Highway Safety Improvement Program
Data Driven Decisions

Minnesota
Highway Safety Improvement Program
2014 Annual Report

Prepared by: MN

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

Minnesota distributes HSIP funds based on the percentage of serious injuries and fatalities. This approach uses the Strategic Highway Safety Plan as a basis. Road Safety Plans for Minnesota districts and counties have further directed the focus of safety funds to lower-cost, systemic strategies. MnDOT is currently in the process of updating the 8 Minnesota districts over the next 18 months.

Definition of Terms:
MnDOT: Minnesota Department of Transportation

Greater Minnesota: Minnesota is split into 8 MnDOT districts. District 5 is the Metro District. All other districts when referred to as a collective, are called Greater Minnesota.

OTST: MnDOT's Office of Traffic, Safety and Technology. MnDOT's Central Office Safety Unit resides within OTST.

SALT: MnDOT's Office of State Aid for Local Transportation. This is the MnDOT office that works most directly with local agencies.

ATP: Area Transportation Partnership.Boundaries are synonymous with MnDOT district investment boundaries. The partnerships have as their members metropolitan and non-metropolitan stakeholders and can include Metropolitan planing organizations, Regional development commissions, cities, counties, townships, transit providers, tribal governments, other interests and MnDOT.

SFY: State Fiscal Year

Introduction

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

Program Structure

Program Administration

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

☒ Central

☐ District

☐ Other

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

MnDOT distributes funds to local roads through the Greater Minnesota Combined Solicitation. The latest solicitation distributed over $20M over three years of local projects for HSIP and Section 164 (MS 32) Funds. OTST, with representatives from State-Aid, prioritizes the local HSIP projects for each ATP. Districts are given the opportunity to comment on the prioritization of projects.

The allocation of HSIP funds is based on the distribution of fatal and A-injury crashes. Funds are distributed as follows:

Step 1: Funds are split based on % of K and A crashes in each District.
Step 2: Funds are split again based on % of K and A crashes occurring on State vs. local system.

The resulting "HSIP Goals" and local/state split of this fund are shown in the table attached to the Program Administration section. The file shows 2004-2006 crash data was used to distribute funds for SFY 2016 and prior. The next solicitation, held in Fall 2014, will use the newer crash data (2009-2011) and the new apportionments to program projects in SFY 2017 and beyond.

The 2007 Minnesota Strategic Highway Safety Plan (SHSP) is the main guidance for project selection and evaluation. The goal for this solicitation is that 70% of Greater Minnesota projects and 30% of Metro projects be systemic. **Systemic projects make up 63% of all the projects awarded for Minnesota in 2014**. **Historically, a subset of that program, local projects in Greater Minnesota, is comprised of approximately 95% systemic projects since 2007.** Minnesota also dispersed over $7M in Sanction 164 (MS32) funds, 83% of which were used for systemic projects.

Additionally, Minnesota has funded a County Safety Plan for each of its 87 counties and 8 districts. These plans have been completed and are being implemented. They provide each county and district with a prioritized list of low-cost, systemic projects. The District safety plans are currently being revised and should be completed by April 2016.

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

☒ Design

☐ Planning

☐ Maintenance

☐ Operations

☐ Governors Highway Safety Office

☒ Other: Other-MnDOT District Traffic Engineers

Briefly describe coordination with internal partners.

MnDOT's office of Traffic, Safety and Technology (OTST) works closely with the State Aid for Local Transportation (SALT) office as well as district traffic engineers in the distribution of HSIP funds.

A representative from the state aid office sits on the both the steering and selection committees for HSIP. The offices work together to educate local agencies and district personnel on the HSIP program. Once projects are selected the state aid office coordinates with the local agencies and provides support as necessary.

The HSIP project selection committee asks for input from the district traffic engineers during the selection and award processes. District traffic engineers provide vital background information on proposed projects as well as adding the local perspective.

MnDOT also holds quarterly TEO (Traffic Engineering Organization) Safety Subcommittee meetings, at which additional HSIP coordination occurs.

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

☒Metropolitan Planning Organizations

☐Governors Highway Safety Office

☐Local Government Association

☒Other: Other-City Engineer Safety Committee

☒Other: Other-County Engineer Safety Committee

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-Beginning with FY 2017, projects will be programmed in a more centralized project selection process as described in question 9.

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

Beginning with projects programmed in SFY 2017, the way Minnesota administers state projects will be changing. Decisions will be made in the central office level rather than the district level. Prior to SFY 2017 projects, only the local HSIP projects are selected by Central Office. District projects were approved by the district personnel in the past, but will now go through Central Office in a more formalized process.

The next solicitation, occurring in the fall of 2014, will be the first to use the new process. The last solicitation occurred in Fall 2013 and programmed projects through SFY 2016.

Program Methodology

Select the programs that are administered under the HSIP.

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

Program: **Other-MnDOT funds these countermeasures through HSIP.**

Date of Program Methodology: **10/1/2007**

What data types were used in the program methodology?

Crashes

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

Exposure

- ☒ Traffic
- ☒ Volume
- ☐ Population
- ☐ Lane miles
- ☐ Other

Roadway

- ☒ Median width
- ☒ Horizontal curvature
- ☐ Functional classification
- ☒ Roadside features
- ☒ Other-Road surface: In one particular county, gravel roads make up almost half of the system but fewer than 15 percent of all severe crashes occur on these roads.

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-Severe Crash Rate

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

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 1

☐Available funding

☐Incremental B/C

☐Ranking based on net benefit

☐Other

☒Road Safety Plan 1

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

63

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

What process is used to identify potential countermeasures?

☐ Engineering Study

☐ Road Safety Assessment

☒ Other: Other-County and District Safety Plans

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-NONE

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

HSIP funds are distributed in three separate processes: Met Council HSIP, Greater Minnesota Combined Solicitation and the MnDOT districts. Each solicitation utilizes a risk based analysis (Road Safety Plans) to select projects. Beginning with projects programmed in SFY 2017, the process MnDOT district projects go through will match the Greater Minnesota Combined Solicitation much more closely. This will

include approval from Central Office Traffic and additional checks and balances to ensure proper funding categories are assigned to each project.

Lower cost, systemic treatments (lighting, signage, rumble strips and enhanced edgelines) are the focus of the Greater Minnesota projects. Any entity that is eligible for State Aid funds can apply directly to the Greater Minnesota Combined Solicitation. Cities and Tribes that are not State Aid eligible must apply for HSIP funds through their county.

In the Metro District, systemic projects are funded as well as projects that address a spot location safety concern. Metro District projects and local metro projects compete side by side for the Metro HSIP funds in the Met Council solicitation.

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)	37734264	85 %	25925533	75 %
HRRRP (SAFETEA-LU)				
HRRR Special Rule				
Penalty Transfer - Section 154				
Penalty Transfer – Section 164	6900000	15 %	8739063	25 %
Incentive Grants - Section 163				
Incentive Grants (Section 406)				
Other Federal-aid Funds (i.e. STP, NHPP)				
State and Local Funds				

Totals	44634264	100%	34664596	100%

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

$19,306,096.00

How much funding is obligated to local safety projects?

$18,472,492.00

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

$485,000.00

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

$485,000.00

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

$0.00

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

$16,937,255.00

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

Minnesota continues to see a number of HSIP projects that are let with a significant savings from the engineer's estimate as contractors become more familiar with the types of strategies being implemented and as the economy fluctuates. The timing of the letting and the end of the fiscal year, often make it difficult to realize these savings and turn them into projects. Minnesota has made efforts to identify HSIP projects further out in the STIP than in previous years. This provides the State with the option of moving projects forward when a savings is realized.

For each year of the STIP, up to $20.5M in safety projects are identified and selected for funding. Because Minnesota has a practice of spending all of its Federal dollars within any given fiscal year, some safety projects may be coded to something other than HSIP depending on the fiscal resources available to the department in that year.

