfer - Section	Rural Major Collector	3464	55	State Highway	Roadway Departure	Milled rumble strips

(project 2S3001)	shoulder				154				Agency		
Various Routes in the Northeast District (project 2P3076)	Work Zone	1 Numbers	36000	40000	HSIP (Section 148)	Rural Principal Arterial - Other	10000	70	State Highway Agency	Work Zones	Work zone speeding
RT Y in Cass County (project 4S2180)	Roadway Rumble strips - edge or shoulder	6.1 Miles	3221000	3690000	Penalty Transfer - Section 154	Rural Major Collector	6449	55	State Highway Agency	Roadway Departure	Milled rumble strips
IS 35 North in Clay County (project 4I3005)	Interchange design Interchange design - other	1 Numbers	27156000	31655000	Other Federal-aid Funds (i.e. STP, NHPP)	Urban Principal Arterial - Interstate	29602	60	State Highway Agency	Intersections	Innovative designs
RT A in Clay County (project 4S3048)	Roadway Rumble strips - edge or shoulder	5.6 Miles	1593000	1624000	Penalty Transfer - Section 154	Urban Major Collector	2624	55	State Highway Agency	Roadway Departure	Milled rumble strips
OR 50 in Jackson	Access management	1 Numbe	6323000	6323000	HSIP (Section	Urban Minor	1000	45	State Highway	Intersectio	Access to

County (project 4P3046)	Change in access - close or restrict existing access	rs			148)	Collector			Agency	ns	public roads
IS 35 North in Clay County (project 4I3023)	Interchange design Interchange design - other	1 Numbers	15513000	17049000	Other Federal-aid Funds (i.e. STP, NHPP)	Urban Principal Arterial - Interstate	28894	60	State Highway Agency	Intersections	Innovative designs
RT M in Pettis County (project 3P3026)	Roadway Rumble strips - edge or shoulder	11.7 Miles	1066000	1073000	Penalty Transfer - Section 154	Urban Major Collector	1421	55	State Highway Agency	Roadway Departure	Milled rumble strips
MO 152 in Platte County (project 4P3050)	Roadside Barrier - cable	11.4 Miles	2231000	2231000	Penalty Transfer - Section 154	Urban Principal Arterial - Other Freeways and Expressways	21833	60	State Highway Agency	Roadway Departure	Install median guard cable
Various Interstate Routes in rural Kansas	Work Zone	1 Numbers	24000	27000	HSIP (Section 148)	Rural Principal Arterial - Interstate	10000	70	State Highway Agency	Work Zones	Work zone speeding

City District (project 4I3008)											
Various Interstate Routes in urban Kansas City District (project 4I3013)	Work Zone	1 Numbers	93000	103000	HSIP (Section 148)	Urban Principal Arterial - Interstate	20000	60	State Highway Agency	Work Zones	Work zone speeding
RT Y in Camden County (project 5L1500D)	Roadway Rumble strips - edge or shoulder	2.8 Miles	2330000	2881000	Other Federal-aid Funds (i.e. STP, NHPP)	Rural Minor Collector	3963	55	State Highway Agency	Roadway Departure	Milled rumble strips
MO 68 in Maries County (project 5L1500E)	Roadway Rumble strips - edge or shoulder	11.8 Miles	1386000	2134000	HSIP (Section 148)	Rural Minor Arterial	2059	55	State Highway Agency	Roadway Departure	Milled rumble strips
RT Y in Miller	Roadway Rumble strips	7.2 Miles	855000	1876000	HSIP (Section	Rural Major Collector	2711	55	State Highway	Roadway Departure	Milled rumble strips

County (project 5L1500C)	- edge or shoulder				148)				Agency		
MO 87 in Monitea u County (project 5S3088)	Roadway Rumble strips - edge or shoulder	18.8 Miles	1182000	3057000	HSIP (Section 148)	Rural Minor Arterial	1616	55	State Highway Agency	Roadway Departure	Milled rumble strips
MO 135 in Morgan County (project 5S3007F)	Roadway Rumble strips - edge or shoulder	20.7 Miles	1898000	3362000	HSIP (Section 148)	Rural Minor Arterial	1582	55	State Highway Agency	Roadway Departure	Milled rumble strips
Various Routes in the Central District (project 5P3032)	Roadway signs and traffic control Curve-related warning signs and flashers	1 Numbe rs	889000	889000	Penalty Transfer - Section 154	Rural Principal Arterial - Other	1000	55	State Highway Agency	Roadway Departure	Install chevrons
Various Routes in the Central District	Work Zone	1 Numbe rs	16000	18000	HSIP (Section 148)	Rural Principal Arterial - Other	1000 0	70	State Highway Agency	Work Zones	Work zone speeding

(project 5P3091)											
MO 100 in Franklin County (project 6S2227)	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	462000	513000	HSIP (Section 148)	Urban Principal Arterial - Other	7767	55	State Highway Agency	Intersections	Install turn lanes
RT T in Franklin County (project 6S2228)	Roadside Barrier-metal	20.1 Miles	636000	677000	HSIP (Section 148)	Rural Major Collector	2299	55	State Highway Agency	Roadway Departure	Install guardrail
RT Y in Jefferson County (project 6S3010E)	Roadway Rumble strips - edge or shoulder	16.3 Miles	1533000	4207000	Penalty Transfer - Section 154	Urban Major Collector	1670	55	State Highway Agency	Roadway Departure	Milled rumble strips
MO 94 in St Charles County (project 3S2009K)	Roadway Rumble strips - edge or shoulder	6.7 Miles	61000	2180000	Penalty Transfer - Section 154	Rural Major Collector	1725	55	State Highway Agency	Roadway Departure	Milled rumble strips

MO 94 in St Charles County (project 6P2329)	Roadway Rumble strips - edge or shoulder	23.4 Miles	3416000	7876000	Penalty Transfer - Section 154	Rural Minor Arterial	1916	55	State Highway Agency	Roadway Departure	Milled rumble strips
IS 270 East in St Louis County (project 6I3108)	Roadway Pavement surface - high friction surface	0.7 Miles	144000	162000	Other Federal-aid Funds (i.e. STP, NHPP)	Urban Principal Arterial - Interstate	92878	60	State Highway Agency	Roadway Departure	Improve surface friction
MO 231 in St Louis County (project 6P2291)	Lighting Intersection lighting	1 Numbers	46000	48000	HSIP (Section 148)	Urban Principal Arterial - Other	7216	35	State Highway Agency	Intersections	Install lighting
Various Routes in the St Louis District (project 6I3097)	Work Zone	1 Numbers	341000	379000	HSIP (Section 148)	Urban Principal Arterial - Other	20000	60	State Highway Agency	Work Zones	Work zone speeding
MO 52 in Bates	Roadway Rumble strips	18.1 Miles	908000	919000	Penalty Transfer	Rural Minor Arterial	1127	55	State Highway	Roadway Departure	Milled rumble strips

County (project 7P3020)	- edge or shoulder				- Section 154				Agency		
US 65 South in Christian County (project 7P3020B)	Roadway Pavement surface - high friction surface	0.8 Miles	205000	205000	Penalty Transfer - Section 154	Rural Principal Arterial - Other Freeways and Expressways	12367	65	State Highway Agency	Roadway Departure	Improve surface friction
US 65 South in Dallas County (project 8P2290)	Roadside Barrier-metal	10.4 Miles	101000	104000	HSIP (Section 148)	Rural Principal Arterial - Other Freeways and Expressways	3566	65	State Highway Agency	Roadway Departure	Install guardrail
MO 360 in Greene County (project 7P3020C)	Interchange design Interchange design - other	1 Numbers	95000	95000	Penalty Transfer - Section 154	Rural Principal Arterial - Other Freeways and Expressways	6114	60	State Highway Agency	Intersections	Innovative designs
US 60 East in Greene County	Interchange design Interchange design -	1 Numbers	4139000	12249000	HSIP (Section 148)	Urban Principal Arterial - Other	12601	60	State Highway Agency	Intersections	Innovative designs

(project 8P0683 D)	other					Freeways and Expressways					
MO 254 in Hickory County (project 8L1300P)	Roadway Rumble strips - edge or shoulder	7.2 Miles	189000	706000	HSIP (Section 148)	Rural Major Collector	967	55	State Highway Agency	Roadway Departure	Milled rumble strips
MO 37 in Jasper County (project 7P2226 D)	Roadway Rumble strips - edge or shoulder	48.7 Miles	2376000	2579000	HSIP (Section 148)	Rural Minor Arterial	2845	55	State Highway Agency	Roadway Departure	Milled rumble strips
RT E in McDonald County (project 7P2226C)	Roadway Rumble strips - edge or shoulder	14.9 Miles	1355000	1506000	HSIP (Section 148)	Rural Major Collector	1183	55	State Highway Agency	Roadway Departure	Milled rumble strips
RT HH in Newton County (project 7S2231)	Roadway Rumble strips - edge or shoulder	29.4 Miles	1085000	3166000	HSIP (Section 148)	Rural Major Collector	1059	55	State Highway Agency	Roadway Departure	Milled rumble strips

MO 32 in Polk County (project 7P2226B)	Roadway Rumble strips - edge or shoulder	16.4 Miles	498000	675000	Penalty Transfer - Section 154	Urban Minor Arterial	3055	55	State Highway Agency	Roadway Departure	Milled rumble strips
RT D Polk County (project 8S2343)	Roadway Rumble strips - edge or shoulder	13.7 Miles	1435000	1720000	HRRRP (SAFETEA-LU)	Rural Major Collector	2928	55	State Highway Agency	Roadway Departure	Milled rumble strips
Various Routes in urban Southwest District (project 8P2279)	Work Zone	1 Numbers	47000	53000	HSIP (Section 148)	Urban Principal Arterial - Interstate	20000	60	State Highway Agency	Work Zones	Work zone speeding
Various Routes in rural Southwest District (project 8P2281)	Work Zone	1 Numbers	29000	33000	HSIP (Section 148)	Rural Principal Arterial - Interstate	10000	70	State Highway Agency	Work Zones	Work zone speeding

MO 34 in Bollinger County (project 0P2295)	Roadway Rumble strips - edge or shoulder	23.1 Miles	30000	6495000	HRRRP (SAFETEA-LU)	Rural Major Collector	975	55	State Highway Agency	Roadway Departure	Milled rumble strips
US 60 in Butler County (project 9P3083)	Intersection geometry Intersection geometry - other	1 Numbers	253000	280000	HSIP (Section 148)	Rural Principal Arterial - Other Freeways and Expressways	6813	65	State Highway Agency	Intersections	Innovative designs
Various Routes in Southeast District (project 9P2264H)	Roadside Barrier-metal	1 Numbers	1485000	1505000	Penalty Transfer - Section 154	Rural Principal Arterial - Other Freeways and Expressways	10000	65	State Highway Agency	Roadway Departure	Install guardrail
Various Routes in Southeast District (project 9P3096)	Work Zone	1 Numbers	63000	70000	HSIP (Section 148)	Rural Principal Arterial - Other	10000	65	State Highway Agency	Work Zones	Work zone speeding
Striping	Roadway	7	1100000	1100000	HSIP	Annual	5000	55	State	Roadway	Improve

of various routes across the state (fed # P151002)	delineation Improve retroreflectivity	Numbers	0	0	(Section 148)	striping program for retroreflectivity			Highway Agency	Departure	retroreflectivity of markings

