Highway Safety Improvement Program

Data Driven Decisions

Missouri
Highway Safety Improvement Program
2013 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 each year for six consecutive years. During that time, fatalities decreased by 38 percent (1,257 in 2005 to 784 in 2011) and serious injuries decreased by 35 percent (8,621 in 2005 to 5,644 in 2011). While crash data is still not complete for 2012, the serious injuries are expected to once again decrease. However, the fatalities in 2012 increased to 826.

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. The anticipated product is the development of a Local SHSP, which will identify 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 to Metropolitan Planning Organizations. 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.

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

☐Cost Effectiveness

☒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
- ☐ Cost Effectiveness

☒ 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

☐ Cost Effectiveness

☒ 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
- ☐ Cost Effectiveness
- ☒ 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
- ☐ Cost Effectiveness
- ☒ 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

☐Cost Effectiveness

☒Systemic safety initiatives 1

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

80

Highway safety improvment program funds are used to address which of the following systemic improvments?

- ☒ 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.

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

☒ Highway Safety Manual

☐ Road Safety audits

☐ Systemic Approach

☐ Other:

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

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)	17738000	33 %	17388062	36 %
HRRRP (SAFETEA-LU)	2009000	4 %	896169	2 %

HRRR Special Rule				
Penalty Transfer - Section 154	14305000	27 %	13469312	28 %
Penalty Transfer – Section 164	18542000	35 %	15993140	33 %
Incentive Grants - Section 163				
Incentive Grants (Section 406)				
Other Federal-aid Funds (i.e. STP, NHPP)	355000	1 %	355000	1 %
State and Local Funds	577000	1 %	577000	1 %
Totals	53526000	100%	48678683	100%

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

$0.00

How much funding is obligated to local safety projects?

$0.00

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

$0.00

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

$0.00

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

$0.00

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

$0.00

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

Impediments are generally related to under-programming HSIP funding. We have not modified the HSIP programming amounts to match the MAP-21 allocation for our state.

As we begin to program HSIP on the local roads, we anitcipate potential obligation issues as locals may not be familiar with federal requirements.

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

The Missouri Coalition for Roadway Safety is committed to improving safety on our roadways. Much of the success beyond the safety engineering relates to grass-roots efforts that have been initiatied in each of the seven regions in the state utilizing the other E's (enforcement,

education, and EMS) to improve the overall safety on our roadways.

It is also important to note that Missouri is committed to sharing safety solution information to the nation. This technology transfer has been instrumental in the progress Missouri has made towards reducing fatal and serious injury crashes on all roadways.

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
MO 32 Shoulder Improvements in Dent County (5P3013)	Roadway Rumble strips - edge or shoulder	11.3 Miles	854000	854000	Penalty Transfer - Section 154	Rural Minor Arterial	2171	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
US 54 Intersection Improvements in Cole County (9P2263B)	Intersection geometry Auxiliary lanes - modify left-turn lane offset	3 Numbers	1000000	1000000	Penalty Transfer - Section 154	Rural Principal Arterial - Other	14438	65	State Highway Agency	Improving the design and operation of highway intersections	Improve intersection safety
Route M Cole County Pavement and Signing Improvement	Roadway signs and traffic control Curve-related warning signs and flashers	1 Numbers	12000	380000	HRRRP (SAFETEA-LU)	Rural Major Collector	1731	55	State Highway Agency	Keeping vehicles in the roadway	Improve curve safety

s (5L1701C)											
MO 87 Pavement and shoulder improvements from I-70 to California (5S3012)	Roadway Rumble strips - edge or shoulder	29.84 Miles	2343000	3821000	Penalty Transfer – Section 164	Rural Minor Arterial	1305	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
On-call work zone enforcement in the Central District (5P3001)	Speed management Speed management - other	0 Miles	20000	20000	State and Local Funds	Rural Principal Arterial - Other	0	60	State Highway Agency	Curbing aggressive driving	Reduce speed in work zone
Guardrail / Cable Repairs (1P2223)	Roadside Barrier - cable	30 Miles	350000	350000	HSIP (Section 148)	Rural Principal Arterial - Interstate	25000	70	State Highway Agency	Minimizing the consequences of leaving the road	Improve roadside safety
MO 6 Daviess/DeKalb Shoulders and rumble stripe (1P3027)	Roadway Rumble strips - edge or shoulder	23.58 Miles	838000	4182000	Penalty Transfer – Section 164	Rural Minor Arterial	1090	60	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders

US 36 Buchanan/De Kalb Resurfacing, shoulders and rumble stripe (1P2195)	Roadway Rumble strips - edge or shoulder	10.61 Miles	700000	3871000	HSIP (Section 148)	Rural Principal Arterial - Other	6330	65	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
US 71 Andrew Rurfacing, shoulders and rumble stripe (1P1039)	Roadway Rumble strips - edge or shoulder	17.92 Miles	700000	3187000	HSIP (Section 148)	Rural Principal Arterial - Other	7000	65	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
US 169 Buchanan Shoulders and rumble stripe (1P2215)	Roadway Rumble strips - edge or shoulder	15 Miles	964000	3298000	Penalty Transfer – Section 164	Urban Principal Arterial - Other	5000	60	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
On-call work zone enforcement in the Northwest District (1P1053)	Speed management Speed management - other	0 Miles	11000	11000	State and Local Funds	Rural Principal Arterial - Other	0	60	State Highway Agency	Curbing aggressive driving	Reduce speed in work zone
On-call work zone enforcement	Speed management Speed management -	0 Miles	6000	6000	State and Local	Rural Principal Arterial -	0	60	State Highway	Curbing aggressive	Reduce speed in work

in the rural Kansas City District (4I3009)	other				Funds	Other			Agency	driving	zone
On-call work zone enforcement in the urban Kansas City District (4I3009)	Speed management Speed management - other	0 Miles	180000	180000	State and Local Funds	Urban Principal Arterial - Other	0	60	State Highway Agency	Curbing aggressive driving	Reduce speed in work zone
MO 13 Lafayette Shoulders and rumble stripe (3P3012)	Roadway Rumble strips - edge or shoulder	12.334 Miles	437000	1548000	Penalty Transfer – Section 164	Rural Principal Arterial - Other	6650	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
I-49 at MO 58 Cass Interchange Improvements (4P2389)	Interchange design Interchange design - other	1 Numbers	610000	610000	HSIP (Section 148)	Urban Principal Arterial - Interstate	62959	65	State Highway Agency	Improving the design and operation of highway intersections	Improve intersection safety
US 69 and MO 45 Clay Shoulder improvement	Roadway Rumble strips - edge or shoulder	20 Miles	1969000	1969000	Penalty Transfer – Section	Rural Principal Arterial -	12000	55	State Highway Agency	Keeping vehicles in the	Improve roadway shoulder

s and rumble stripes (4P3030)					164	Other				roadway	s
MO 273 Platte Shoulder improvements and rumble stripes (4S2182)	Roadway Rumble strips - edge or shoulder	3.96 Miles	151000	616000	Penalty Transfer – Section 164	Rural Minor Arterial	5239	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
MO 2 Cass Shoulder improvements and rumble stripes (4S3031)	Roadway Rumble strips - edge or shoulder	14.684 Miles	676000	1871000	Penalty Transfer – Section 164	Rural Minor Arterial	1110	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
MO 47 Lincoln Shoulder improvements and rumble stripes(3P2228G)	Roadway Rumble strips - edge or shoulder	12.75 Miles	943000	1702000	Penalty Transfer – Section 164	Rural Minor Arterial	8548	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
MO 79 Marion Shoulder improvement	Roadway Rumble strips - edge or shoulder	7.73 Miles	151000	5062000	Penalty Transfer - Section	Rural Minor Arterial	1058	55	State Highway Agency	Keeping vehicles in the	Improve roadway shoulder

s and rumble stripes (3P2193)					154					roadway	s
US 24 Marion Friction improvements for interchange ramps (2P3012)	Roadway Pavement surface - high friction surface	1 Miles	209000	209000	HSIP (Section 148)	Rural Principal Arterial - Other	15000	60	State Highway Agency	Keeping vehicles in the roadway	Improve curve safety
MO 3 Randolph Shoulder improvements and rumble stripes (2P3010)	Roadway Rumble strips - edge or shoulder	9.1 Miles	5000	910000	HRRRP (SAFETEA-LU)	Rural Major Collector	1206	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
On-call work zone enforcement in the Northeast District (2P3009)	Speed management Speed management - other	0 Miles	25000	25000	State and Local Funds	Rural Principal Arterial - Other	0	60	State Highway Agency	Curbing aggressive driving	Reduce speed in work zone
MO 30 Intersection improvement	Intersection geometry Intersection geometry	3 Numb	1108000	1239000	Penalty Transfer -	Urban Principal Arterial -	37886	60	State Highway	Improving the design and	Improve intersecti

s at Dillion Rd, Caroline Rd, and Delores Dr (J6P2373C)	- other	ers			Section 154	Other Freeways and Expressways			Agency	operation of highway intersections	on safety
MO 30 Signing and guardrail from Rte. 141 to Rte. B. (J6P2373F)	Roadway signs and traffic control Roadway signs and traffic control - other	17.326 Miles	304000	433079	Penalty Transfer - Section 154	Urban Principal Arterial - Other Freeways and Expressways	37288	60	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
MO 30 Safety improvements including signal upgrades and advanced warning systems from Rte. 141 to Rte. B. (J6P2373G)	Intersection traffic control Intersection flashers - add advance intersection warning sign-mounted	17.326 Miles	1105000	1105000	Penalty Transfer - Section 154	Urban Principal Arterial - Other Freeways and Expressways	37288	60	State Highway Agency	Improving the design and operation of highway intersections	Improve intersection safety
Rt PP Pavement, shoulder, and	Shoulder treatments Widen shoulder - paved or other	2.158 Miles	619000	939000	Penalty Transfer –	Rural Major Collector	2029	45	State Highway Agency	Keeping vehicles in the	Improve roadway shoulder

curve improvements from Twin Rivers Road to Rte. 30. (J6S3021)					Section 164					roadway	s
Rt D Pavement, shoulder and curve improvements from Rte. Z to MO 94. (J6S2192C)	Shoulder treatments Widen shoulder - paved or other	4.73 Miles	813000	1518939	Penalty Transfer – Section 164	Rural Major Collector	2982	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
Rt D Pavement, shoulder, and curve improvements from Rte. T to Rte. Z (J6S3018)	Shoulder treatments Widen shoulder - paved or other	4.9 Miles	1418000	2157379	Penalty Transfer – Section 164	Rural Major Collector	2152	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
Rt DD Pavement, shoulder and curve improvement	Shoulder treatments Widen shoulder - paved or other	3.83 Miles	1288000	1759000	Penalty Transfer – Section 164	Rural Major Collector	1299	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders

s from 2 miles north of Rte. D to Rte. 94 (J6S2310B)											
Rt Z Pavement and shoulder improvements from I-70 to Rte. D. (J6S2322)	Shoulder treatments Widen shoulder - paved or other	7.325 Miles	1525000	2288732	Penalty Transfer – Section 164	Urban Major Collector	10994	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
MO 109 Intersection improvements at Pond Grover Loop. (J6S2046B)	Intersection traffic control Modify traffic signal - modernization/replacement	1 Numbers	512000	612000	HSIP (Section 148)	Urban Minor Arterial	8263	45	State Highway Agency	Improving the design and operation of highway intersections	Improve intersection safety
Rt D Signal, lighting and ADA facilities improvements at Skinker Parkway, Hodiamont Avenue and Union Blvd.	Pedestrians and bicyclists Pedestrian signal - modify existing	3 Numbers	686000	930156	HSIP (Section 148)	Urban Principal Arterial - Other	7289	35	State Highway Agency	Improving the design and operation of highway intersections	Improve intersection safety

(J6S2242)											
On-call work zone enforcement in the St. Louis District (J6I3002)	Speed management Speed management - other	0 Miles	250000	250000	State and Local Funds	Urban Principal Arterial - Other Freeways and Expressways	0	60	State Highway Agency	Curbing aggressive driving	Reduce speed in work zone
MO 366 Pavement Seal and ADA facility improvements from the City Limits to Broadway (J6S2234)	Pedestrians and bicyclists Miscellaneous pedestrians and bicyclists	5.1 Miles	175000	178870	Other Federal-aid Funds (i.e. STP, NHPP)	Urban Minor Arterial	18500	30	State Highway Agency	Making walking and street crossing easier	Improving pedestrian safety
MO 100 Pavement Overlay and ADA Facility improvements from the City Limits to Vandeventer (J6P2236),	Pedestrians and bicyclists Miscellaneous pedestrians and bicyclists	3.6 Miles	180000	187764	Other Federal-aid Funds (i.e. STP, NHPP)	Urban Minor Arterial	9900	35	State Highway Agency	Ensuring safer bicycle travel	Improving bicycle safety

inlcuded road diet from McCausland to Kingshighway to include dedicated bike lanes.											
US 54 Benton Shoulder improvements and rumble stripes (5P0915)	Roadway Rumble strips - edge or shoulder	16 Miles	561000	5852000	HSIP (Section 148)	Rural Principal Arterial - Other	3752	60	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
MO 7, MO 83, & RT U Benton Shoulder improvements and rumble stripes (5P2155)	Roadway Rumble strips - edge or shoulder	14 Miles	414000	5351000	Penalty Transfer – Section 164	Rural Principal Arterial - Other	1044	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
MO 76 Stone Shoulder improvements and rumble stripes	Roadway Rumble strips - edge or shoulder	8.489 Miles	840000	1344000	HSIP (Section 148)	Rural Minor Arterial	2147	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders

(7P3012)											
US 160 Taney Shoulder improvements and rumble stripes (8L1300L)	Roadway Rumble strips - edge or shoulder	14.234 Miles	498000	1932000	Penalty Transfer – Section 164	Rural Major Collector	7196	60	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
MO 176 Taney Shoulder improvements and rumble stripes (8L1300O)	Roadway Rumble strips - edge or shoulder	4.762 Miles	238000	541000	Penalty Transfer – Section 164	Rural Major Collector	302	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
US 160 Greene Shoulder improvements and rumble stripes (8L1300T)	Roadway Rumble strips - edge or shoulder	8.574 Miles	400000	1014000	HSIP (Section 148)	Rural Minor Arterial	989	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
On-call work zone enforcement in the urban Southwest District	Speed management Speed management - other	0 Miles	40000	40000	State and Local Funds	Urban Principal Arterial - Other Freeways and	0	60	State Highway Agency	Curbing aggressive driving	Reduce speed in work zone

(8P2208)						Expressways					
On-call work zone enforcement in the rural Southwest District (8P2209)	Speed management Speed management - other	0 Miles	20000	20000	State and Local Funds	Rural Principal Arterial - Other	0	60	State Highway Agency	Curbing aggressive driving	Reduce speed in work zone
Guardrail / Cable Repairs in the rural Southwest District (8P2288)	Roadside Barrier - cable	0 Miles	83000	83000	HSIP (Section 148)	Rural Principal Arterial - Other	0	55	State Highway Agency	Minimizing the consequences of leaving the road	Improve roadside safety
MO 86 Stone Shoulder improvements and rumble stripes (8P2385)	Roadway Rumble strips - edge or shoulder	11.527 Miles	641000	641000	HSIP (Section 148)	Rural Minor Arterial	1951	0	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
US 65 Christian Intersection safety improvements at BB and A	Intersection traffic control Intersection flashers - add advance intersection warning sign-mounted	0.3 Miles	98000	98000	HSIP (Section 148)	Rural Principal Arterial - Other	10393	55	State Highway Agency	Improving the design and operation of highway intersectio	Improve intersection safety