Minnesota's HSIP program has consisted mainly of stand-alone safety projects. Each district is also required to spend an additional 2X HSIP on safety add-ons to other projects in their program.

Some higher cost projects, such as roundabouts, while eligible for HSIP funds, have normally been funded through other programs.

Beginning with FY 2017, the more centralized process for programming MnDOT projects should make it easier to utilize more HSIP funds. Minnesota will be able to shift dollars from one district to another more easily to utilize any left over funds. MnDOT has also moved to a more balanced letting schedule in the past year. This should allow for fewer surprises in cost estimates and project schedules at the end of the fiscal year.

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

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
'2514-119'	Intersection geometry Auxiliary lanes - extend acceleration/deceleration lane	1 Numbers	416086.54	462318.38	HSIP (Section 148)		0	0	State Highway Agency	Intersections	Cost effective Intersection Improvements
'018-070-009'	Roadway signs and traffic control Curve-related warning signs and flashers	451 Numbers	163170	181300	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'3403-68','3404-55'	Intersection geometry Auxiliary lanes - add right-turn lane (free-flow)	2 Numbers	262938.56	292153.96	HSIP (Section 148)		0	0	State Highway Agency	Intersections	Cost effective Intersection Improvements

'0704-88','137-122-002','007-617-016','137-123-008'	Intersection traffic control Modify control - traffic signal to roundabout	1 Numbers	944469.07	1049410.08	HSIP (Section 148)		0	0	State Highway Agency	Intersections	Cost effective Intersection Improvements
'5006-50002B','5509-70','5006-19','5006-50001B'	Intersection geometry Auxiliary lanes - add left-turn lane	2 Numbers	347838.3	386487	HSIP (Section 148)		0	0	State Highway Agency	Intersections	Cost effective Intersection Improvements
'5209-66S','5209-66','5209-66F','5209-66H','7211-35'	Alignment Vertical alignment or elevation change	2 Miles	1258889.09	1398765.65	HSIP (Section 148)		0	0	State Highway Agency	Removing or relocating objects in hazardous locations	Roadway Maintenance
'002-596-020'	Intersection traffic control Modify traffic signal - modernization/replacement	1 Numbers	468000	468000	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements

'002-605-018'	Intersection traffic control Modify traffic signal - add additional signal heads	1 Numbers	936000	1040000	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements
'002-678-020'	Intersection traffic control Modify traffic signal - add additional signal heads	1 Numbers	842400	842400	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements
'004-070-011','004-070-008','004-070-012'	Roadway Rumble strips - edge or shoulder	12 Miles	506887	699109	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'008-070-004'	Roadway delineation Longitudinal pavement markings - new	19 Miles	27934.83	31038.7	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'013-030-003'	Roadway delineation Longitudinal pavement	11 Miles	190286	241045	HSIP (Sectio		0	0	County Highway	Roadway Departur	Cost Effective Lane

	markings - new				n 148)				Agency	e	Departure Improvements
'013-030-003'	Roadway signs and traffic control Curve-related warning signs and flashers	14 Numbers	0	0	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'013-618-004'	Intersection geometry Intersection geometrics - modify skew angle	1 Numbers	97200	110558	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements
'016-070-005','016-070-006','016-070-007','016-070-008'	Roadway delineation Longitudinal pavement markings - new	62 Miles	282534	376633	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'1906-57'	Miscellaneous	0 Numbers	967164.71	1074627.46	HSIP (Section 148)		0	0	State Highway Agency	Intersections	Cost effective Intersection Improvem

											ents
'019-632-028'	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	327600	783552	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements
'024-070-016','024-070-015','024-617-018'	Roadway Rumble strips - edge or shoulder	14 Miles	403658	403658	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'025-070-007'	Roadway delineation Longitudinal pavement markings - new	15 Miles	88676	88676	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'141-030-027'	Intersection traffic control Modify traffic signal - add additional signal heads	10 Numbers	769600	1206355	HSIP (Section 148)		0	0	City of Municipal Highway Agency	Intersections	Cost effective Intersection Improvements

'027-030-034'	Roadway delineation Longitudinal pavement markings - new	7 Miles	84500	84500	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'030-070-004'	Roadway signs and traffic control Curve-related warning signs and flashers	87 Numbers	156355	173728	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'030-070-005'	Roadway delineation Longitudinal pavement markings - new	35 Miles	259776	259776	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'033-070-004'	Lighting Intersection lighting	29 Numbers	241200	268000	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements
'034-070-006'	Roadway signs and traffic control Curve-related warning signs	49 Numb	26123	37350	HSIP (Sectio		0	0	County Highway	Roadway Departur	Cost Effective Lane

	and flashers	ers			n 148)				Agency	e	Departure Improvements
'037-620-019','037-070-004'	Shoulder treatments Widen shoulder - paved or other	4 Miles	160219	178021	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'042-070-006'	Roadway Rumble strips - edge or shoulder	11 Miles	357219	357219	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'043-070-008'	Roadway delineation Longitudinal pavement markings - new	54 Miles	315000	393137	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'044-070-004'	Roadway signs and traffic control Curve-related warning signs and flashers	31 Numbers	44775	44775	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvem

											ents
'047-070-007'	Roadway delineation Longitudinal pavement markings - new	47 Miles	268481	298312	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'048-070-009'	Roadway Rumble strips - edge or shoulder	2 Miles	95606	95606	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'048-070-008','048-070-007'	Roadway Rumble strips - edge or shoulder	5 Miles	169200	169200	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'052-070-003'	Roadway signs and traffic control Curve-related warning signs and flashers	121 Numbers	103092.3	114547	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements

'056-070-009','056-070-008'	Roadway delineation Longitudinal pavement markings - new	155 Miles	581720	646355	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'056-070-011','056-070-010'	Intersection traffic control Pavement markings - add advance stop ahead	43 Numbers	0	0	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements
'056-070-011','056-070-010'	Roadway signs and traffic control Curve-related warning signs and flashers	23 Numbers	126619	140688	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements
'056-070-013','056-070-012'	Roadway Roadway widening - curve	85 Numbers	555291	616990	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'056-070-014'	Lighting Intersection lighting	20 Numb	182700	251375	HSIP (Sectio		0	0	County Highway	Intersections	Cost effective Intersectio

		ers			n 148)				Agency		n Improvements
'060-070-006','060-070-007','060-070-005'	Roadway Rumble strips - edge or shoulder	13 Miles	567672.3	912252.2	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'060-070-006','060-070-007','060-070-005'	Roadway Rumble strips - center	5 Miles	0	0	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'062-631-009'	Intersection traffic control Modify traffic signal - modernization/replacement	1 Numbers	1497556	1654045	HSIP (Section 148)		0	0	City of Municipal Highway Agency	Intersections	Cost effective Intersection Improvements
'062-030-016'	Intersection traffic control Modify traffic signal - miscellaneous/other/unspecified	49 Numbers	333216	469000	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvem

											ents
'062-630-059'	Roadway Roadway - restripe to revise separation between opposing lanes and/or shoulder widths	1 Miles	304516	340053	HSIP (Section 148)		0	0	City of Municipal Highway Agency	Intersections	Cost effective Intersection Improvements
'063-070-002'	Lighting Intersection lighting	10 Numbers	34290	38100	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements
'064-070-004'	Roadway delineation Longitudinal pavement markings - new	10 Miles	39548.04	43942.27	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'065-070-006'	Roadway delineation Longitudinal pavement markings - new	141 Miles	67497	67497	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements

'065-070-005'	Roadway delineation Longitudinal pavement markings - new	14 Miles	93636	93636	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'066-637-010','066-070-011'	Roadway Rumble strips - edge or shoulder	6 Miles	250000	2157698.98	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'069-070-010','069-070-011','069-070-012'	Roadway delineation Longitudinal pavement markings - new	148 Miles	626786	696430	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'166-020-014','166-104-010','070-617-025'	Intersection traffic control Modify traffic signal - modernization/replacement	3 Numbers	1101600	1101600	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements
'071-070-023'	Roadway delineation Longitudinal pavement	169 Miles	126900	372482	HSIP (Sectio		0	0	County Highway	Roadway Departur	Cost Effective Lane

	markings - new				n 148)				Agency	e	Departure Improvements
'071-070-024','071-070-022'	Intersection geometry Intersection geometrics - miscellaneous/other/unspecified	1 Numbers	700844	700844	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements
'073-070-009'	Lighting Intersection lighting	7 Numbers	81900	81900	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements
'073-070-010'	Intersection traffic control Modify control - traffic signal to roundabout	1 Numbers	405000	405000	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements
'074-070-003'	Roadway delineation Longitudinal pavement markings - new	22 Miles	136539	155178	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvem

											ents
'7401-39'	Roadside Barrier - cable	2 Miles	246786.75	274207.5	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'079-070-006'	Roadway delineation Longitudinal pavement markings - new	111 Miles	350000	398355	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'079-070-005'	Roadway signs and traffic control Curve-related warning signs and flashers	118 Numbers	120474	120474	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'083-605-039','083-608-019','083-070-006'	Roadway delineation Longitudinal pavement markings - new	14 Miles	448140	448140	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements

'085-626-021','085-070-009'	Roadway Rumble strips - edge or shoulder	5 Miles	0	43108	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'087-070-005'	Roadway delineation Longitudinal pavement markings - new	12 Miles	81792	97171	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'019-609-018','070-602-020'	Intersection traffic control Modify control - all-way stop to roundabout	1 Numbers	0	0	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements
'088-070-038'	Roadway signs and traffic control Curve-related warning signs and flashers	528 Numbers	542025	602250	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'8822-167'	Lighting Intersection lighting	8 Numb	310500	345000	HSIP (Sectio		0	0	State Highway	Intersections	Cost effective Intersectio

		ers			n 148)				Agency		n Improvements
'8825-389'	Lighting Intersection lighting	12 Numbers	159109.2	176788	HSIP (Section 148)		0	0	State Highway Agency	Intersections	Cost effective Intersection Improvements
'088-070-040'	Roadway delineation Longitudinal pavement markings - new	640 Miles	569041	569041	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'088-070-041'	Roadway Rumble strips - edge or shoulder	41 Miles	807890	916880	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'088-070-041'	Roadway delineation Longitudinal pavement markings - new	83 Miles	0	0	HSIP (Section 148)		0	0	County Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvem

											ents
'8824-115'	Roadway Rumble strips - edge or shoulder	0	0	0	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'6982-299','0980-183'	Roadside Barrier - cable	9 Miles	1121959	1246622	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'1480-165','2180-103','2680-43'	Roadside Barrier - cable	0	50365.62	55961.8	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'8680-86803','8680-158','8680-86526','8680-86530'	Roadway Roadway widening - add lane(s) along segment	2 Miles	1366933.52	1518815.02	HSIP (Section 148)		0	0	State Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements

'5209-66S','5209-66','5209-66F','5209-66H','7211-35'	Alignment Vertical alignment or elevation change	0 Miles	973798.58	973798.58	Penalty Transfer – Section 164		0	0	State Highway Agency	Removing or relocating objects in hazardous locations	Roadway Maintenance
'8828-158'	Roadway delineation Longitudinal pavement markings - new	20 Miles	501338.14	501338.14	Penalty Transfer – Section 164		0	0	State Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'8826-156'	Roadway delineation Longitudinal pavement markings - new	73 Miles	684542.17	684542.17	Penalty Transfer – Section 164		0	0	State Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'8828-164'	Roadway Rumble strips - edge or shoulder	67 Miles	130281.74	343653.13	Penalty Transfer – Section 164		0	0	State Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements

'8816-2141'	Non-infrastructure Transportation safety planning	6 Numbers	485000	485000	Penalty Transfer – Section 164		0	0	State Highway Agency	Coordinate TZD Efforts	Coordinate TZD Efforts
'1480-165','2180-103','2680-43'	Roadside Barrier - cable	5 Miles	2290867	2290867	Penalty Transfer – Section 164		0	0	State Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'1480-167','2680-45','8480-35','5680-135'	Roadside Barrier - cable	24 Miles	3673235.2	3673235.2	Penalty Transfer – Section 164		0	0	State Highway Agency	Roadway Departure	Cost Effective Lane Departure Improvements
'002-030-007'	Intersection traffic control Modify traffic signal - modernization/replacement	4 Numbers	353808	446146	HSIP (Section 148)		0	0	County Highway Agency	Intersections	Cost effective Intersection Improvements

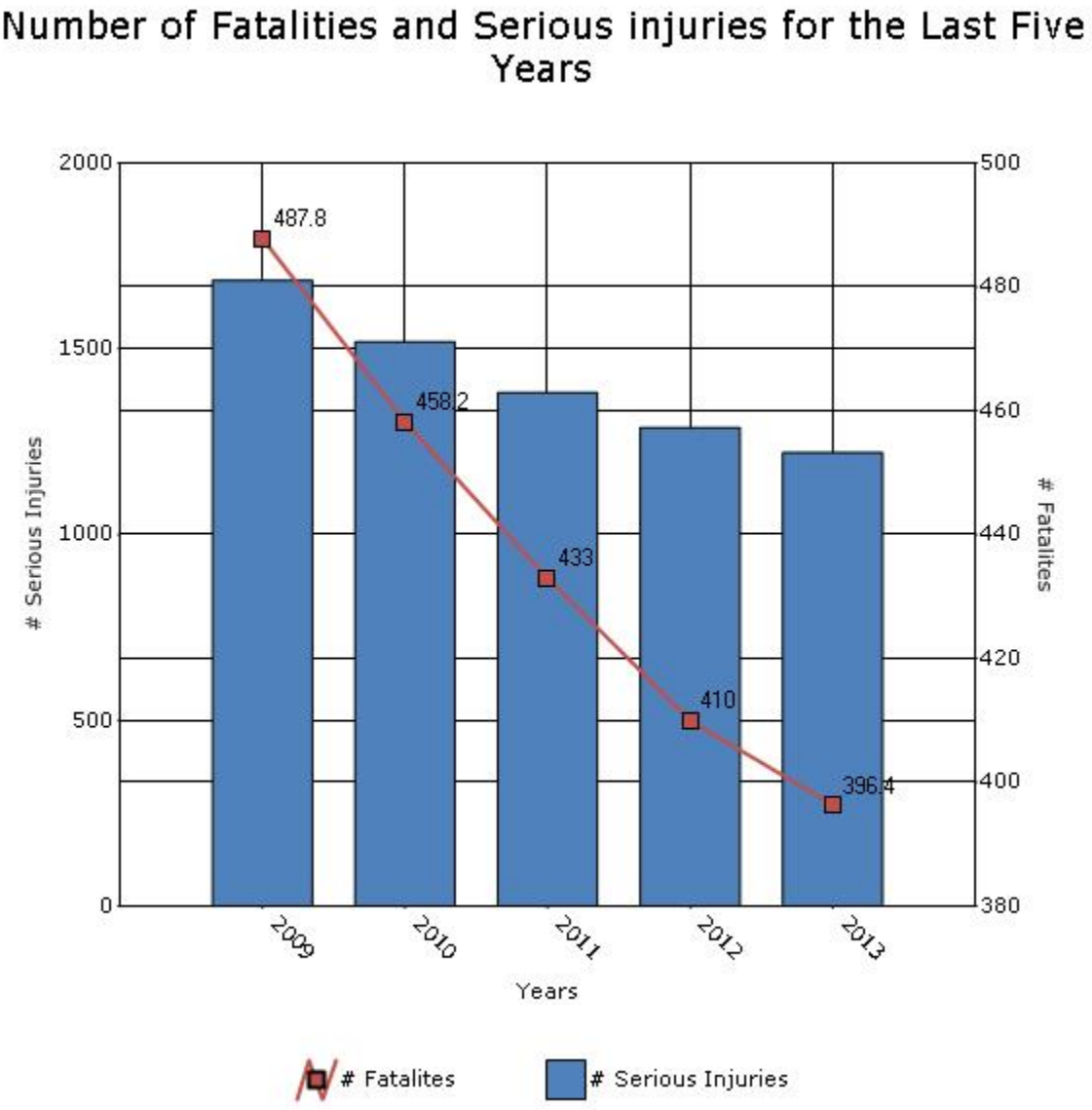
Progress in Achieving Safety Performance Targets