Progress in Achieving Safety Performance Targets

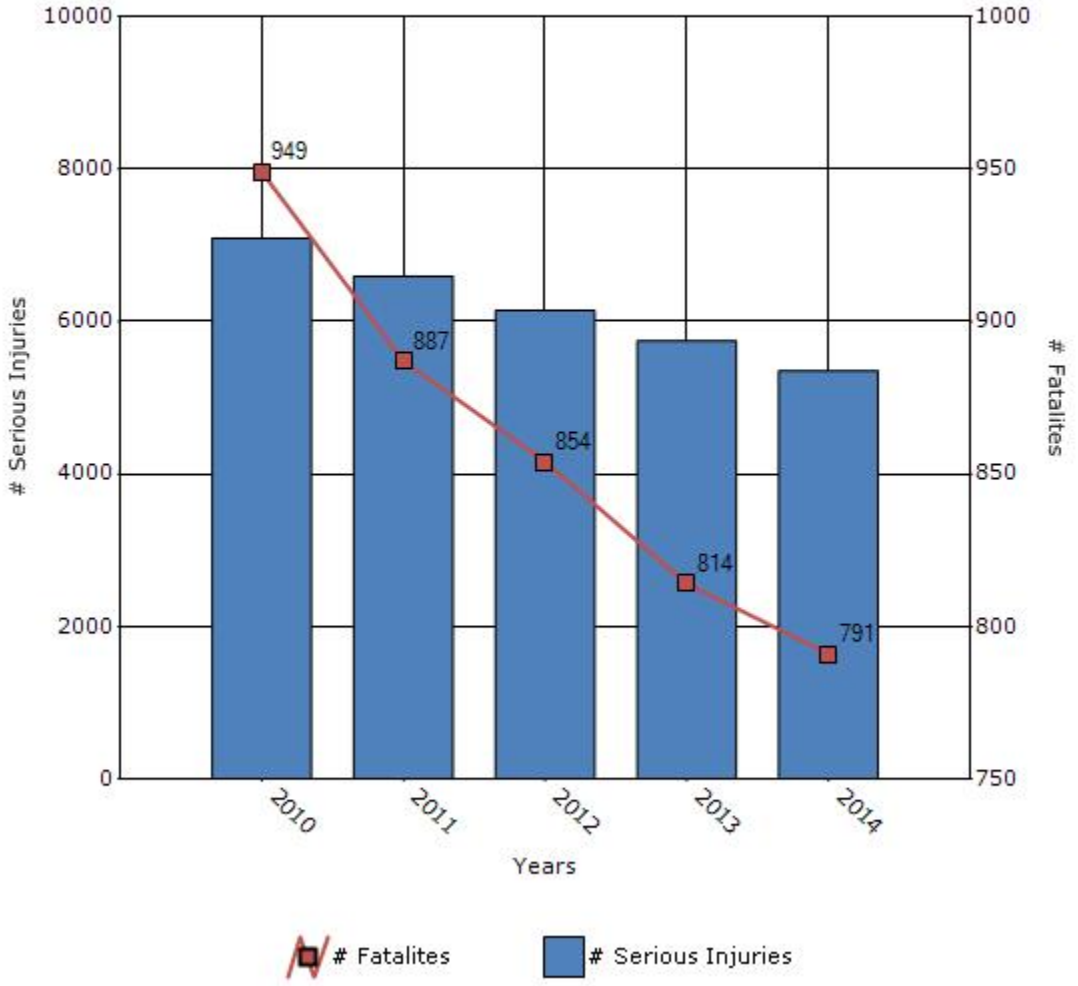
Overview of General Safety Trends

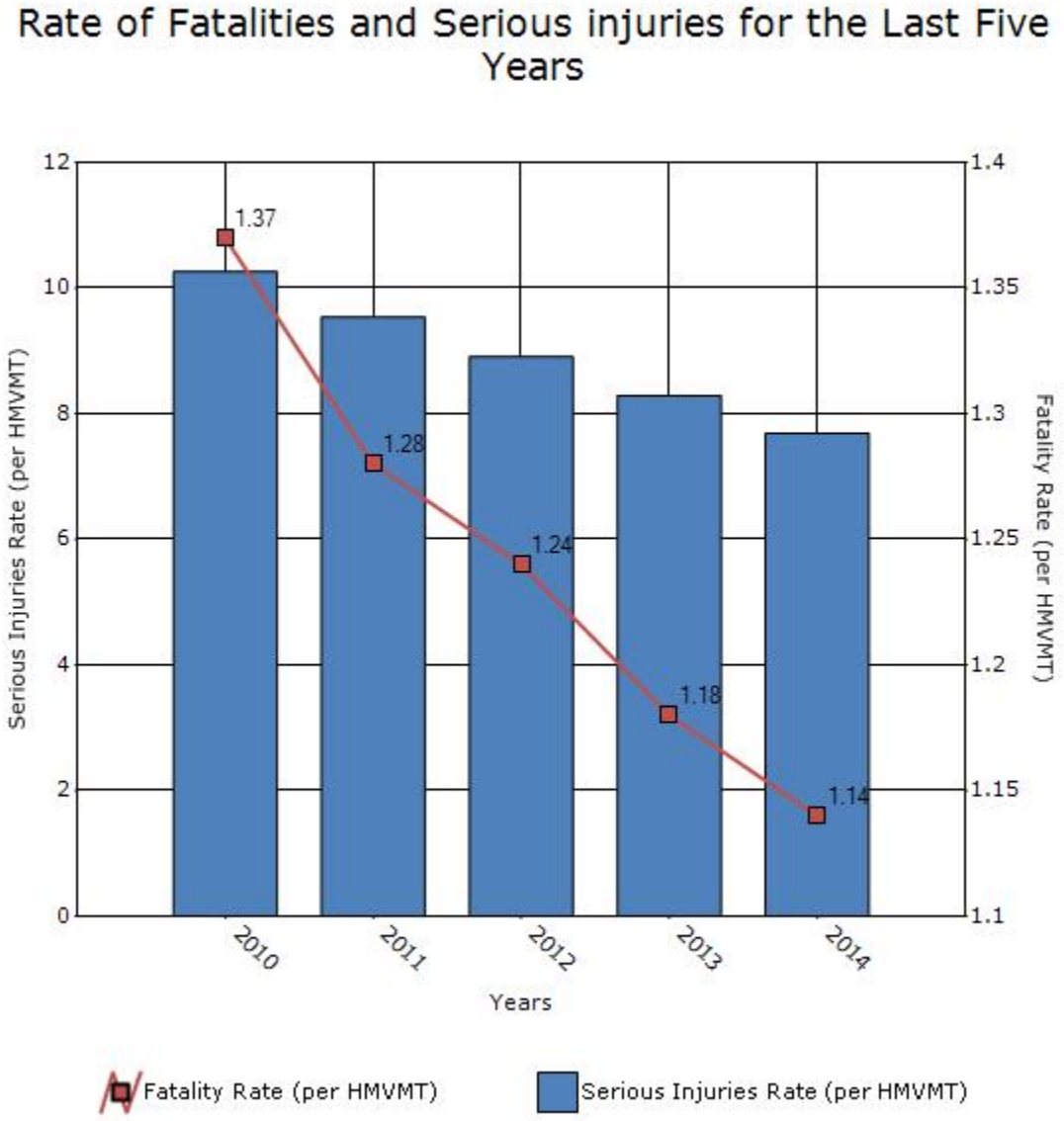
Present data showing the general highway safety trends in the state for the past five years.

Performance Measures*	2010	2011	2012	2013	2014
Number of fatalities	949	887	854	814	791
Number of serious injuries	7092	6591	6143	5745	5353
Fatality rate (per HMVMT)	1.37	1.28	1.24	1.18	1.14
Serious injury rate (per HMVMT)	10.26	9.54	8.91	8.29	7.69

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

Number of Fatalities and Serious injuries for the Last Five Years



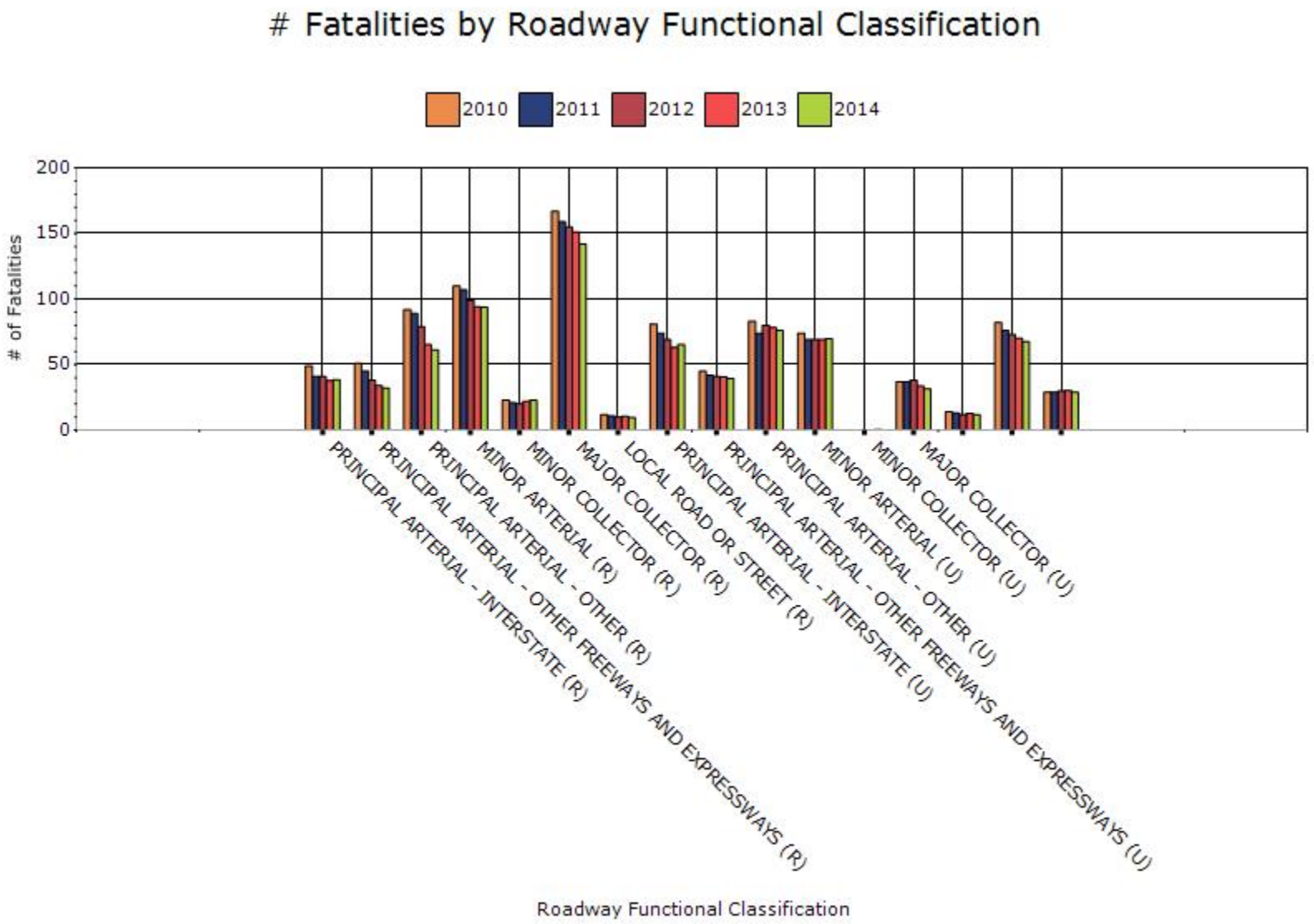

Rate of Fatalities and Serious injuries for the Last Five Years
Serious Injuries Rate (per HMVMT)
Fatality Rate (per HMVMT)
Years
1.37
1.28
1.24
1.18
1.14
2010
2011
2012
2013
2014
Fatality Rate (per HMVMT)
Serious Injuries Rate (per HMVMT)

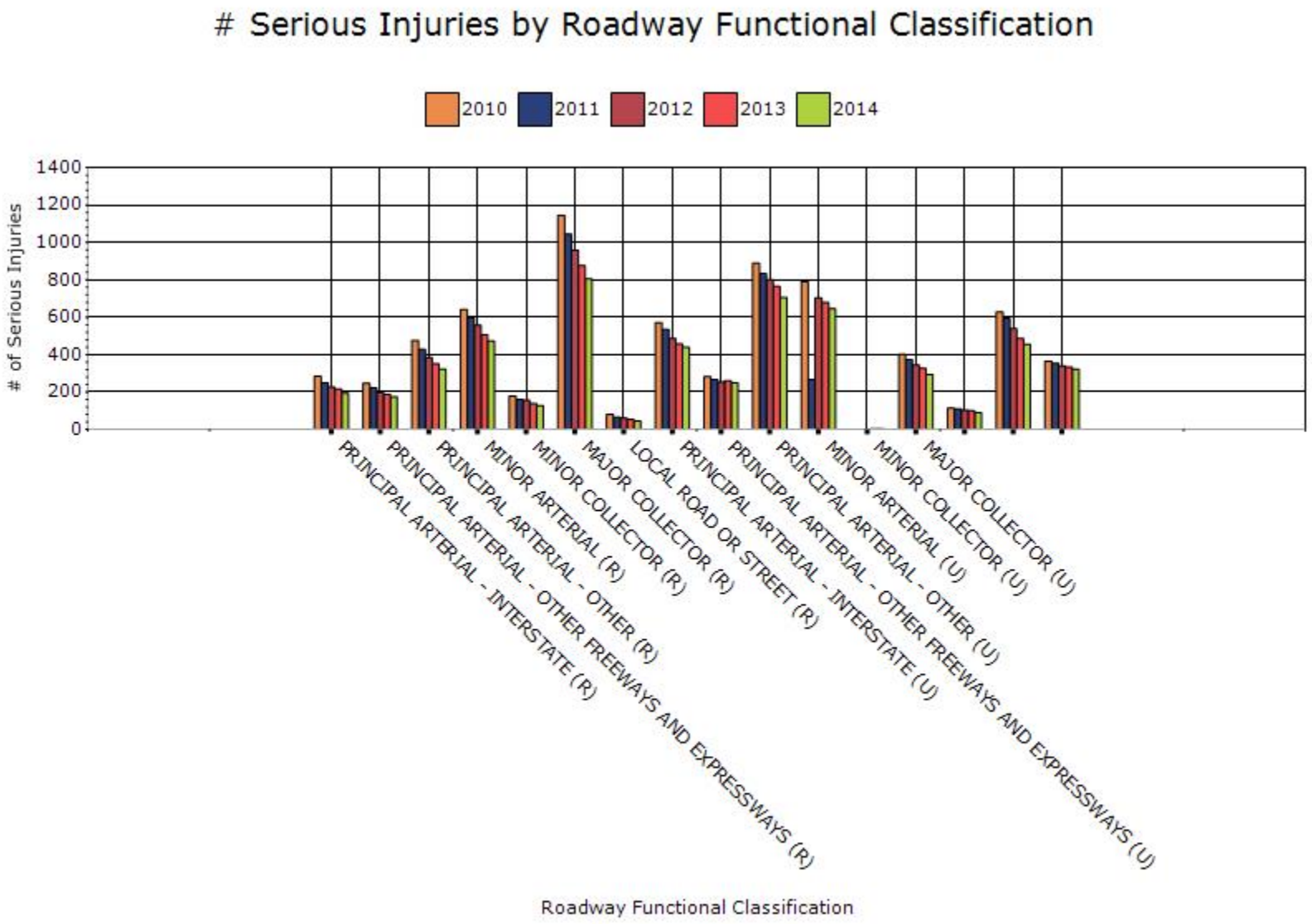
To the maximum extent possible, present performance measure* data by functional classification and ownership.