(8P2418)										ns	
MO 265 Taney Shoulder improvements and rumble stripes (8S2442)	Roadway Rumble strips - edge or shoulder	4.4 Miles	72000	1029000	HSIP (Section 148)	Rural Major Collector	2204	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
MO 38 Webster Shoulder improvements and rumble stripes (8S2457B)	Roadway Rumble strips - edge or shoulder	10.461 Miles	1100000	2421000	Penalty Transfer – Section 164	Rural Minor Arterial	2000	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
MO 125 Greene Shoulder improvements and rumble stripes (8S3018)	Roadway Rumble strips - edge or shoulder	15.134 Miles	861000	1908000	Penalty Transfer – Section 164	Urban Minor Arterial	810	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
MO 64 Polk Shoulder improvements and rumble stripes	Roadway Rumble strips - edge or shoulder	1.317 Miles	351000	460000	HRRRP (SAFETEA-LU)	Rural Major Collector	1084	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders

(9P2261B)											
RT DD Webster Shoulder improvements and rumble stripes (9P2261D)	Roadway Rumble strips - edge or shoulder	5.867 Miles	233000	299000	HRRRP (SAFETEA-LU)	Rural Major Collector	1539	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
9P2261E Greene Shoulder improvements and rumble stripes (9P2261E)	Roadway Rumble strips - edge or shoulder	10.747 Miles	531000	680000	HRRRP (SAFETEA-LU)	Rural Major Collector	283	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
MO 34 Bollinger Shoulder improvements and rumble stripes (0P0922)	Roadway Rumble strips - edge or shoulder	1.6 Miles	400000	2918000	Penalty Transfer - Section 154	Rural Principal Arterial - Other	1588	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
MO 51 Bollinger Shoulder improvements and rumble	Roadway Rumble strips - edge or shoulder	45.3 Miles	1997000	8530000	Penalty Transfer - Section	Rural Minor Arterial	1258	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders

stripes (0S2262)					164						
US 61 New Madrid Shoulder improvements and rumble stripes (0S2287)	Roadway Rumble strips - edge or shoulder	21 Miles	73000	2671000	Penalty Transfer - Section 154	Rural Major Collector	3577	60	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
IS 55 Scott Install guardcable from IS 57 to Arkansas State Line (9P2263)	Roadside Barrier - cable	48.6 Miles	8838000	8838000	Penalty Transfer - Section 154	Rural Principal Arterial - Interstate	18803	70	State Highway Agency	Minimizing the consequences of leaving the road	Install median guardcable
RT Y St Francois Shoulder improvements and rumble stripes (9P2261)	Roadway Rumble strips - edge or shoulder	18.1 Miles	799000	2293000	HRRRP (SAFETEA-LU)	Rural Major Collector	1012	55	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders
On-call work zone enforcement in the	Speed management Speed management - other	0 Miles	25000	25000	State and Local	Rural Principal Arterial -	0	60	State Highway Agency	Curbing aggressive driving	Reduce speed in work

Southeast District (9P3001)					Funds	Other					zone
Improving shoulders and adding rumble stripes to major roads across state	Roadway Rumble strips - edge or shoulder	1100 Miles	11276000	45104000	HSIP (Section 148)	Rural Principal Arterial - Other	7500	60	State Highway Agency	Keeping vehicles in the roadway	Improve roadway shoulders

Progress in Achieving Safety Performance Targets

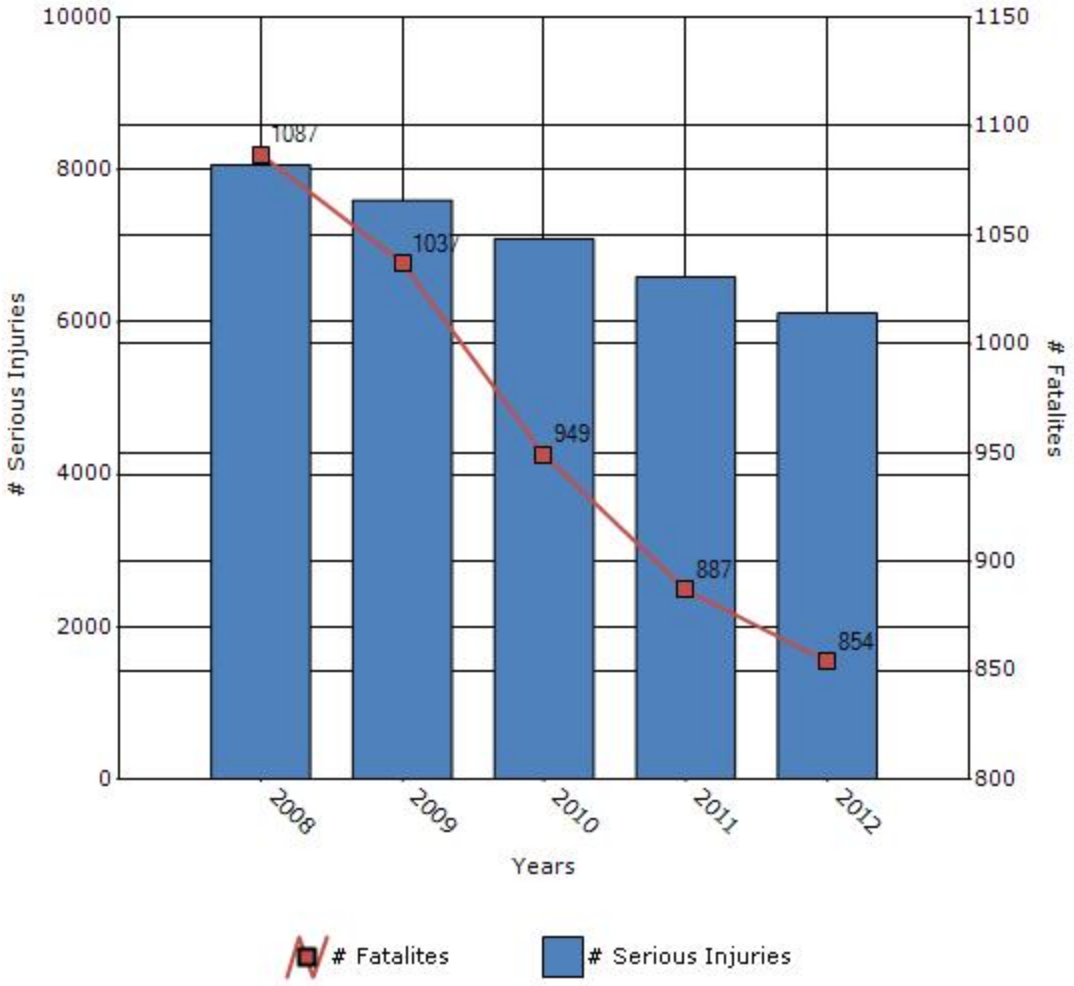
Overview of General Safety Trends

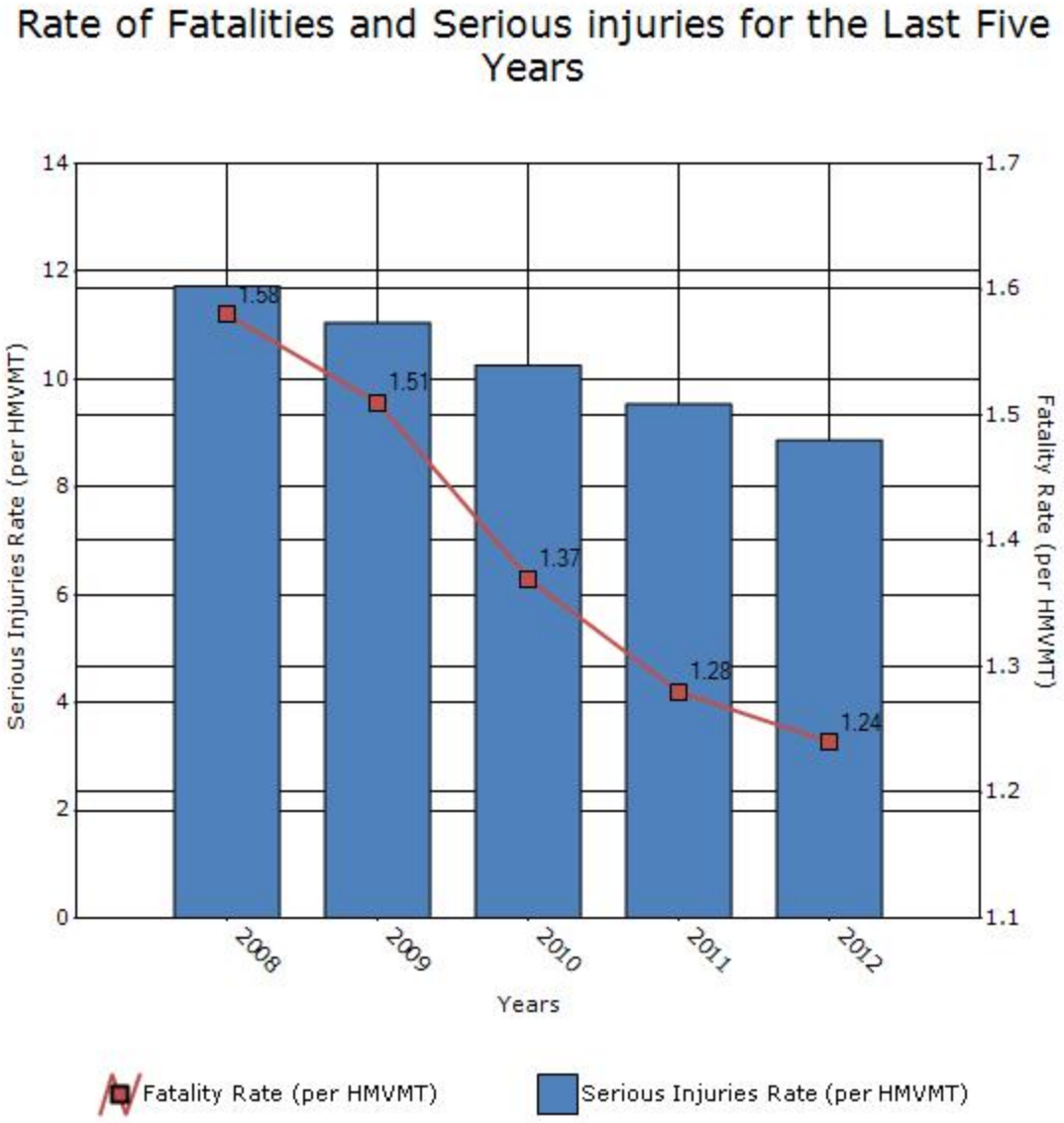
Present data showing the general highway safety trends in the state for the past five years.

Performance Measures*	2008	2009	2010	2011	2012
Number of fatalities	1087	1037	949	887	854
Number of serious injuries	8061	7598	7092	6591	6116
Fatality rate (per HMVMT)	1.58	1.51	1.37	1.28	1.24
Serious injury rate (per HMVMT)	11.73	11.05	10.26	9.54	8.87

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

Number of Fatalities and Serious injuries for the Last Five Years



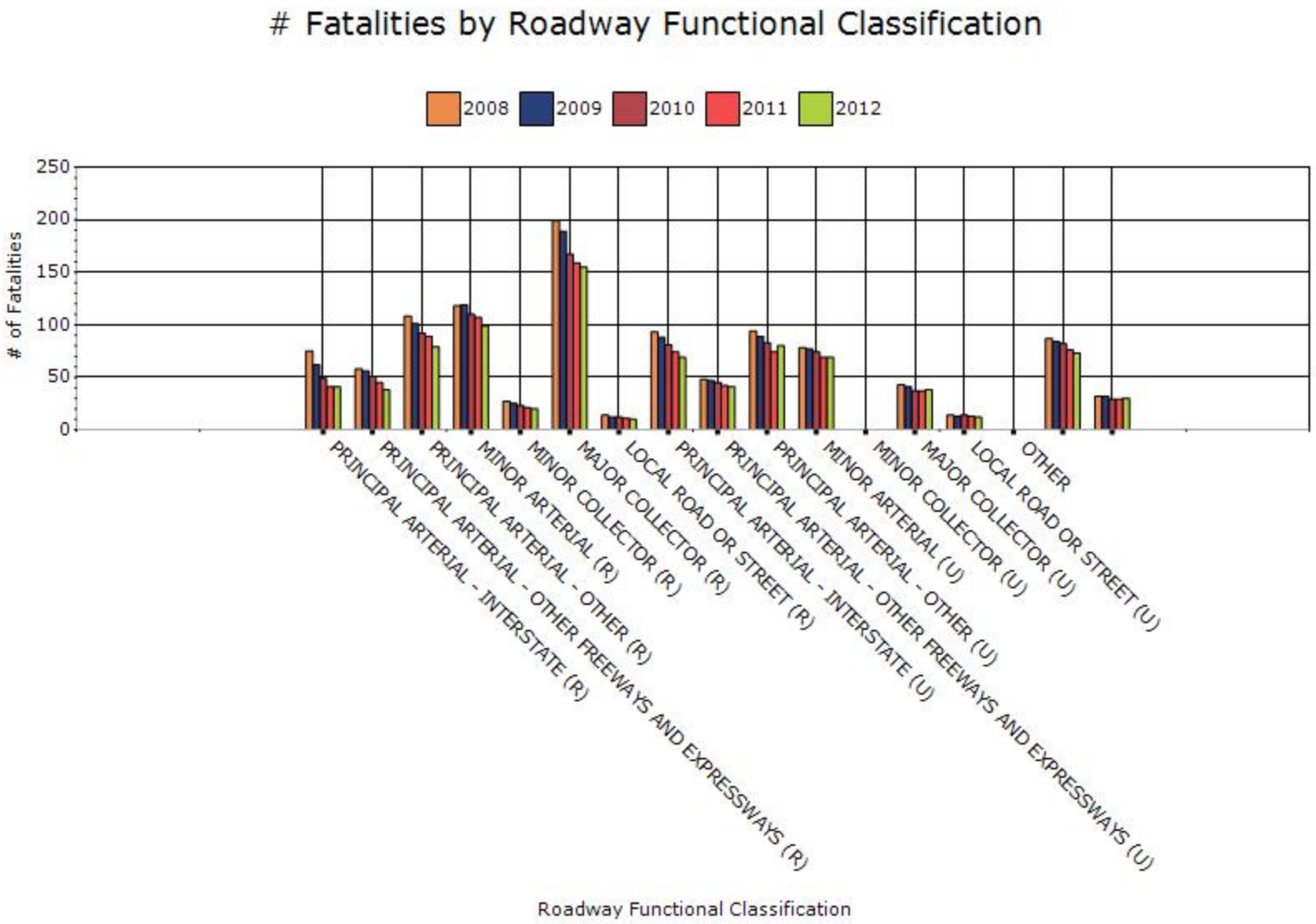

Rate of Fatalities and Serious injuries for the Last Five Years
Serious Injuries Rate (per HMVMT)
Fatality Rate (per HMVMT)
Years
2008
2009
2010
2011
2012
1.58
1.51
1.37
1.28
1.24
Fatality Rate (per HMVMT)
Serious Injuries Rate (per HMVMT)