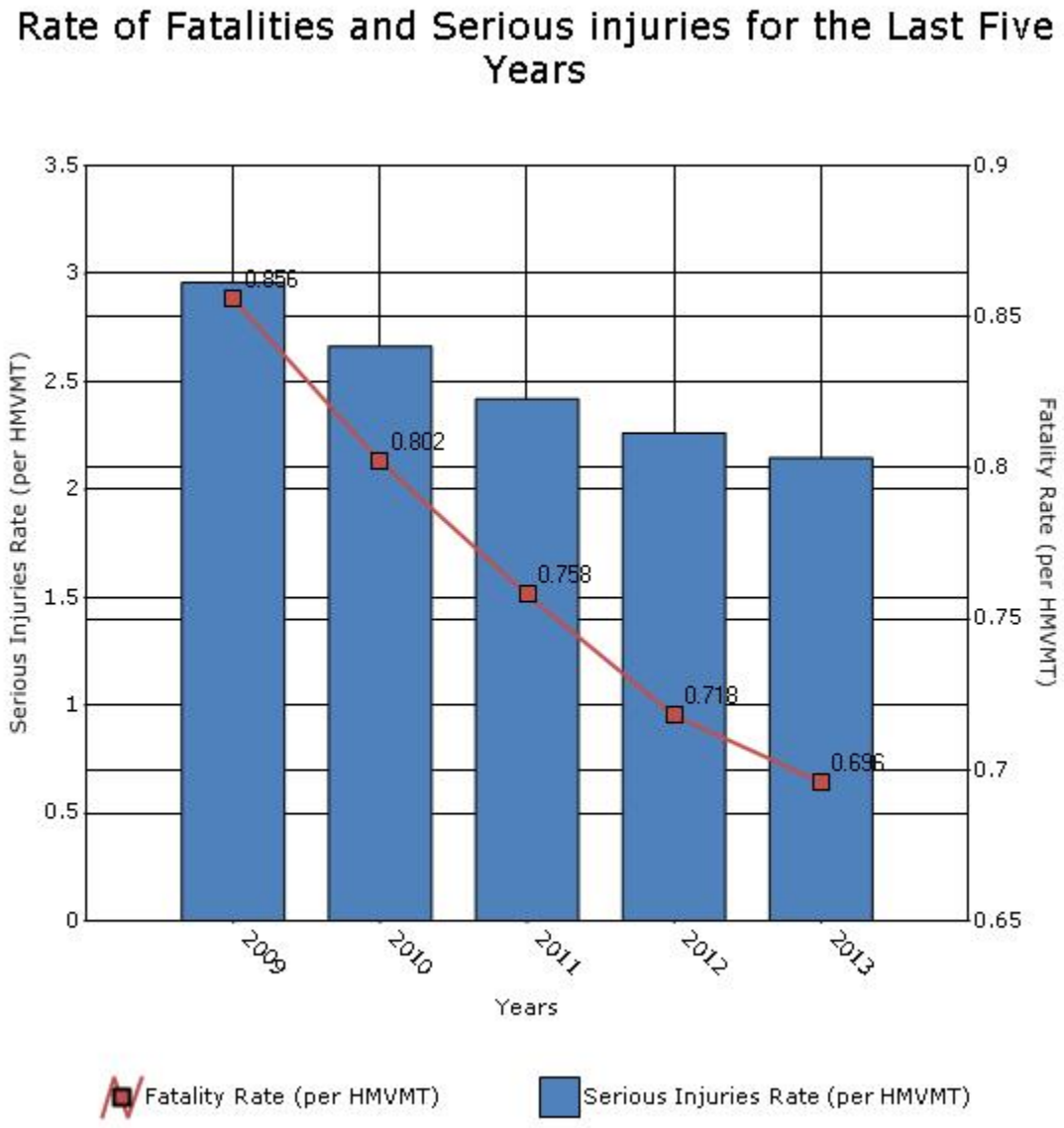
Overview of General Safety Trends

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

Performance Measures*	2009	2010	2011	2012	2013
Number of fatalities	487.8	458.2	433	410	396.4
Number of serious injuries	1684.6	1519	1382	1288.4	1221
Fatality rate (per HMVMT)	0.856	0.802	0.758	0.718	0.696
Serious injury rate (per HMVMT)	2.958	2.664	2.42	2.262	2.146

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


Number of Fatalities and Serious injuries for the Last Five Years
2000
1500
1000
500
0
Serious Injuries
500
480
460
440
420
400
380
Fatalites
487.8
458.2
433
410
396.4
2009
2010
2011
2012
2013
Years
Fatalites
Serious Injuries