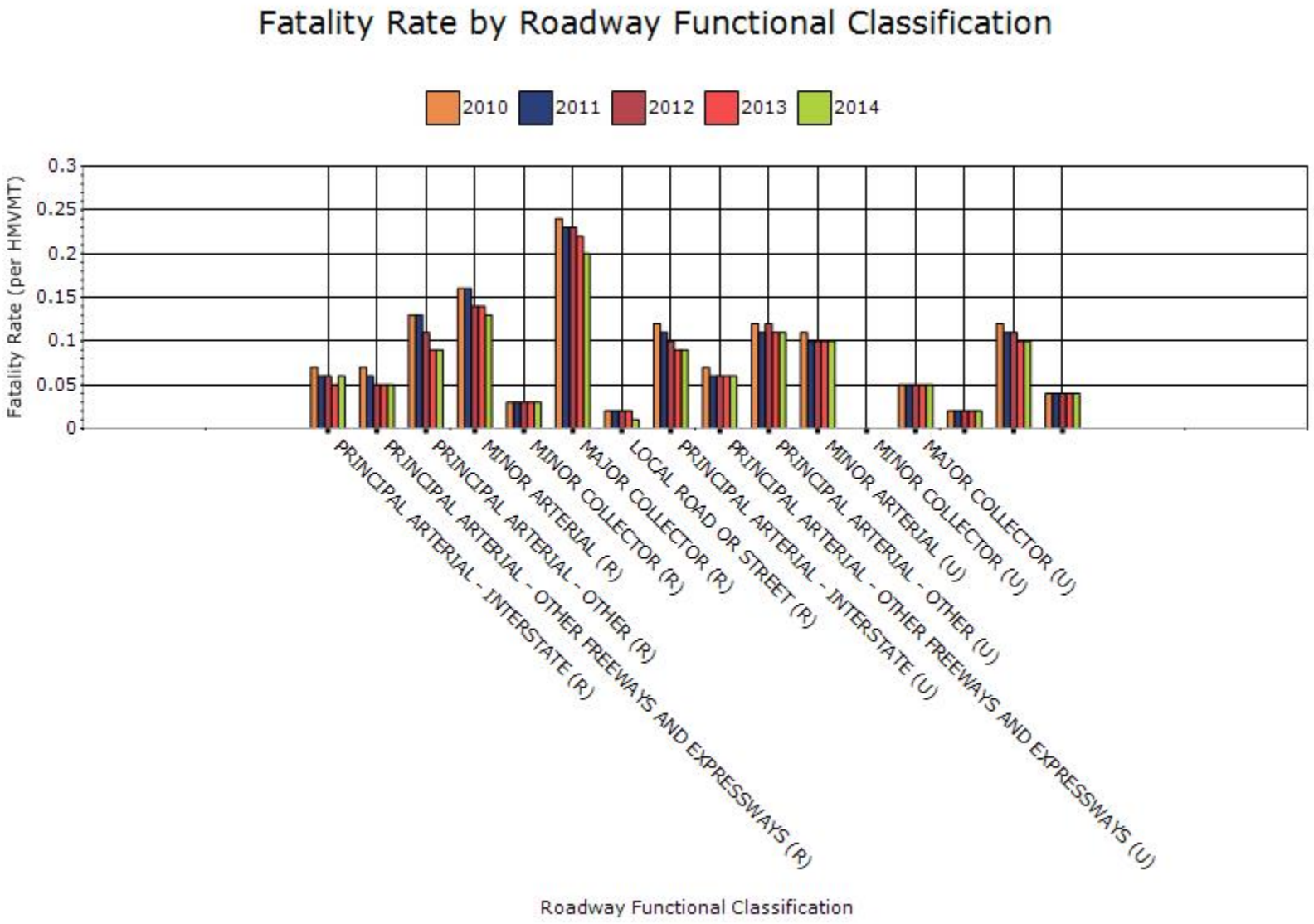
Year - 2014

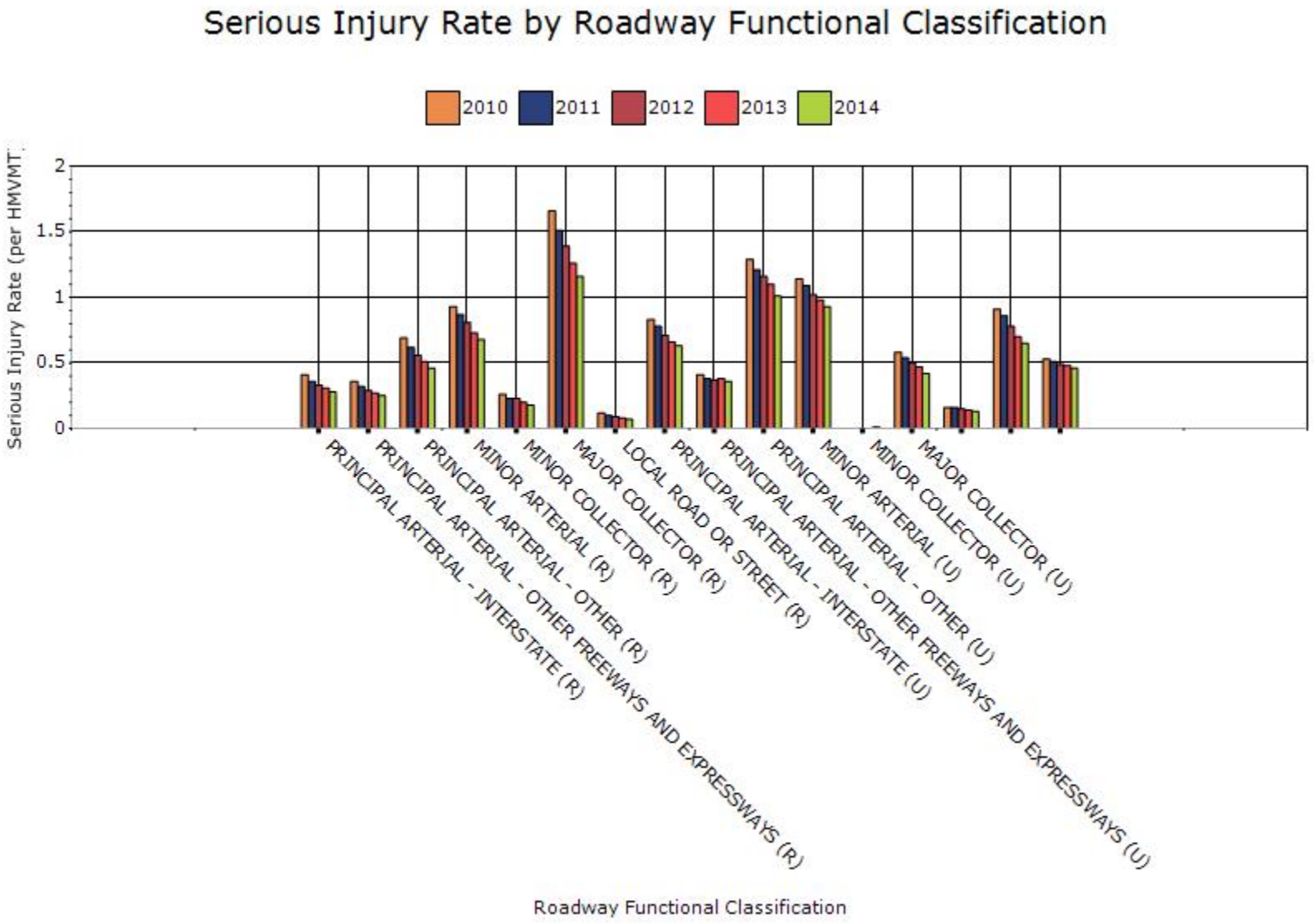
Function Classification	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
RURAL PRINCIPAL ARTERIAL - INTERSTATE	38.6	193	0.06	0.28
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	32.2	174.6	0.05	0.25
RURAL PRINCIPAL ARTERIAL - OTHER	61.2	322.6	0.09	0.46
RURAL MINOR ARTERIAL	93.8	473.4	0.13	0.68
RURAL MINOR COLLECTOR	22.8	128	0.03	0.18
RURAL MAJOR COLLECTOR	142	805.6	0.2	1.16
RURAL LOCAL ROAD OR STREET	9.6	46	0.01	0.07
URBAN PRINCIPAL	65.2	438.6	0.09	0.63

ARTERIAL - INTERSTATE				
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	39.4	249.4	0.06	0.36
URBAN PRINCIPAL ARTERIAL - OTHER	76	705.6	0.11	1.01
URBAN MINOR ARTERIAL	69.8	646	0.1	0.93
URBAN MINOR COLLECTOR	0.6	4	0	0.01
URBAN MAJOR COLLECTOR	31.6	294.6	0.05	0.42
URBAN LOCAL ROAD OR STREET	11.8	90.8	0.02	0.13
RURAL UNKNOWN	67.6	455.4	0.1	0.65
URBAN UNKNOWN	28.8	323	0.04	0.46


Fatalities by Roadway Functional Classification
2010
2011
2012
2013
2014
# of Fatalities
200
150
100
50
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
Roadway Functional Classification

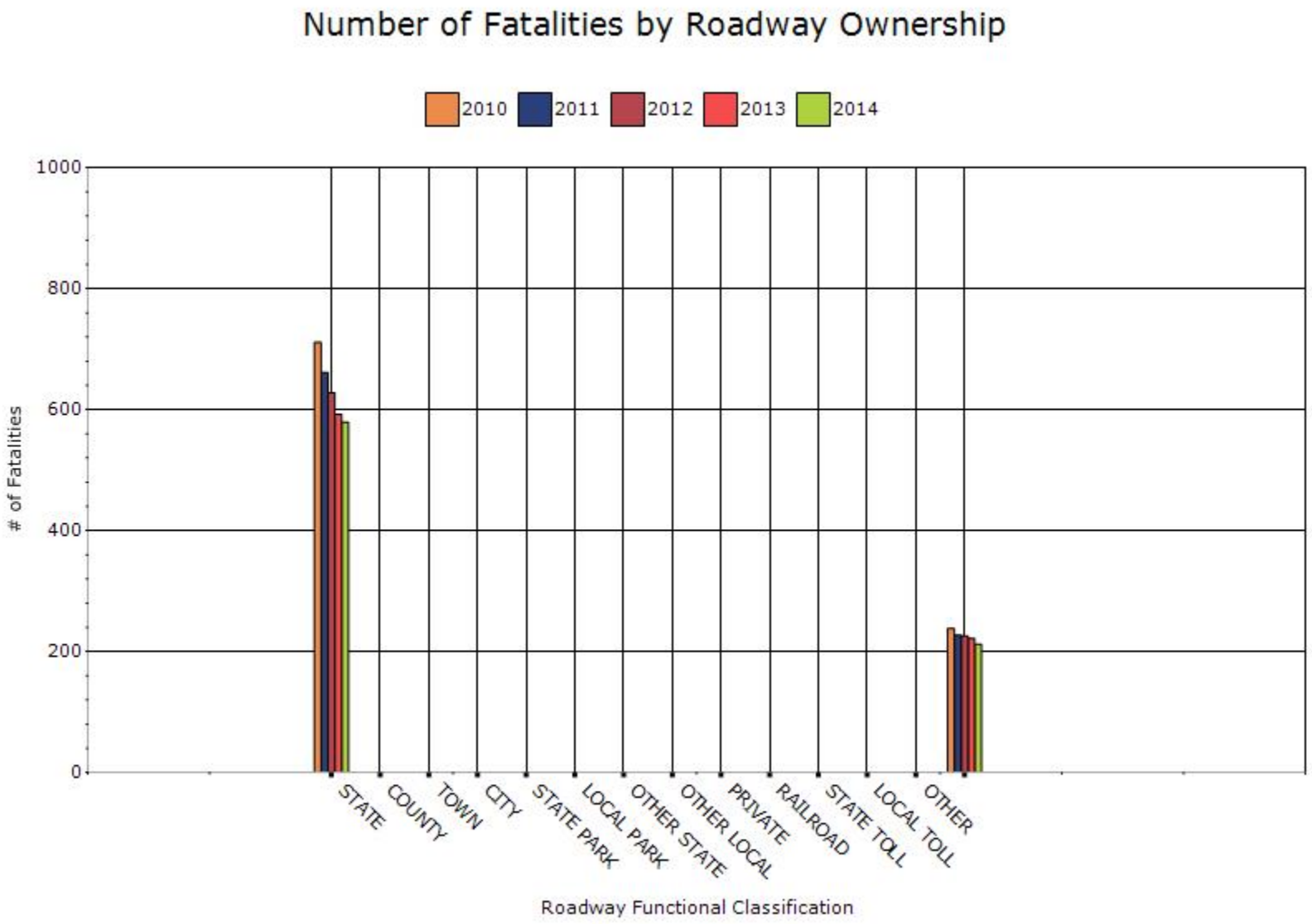

Serious Injuries by Roadway Functional Classification
2010
2011
2012
2013
2014
# of Serious Injuries
1400
1200
1000
800
600
400
200
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
Roadway Functional Classification

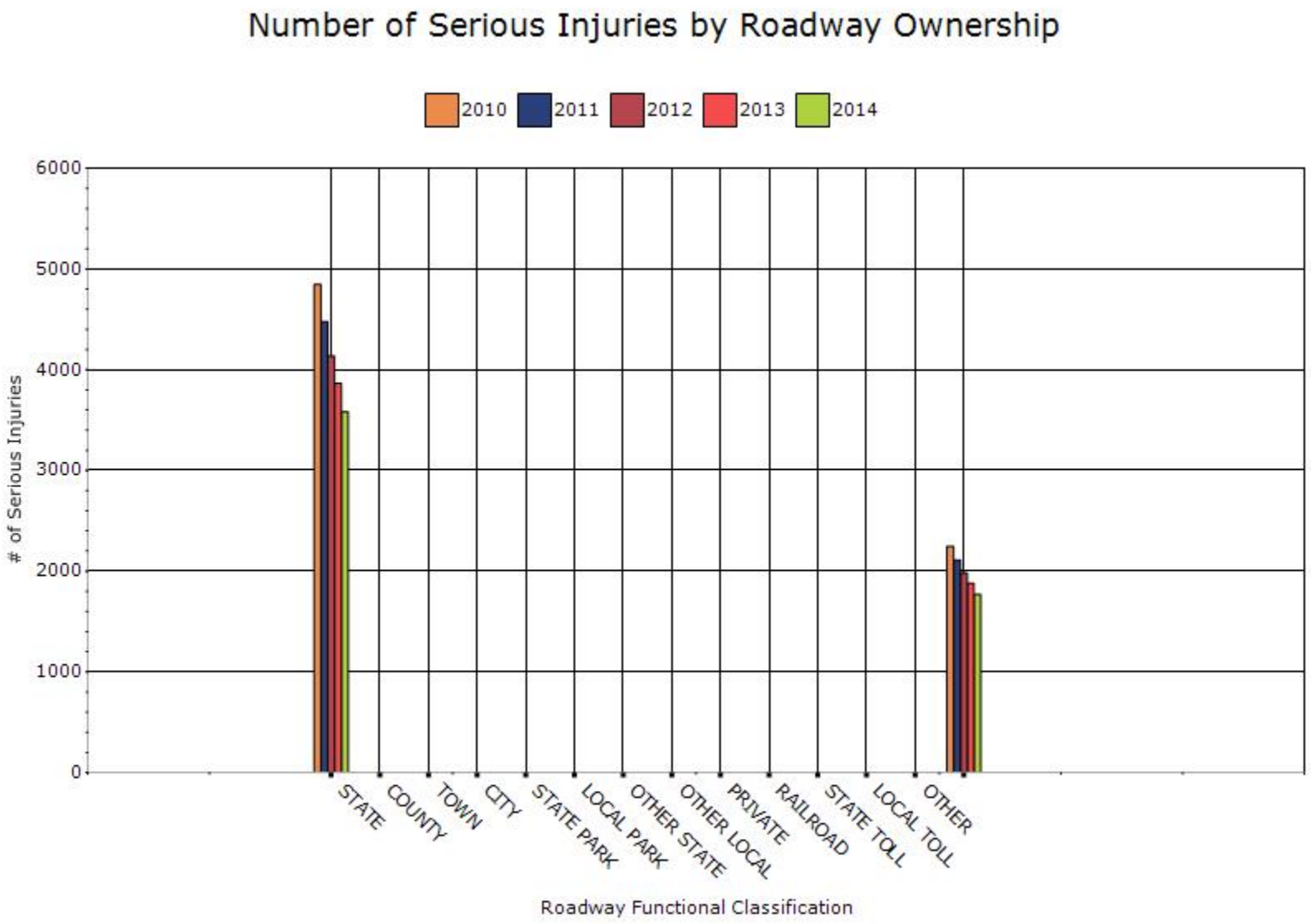

Fatality Rate by Roadway Functional Classification
2010
2011
2012
2013
2014
Fatality Rate (per HMVMT)
0.3
0.25
0.2
0.15
0.1
0.05
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
Roadway Functional Classification