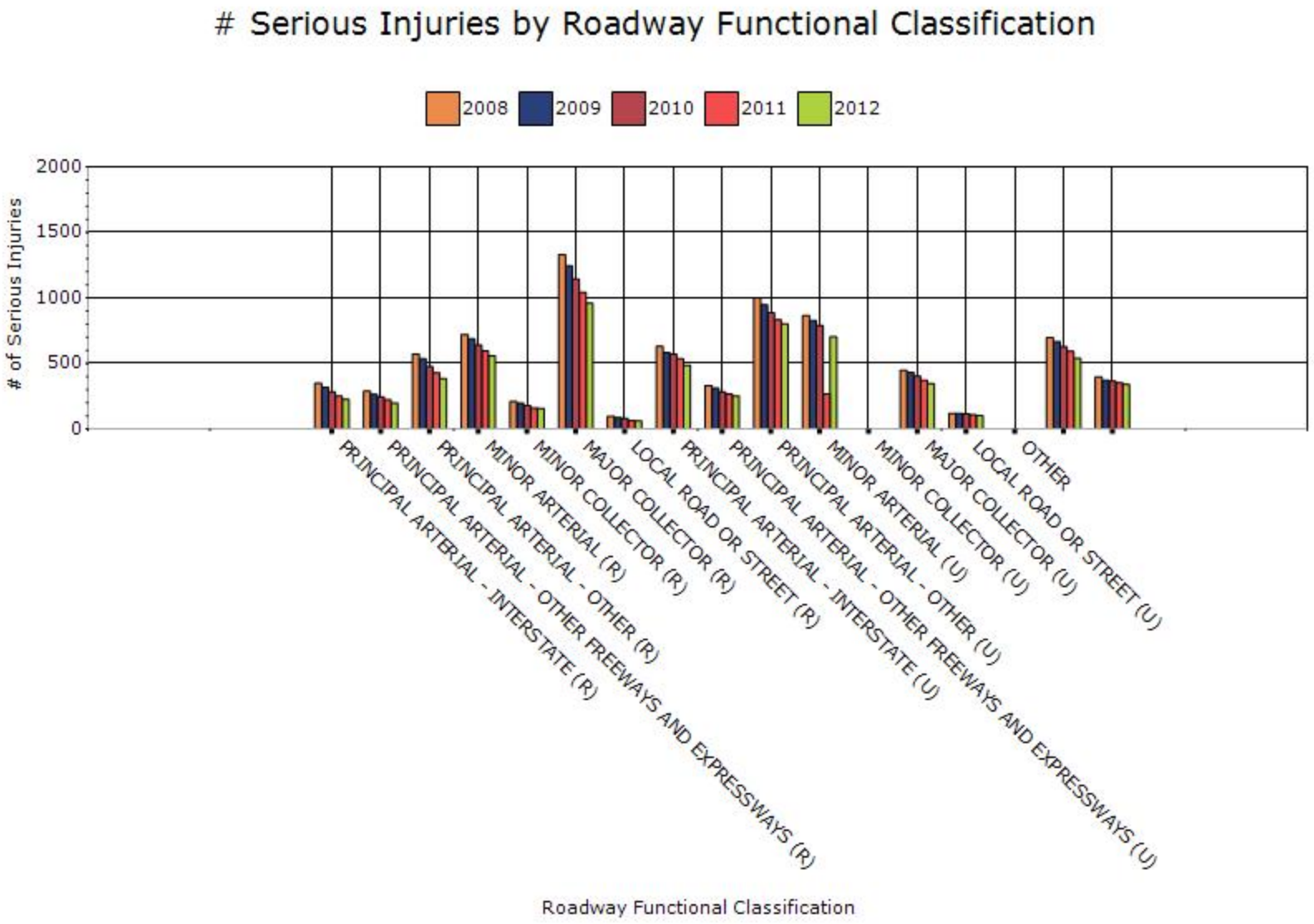
To the maximum extent possible, present performance measure* data by functional classification and ownership.

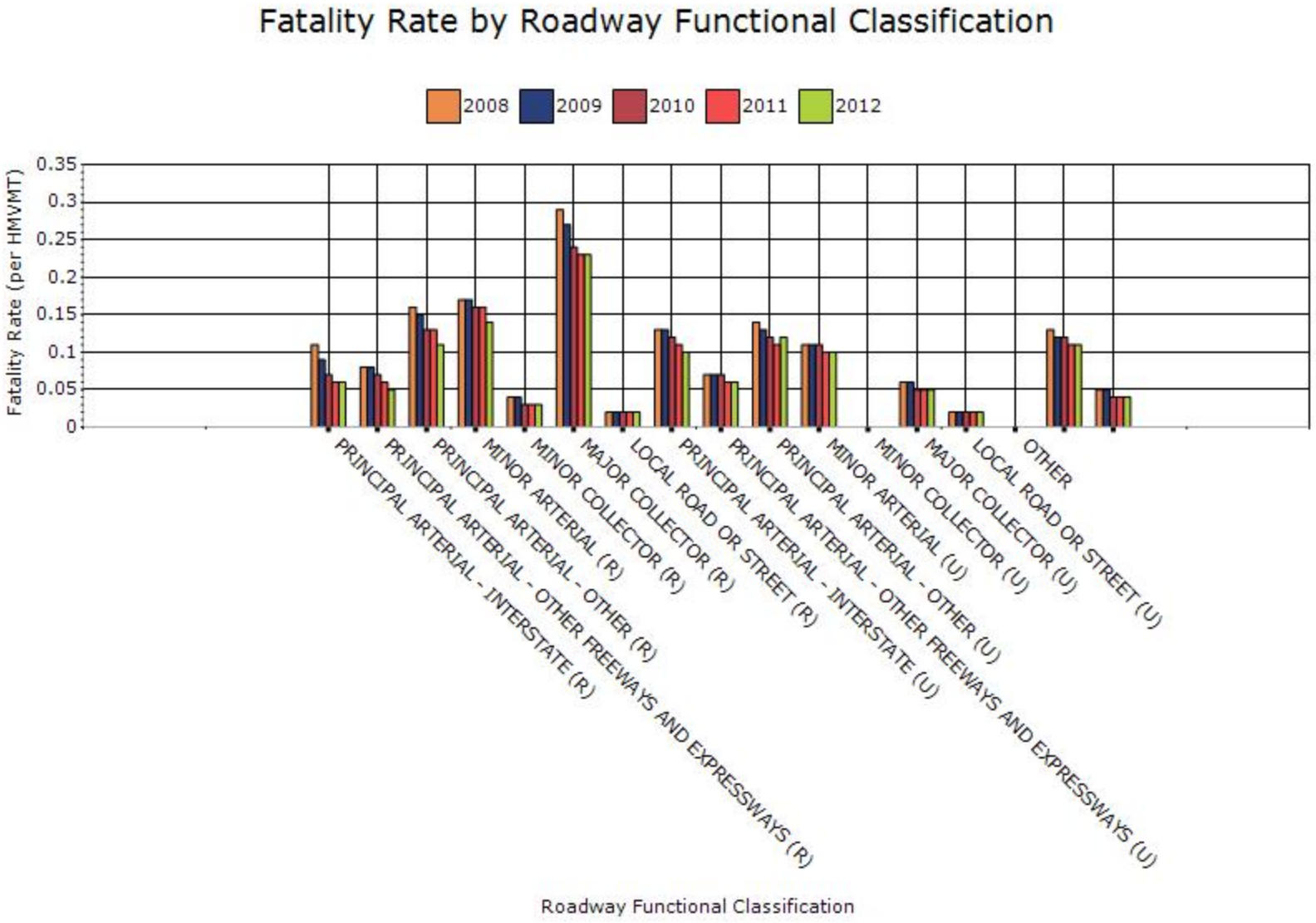
Year - 2012

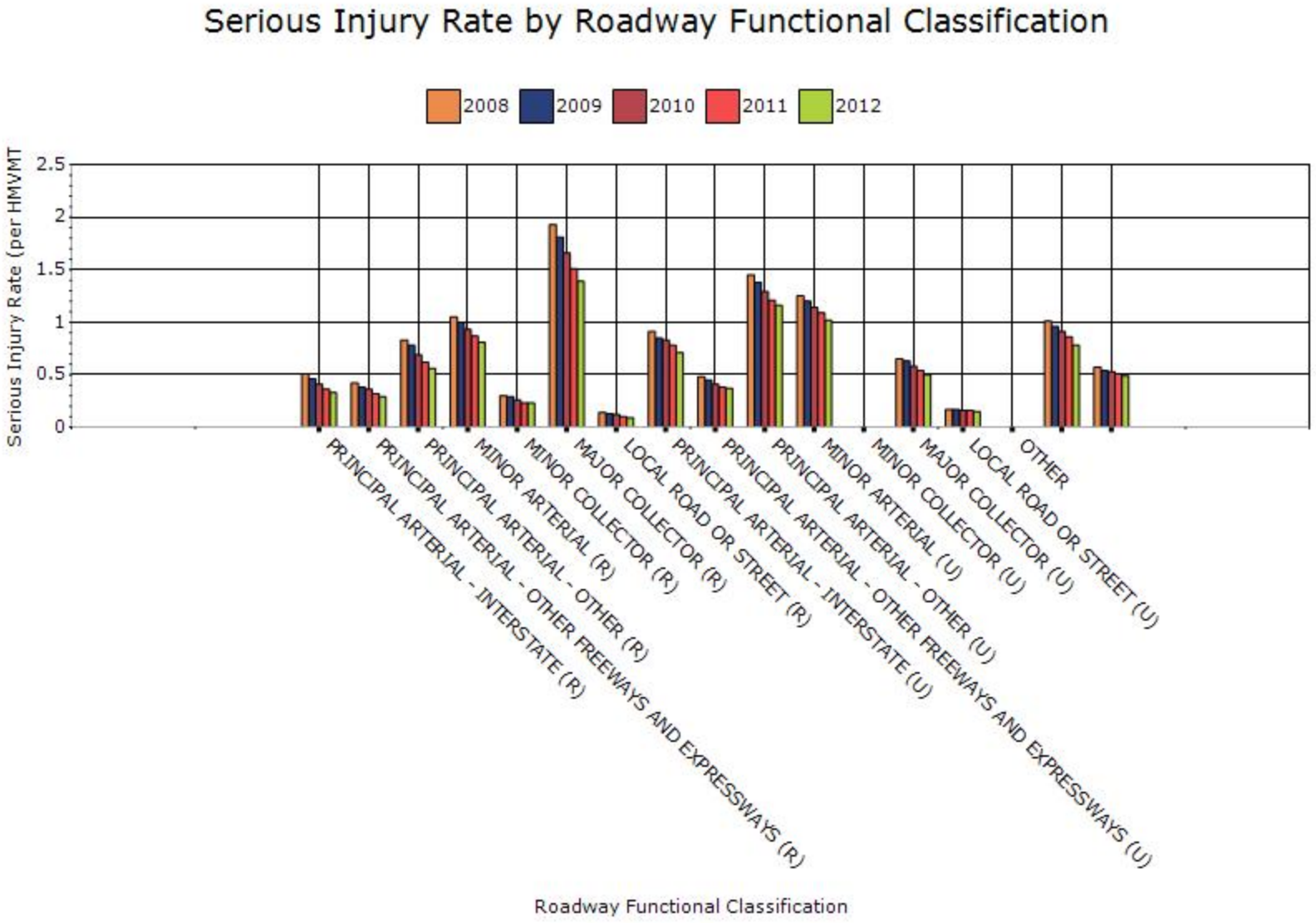
Function Classification	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
RURAL PRINCIPAL ARTERIAL - INTERSTATE	41	227	0.06	0.33
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	38	199	0.05	0.29
RURAL PRINCIPAL ARTERIAL - OTHER	79	384	0.11	0.56
RURAL MINOR ARTERIAL	99	558	0.14	0.81
RURAL MINOR COLLECTOR	20	157	0.03	0.23
RURAL MAJOR COLLECTOR	155	959	0.23	1.39
RURAL LOCAL ROAD OR STREET	10	61	0.02	0.09
URBAN PRINCIPAL	69	487	0.1	0.71

ARTERIAL - INTERSTATE				
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	41	253	0.06	0.37
URBAN PRINCIPAL ARTERIAL - OTHER	80	801	0.12	1.16
URBAN MINOR ARTERIAL	69	703	0.1	1.02
URBAN MINOR COLLECTOR	0	2	0	0
URBAN MAJOR COLLECTOR	38	345	0.05	0.5
URBAN LOCAL ROAD OR STREET	12	102	0.02	0.15
OTHER	0	0	0	0
RURAL UNKNOWN	73	540	0.11	0.78
URBAN UNKNOWN	30	340	0.04	0.49
URBAN UNKNOWN	30	340	0.04	0.49


Fatalities by Roadway Functional Classification
2008
2009
2010
2011
2012
# of Fatalities
250
200
150
100
50
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
LOCAL ROAD OR STREET (U)
OTHER
Roadway Functional Classification


Serious Injuries by Roadway Functional Classification
2008
2009
2010
2011
2012
# of Serious Injuries
2000
1500
1000
500
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
LOCAL ROAD OR STREET (U)
OTHER
Roadway Functional Classification