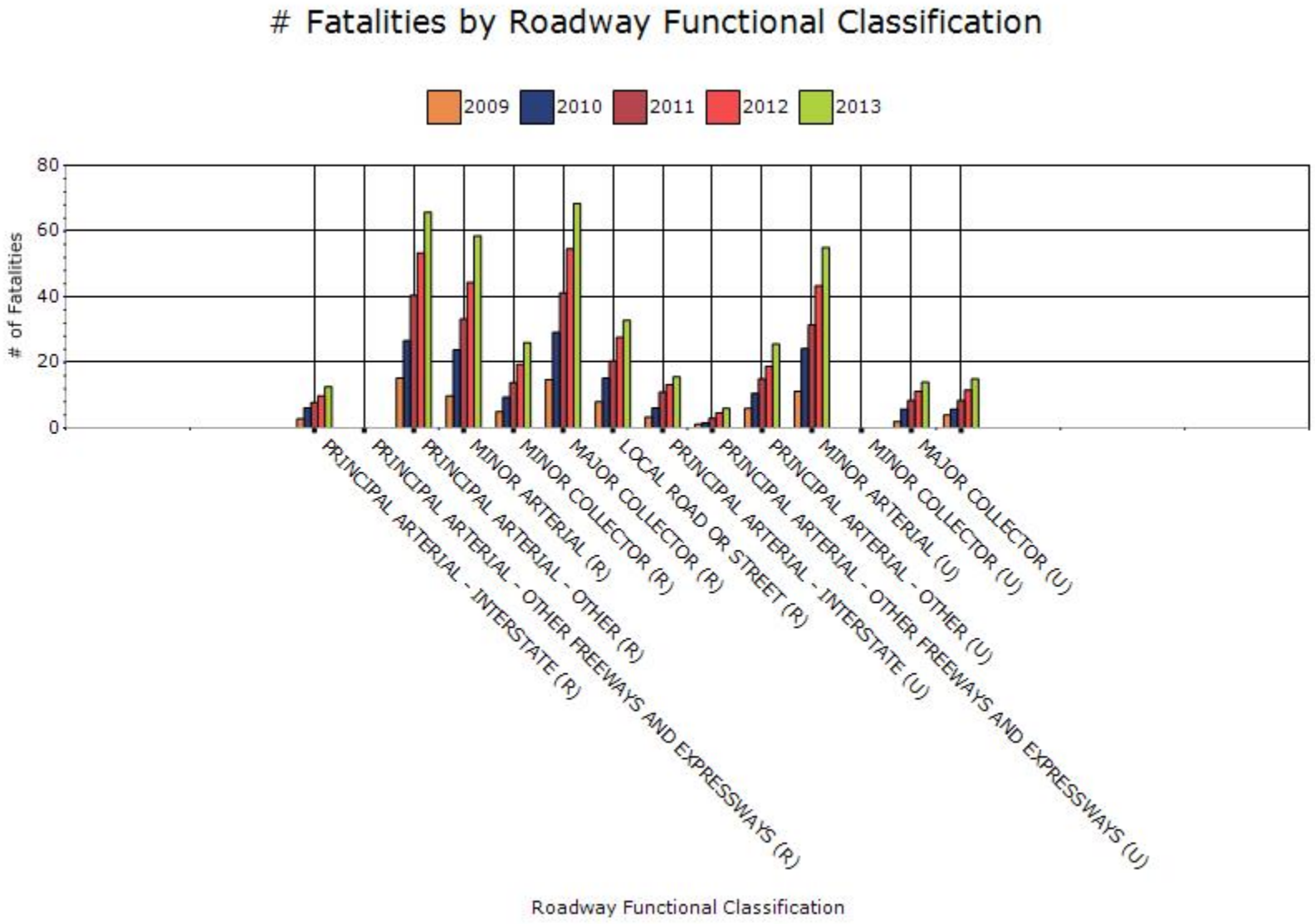

Rate of Fatalities and Serious injuries for the Last Five Years
Serious Injuries Rate (per HMVMT)
Fatality Rate (per HMVMT)
3.5
3
2.5
2
1.5
1
0.5
0
0.9
0.85
0.8
0.75
0.7
0.65
0.856
0.802
0.758
0.718
0.696
2009
2010
2011
2012
2013
Years
Fatality Rate (per HMVMT)
Serious Injuries Rate (per HMVMT)

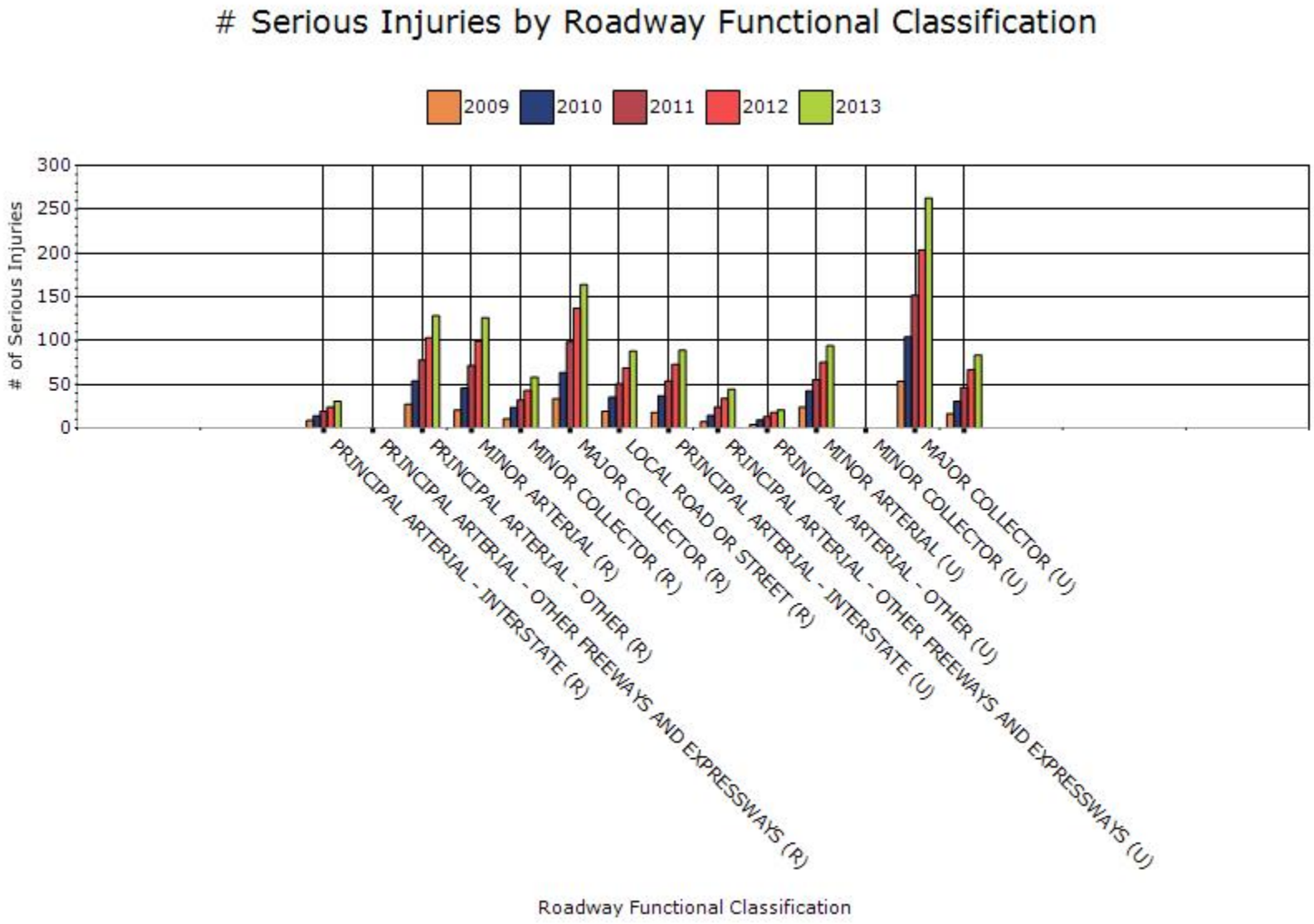
To the maximum extent possible, present performance measure* data by functional classification and ownership.