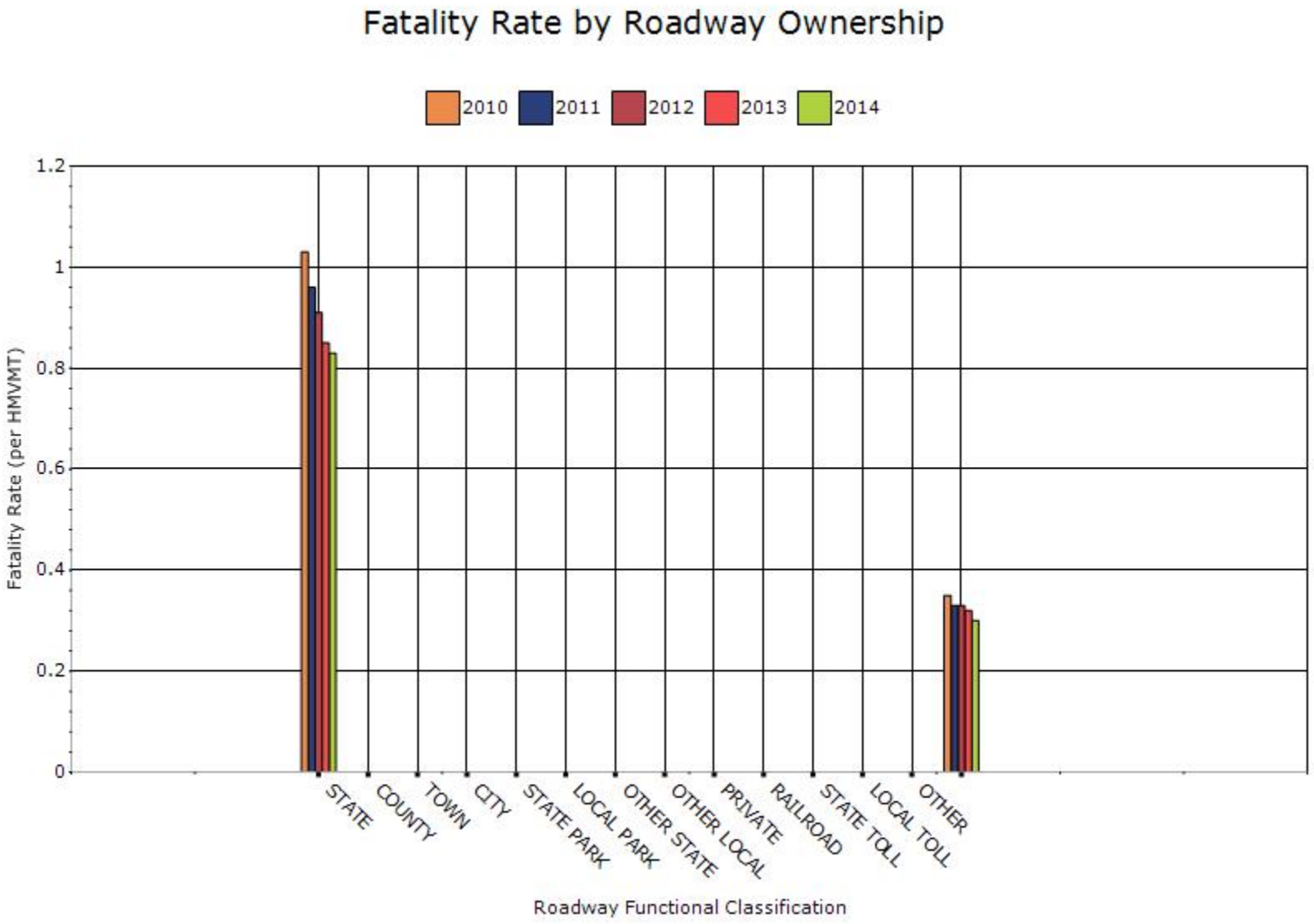

Serious Injury Rate by Roadway Functional Classification
2010
2011
2012
2013
2014
Serious Injury Rate (per HMVMT)
2
1.5
1
0.5
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
Roadway Functional Classification

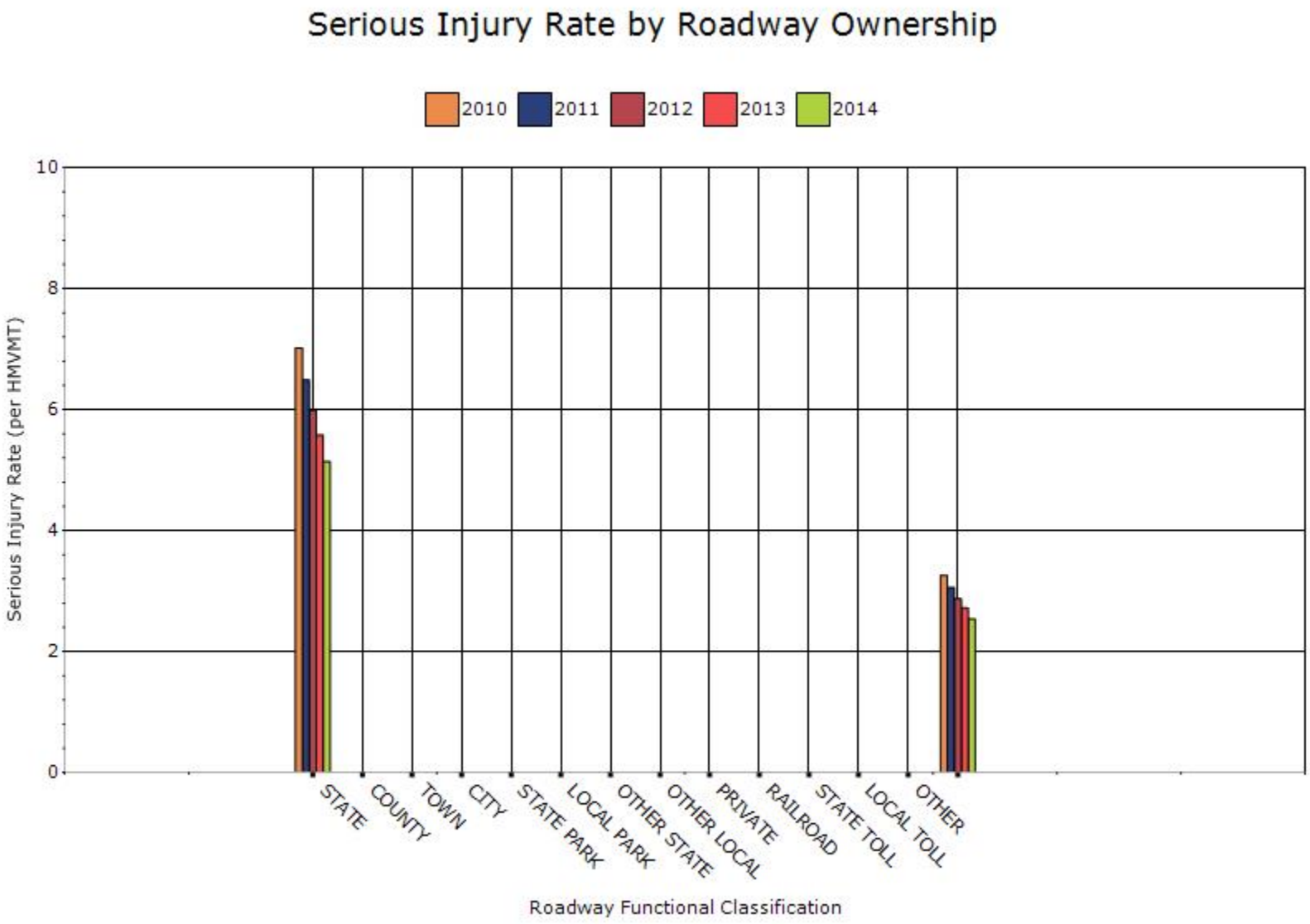
Year - 2014

Roadway Ownership	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
STATE HIGHWAY AGENCY	579	3581.6	0.83	5.14
COUNTY HIGHWAY AGENCY	0	0	0	0
TOWN OR TOWNSHIP HIGHWAY AGENCY	0	0	0	0
CITY OF MUNICIPAL HIGHWAY AGENCY	0	0	0	0
STATE PARK, FOREST, OR RESERVATION AGENCY	0	0	0	0
LOCAL PARK, FOREST OR RESERVATION AGENCY	0	0	0	0
OTHER STATE AGENCY	0	0	0	0
OTHER LOCAL AGENCY	0	0	0	0
PRIVATE (OTHER THAN RAILROAD)	0	0	0	0
RAILROAD	0	0	0	0
STATE TOLL AUTHORITY	0	0	0	0
LOCAL TOLL AUTHORITY	0	0	0	0
OTHER PUBLIC INSTRUMENTALITY (E.G. AIRPORT, SCHOOL, UNIVERSITY)	0	0	0	0
CITY AND COUNTY HIGHWAY AGENCY	212.2	1771	0.3	2.54


Number of Fatalities by Roadway Ownership
2010
2011
2012
2013
2014
1000
800
600
400
200
0
# of Fatalities
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER
Roadway Functional Classification


Number of Serious Injuries by Roadway Ownership
2010
2011
2012
2013
2014
6000
5000
4000
3000
2000
1000
0
# of Serious Injuries
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER
Roadway Functional Classification


Fatality Rate by Roadway Ownership
2010
2011
2012
2013
2014
1.2
1
0.8
0.6
0.4
0.2
0
Fatality Rate (per HMVMT)
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER
Roadway Functional Classification


Serious Injury Rate by Roadway Ownership
2010
2011
2012
2013
2014
Serious Injury Rate (per HMVMT)
0
2
4
6
8
10
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER
Roadway Functional Classification

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

MoDOT has placed a large safety emphasis on the major roads in the state (both urban and rural). These major roads are considered the interstate, freeways & expressways, and principal arterials. These roads also carry the largest traffic volumes in our state. Most of the positive safety trends are occurring on this system of routes. Emphasis has also been placed on higher traveled minor roads (locations are receiving 2-foot shoulders with rumble strips) as well as the top counties (limited project implementation to date).

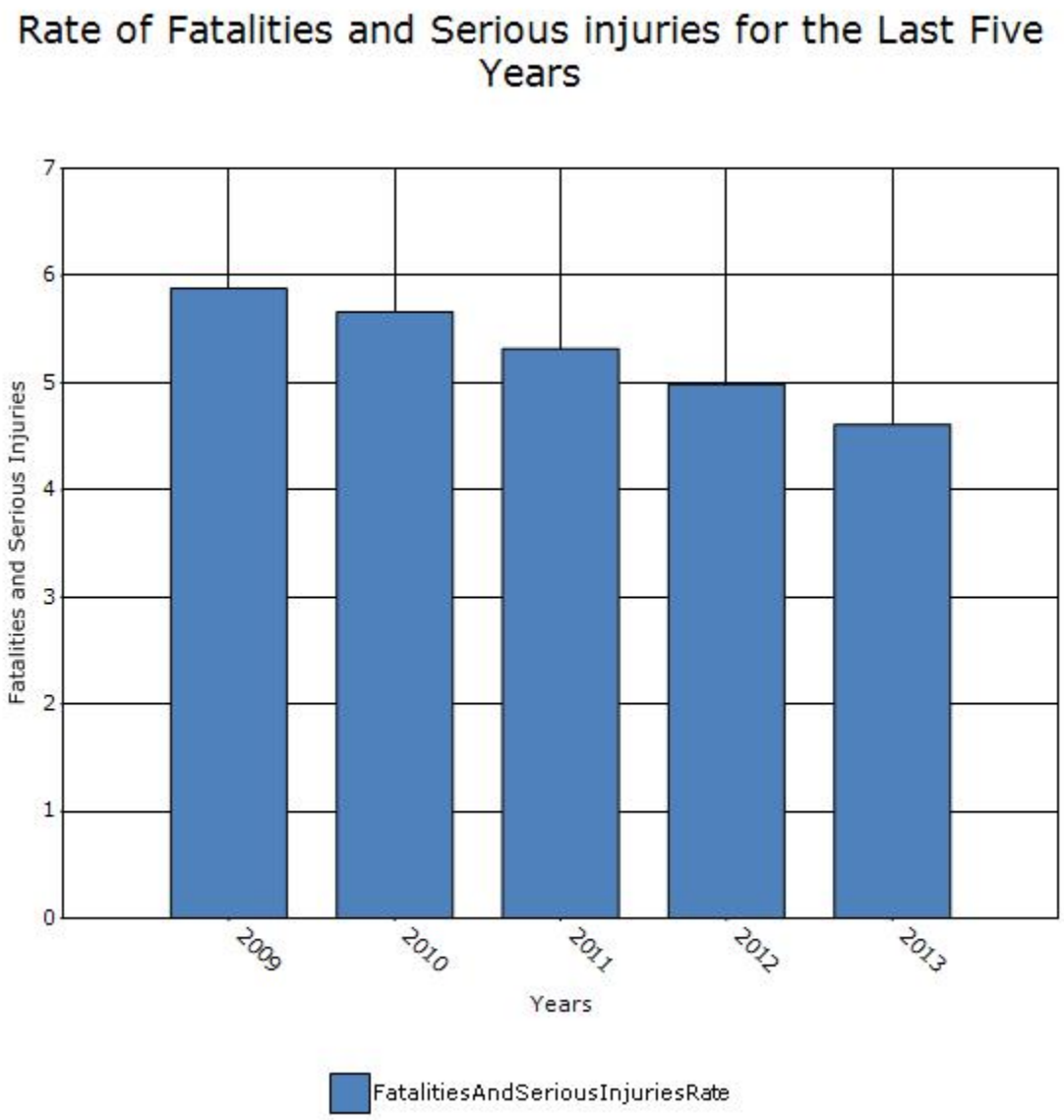
Application of Special Rules

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

Older Driver Performance Measures	2009	2010	2011	2012	2013
Fatality rate (per capita)	1.188	1.102	1.046	0.986	0.924
Serious injury rate (per capita)	4.692	4.56	4.274	4.008	3.69
Fatality and serious injury rate (per capita)	5.88	5.662	5.318	4.988	4.61

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

5-Yr Rate Ending in 2013: (F+SI 2013 Drivers and Pedestrians 65 years of age and older/2013 Population Figure*) + (F+SI 2012 Drivers and Pedestrians 65 years of age and older /2012 Population Figure) + (F+SI 2011 Drivers and Pedestrians 65 years of age and older/2011 Population Figure) + (F+SI 2010 Drivers and Pedestrians 65 years of age and older/2010 Population Figure) + (F+SI 2009 Drivers and Pedestrians 65 years of age and older/2009 Population Figure) / 5



Does the older driver special rule apply to your state?