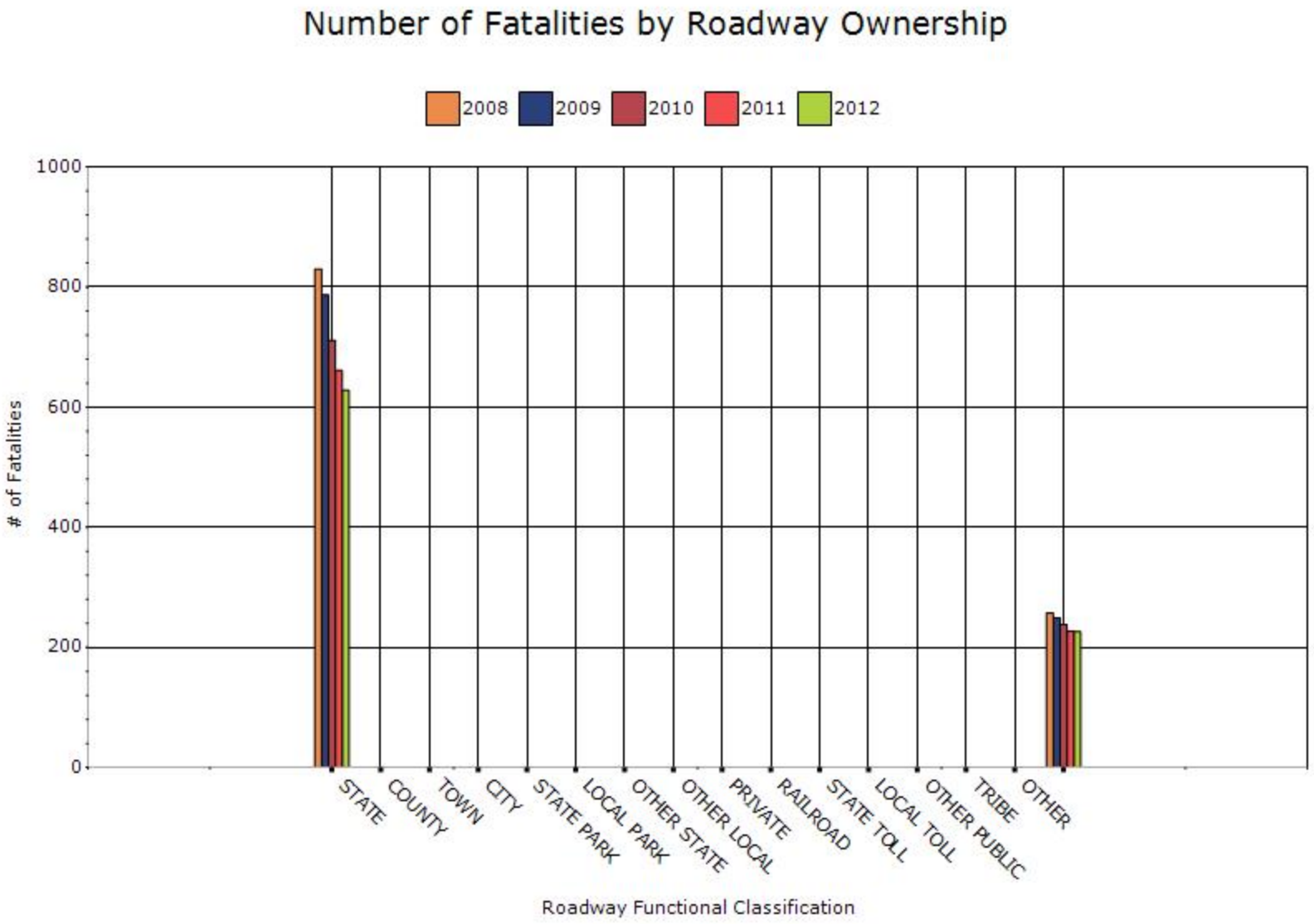

Fatality Rate by Roadway Functional Classification
2008
2009
2010
2011
2012
Fatality Rate (per HMVMT)
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR 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)
LOCAL ROAD OR STREET (U)
OTHER
Roadway Functional Classification

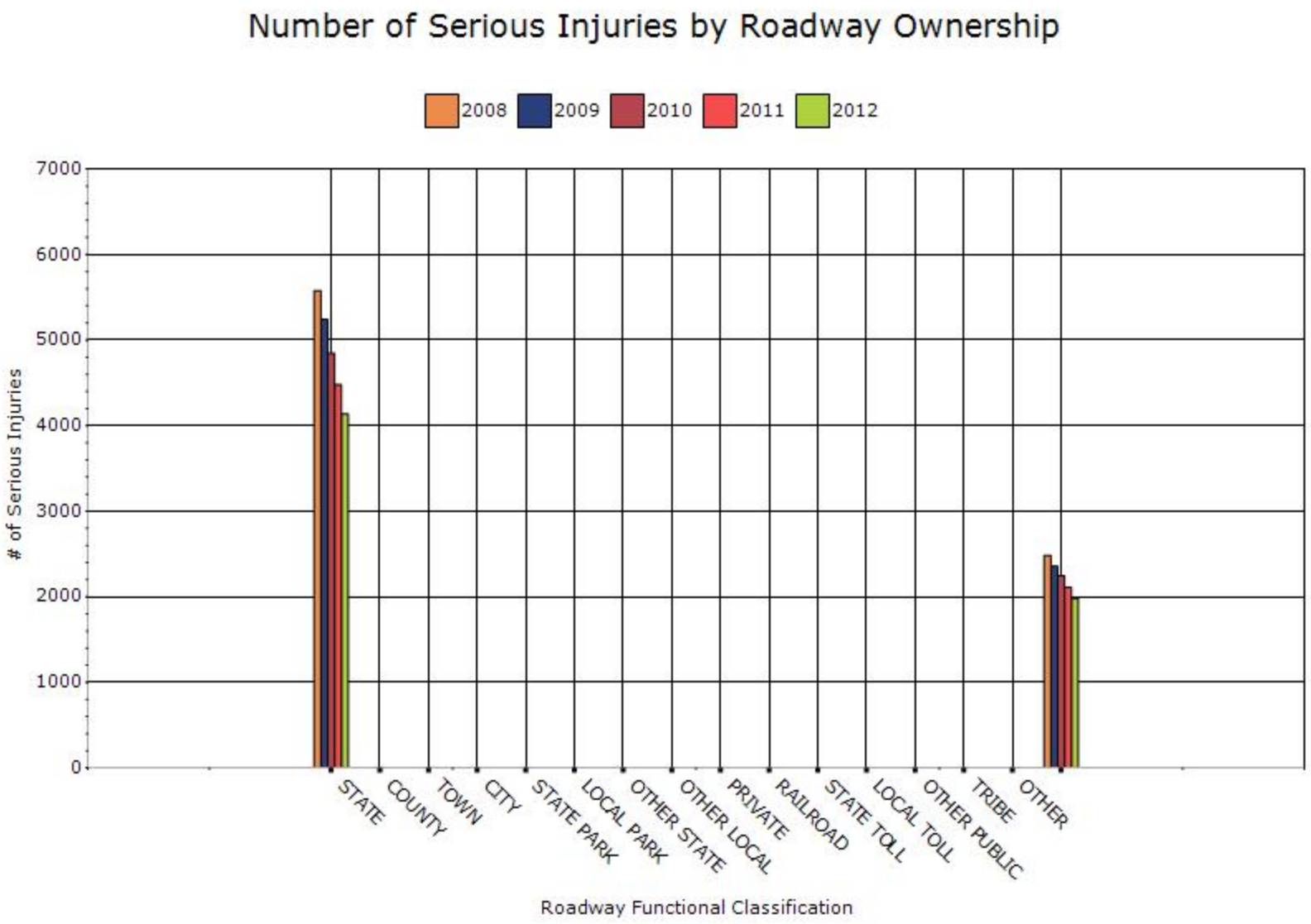

Serious Injury Rate by Roadway Functional Classification
2008
2009
2010
2011
2012
Serious Injury Rate (per HMVMT
2.5
2
1.5
1
0.5
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (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)
LOCAL ROAD OR STREET (U)
OTHER
Roadway Functional Classification

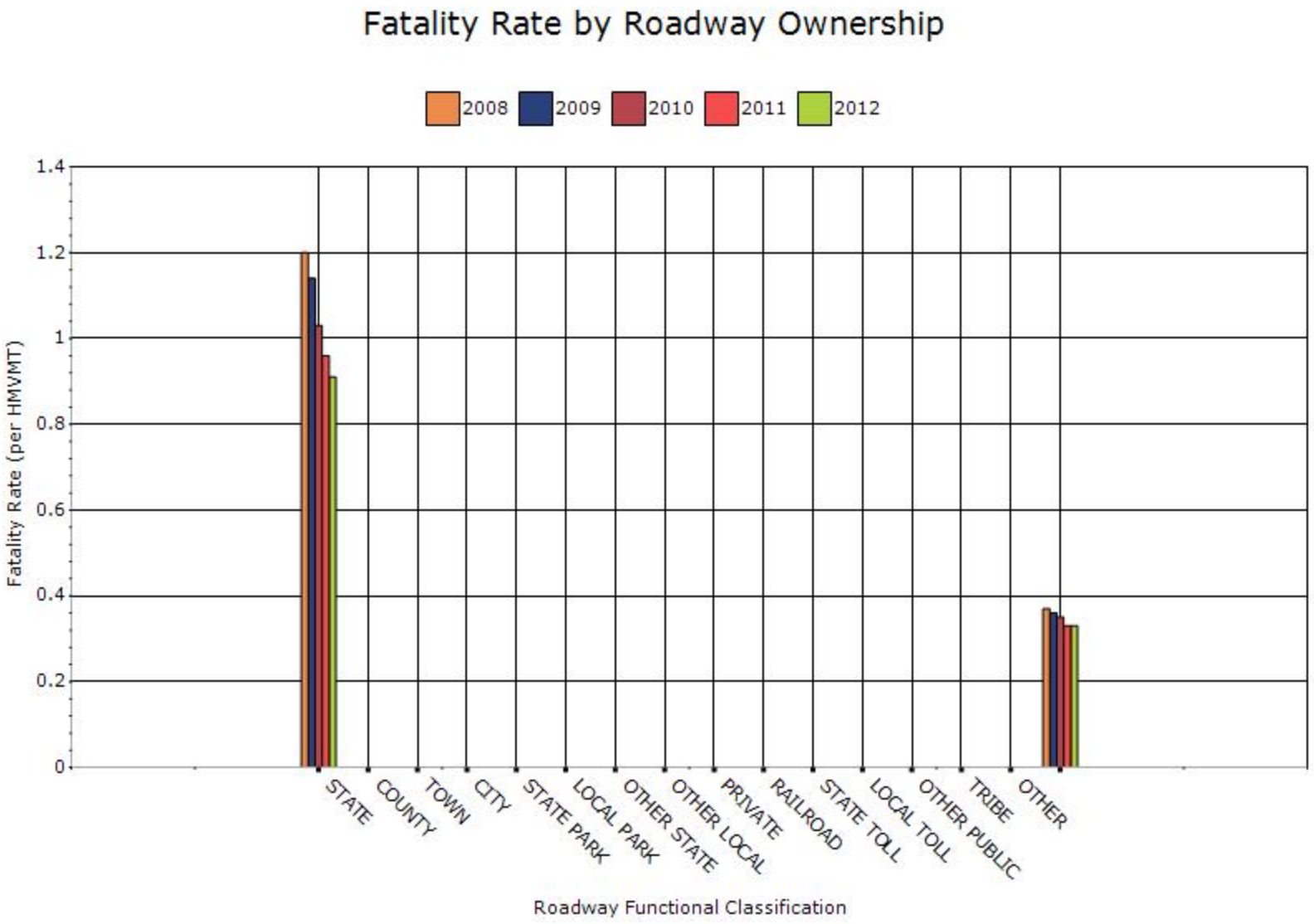
Year - 2012

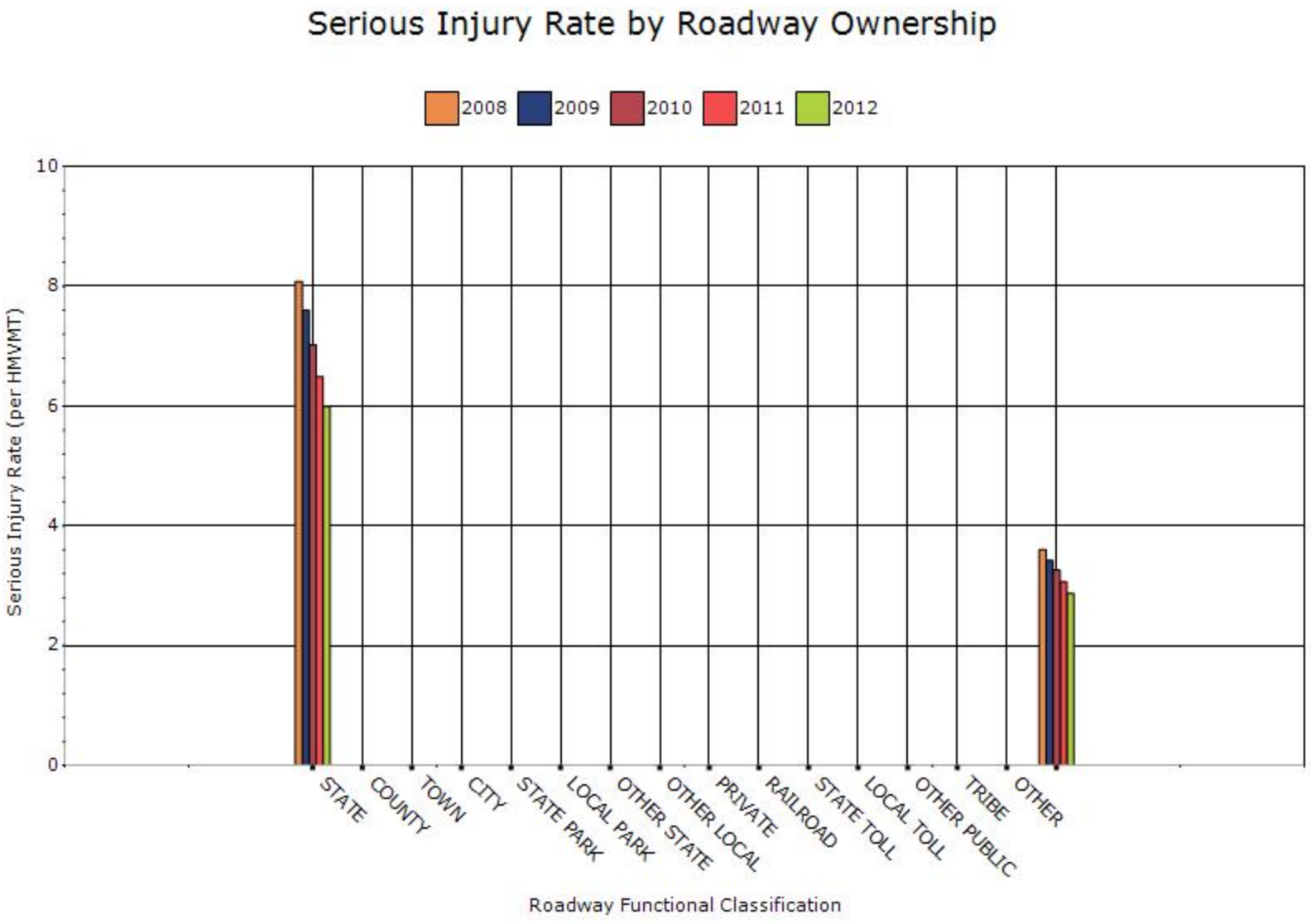
Roadway Ownership	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
STATE HIGHWAY AGENCY	628	4136	0.91	5.99
COUNTY HIGHWAY AGENCY	0	0	0	0
TOWN OR TOWNSHIP HIGHWAY AGENCY	0	0	0	0
CITY OF MUNICIPAL HIGHWAY AGENCY	0	0	0	0
STATE PARK, FOREST, OR RESERVATION 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
INDIAN TRIBE NATION	0	0	0	0
OTHER	0	0	0	0
CITY AND COUNTY HIGHWAY AGENCY	226	1981	0.33	2.87
CITY AND COUNTY HIGHWAY AGENCY	226	1981	0.33	2.87


Number of Fatalities by Roadway Ownership
2008
2009
2010
2011
2012
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 PUBLIC
TRIBE
OTHER
Roadway Functional Classification


Number of Serious Injuries by Roadway Ownership
2008
2009
2010
2011
2012
7000
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 PUBLIC
TRIBE
OTHER
Roadway Functional Classification


Fatality Rate by Roadway Ownership
2008
2009
2010
2011
2012
Fatality Rate (per HMVMT)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER PUBLIC
TRIBE
OTHER
Roadway Functional Classification


Serious Injury Rate by Roadway Ownership
2008
2009
2010
2011
2012
Serious Injury Rate (per HMVMT)
10
8
6
4
2
0
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER PUBLIC
TRIBE
OTHER
Roadway Functional Classification

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

Missouri has focused a great deal of effort towards minimizing the lane departure crash types (run-off-road and head-on). Much of the effort to date has been on the Major Road system, which accounts for 5,600 centerline miles of system (this system accounted for over 50 percent of the state system fatalities). The state system historically has seen about 75 percent of the fatalities for the entire state roadway fatalities (over 130,000 centerline miles of roadways - includes local roads).