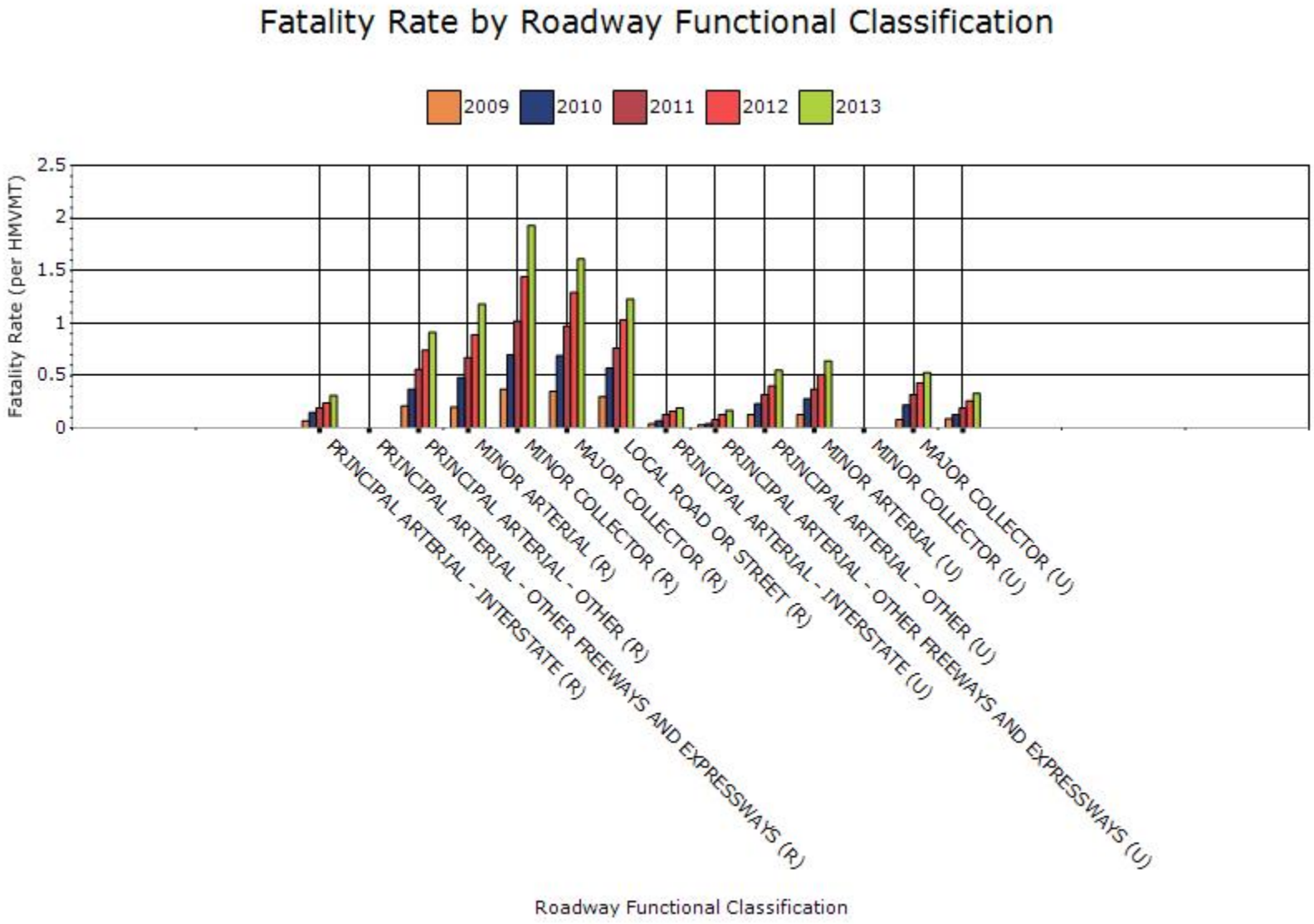
Year - 2013

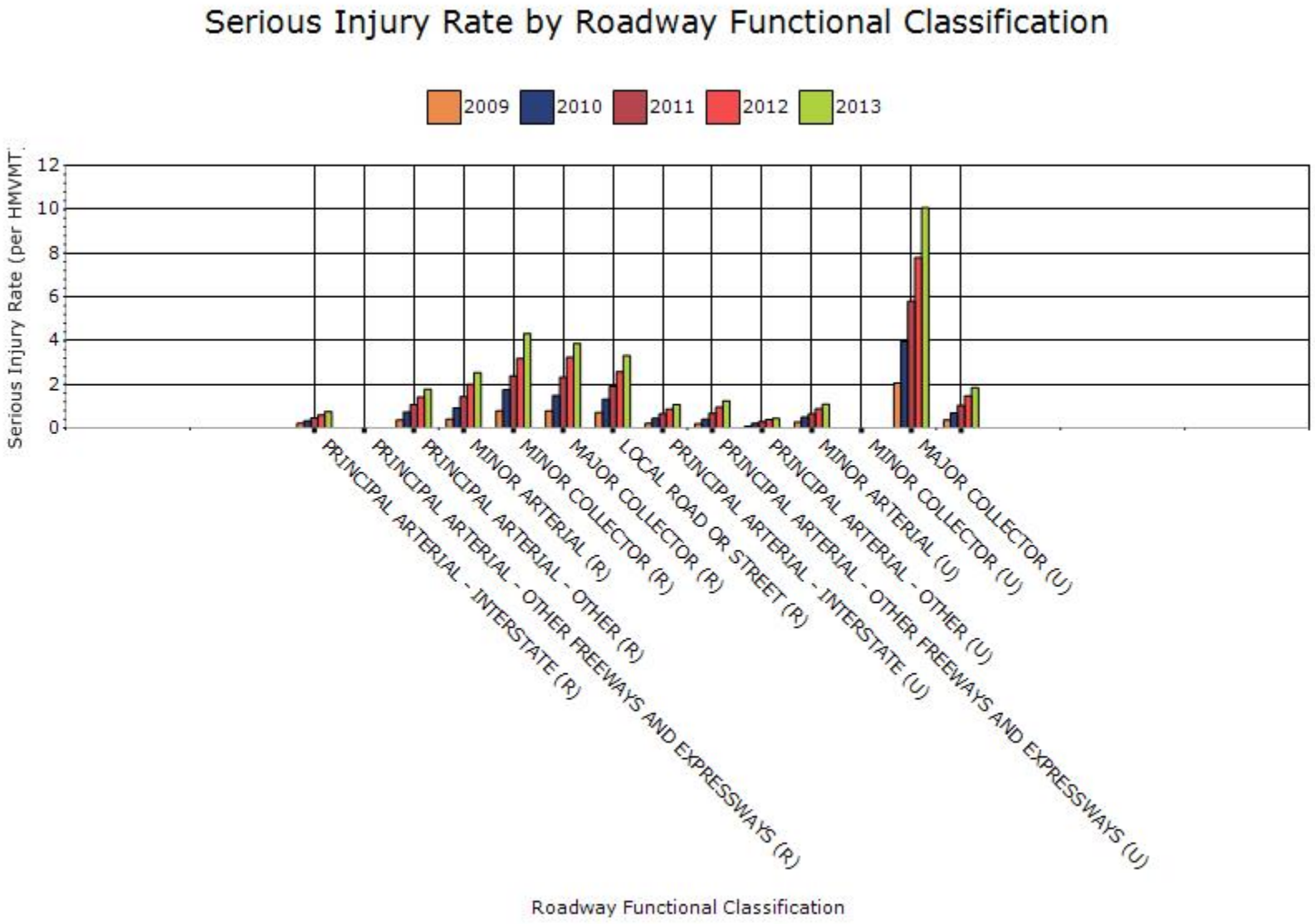
Function Classification	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
RURAL PRINCIPAL ARTERIAL - INTERSTATE	12.6	30.6	0.31	0.75
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	0	0	0	0
RURAL PRINCIPAL ARTERIAL - OTHER	65.8	128.2	0.91	1.77
RURAL MINOR ARTERIAL	58.6	126	1.18	2.53
RURAL MINOR COLLECTOR	26	58.2	1.93	4.32
RURAL MAJOR COLLECTOR	68.4	164	1.61	3.86
RURAL LOCAL ROAD OR STREET	32.8	88	1.23	3.31
URBAN PRINCIPAL	15.6	88.8	0.19	1.07

ARTERIAL - INTERSTATE				
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	6	44.2	0.17	1.24
URBAN PRINCIPAL ARTERIAL - OTHER	25.6	20.8	0.55	0.44
URBAN MINOR ARTERIAL	55	94	0.64	1.1
URBAN MINOR COLLECTOR	0	0	0	0
URBAN MAJOR COLLECTOR	14	262.8	0.53	10.07
URBAN LOCAL ROAD OR STREET	15	83.4	0.33	1.85


Fatalities by Roadway Functional Classification
2009
2010
2011
2012
2013
# of Fatalities
80
60
40
20
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