No

Assessment of the Effectiveness of the Improvements (Program Evaluation)

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

☐ None

☐ Benefit/cost

☒ Policy change

☐ Other:

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

☐ Shift Focus to Fatalities and Serious Injuries

☐ Include Local Roads in Highway Safety Improvement Program

☐ Organizational Changes

☒ None

☐ Other:

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

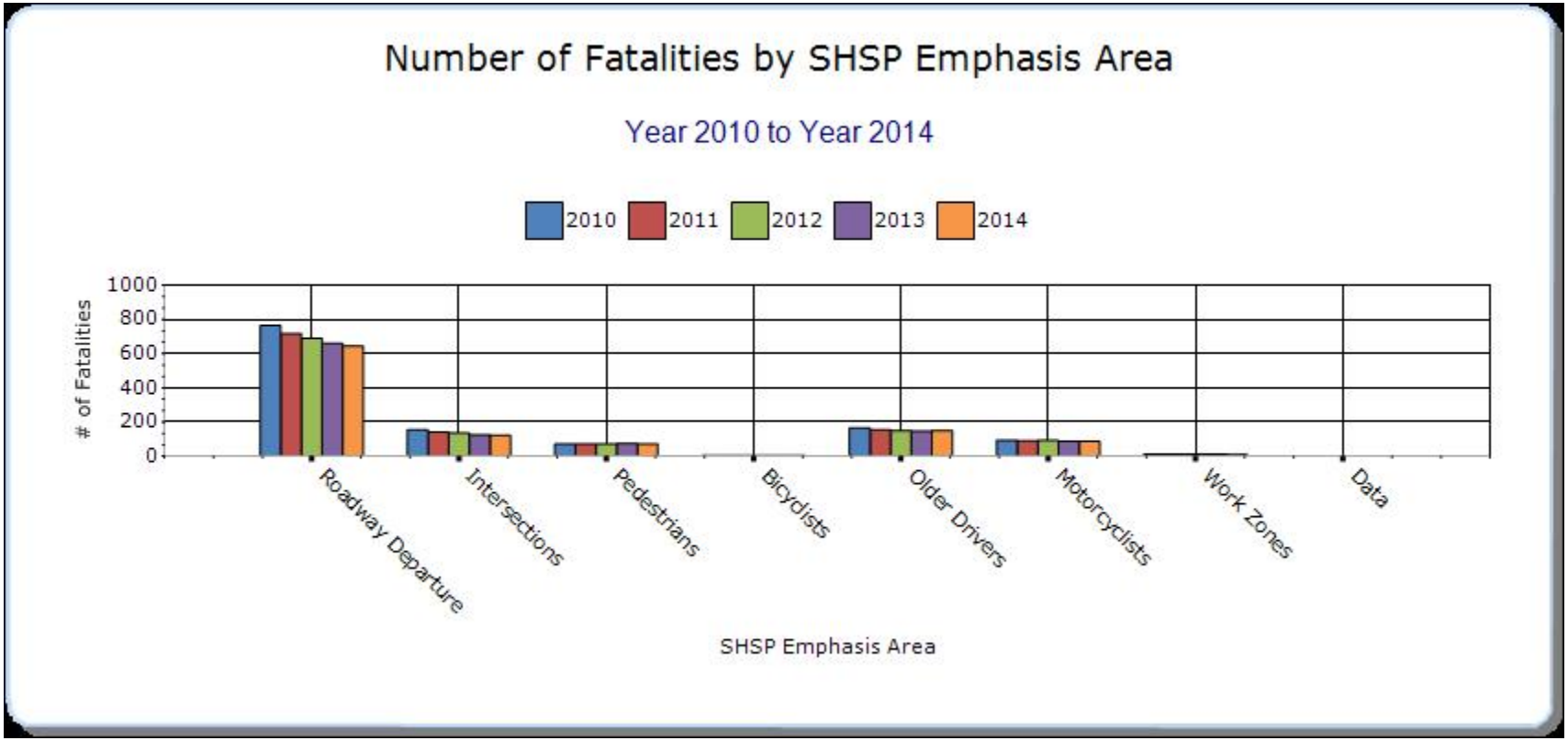
There have been no significant program changes since the last reporting period. MoDOT is in the early stages of using the HSIP funding on local safety initiatives (no funding spent to date).

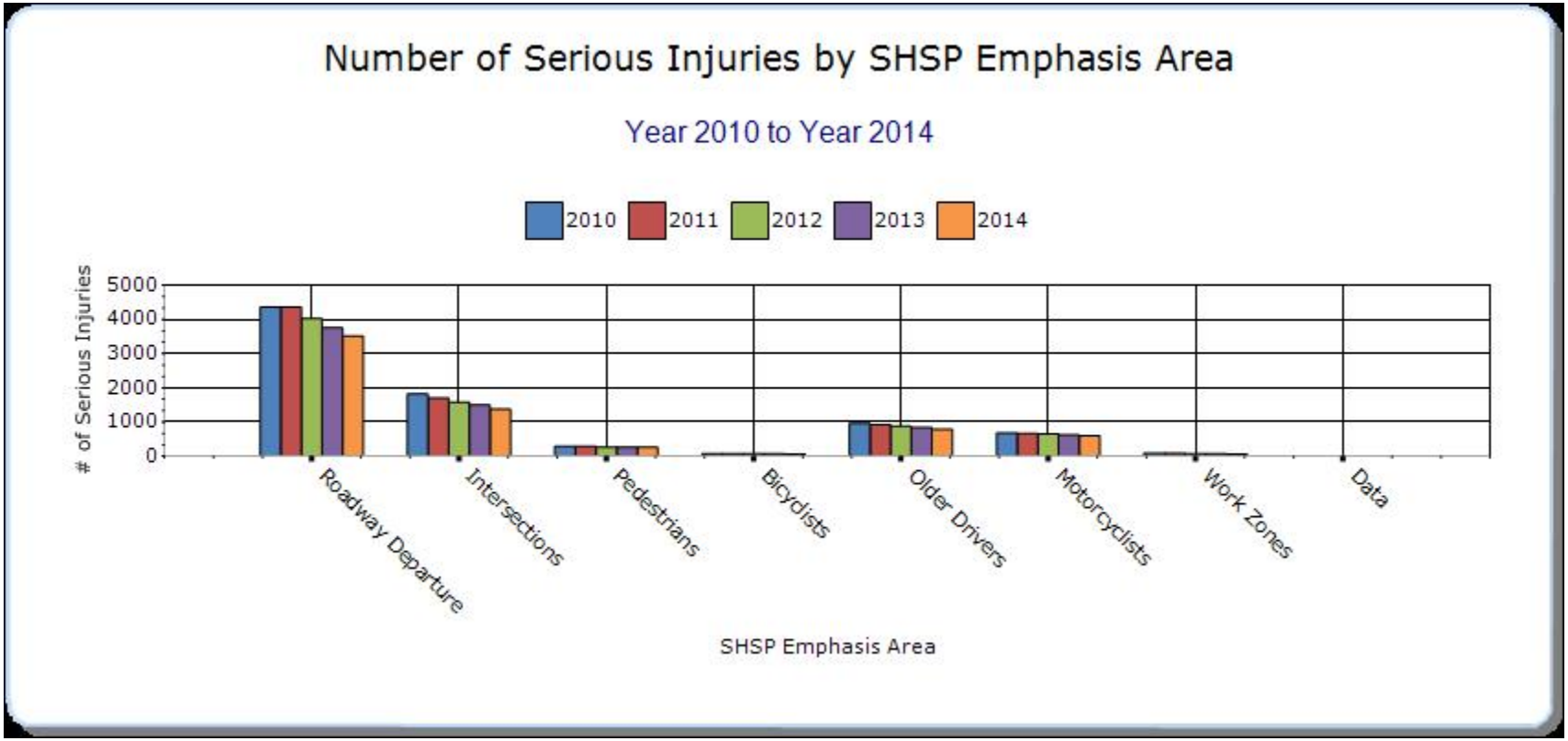
SHSP Emphasis Areas

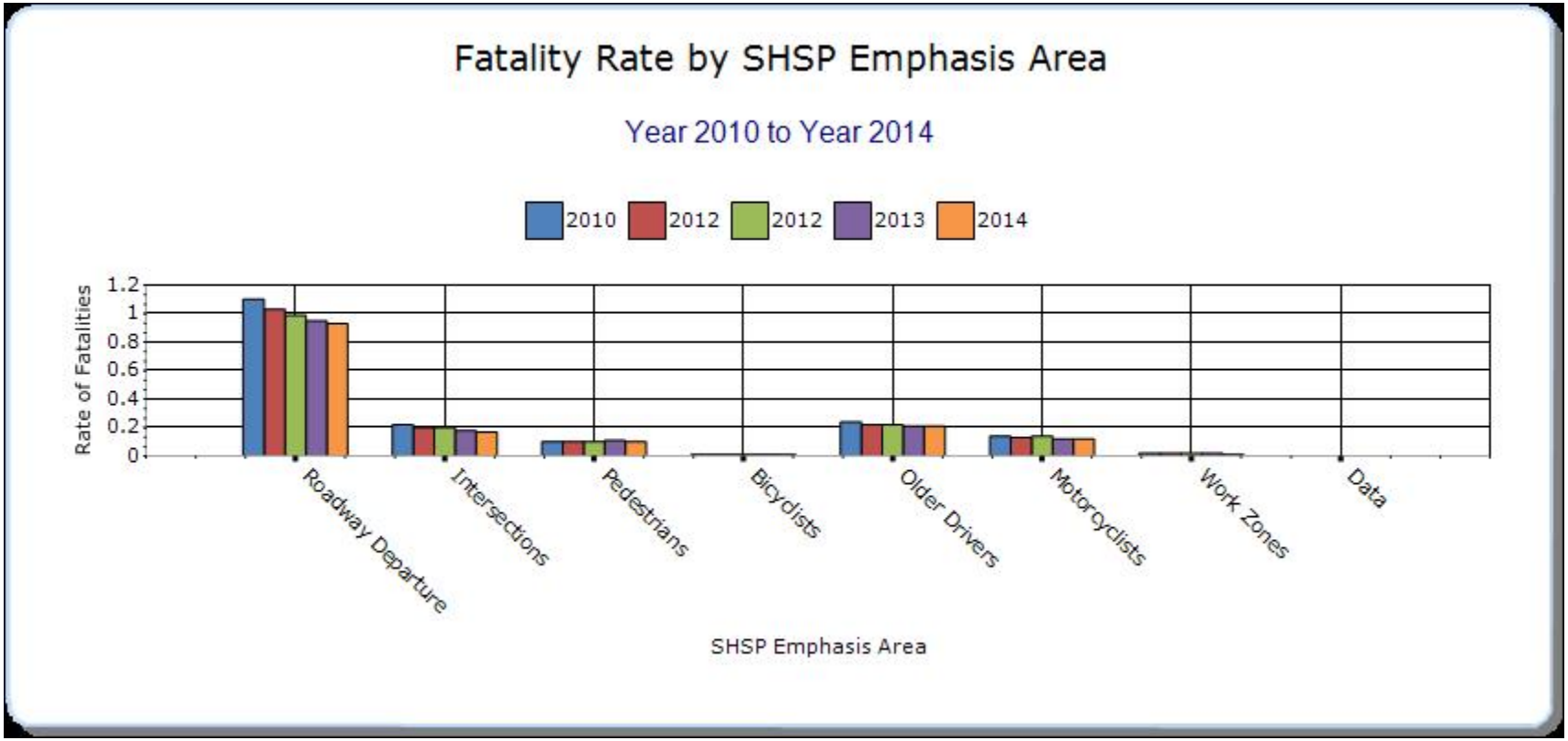
For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.

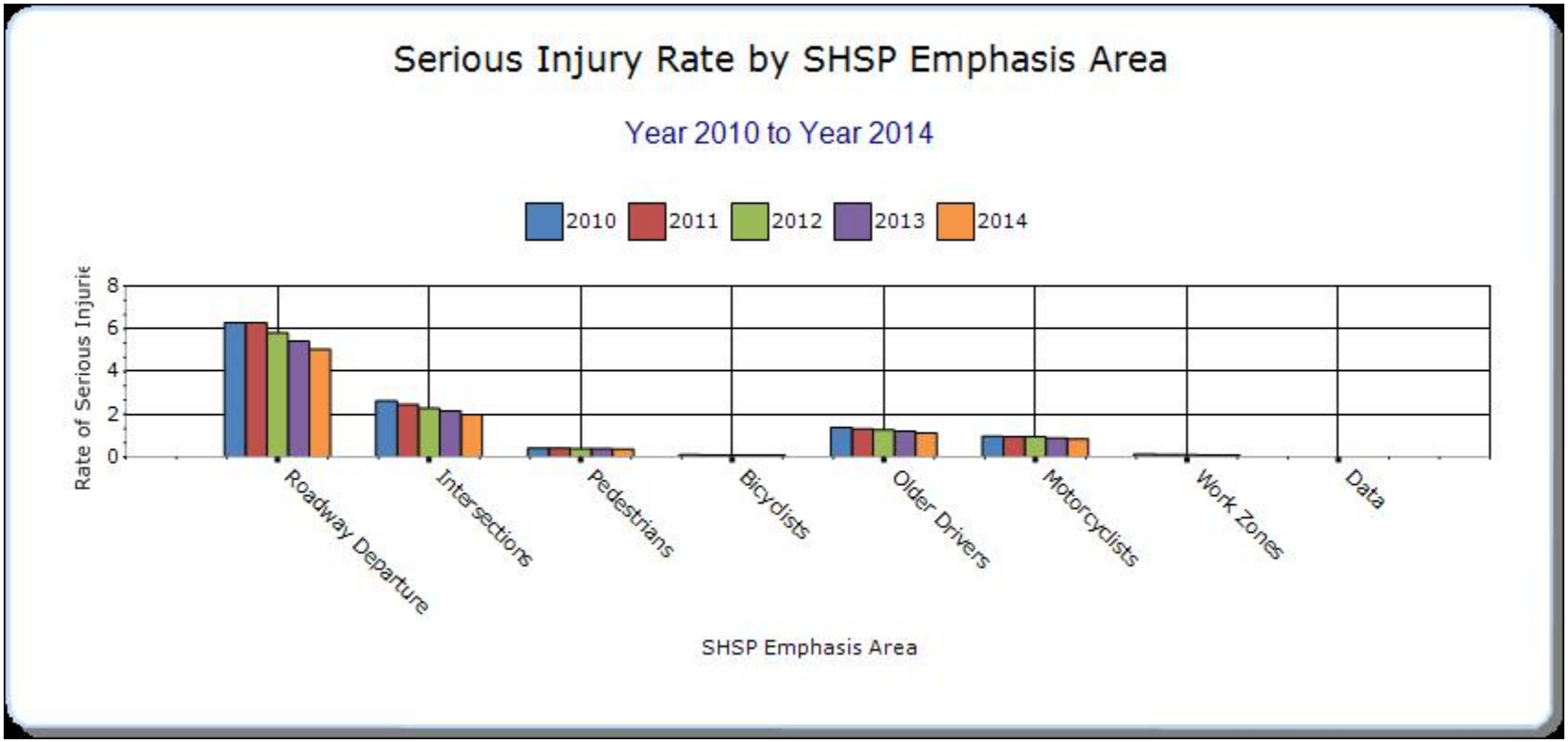
Year - 2014

HSIP-related SHSP Emphasis Areas	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Roadway Departure	Run-off-road	644.4	3508.4	0.93	5.04	0	0	0
Intersections	Intersection-related	121.8	1377.2	0.17	1.98	0	0	0
Pedestrians	Vehicle/pedestrian	72.4	263.2	0.1	0.38	0	0	0
Bicyclists	Vehicle/bicycle	4.4	66.2	0.01	0.1	0	0	0
Older Drivers	All	149.4	786.4	0.21	1.13	0	0	0
Motorcyclists	Motorcycle-related	87	600.6	0.12	0.86	0	0	0
Work Zones	Work Zone-related	10.2	63.4	0.01	0.09	0	0	0


Number of Fatalities by SHSP Emphasis Area
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Fatalities
1000
800
600
400
200
0
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
SHSP Emphasis Area


Number of Serious Injuries by SHSP Emphasis Area
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Serious Injuries
5000
4000
3000
2000
1000
0
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
SHSP Emphasis Area


Fatality Rate by SHSP Emphasis Area
Year 2010 to Year 2014
2010
2012
2012
2013
2014
Rate of Fatalities
1.2
1
0.8
0.6
0.4
0.2
0
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
SHSP Emphasis Area