The countermeasures installed on the Major Road system include a wider stripe (6 inch), an improved shoulder that includes a rumble stripe, bigger and brighter signs, and other visibility measures (such as delineators and tabs). The Major Road system has seen a nearly 50 percent decline in fatalities since 2005.

This same effort is now beginning on much of the lower order system that appears over-represented in regards to roadway fatalities. Additional efforts include intersection improvements (much in relation to our expressway intersections), improving our Top 200 horizontal curves, installing chevrons on curves based on MUTCD, implementing the high friction surface treatments, implementing wrong-way driver countermeasures, and beginning efforts to improve safety on local roads (beginning by developing County SHSPs for top counties in the state).

Application of Special Rules

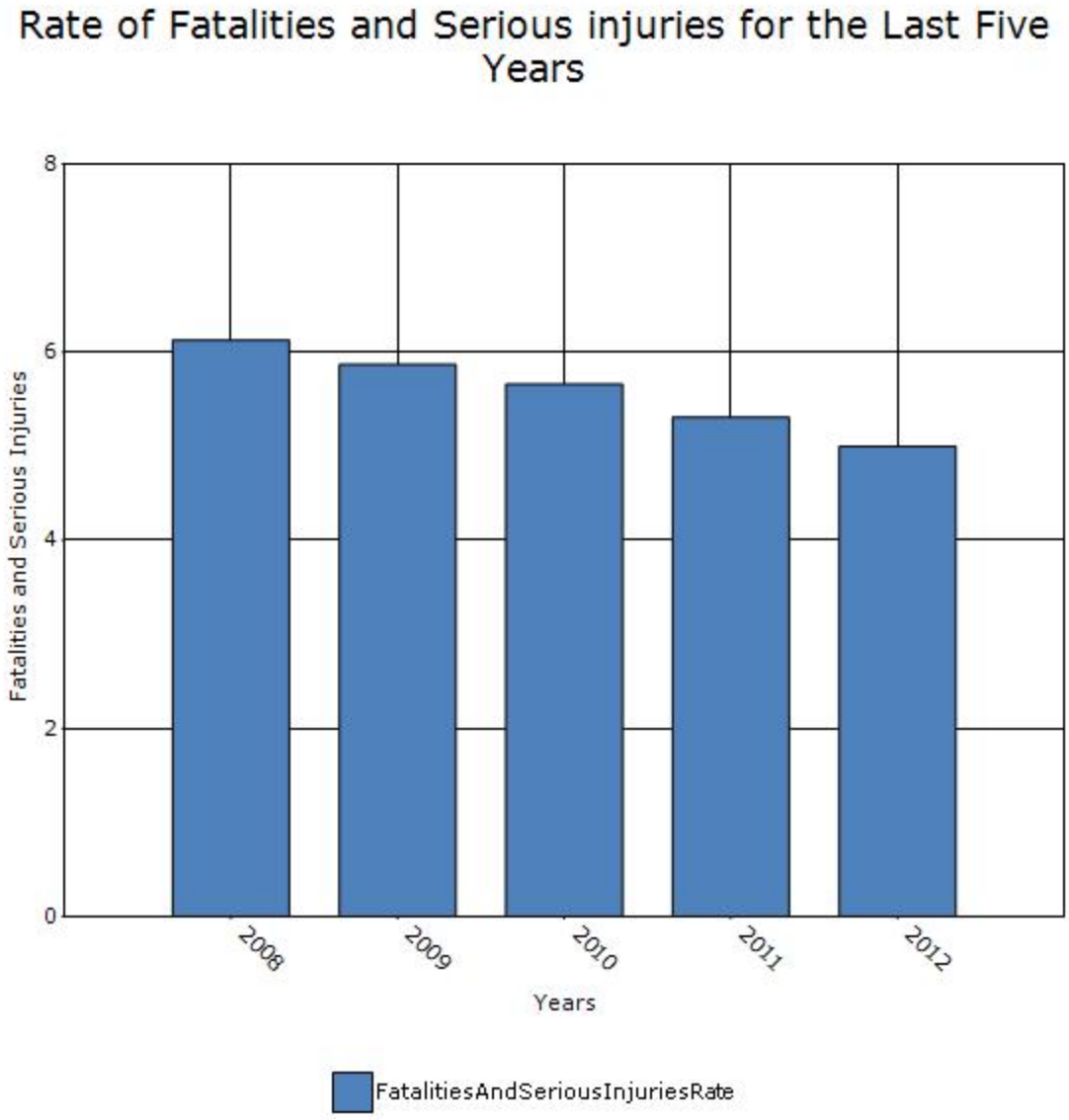
Present the rate of traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65.

Older Driver Performance Measures	**2008**	**2009**	**2010**	**2011**	**2012**
Fatality rate (per capita)	1.22	1.18	1.1	1.04	0.99
Serious injury rate (per capita)	4.91	4.69	4.56	4.27	4.01
Fatality and serious injury rate (per capita)	6.13	5.87	5.66	5.31	5

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

The 5-Year Rolling Average for Fatality and Serious Injury Rate per Capita = (5-Yr Average Fatalities + Serious Injuries / 5-Yr Average per Capita).

A per Capita value of 142 was assumed for 2012 and a per Capita value of 128 was assumed for 2004 in order to generate 5-Yr numbers from 2008-2012.



Does the older driver special rule apply to your state?

No

Assessment of the Effectiveness of the Improvements (Program Evaluation)

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

☐ None

☐ Benefit/cost

☒ Policy change

☒ Other: Other-General safety trends in regards to fatalities and serious injuries.

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

☐ Shift Focus to Fatalities and Serious Injuries

☐ Include Local Roads in Highway Safety Improvement Program

☐ Organizational Changes

☐ None

☒ Other: Other-Local Roads SHSPs are being developed. These Local SHSPs will allow for a better understanding of the local roads safety issues and ultimately will allow for HSIP funding to be spent on systemic measures at the local level.

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

Since the FY 2012 reporting period, Missouri has implemented some systemic countermeasures that are high priority for use of the Section 154 funding source. These initiatives include intersection safety countermeasures on the high need expressway intersections, improving the Top 200 horizontal curves, installing improved shoulders with rumble stripes on routes with 1,800 average daily traffic or greater, installing the high friction surface treatments, implementing wrong-way driving countermeasures, and implementing systemic safety countermeasures on local roads based on the County SHSPs.

SHSP Emphasis Areas

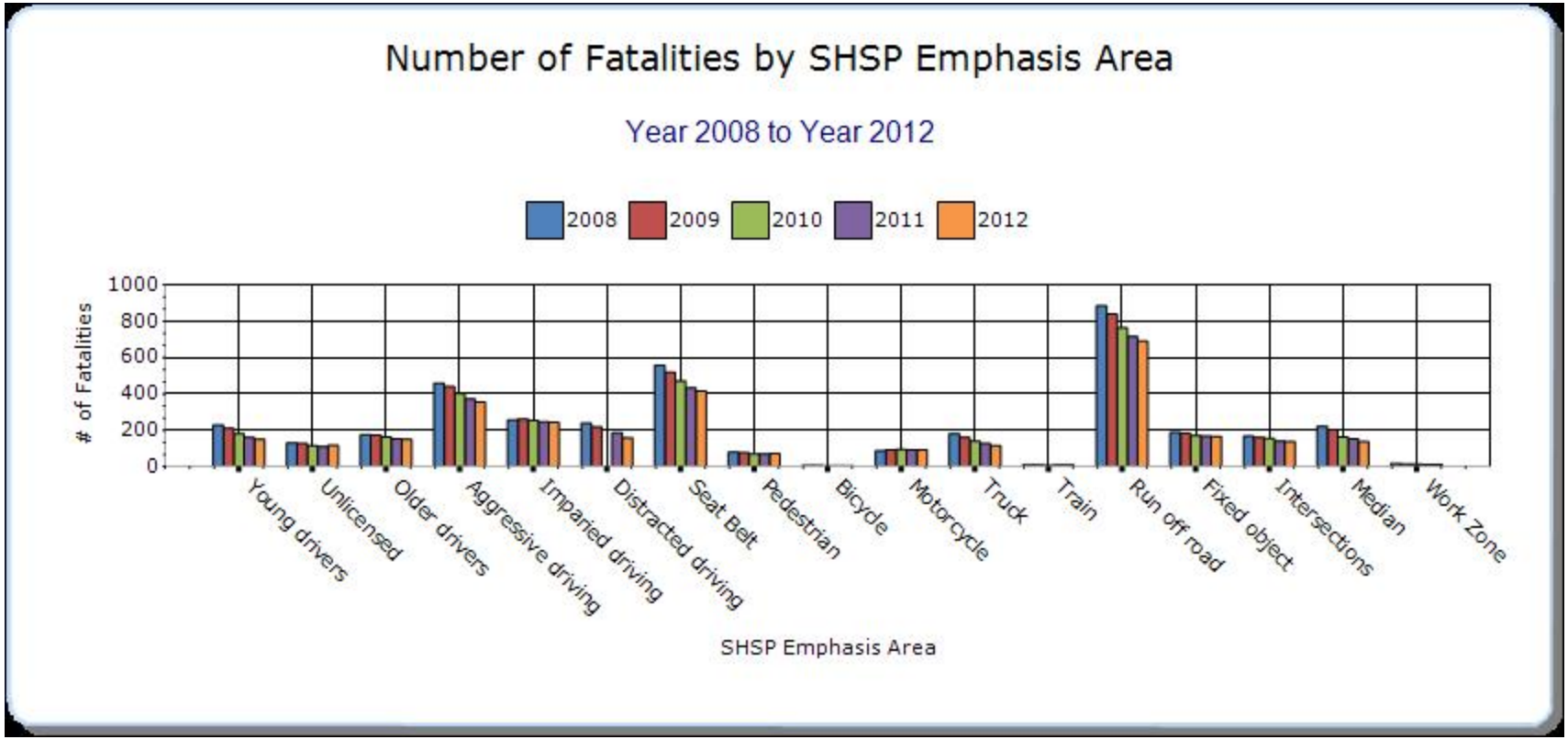
For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.