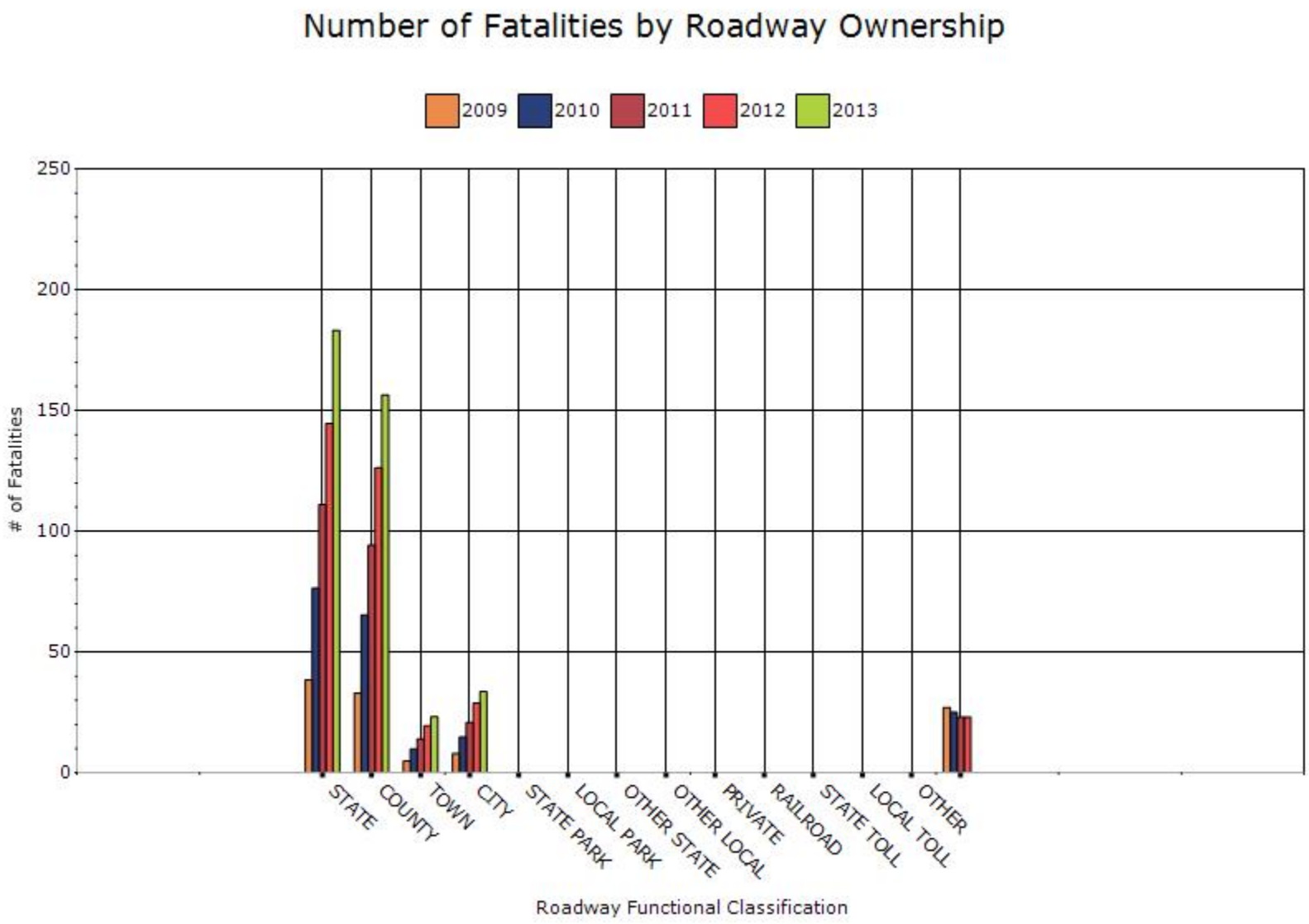

Serious Injuries by Roadway Functional Classification
2009
2010
2011
2012
2013
# of Serious Injuries
300
250
200
150
100
50
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (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)
Roadway Functional Classification

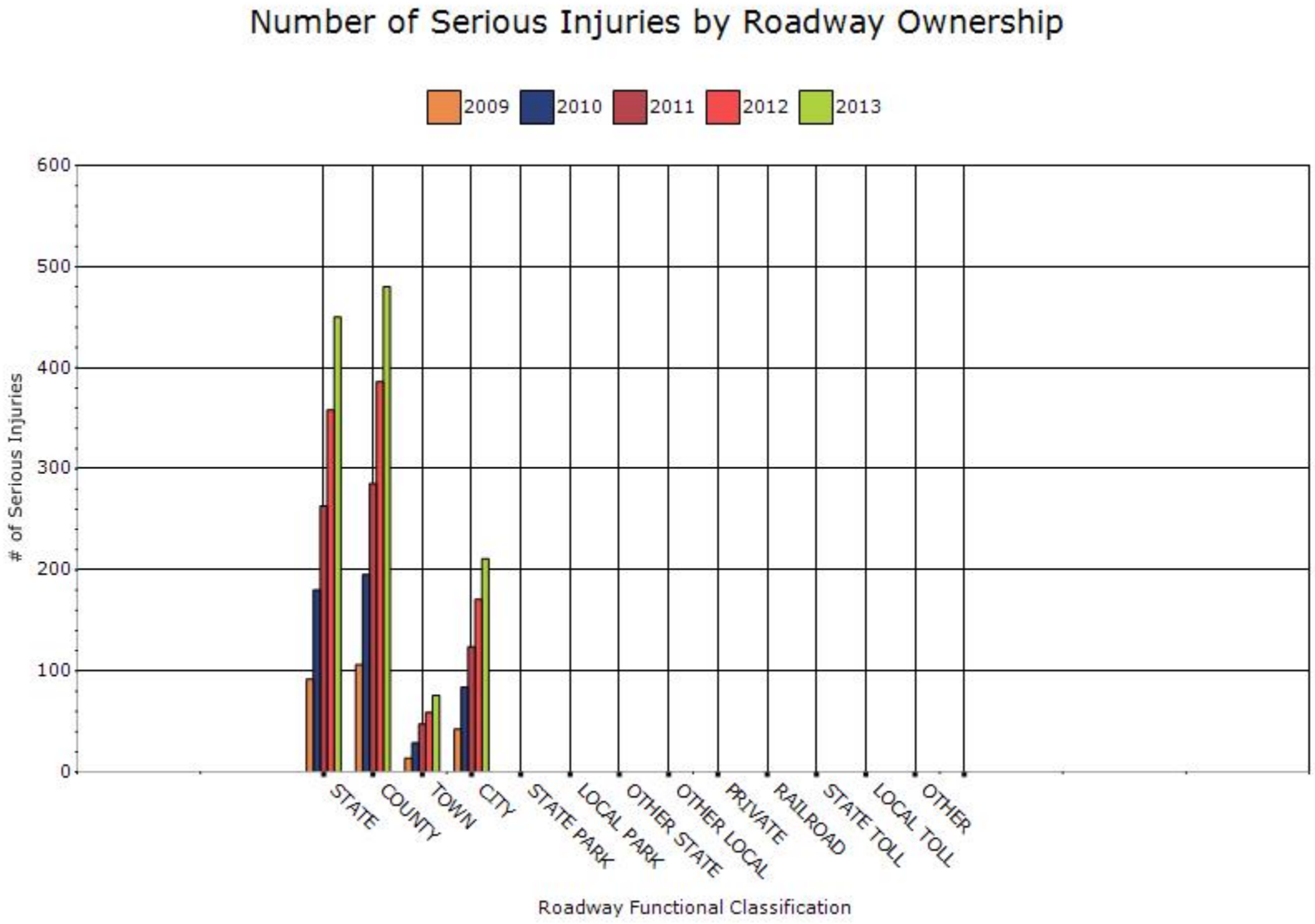

Fatality Rate by Roadway Functional Classification
2009
2010
2011
2012
2013
Fatality Rate (per HMVMT)
2.5
2
1.5
1
0.5
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
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)
Roadway Functional Classification