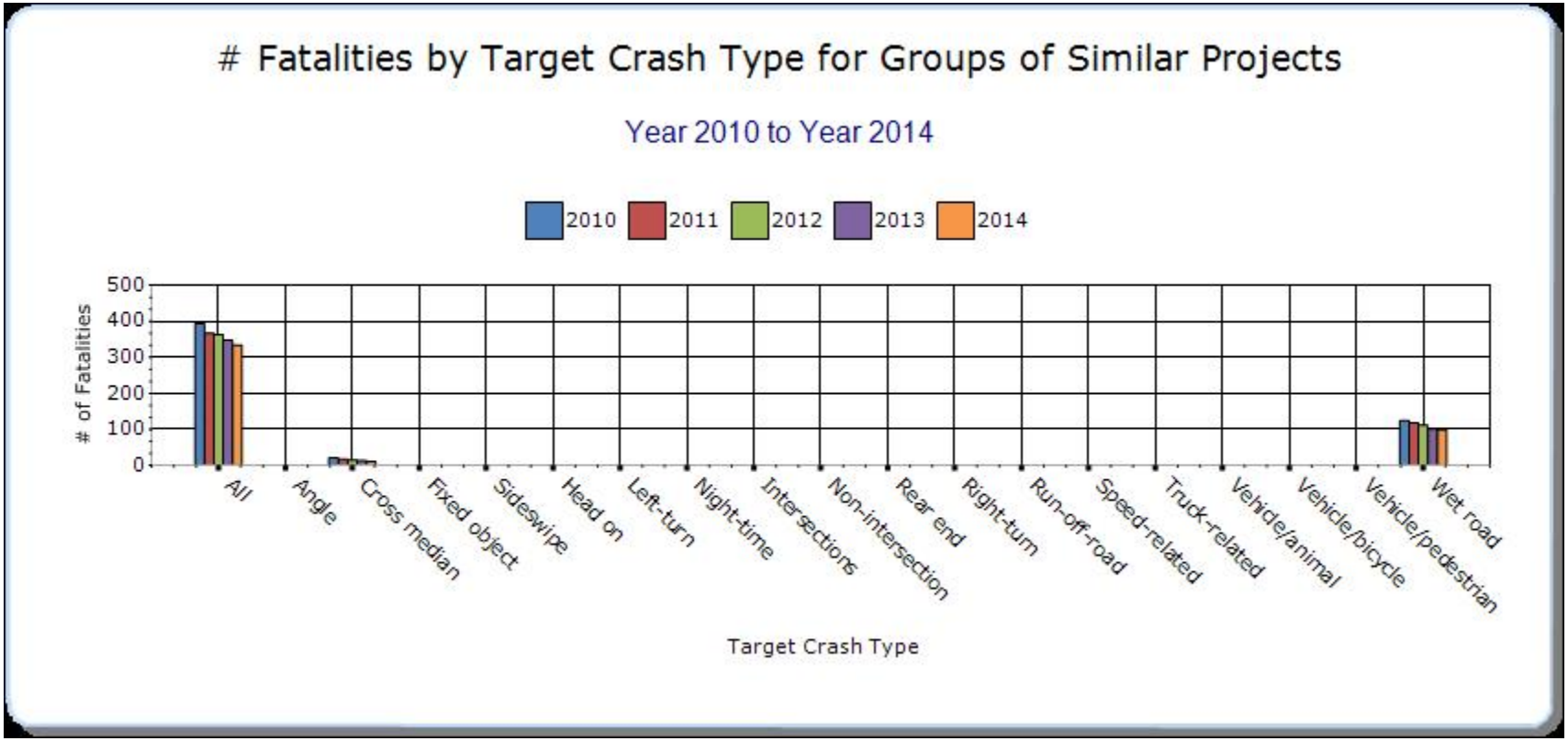

Serious Injury Rate by SHSP Emphasis Area
Year 2010 to Year 2014
2010
2011
2012
2013
2014
Rate of Serious Injurie
8
6
4
2
0
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
SHSP Emphasis Area

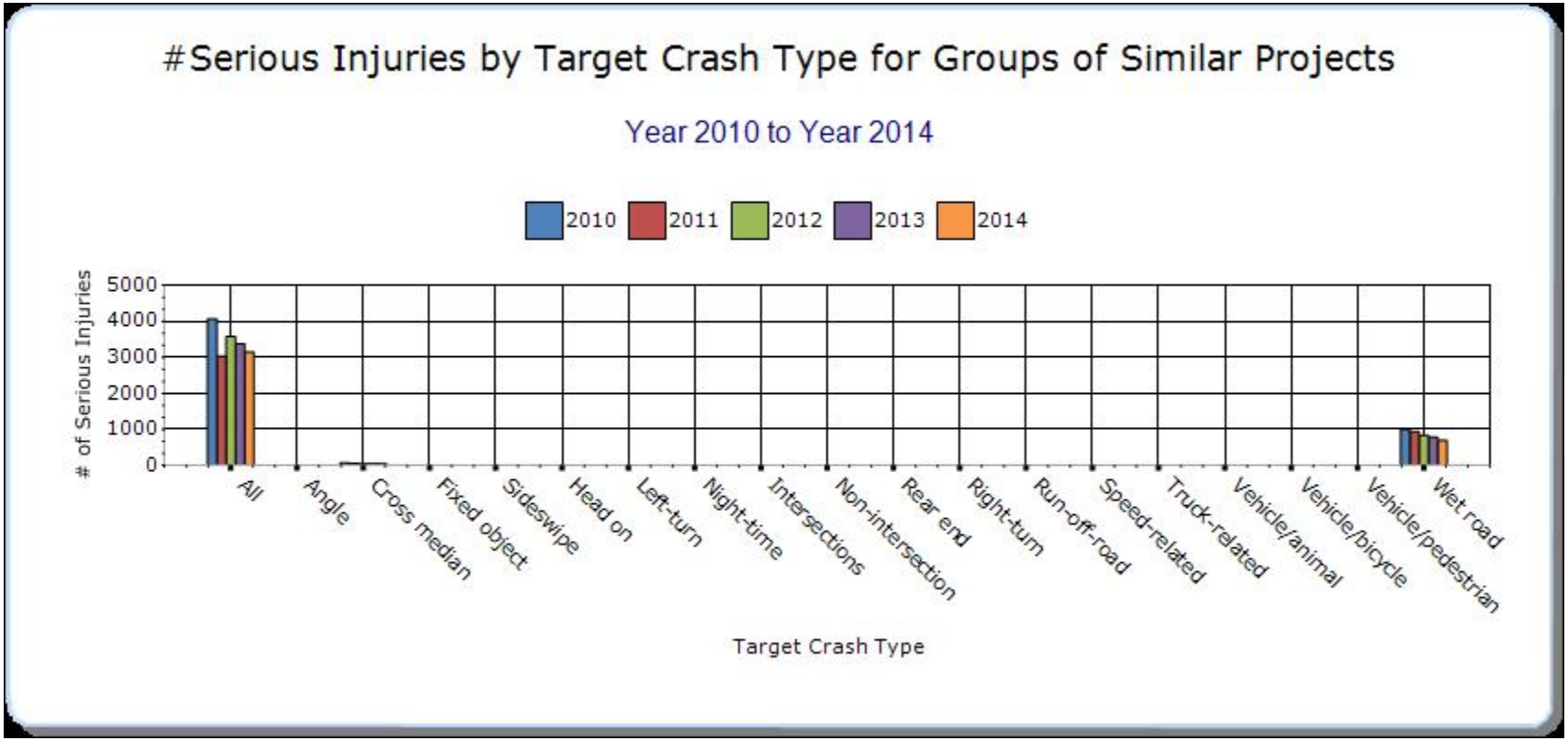
Groups of similar project types

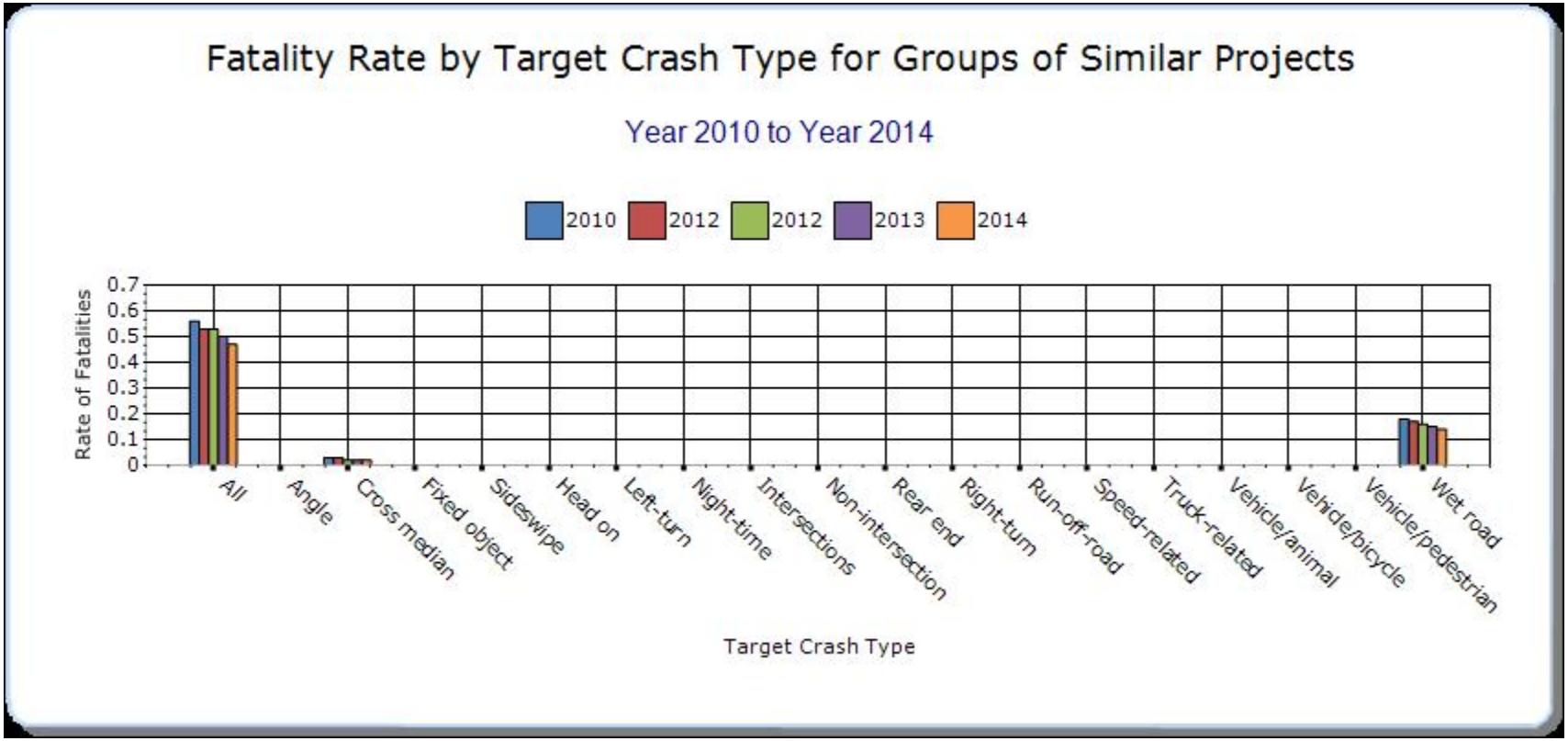
Present the overall effectiveness of groups of similar types of projects.

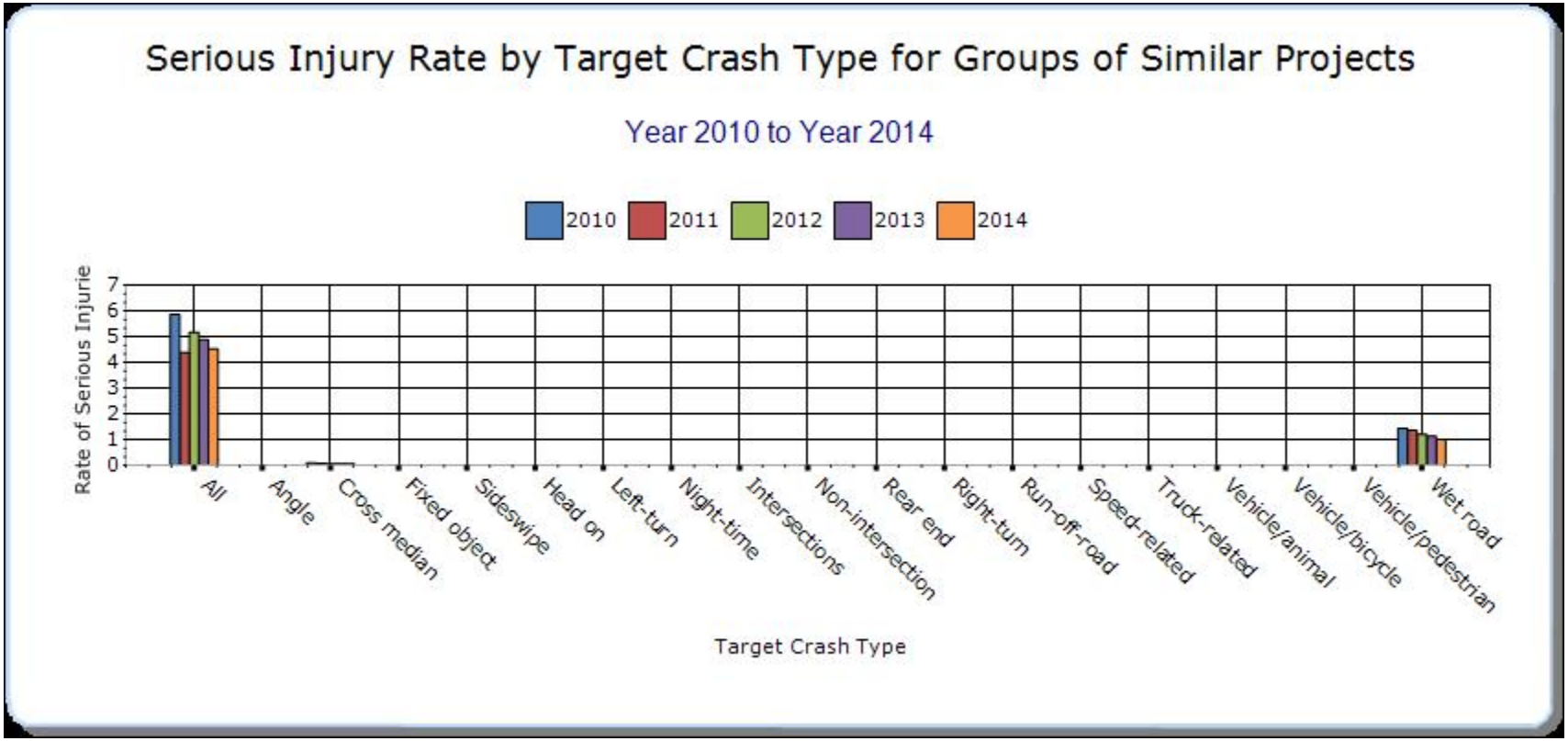
Year - 2014

HSIP Sub-program Types	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Local Safety	All	212.2	1771	0.3	2.54	0	0	0
Roadway Departure	Run-Off-Road & Head-On	644.4	3508.4	0.93	5.04	0	0	0
Median Barrier	Cross median	10.8	43.8	0.02	0.06	0	0	0
Intersection	All	121.8	1377.2	0.17	1.98	0	0	0
Skid Hazard	Wet road	98.4	697.6	0.14	1	0	0	0
Horizontal Curve	Curve Related	266	1427.4	0.38	2.05	0	0	0


Fatalities by Target Crash Type for Groups of Similar Projects
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Fatalities
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
Target Crash Type