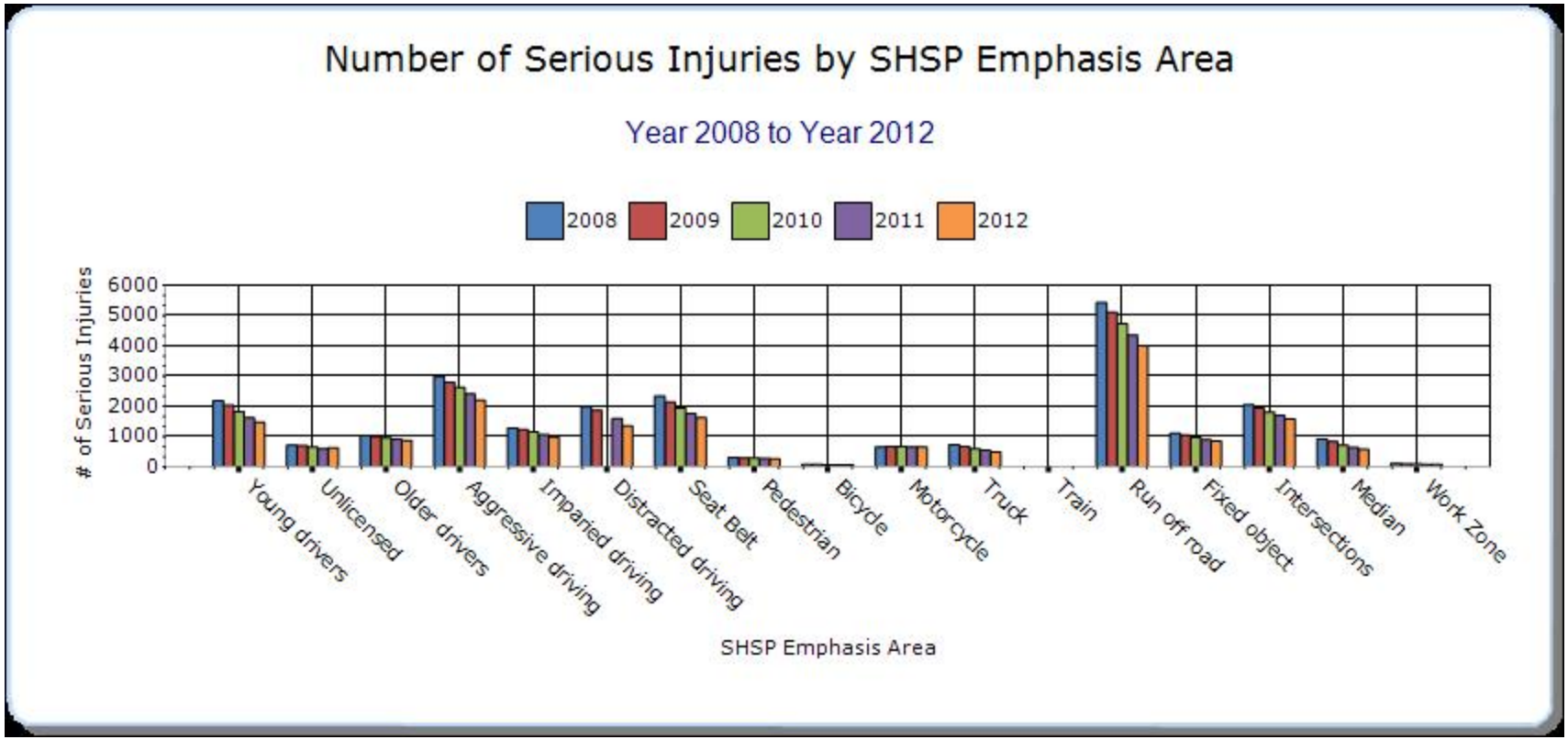
Year - 2012

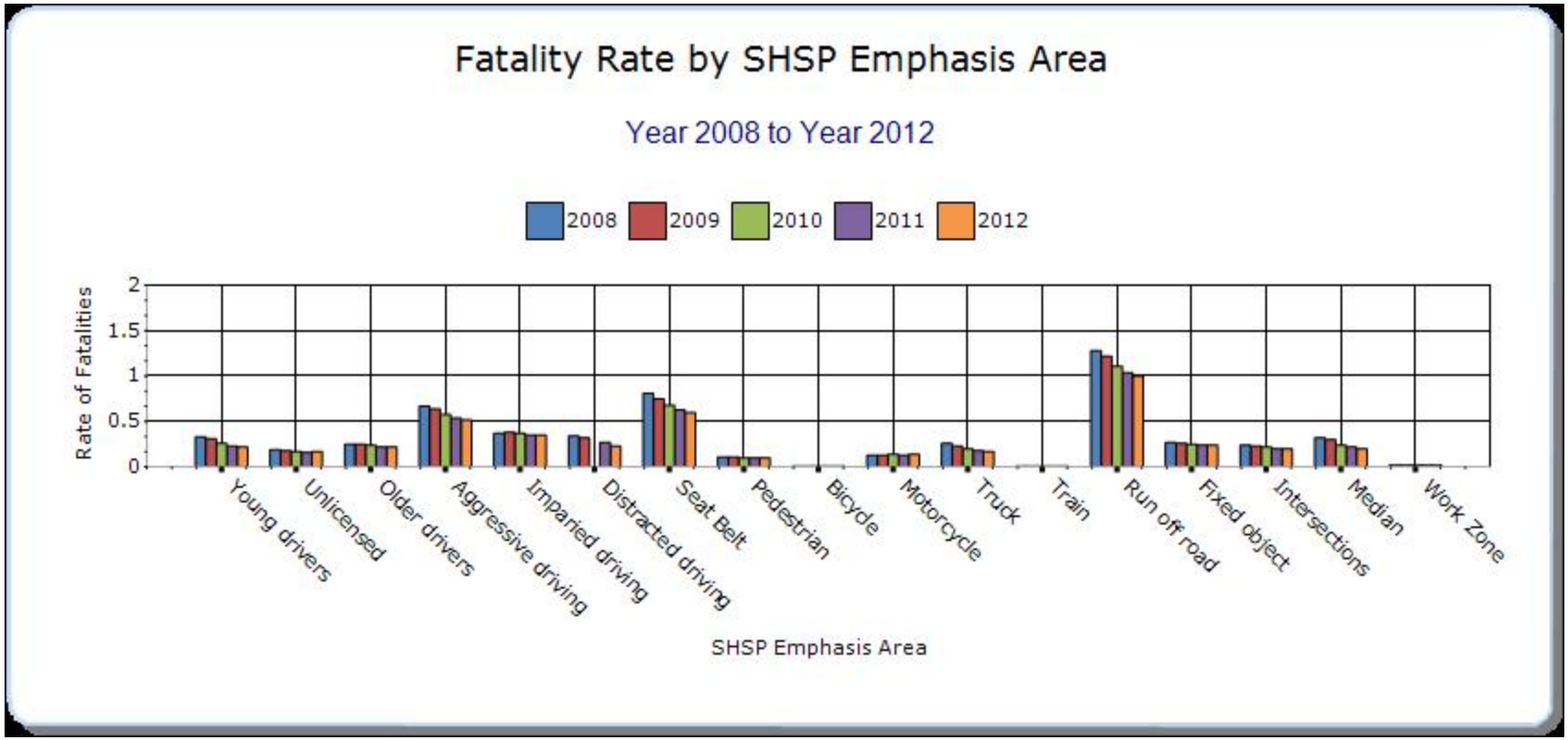
HSIP-related SHSP Emphasis Areas	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Instituting graduated licensing for younger drivers	**All**	**151**	**1476**	**0.22**	**2.14**	**0**	**0**	**0**
Ensuring drivers are licensed and fully competent	All	117	626	0.17	0.91	0	0	0
Sustaining proficiency in older drivers	All	149	875	0.22	1.27	0	0	0
Curbing aggressive driving	Speed-related	355	2199	0.52	3.19	0	0	0
Reducing impaired driving	Alcohol/Drug-related	243	992	0.35	1.44	0	0	0
Keeping drivers alert	Inattention-related	158	1350	0.23	1.96	0	0	0
Increasing seat belt use and improving	All	416	1623	0.6	2.35	0	0	0

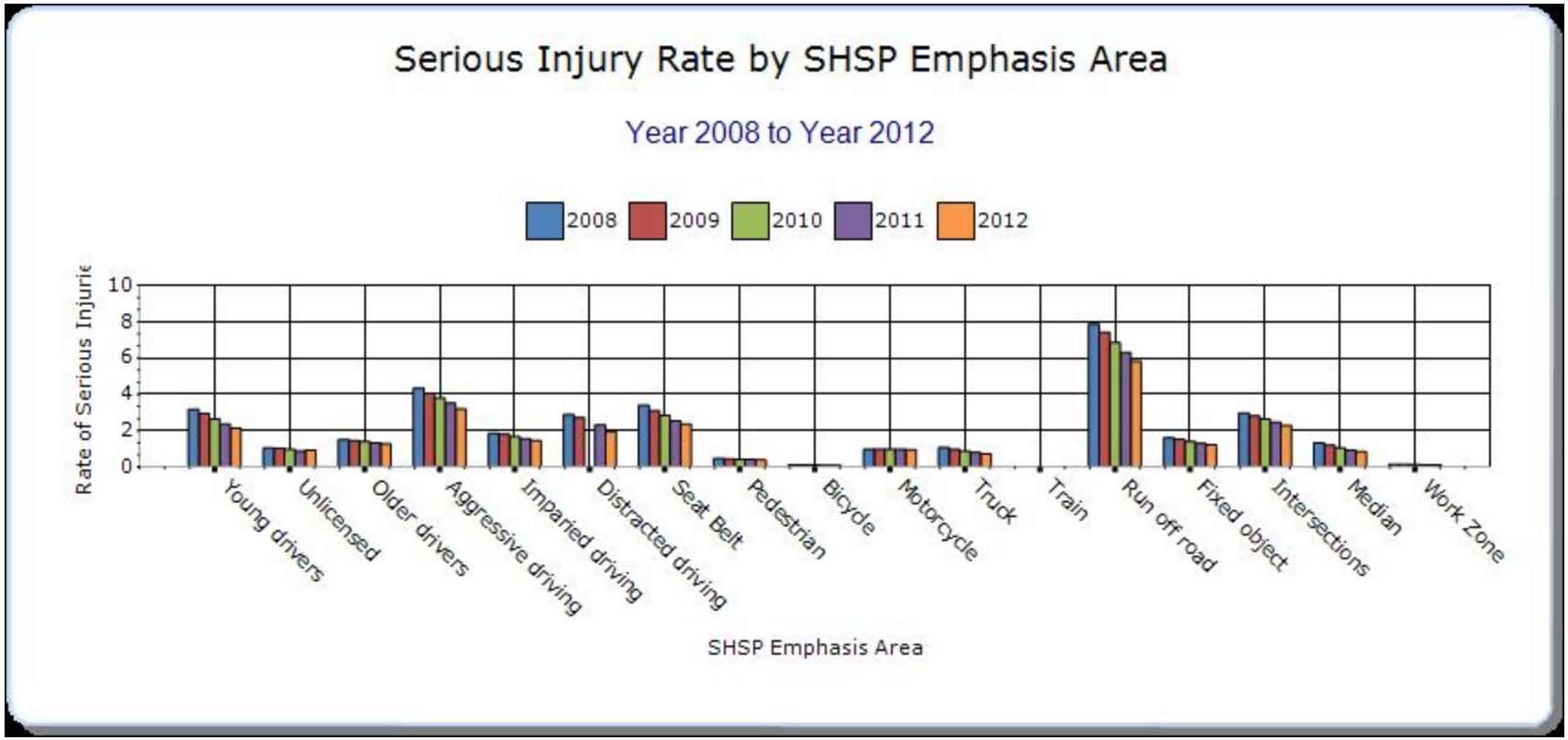
airbag effectiveness								
Making walking and street crossing easier	Vehicle/pedestrian	71	267	0.1	0.39	0	0	0
Ensuring safer bicycle travel	Vehicle/bicycle	4	71	0.01	0.1	0	0	0
Improving motorcycle safety and increasing motorcycle awareness	Motorcycle-related	93	657	0.14	0.95	0	0	0
Making truck travel safer	Truck-related	115	490	0.17	0.71	0	0	0
Reducing vehicle-train crashes	Vehicle/train	8	7	0.01	0.01	0	0	0
Keeping vehicles in the roadway	Lane Departure	690	4015	1	5.82	0	0	0
Minimizing the consequences of leaving the road	Tree/Utility Pole	165	849	0.24	1.23	0	0	0
Improving the design and operation of highway intersections	Intersection-related	137	1580	0.2	2.29	0	0	0

Reducing head-on and across-median crashes	Cross-Median & Head-On	137	580	0.2	0.84	0	0	0
Designing safer work zones	Work Zone-related	12	78	0.02	0.11	0	0	0




Number of Serious Injuries by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
# of Serious Injuries
6000
5000
4000
3000
2000
1000
0
Young drivers
Unlicensed
Older drivers
Aggressive driving
Impaired driving
Distracted driving
Seat Belt
Pedestrian
Bicycle
Motorcycle
Truck
Train
Run off road
Fixed object
Intersections
Median
Work Zone
SHSP Emphasis Area


Fatality Rate by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Fatalities
2
1.5
1
0.5
0
Young drivers
Unlicensed
Older drivers
Aggressive driving
Imparied driving
Distracted driving
Seat Belt
Pedestrian
Bicyde
Motorcycle
Truck
Train
Run off road
Fixed object
Intersections
Median
Work Zone
SHSP Emphasis Area

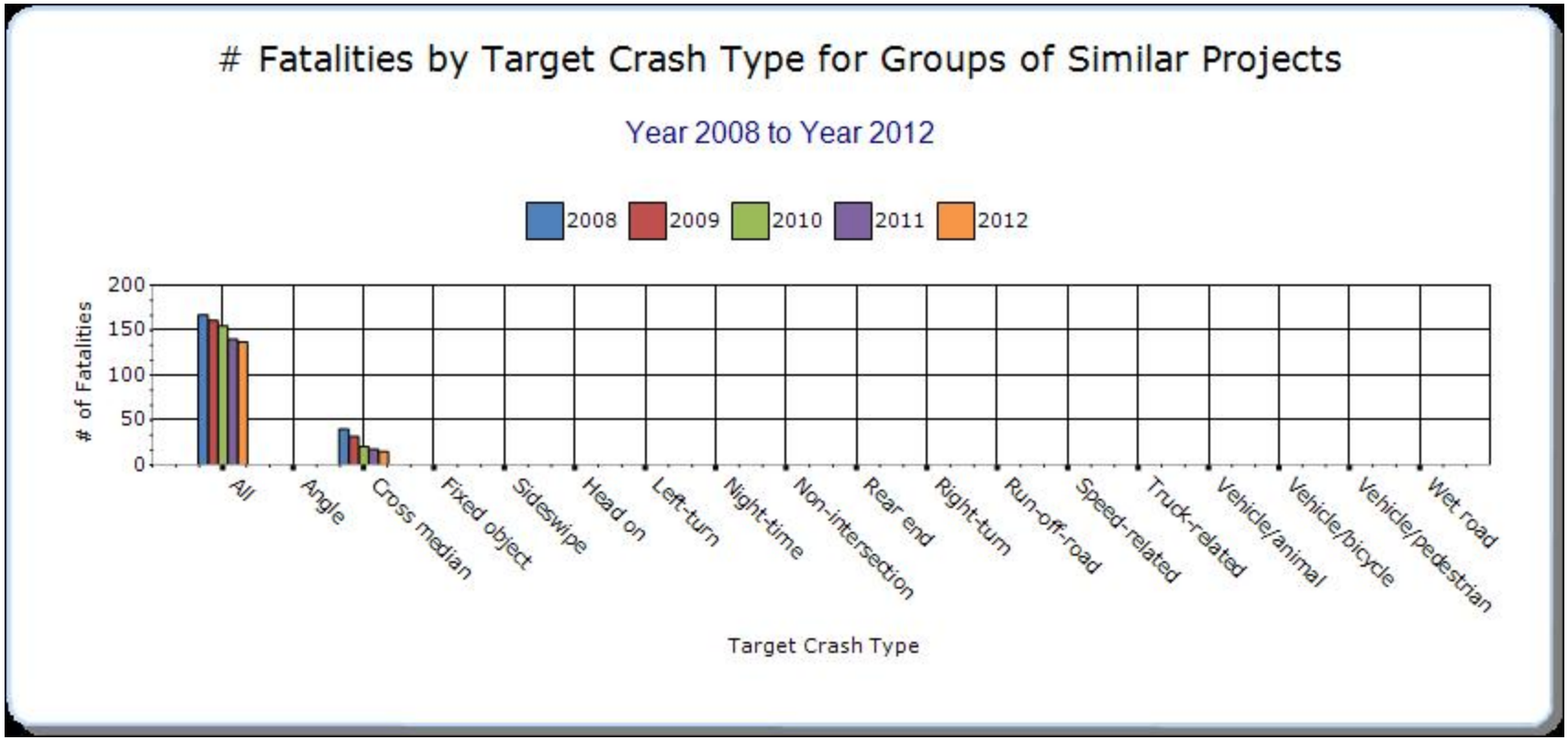

Serious Injury Rate by SHSP Emphasis Area
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Serious Injurie
10
8
6
4
2
0
Young drivers
Unlicensed
Older drivers
Aggressive driving
Impaired driving
Distracted driving
Seat Belt
Pedestrian
Bicycle
Motorcycle
Truck
Train
Run off road
Fixed object
Intersections
Median
Work Zone
SHSP Emphasis Area