#Serious Injuries by Target Crash Type for Groups of Similar Projects
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Serious Injuries
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
Target Crash Type


Fatality Rate by Target Crash Type for Groups of Similar Projects
Year 2010 to Year 2014
2010
2012
2012
2013
2014
Rate of Fatalities
0.7
0.6
0.5
0.4
0.3
0.2
0.1
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
Target Crash Type

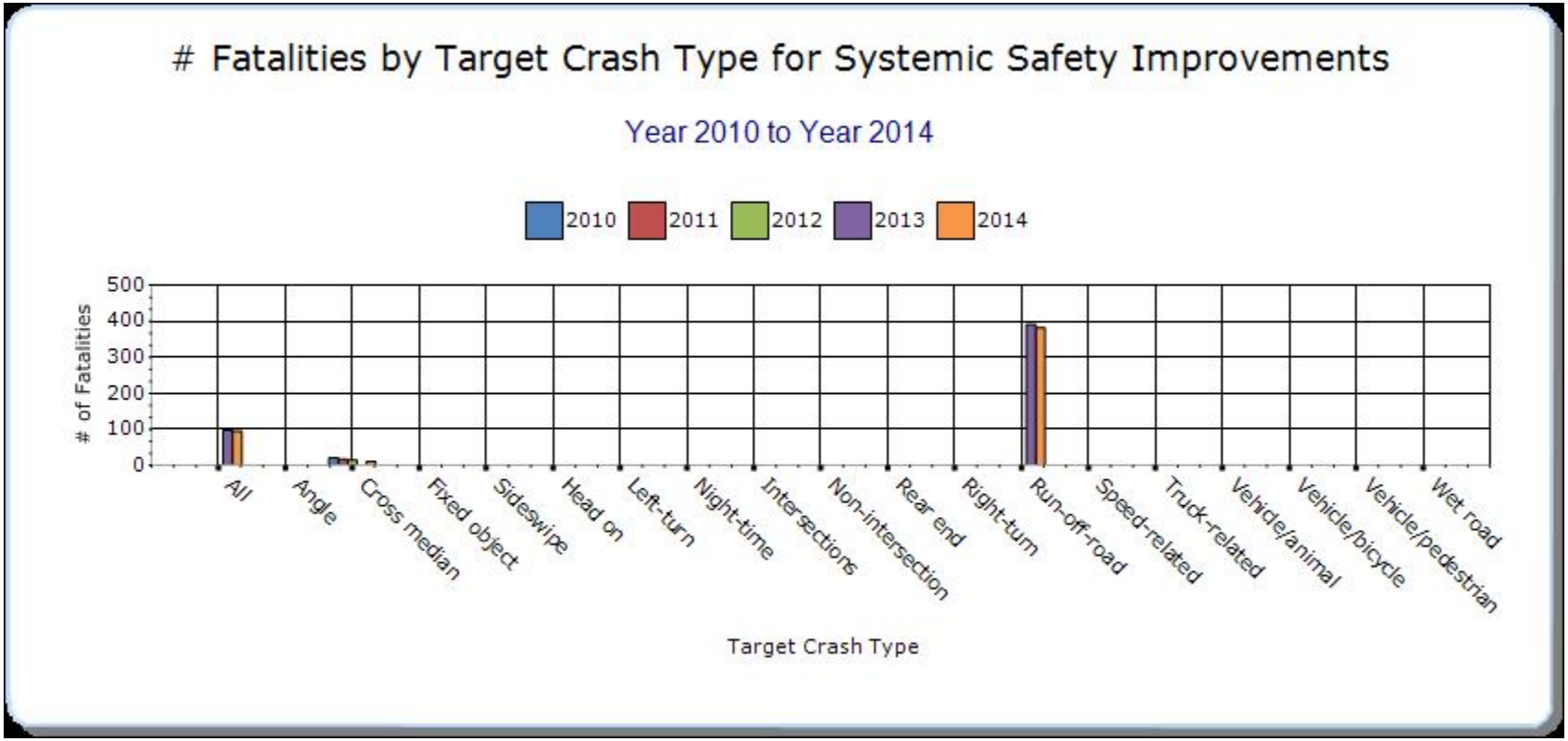

Serious Injury Rate by Target Crash Type for Groups of Similar Projects
Year 2010 to Year 2014
2010
2011
2012
2013
2014
Rate of Serious Injurie
0
1
2
3
4
5
6
7
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type

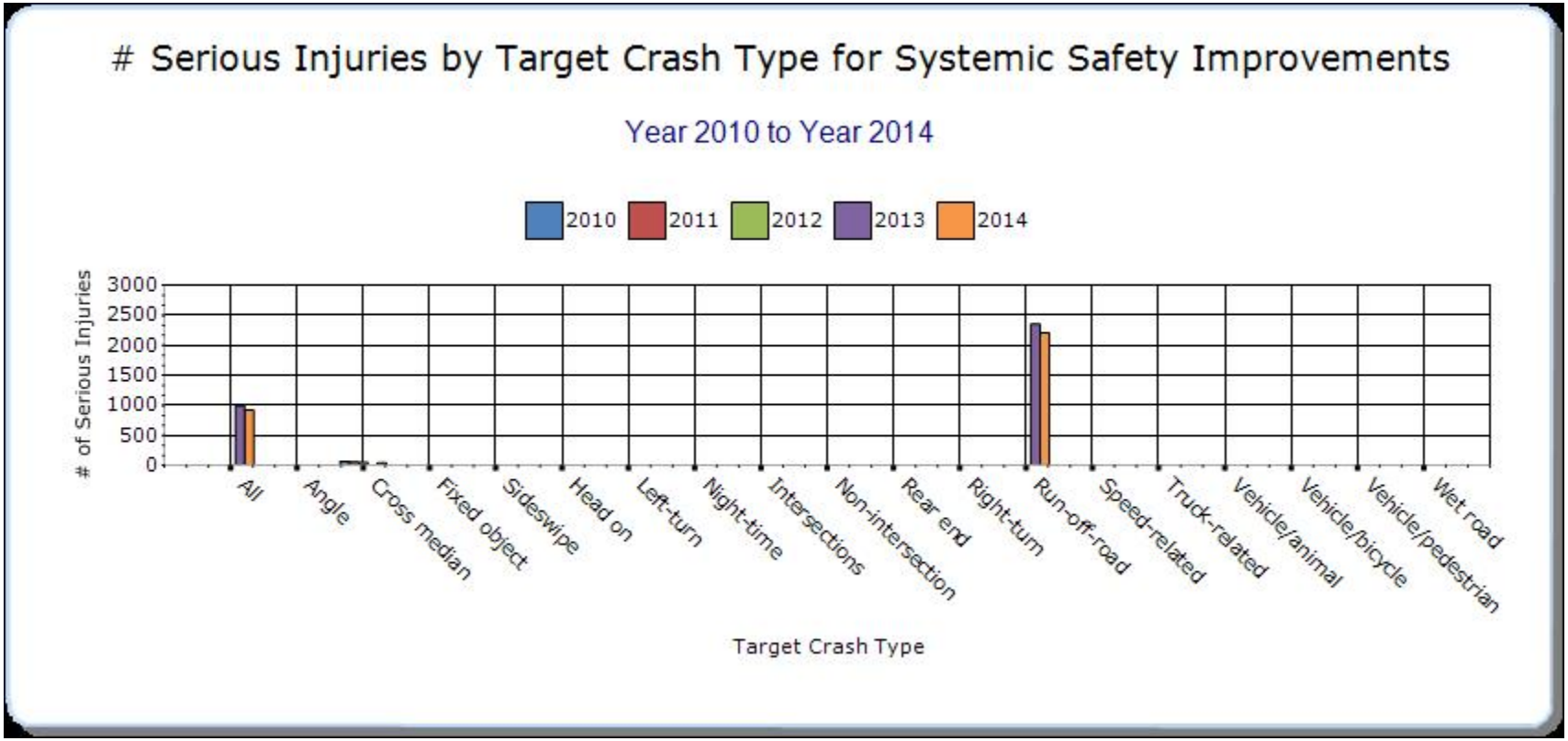
Systemic Treatments

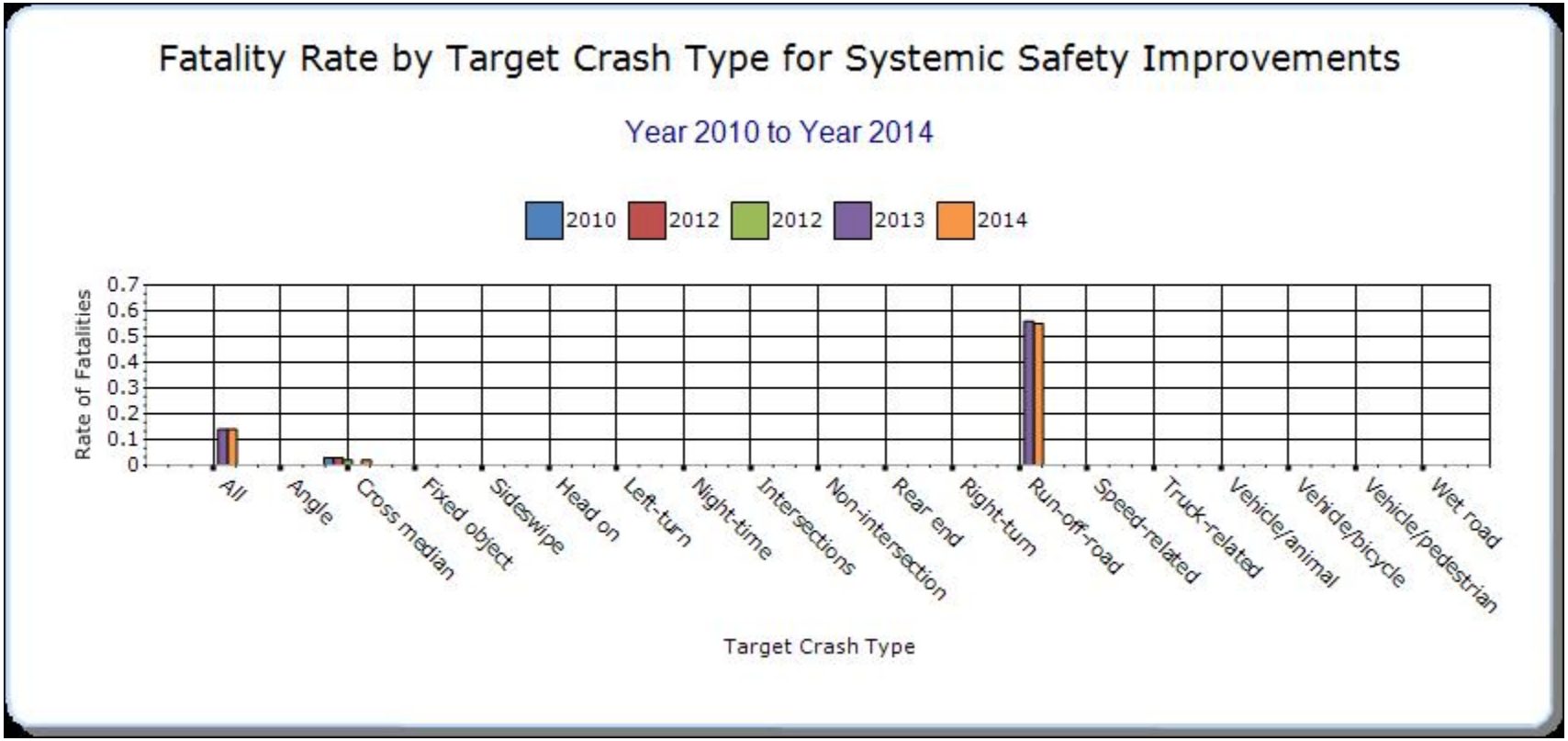
Present the overall effectiveness of systemic treatments.

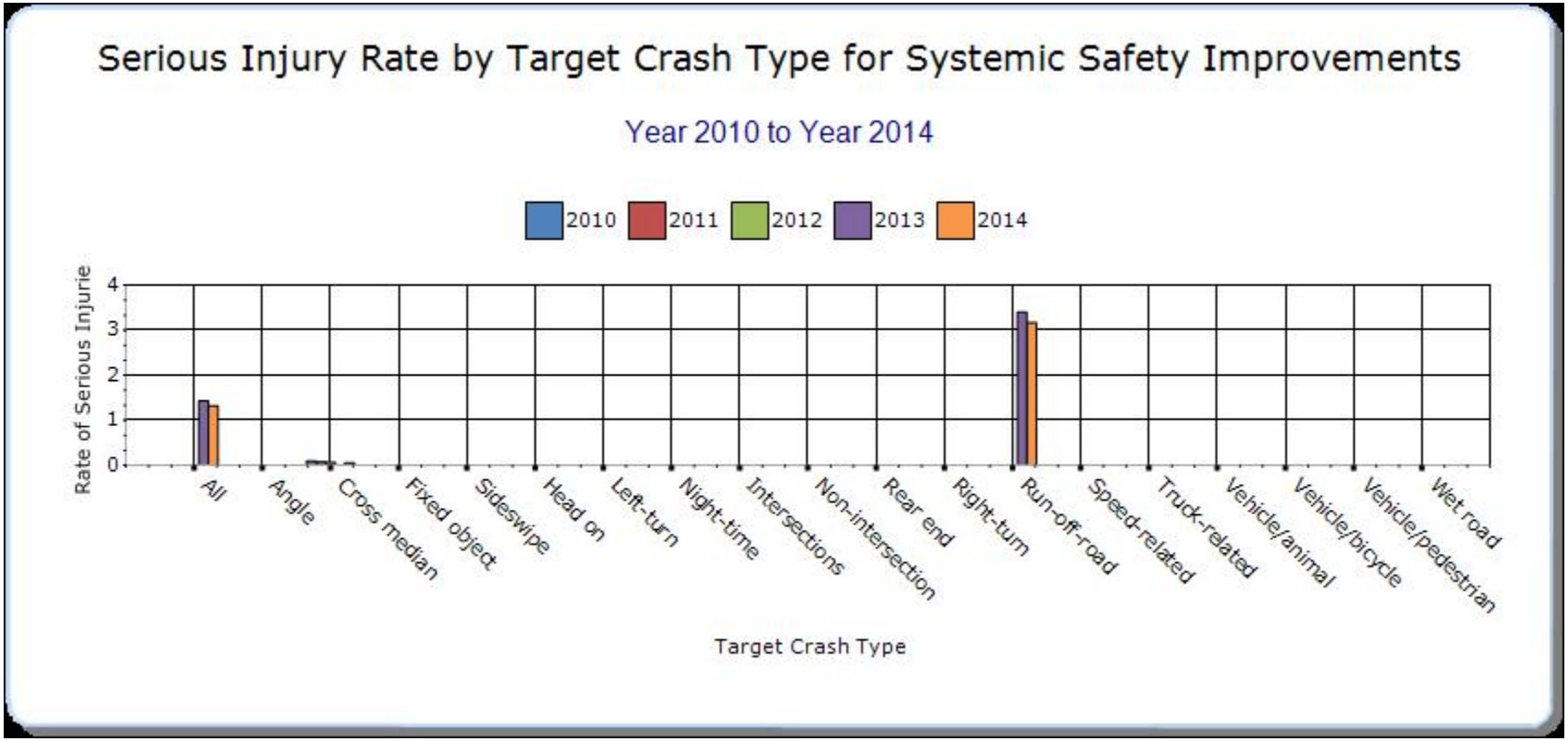
Year - 2014

Systemic improvement	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Cable Median Barriers	Cross median	10.8	43.8	0.02	0.06	800	0	0
Pavement/Shoulder Widening	Run-off-road	382	2205	0.55	3.17	0	0	0
Innovative Intersections	All	95	920	0.14	1.32	0	0	0
Rumble Strips	Lane Departure	644	3508	0.93	5.04	0	12500	0


Fatalities by Target Crash Type for Systemic Safety Improvements
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Fatalities
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
Target Crash Type


Serious Injuries by Target Crash Type for Systemic Safety Improvements
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# 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
Target Crash Type


Fatality Rate by Target Crash Type for Systemic Safety Improvements
Year 2010 to Year 2014
2010
2012
2012
2013
2014
Rate of Fatalities
0.7
0.6
0.5
0.4
0.3
0.2
0.1
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
Target Crash Type


Serious Injury Rate by Target Crash Type for Systemic Safety Improvements
Year 2010 to Year 2014
2010
2011
2012
2013
2014
Rate of Serious Injurie
4
3
2
1
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
Target Crash Type

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

MoDOT is in early stages of beginning to implement safety countermeasures on the local road system. County SHSPs have been developed for several of the high need counties in the state and the identified safety countermeasures shown in the completed SHSPs will be eligible to use the HSIP funding. Jefferson County has implemented a curve safety initiative in relation to their completed SHSP. Overall, Missouri has seen a very good reduction in the roadway fatalities and serious injuries. Much of this is due to the systemic approach used in the state. Engineering safety policy will allow us to continue to see success on many of the high need roads in the state.