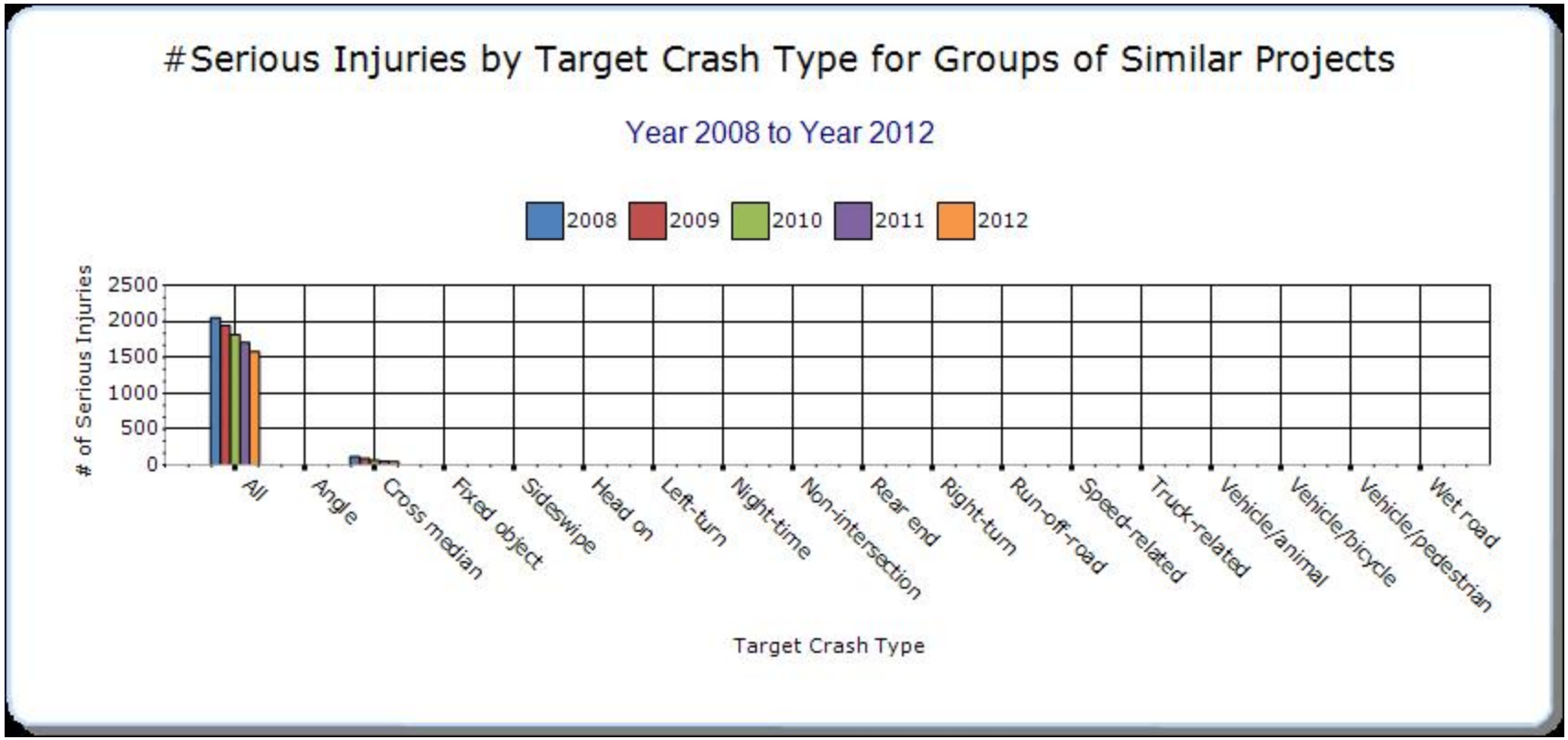
Groups of similar project types

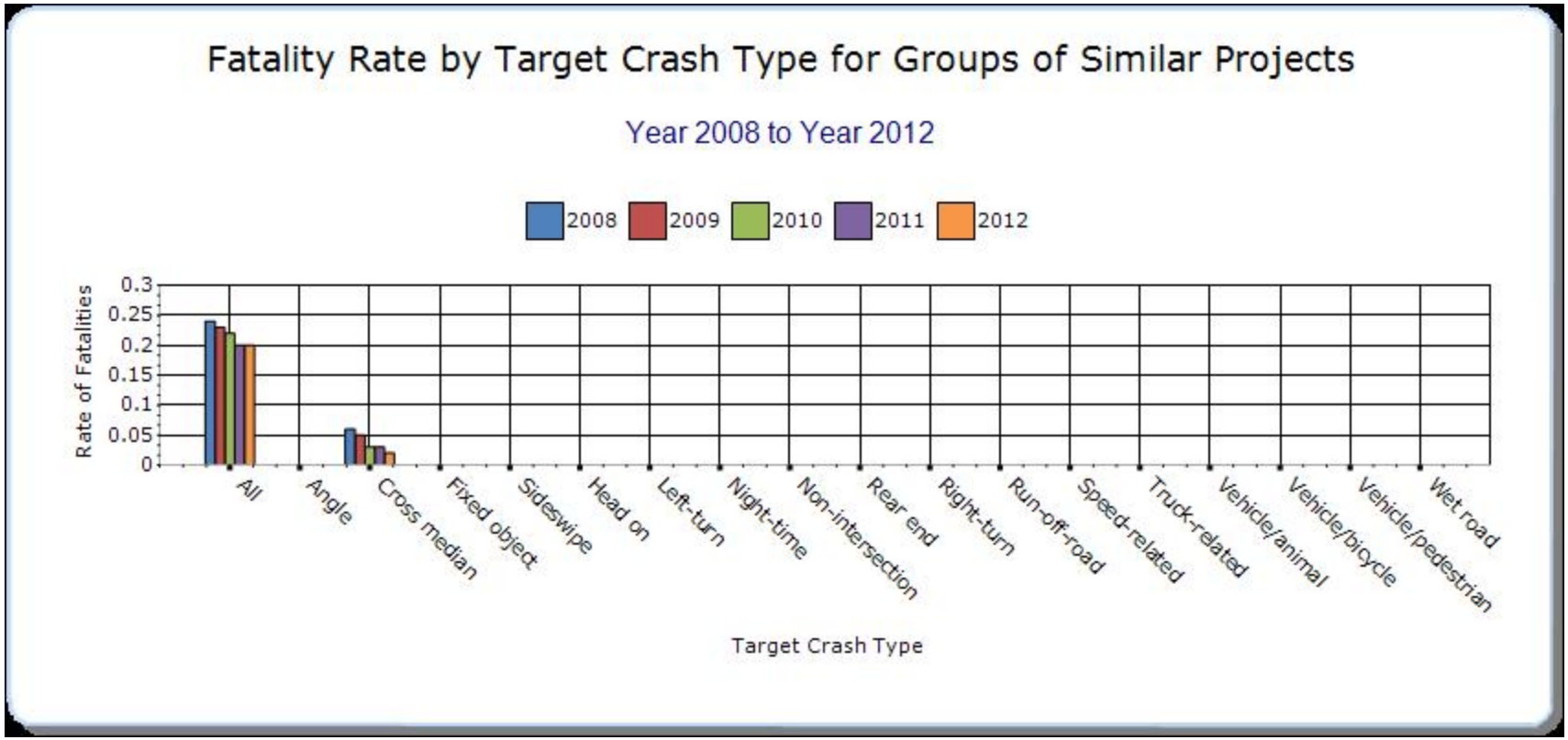
Present the overall effectiveness of groups of similar types of projects.

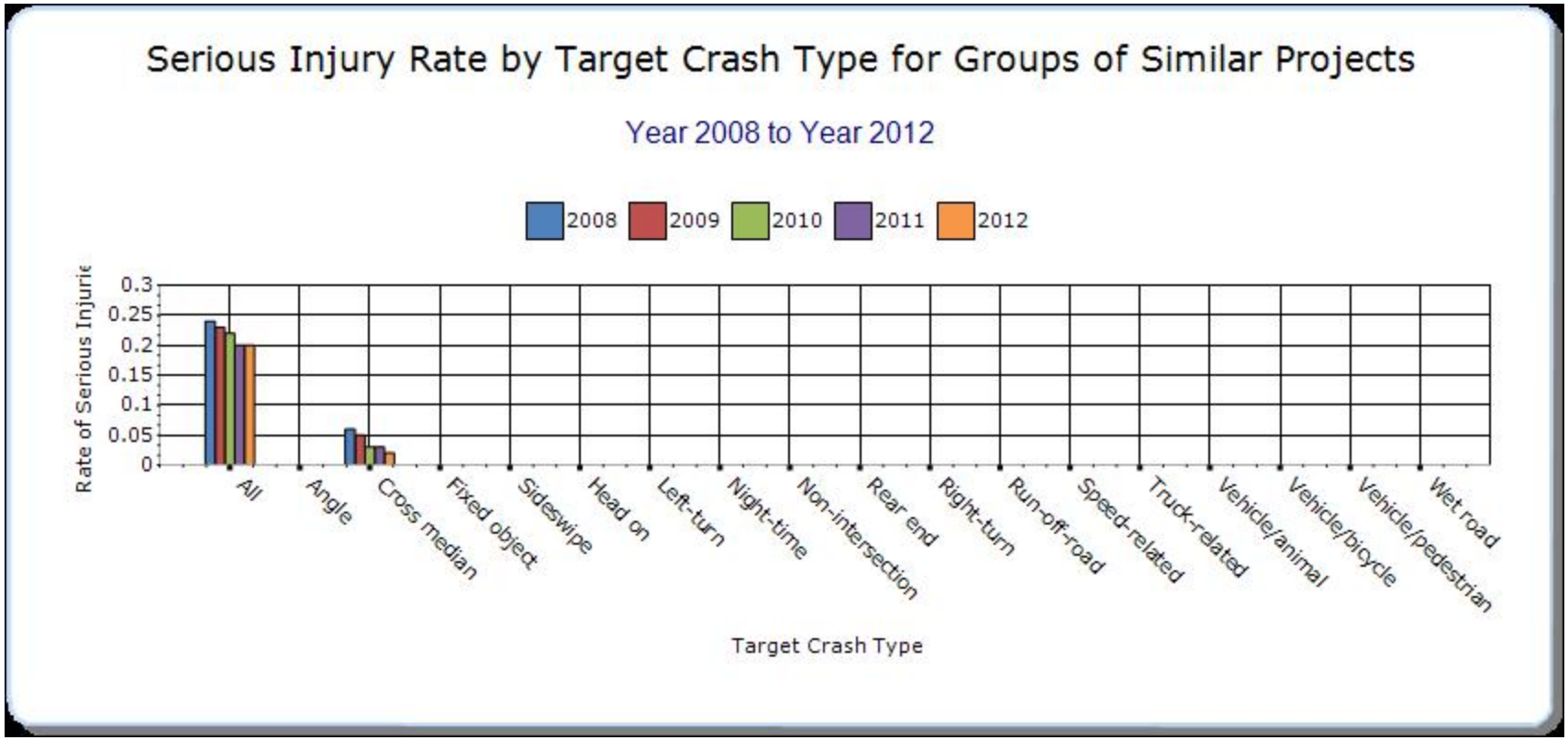
Year - 2012

HSIP Sub-program Types	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Median Barrier	**Cross median**	**15**	**47**	**0.02**	**0.07**	**0**	**0**	**0**
Intersection	All	137	1580	0.2	2.29	0	0	0
Roadway Departure	Run-Off-Road & Head-On	690	4015	1	5.82	0	0	0
Horizontal Curve	Curve Related	287	1659	0.42	2.4	0	0	0


Fatalities by Target Crash Type for Groups of Similar Projects
Year 2008 to Year 2012
2008
2009
2010
2011
2012
# of Fatalities
200
150
100
50
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type


#Serious Injuries by Target Crash Type for Groups of Similar Projects
Year 2008 to Year 2012
2008
2009
2010
2011
2012
# of Serious Injuries
2500
2000
1500
1000
500
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type


Fatality Rate by Target Crash Type for Groups of Similar Projects
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Fatalities
0.3
0.25
0.2
0.15
0.1
0.05
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type

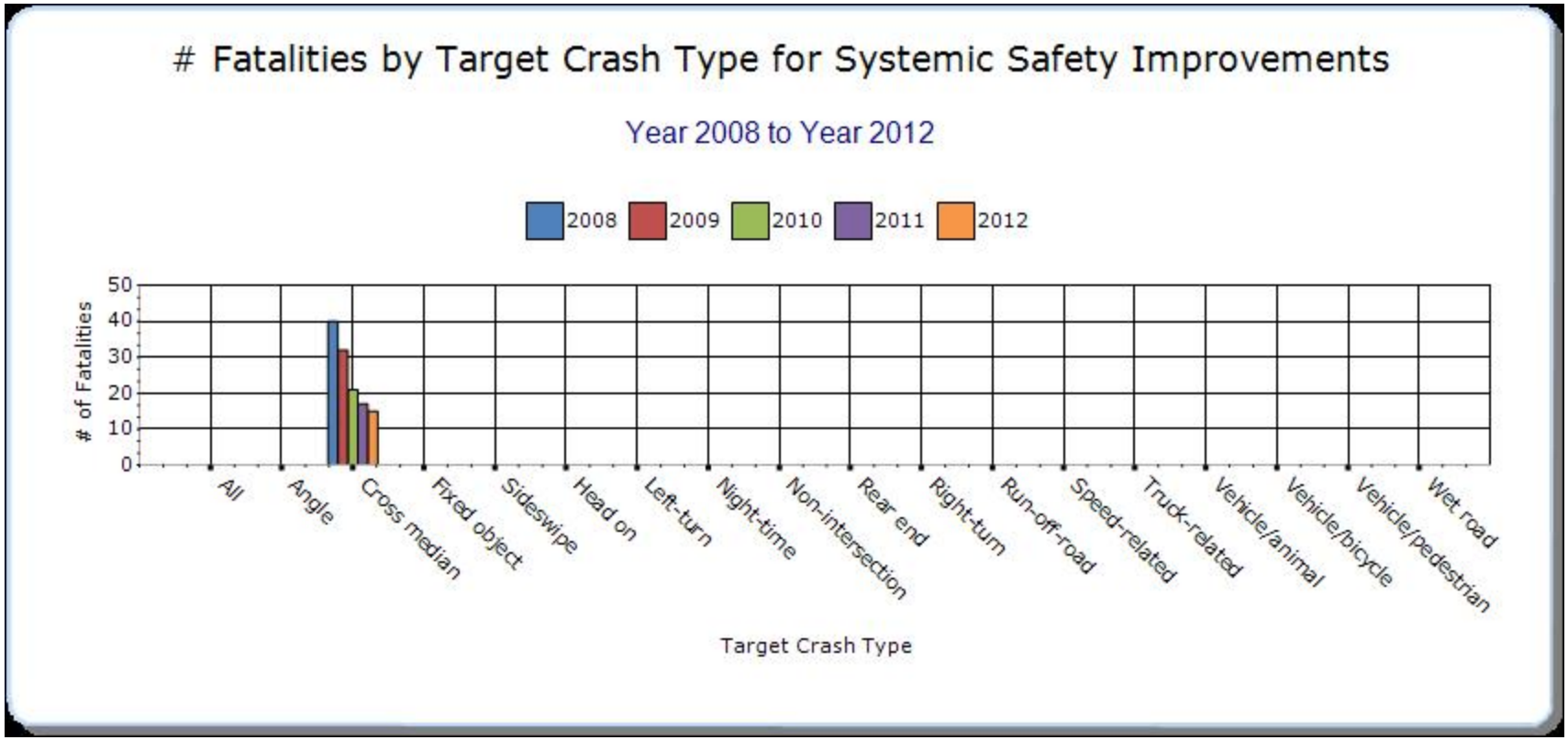

Serious Injury Rate by Target Crash Type for Groups of Similar Projects
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Serious Injurie
0.3
0.25
0.2
0.15
0.1
0.05
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type

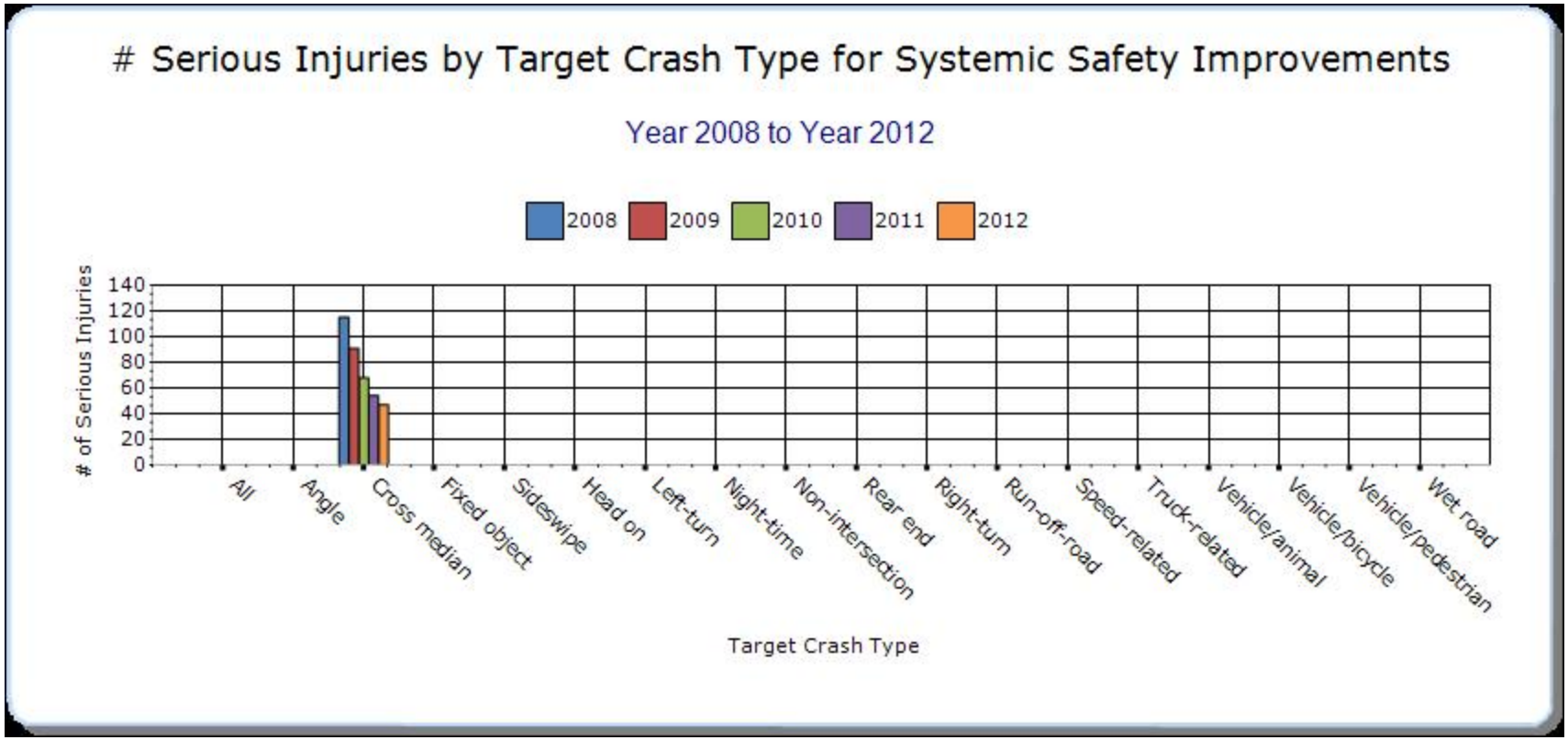
Systemic Treatments

Present the overall effectiveness of systemic treatments..

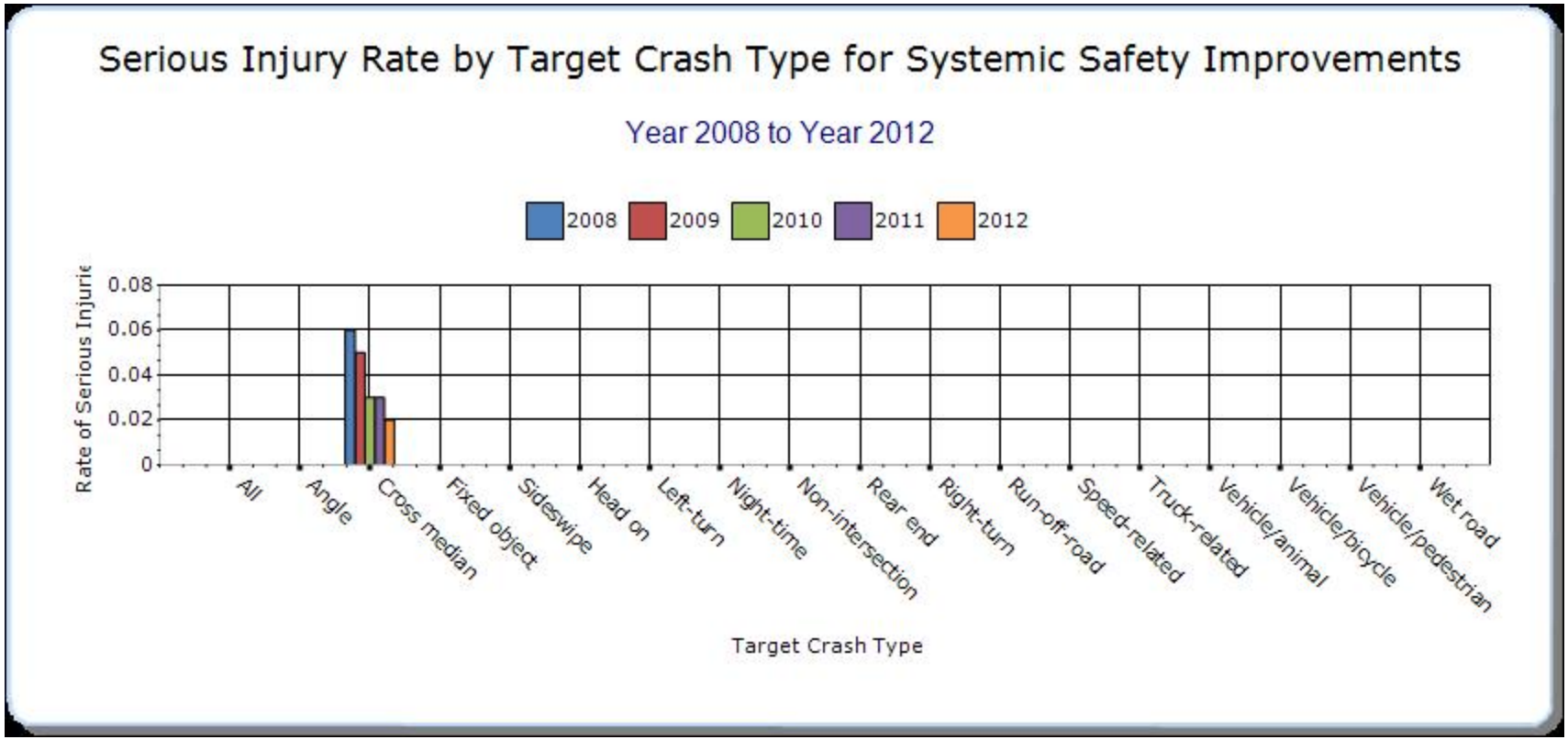
Year - 2012

Systemic improvement	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Cable Median Barriers	**Cross median**	**15**	**47**	**0.02**	**0.07**	**800**	**0**	**0**
Rumble Strips	Lane Departure	690	4015	1	5.82	0	11150	0


Fatalities by Target Crash Type for Systemic Safety Improvements
Year 2008 to Year 2012
2008
2009
2010
2011
2012
# of Fatalities
50
40
30
20
10
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type


Serious Injuries by Target Crash Type for Systemic Safety Improvements
Year 2008 to Year 2012
2008
2009
2010
2011
2012
# of Serious Injuries
140
120
100
80
60
40
20
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type


Fatality Rate by Target Crash Type for Systemic Safety Improvements
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Fatalities
0.08
0.06
0.04
0.02
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type


Serious Injury Rate by Target Crash Type for Systemic Safety Improvements
Year 2008 to Year 2012
2008
2009
2010
2011
2012
Rate of Serious Injuri
0.08
0.06
0.04
0.02
0
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type

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

The HSIP effectiveness is proven with lives saved. With the implementation of Missouri's 3rd SHSP in January 2013 (Missouri's Blueprint to Save More Lives) a new fatality reduction goal was established and additionally Missouri adopted a "Towards Zero Deaths" vision. Missouri has a very strong Coalition for Roadway Safety with outstanding leadership and commitment to achieve our goals. Ultimately, Missouri is committed to driving down the roadway fatalities not only in our state, but the nation. We are continuing to implement strategies to save more lives on our roadways and we continue to share these ideas to other states.

Our commitment to improving roadway safety is allowing more families to see their loved ones at night. In 2005, Missouri had 1,257 roadway deaths. By 2016, we hope to have reduced the number of roadway deaths to 700 or fewer in our state. Our commitment to safety will allow more Missourians to Arive Alive.

Provide project evaluation data for completed projects (optional).

Location	Functional Class	Improvement Category	Improvement Type	Bef-Fatal	Bef-Serious Injury	Bef-Other Injury	Bef-PDO	Bef-Total	Aft-Fatal	Aft-Serious Injury	Aft-Other Injury	Aft-PDO	Aft-Total	Evaluation Results (Benefit/ Cost Ratio)
I-70 (Installation of guardrail protection of DMS boards in Central District) (5I2166)	Rural Principal Arteria - Interstate	Roadside	Barrier- metal	3	2	7	45	57	0	3	7	29	39	21.1
Laclede County - Signal at MO 5 and Route YY (8P2155)	Rural Principal Arterial - Other	Intersection traffic control	Systemic improvements - signal-controlled	0	1	6	9	16	0	1	1	7	9	2.5
Installation of rumble strips on various routes in various counties in the Central District (5P1979)	Rural Principal Arterial - Other	Roadway	Rumble strips - edge or shoulder	0	0	0	0	0	0	0	0	0	0	1
Intersection modification from "Y" to "T", Rtes	Rural Principal Arterial -	Intersection geometry	Intersection geometrics - modify intersection corner	0	0	0	0	0	0	0	1	0	1	-0.552

136 and 59, Atchison Co. (J1P1006)	Other		radius											
Resurfacing with addition of paved shoulder and rumble stripe, 136 Harrison (J1P1017)	Rural Principal Arterial - Other	Shoulder treatments	Widen shoulder - paved or other	0	2	1	12	15	0	0	2	3	5	1.32
Ray County MO 210 (0P2149B): BNSF RR Overpass to MO 10 , Length = 9.841 mi	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	1	1	8	23	33	1	0	4	18	23	1
Clay County I-35 (4I1923): I-29/I-35 Split to MO 92, Length = 17.36 mi	Urban Principal Arterial - Interstate	Roadside	Barrier - cable	6	25	95	356	482	1	7	87	341	436	1
Clay County MO 92 (4P1883): Commercial Street in Smithville, Length = .2 mi	Rural Principal Arterial - Other	Intersection geometry	Intersection geometry - other	0	0	4	6	10	0	0	1	2	3	1
Jackson County US 50 OR (4S2197): Colbern Road in	Urban Local Road	Lighting	Lighting - other	1	0	7	6	14	1	0	1	3	5	1

Lee's Summit and at Bynum Road in Lone Jack.	or Street													
Saline County I-70 (4P2236C): Entire Length in Saline County	Rural Principal Arteria - Interstate	Roadway delineation	Improve retroreflectivity	4	13	42	155	214	1	3	34	133	171	1
Jefferson County MO 30 (J6P1803): Add left turn lanes EB and WB, upgrade signals, signing at Little Brennam Rd	Urban Principal Arterial - Other Freeways and Expressways	Intersection geometry	Auxiliary lanes - add left-turn lane	1	5	3	19	28	0	0	0	7	7	1
Jefferson County Rt BB (J6S1888): Realign roadway at Olde Baker School Lane.	Rural Major Collector	Alignment	Horizontal curve realignment	0	3	2	4	9	0	1	2	7	10	27.3
Jefferson County US 61 (J6S1903): Add dual left-turn lane from eastbound Rte.	Urban Principal Arterial - Other	Intersection geometry	Auxiliary lanes - add left-turn lane	2	4	24	70	100	0	1	7	44	52	13.9

61/67 to westbound Richardson Road and dual right-turn lane from eastbound Richardson Road to southbound Rte. 61/67.														
St. Charles County IS 70 (J6I1999): Add a southbound right turn lane to the I-70 westbound on-ramp and add a dual left turn lane to the eastbound I-70 on-ramp at Wentzville Parkway. Right of way will be donated by TDD.	Urban Principal Arterial - Interstate	Interchange design	Installation of new lane on ramp	0	2	13	74	89	0	0	10	66	76	12.6
St. Charles Rt D (J6S2119): Widen shoulders from 1.2 miles west of Callaway Fork	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	0	2	6	6	14	0	0	5	6	11	17.5

Road to Callaway Fork Road.														
St. Louis County MO 30 (J6S2117): Construct signal at Geyer Road/Sappington Barracks Road.	Urban Principal Arterial - Other	Intersection traffic control	Systemic improvements - signal-controlled	0	0	10	18	28	0	1	6	16	23	-8
St. Louis County US 67 (J6P2129): Traffic safety improvements from Rte. AC to Rte. 367.	Urban Principal Arterial - Other	Access management	Raised island - install new	2	10	74	269	355	0	4	74	243	321	11
St. Louis City IS 44 (J6I1989): Replace retaining wall to improve sight distance on Hampton Avenue under the bridge at I-44. b/c ratio 8.5	Urban Principal Arterial - Interstate	Intersection geometry	Intersection geometry - other	1	2	18	61	82	0	2	23	47	72	12.9
St. Louis City MO 30 (J6O0026): Reconstruct signal at Loughborough	Urban Principal Arterial -	Intersection traffic control	Modify traffic signal - modernization/replacement	0	1	12	56	69	0	0	18	57	75	10.9

Avenue.	Other													
St. Louis City MO 30 (J6O0027): Reconstruct signal at Grand Avenue. b/c ratio 29	Urban Principal Arterial - Other	Intersection traffic control	Modify traffic signal - modernization/replacement	0	3	29	103	135	0	0	35	82	117	25
St. Louis City MO 30 (J6O0028): Reconstruct signal at Jefferson Avenue. b/c ratio 24.1	Urban Principal Arterial - Other	Intersection traffic control	Modify traffic signal - modernization/replacement	0	1	21	64	86	0	0	22	64	86	6.1
St. Clair County, Mo 13 - Install signs and activated flashers from 0.3 mile north of 1st Street to 0.3 mile south of 7th Street in Lowry City. (7P0861)	Rural Principal Arterial - Other	Roadway signs and traffic control	Roadway signs and traffic control - other	1	3	2	5	11	0	5	2	5	12	1
St. Clair County, Mo 13 - Intersection improvements 0.6 mile north of Rte.	Rural Principal Arterial - Other	Intersection geometry	Intersection geometrics - miscellaneous/other/unspecified	0	0	2	1	3	0	1	0	2	3	1

B at Old Rte. 13. (7P0871)														
Greene County, Bus 65 - Add dual left-turn lanes, improve right-turn lane capacity at the Primrose Street intersection with Glenstone Avenue in Springfield.(8P0789)	Rural Principal Arterial - Other	Intersection geometry	Auxiliary lanes - add left-turn lane	0	1	49	94	144	0	1	42	138	181	1
Taney County, Mo 86 - SFY 2009 installation of guardrail and replacement of nonstandard guardrail throughout non-metropolitan District 8.(8P2176)	Rural Minor Arterial	Roadside	Barrier- metal	0	0	0	1	1	0	0	0	0	0	1
Montgomery County IS 70 (4P2236F): Striping at various	Rural Principal Arteria - Interstate	Roadway delineation	Improve retroreflectivity	9	29	150	892	1080	4	22	136	920	1082	1

locations														
Audrain County US 54 (3P2170): Offset right at Scott's corner	Rural Principal Arterial - Other	Intersection geometry	Intersection geometry - other	1	2	3	8	14	0	2	7	3	12	1
I-55 Cape Girardeau County, Guardcable installation (0I0978B)	Interstate	Roadside	Barrier - cable	3	6	41	261	311	2	6	44	212	264	1
US 67, Madison County, (0P2150)	Other Freeway and Expressway	Roadside	Barrier - cable	3	15	77	266	361	3	13	81	258	355	1
US 61, Ste Genevieve County, (0P2164) Rte OO to Mo 25 Cape Co	Major Collector	Roadway	Rumble strips - edge or shoulder	1	9	27	132	169	0	8	31	137	176	1
Various Routes, Milling and Rumble Strips (0P1979)	Rural Principal Arterial - Other	Roadway	Rumble strips - edge or shoulder	0	0	0	0	0	0	0	0	0	0	1

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.