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)
RT A at RT T intersection in Clinton County (project 1S1007)	Rural Major Collector	Intersection geometry	Intersection geometrics - modify skew angle	0	0	1	0	1	0	0	0	0	0	1
Various locations in Northwest District (project 1P2200)	Rural Principal Arterial - Other	Roadside	Barrier - cable	0	0	0	0	0	0	0	0	0	0	1
RT PP in Clinton County (project 1S1005)	Rural Major Collector	Roadway	Roadway widening - curve	0	1	10	10	21	0	1	2	3	6	1

US 136 in Nodaway County from RT M to US 71 (project 1P2199)	Rural Principal Arterial - Other	Roadway	Rumble strips - edge or shoulder	1	6	14	18	39	0	1	1	7	9	1
RT YY at Woodbine Rd in Buchanan County (project 1S2209)	Urban Minor Arterial	Intersection geometry	Auxiliary lanes - add right-turn lane	0	1	5	16	22	0	0	8	9	17	1
US 65 at Keelsey-Reeter Rd in Livingston County (project 2P2146B)	Urban Principal Arterial - Other	Intersection geometry	Intersection geometrics - realignment to align offset cross streets	0	0	1	1	2	0	0	0	2	2	1
US 61 at US 24 in Marion County (project 3P2196)	Rural Principal Arterial - Other Freeways and	Roadway	Pavement surface - high friction surface	1	2	12	41	56	2	1	10	33	46	1

	Expressways													
US 54 in Audrain County (project 3M0061)	Rural Principal Arterial - Other Freeways and Expressways	Roadway	Pavement surface - miscellaneous	0	0	0	0	0	0	0	0	0	0	1
Various locations in Northeast District (project 3P2203)	Rural Principal Arterial - Other	Roadside	Barrier - cable	0	0	0	0	0	0	0	0	0	0	1
Various locations in rural Kansas City District (project 4P2320)	Rural Principal Arterial - Other	Work Zone		0	0	0	0	0	0	0	0	0	0	1
Various locations in urban Kansas City	Urban Principal Arterial -	Work Zone		0	0	0	0	0	0	0	0	0	0	1

District (project 4P2322)	Other													
Various locations in Kansas City District (project 4P2301)	Urban Principal Arterial - Other	Roadway	Pavement surface - high friction surface	0	0	0	0	0	0	0	0	0	0	1
RT V in Jackson County from US 40 to MO 350 (project 4P2329)	Urban Principal Arterial - Other	Roadway	Rumble strips - edge or shoulder	0	1	5	3	9	0	0	3	3	6	1
MO 13 in Henry County from CR 55 to MO 7 (project 4P2345)	Rural Principal Arterial - Other	Roadway	Rumble strips - edge or shoulder	0	0	0	0	0	0	0	0	0	0	1
MO 350 in Jackson County from IS 470 west approx	Urban Principal Arterial - Other	Roadside	Barrier - cable	0	0	0	0	0	0	1	1	0	2	1

1.5 miles (project 4S2195)	Freeways and Expressways													
US 50 in Jackson County from 2nd Street to Chipman Rd (project 4P2025)	Urban Principal Arterial - Other Freeways and Expressways	Roadside	Barrier - cable	0	1	4	1	6	0	0	2	11	13	1
US 169 in Clay County from IS 29 to Smithville (project 4P2026)	Urban Principal Arterial - Other Freeways and Expressways	Roadside	Barrier - cable	1	1	5	2	9	0	0	7	14	21	1
US 71 in Cass and Jackson Counties from 63rd St to MO 7 (project	Urban Principal Arterial - Other Freeways and Expresswa	Roadside	Barrier - cable	1	2	12	16	31	1	0	19	29	49	1

4P2027)	ys													
US 50 in Jackson County at various intersections (project 4P1959)	Urban Principal Arterial - Other Freeways and Expressways	Intersection geometry	Auxiliary lanes - modify left-turn lane offset	0	0	0	0	0	0	0	0	0	0	1
US 50 in Johnson County at various interesections (project 4P1969)	Rural Principal Arterial - Other Freeways and Expressways	Intersection geometry	Auxiliary lanes - modify left-turn lane offset	0	0	0	0	0	0	0	0	0	0	1
IS 435 in Jackson at various locations (project 4I2189)	Rural Principal Arteria - Interstate	Roadside	Barrier - cable	0	0	0	0	0	0	0	0	0	0	1
Various locations in urban Kansas City	Urban Principal Arterial -	Roadside	Barrier - cable	0	0	0	0	0	0	0	0	0	0	1

District (project 4P1914)	Interstate													
Various locations in rural Kansas City District (project 4P1910)	Rural Principal Arteria - Interstate	Roadside	Barrier - cable	0	0	0	0	0	0	0	0	0	0	1
MO 131 in Lafayette County from MO 224 to US 50 (project 4L1111D)	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	0	0	0	0	0	0	0	0	0	0	1
MO 240 at MO 124 in Howard County (project 2P0724)	Rural Minor Arterial	Intersection geometry	Auxiliary lanes - add left-turn lane	0	1	2	1	4	0	0	1	3	4	2
US 54 at RT V and LR 54-68 in Camden County	Rural Principal Arterial - Other	Intersection geometry	Auxiliary lanes - modify left-turn lane offset	1	0	2	26	29	0	0	3	10	13	3

(project 5P0932)	Freeways and Expressways													
US 54 at 12 intersections in Cole County (project 5P2185)	Rural Principal Arterial - Other Freeways and Expressways	Intersection geometry	Intersection geometry - other	7	19	65	98	189	5	11	63	115	194	6
Various locations in Central District (project 5O0010)	Rural Principal Arterial - Other	Work Zone		0	0	0	0	0	0	0	0	0	0	1
MO 133 in Pulaski County from Crocker to Richland (project 9L1111E)	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	1	0	2	20	23	0	5	12	18	35	7

MO 19 in Crawford County from RT PP to south of Cuba (project 9P0515)	Rural Minor Arterial	Roadway	Rumble strips - edge or shoulder	0	8	21	50	79	1	1	8	21	31	35
IS 44 in Pulaski and Phelps Counties (project 9P2214)	Rural Principal Arteria - Interstate	Roadway	Pavement surface - miscellaneous	0	7	36	158	201	0	6	42	124	172	11
Various locations in Central District (project 9P2181)	Rural Principal Arterial - Other	Work Zone		0	0	0	0	0	0	0	0	0	0	1
MO 8 in Washington County from RT AA to Potosi (project 9P0577F)	Rural Principal Arterial - Other	Roadway	Rumble strips - edge or shoulder	3	0	6	20	29	1	2	12	22	37	63

MO 141 in Jefferson County at Astra Way (project 6P2209)	Urban Principal Arterial - Other Freeways and Expressways	Intersection traffic control	Modify traffic signal - miscellaneous/other/unspecified	0	0	17	52	69	1	0	3	22	26	-9
RT PP in Jefferson County from High Ridge Blvd to Brynes Mill Road (project 6P2315)	Urban Major Collector	Roadway	Rumble strips - center	1	6	20	33	60	0	2	11	52	65	2
RT N in St. Charles County from Meadowlake Drive to Eagle Hill Drive (project 6S1988)	Urban Minor Arterial	Intersection geometry	Auxiliary lanes - add left-turn lane	0	1	8	27	36	0	0	1	13	14	13

MO 100 in Franklin County from Dubois Creek to IS 44 (project 6P2206)	Urban Major Collector	Roadway	Rumble strips - edge or shoulder	2	15	42	176	235	2	11	44	130	187	-8
Various locations in St Louis District (project 6P2351)	Urban Principal Arterial - Other	Work Zone		0	0	0	0	0	0	0	0	0	0	1
MO 94 in St. Charles County from RT D to Walnut Springs Drive (project 3S2009J)	Rural Minor Arterial	Roadway	Rumble strips - edge or shoulder	0	11	44	33	88	1	10	23	35	69	-9
RT D in St. Charles County from RT DD to MO 94	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	2	6	20	31	59	1	1	6	48	56	5

(project 6S2192)														
RT D in St. Charles County from east of RT Z to RT DD (project 6S2192B)	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	0	2	11	21	34	0	0	1	15	16	35
RT DD in St. Charles County from west of Sommers Rd to RT D (project 6S2310)	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	3	3	25	53	84	0	0	5	19	24	13
RT P in St. Charles County from US 61 to Hoff Road (project 6S2391)	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	4	7	40	59	110	0	7	17	45	69	-11
MO 39 in Barry County from 3.7	Rural Minor Arterial	Roadway	Rumble strips - edge or shoulder	0	2	3	7	12	0	3	5	12	20	14

miles north of MO 76 to MO 76 (project 7P2171C)														
MO 39 in Barry County from RT WW to 2.8 miles south of RT WW (project 7P2171D)	Rural Minor Arterial	Roadway	Rumble strips - edge or shoulder	0	0	5	7	12	0	2	6	5	13	22
MO 39 in Barry County from RT EE to MO 76 (project 7P2171E)	Rural Minor Arterial	Roadway	Rumble strips - edge or shoulder	1	3	7	12	23	0	4	9	19	32	19
MO 174 in Lawrence County from MO 39 to IS 44 (project 7P2171F)	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	0	0	1	4	5	0	0	0	4	4	14

MO 174 in Lawrence County from IS 44 to CR 59 (project 7S2219)	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	0	5	6	23	34	0	2	7	7	16	55
MO 112 in Barry County from SP 112 to MO 76 (project 7P2171G)	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	1	3	9	13	26	1	1	6	12	20	19
MO 52 in Bates County from KS state line to US 71 (project 7P2213)	Rural Minor Arterial	Roadway	Rumble strips - edge or shoulder	0	3	8	32	43	0	3	8	39	50	76
Various locations in Southwest District (project 7P2196)	Rural Principal Arterial - Other	Work Zone		0	0	0	0	0	0	0	0	0	0	1

Various locations in rural Southwest District (project 8P2294)	Rural Principal Arterial - Other	Roadside	Removal of roadside objects (trees, poles, etc.)	0	0	0	0	0	0	0	0	0	0	1
Various locations in rural Southwest District (project 8P2178)	Rural Principal Arterial - Other Freeways and Expresswa ys	Roadside	Barrier- metal	0	0	0	0	0	0	0	0	0	0	1
US 60 at West Clinton Ave in Webster County (project 8P2213)	Urban Principal Arterial - Other Freeways and Expresswa ys	Intersection traffic control	Modify traffic signal - miscellaneous/other/unspe cified	0	0	1	0	1	0	0	0	3	3	73
MO 174 in Greene County from CR 59 to west of	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	0	1	12	40	53	0	1	12	34	47	6

BNSF railway (project 8S2282)														
MO 13 in Stone County from south of MO 76 to Kimberling Blvd (project 8P2188)	Rural Principal Arterial - Other	Roadway	Rumble strips - edge or shoulder	0	11	38	61	110	0	3	14	27	44	54
Various locations in urban Southwest District (project 8P2164)	Urban Principal Arterial - Other	Work Zone		0	0	0	0	0	0	0	0	0	0	1
Various locations in rural Southwest District (project 8P2173)	Rural Principal Arterial - Other	Work Zone		0	0	0	0	0	0	0	0	0	0	1

MO 95 in Wright County from MO 38 to RT N (project 8P2306)	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	0	4	9	19	32	1	5	13	19	38	-31
Various locations in Southeast District (project 0P2240)	Rural Principal Arterial - Other	Work Zone		0	0	0	0	0	0	0	0	0	0	1
IS 55 in Pemiscot County at multiple interchanges (project 0I2188)	Rural Principal Arteria - Interstate	Lighting	Intersection lighting	0	2	8	8	18	0	0	0	5	5	7
RT W in Butler County from RT O to BU 60 (project 0S2245)	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	0	9	28	40	77	0	0	12	42	54	10

Optional Attachments

Sections	Files Attached

Glossary

5 year rolling average means the average of five individual, consecutive annual points of data (e.g. annual fatality rate).

Emphasis area means a highway safety priority in a State's SHSP, identified through a data-driven, collaborative process.

Highway safety improvement project means strategies, activities and projects on a public road that are consistent with a State strategic highway safety plan and corrects or improves a hazardous road location or feature or addresses a highway safety problem.

HMVMT means hundred million vehicle miles traveled.

Non-infrastructure projects are projects that do not result in construction. Examples of non-infrastructure projects include road safety audits, transportation safety planning activities, improvements in the collection and analysis of data, education and outreach, and enforcement activities.

Older driver special rule applies if traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65 in a State increases during the most recent 2-year period for which data are available, as defined in the Older Driver and Pedestrian Special Rule Interim Guidance dated February 13, 2013.

Performance measure means indicators that enable decision-makers and other stakeholders to monitor changes in system condition and performance against established visions, goals, and objectives.

Programmed funds mean those funds that have been programmed in the Statewide Transportation Improvement Program (STIP) to be expended on highway safety improvement projects.

Roadway Functional Classification means the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide.

Strategic Highway Safety Plan (SHSP) means a comprehensive, multi-disciplinary plan, based on safety data developed by a State Department of Transportation in accordance with 23 U.S.C. 148.

Systemic safety improvement means an improvement that is widely implemented based on high risk roadway features that are correlated with specific severe crash types.

Transfer means, in accordance with provisions of 23 U.S.C. 126, a State may transfer from an apportionment under section 104(b) not to exceed 50 percent of the amount apportioned for the fiscal year to any other apportionment of the State under that section.