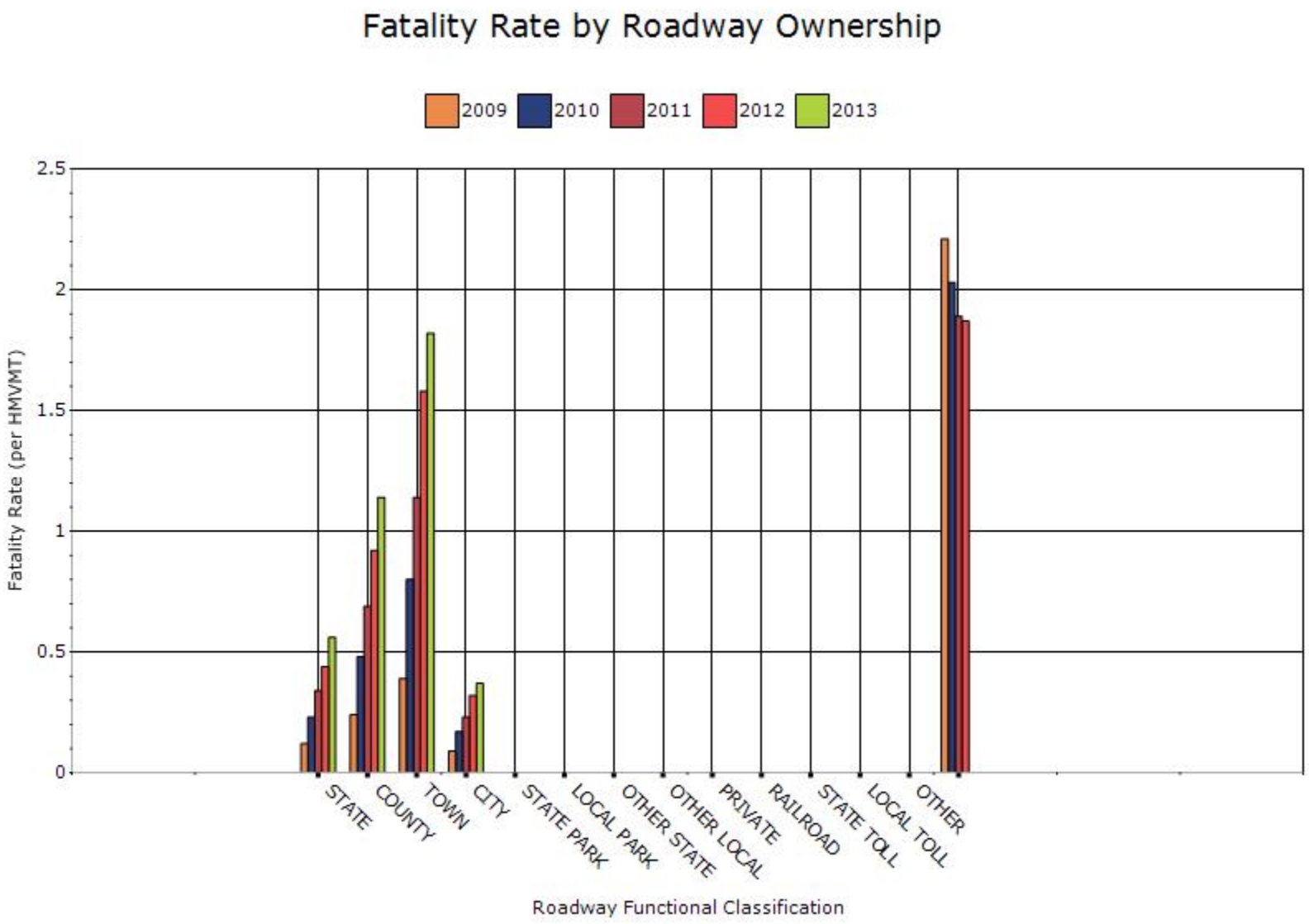

Serious Injury Rate by Roadway Functional Classification
2009
2010
2011
2012
2013
Serious Injury Rate (per HMVMT)
12
10
8
6
4
2
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (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

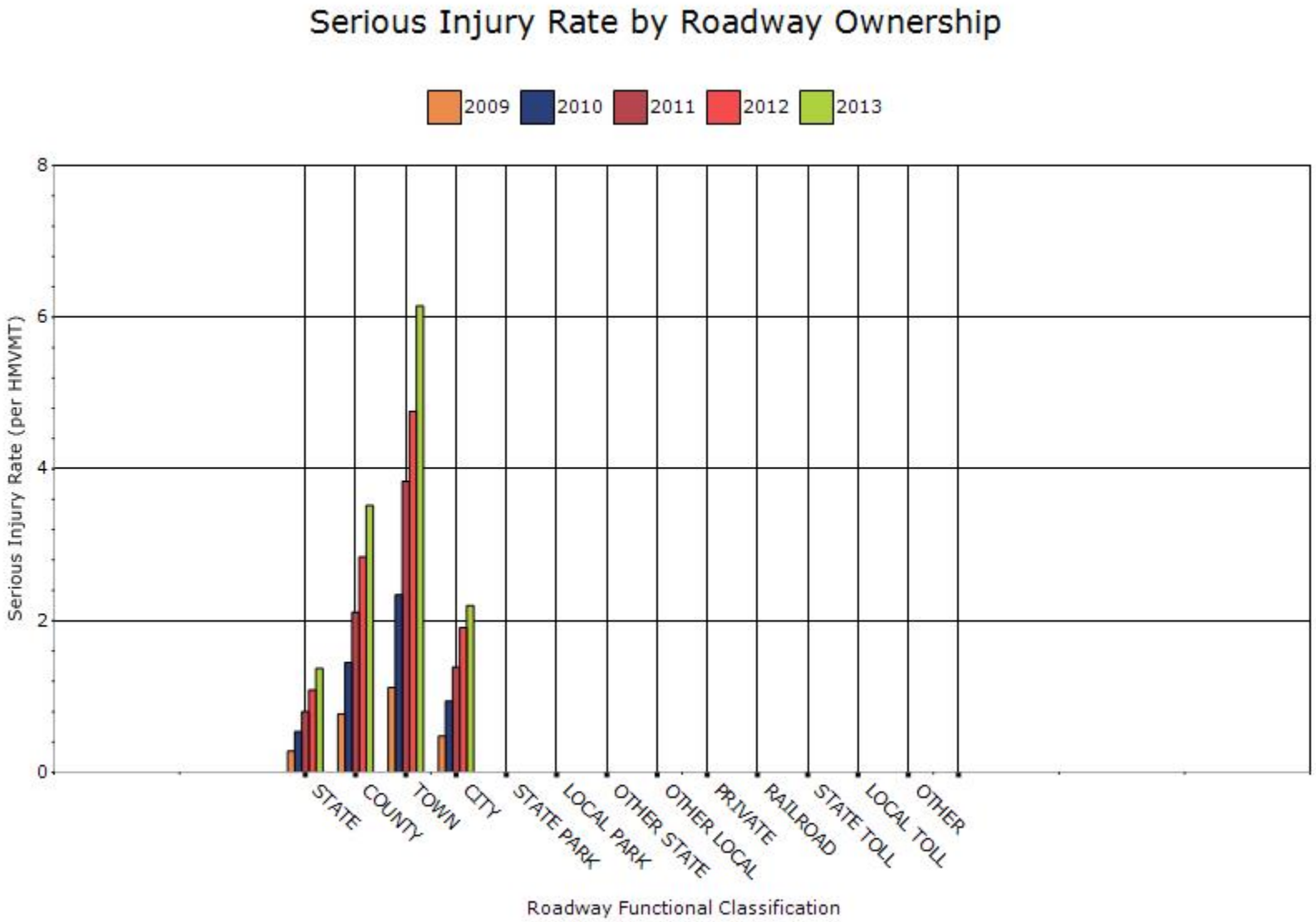
Year - 2013

Roadway Ownership	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
STATE HIGHWAY AGENCY	183.2	450	0.56	1.37
COUNTY HIGHWAY AGENCY	156.4	480	1.14	3.52
TOWN OR TOWNSHIP HIGHWAY AGENCY	23.2	76	1.82	6.15
CITY OF MUNICIPAL HIGHWAY AGENCY	33.6	211	0.37	2.2
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
OTHER	0	0	0	0


Number of Fatalities by Roadway Ownership
2009
2010
2011
2012
2013
250
200
150
100
50
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
2009
2010
2011
2012
2013
600
500
400
300
200
100
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
2009
2010
2011
2012
2013
Fatality Rate (per HMVMT)
2.5
2
1.5
1
0.5
0
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
2009
2010
2011
2012
2013
Serious Injury Rate (per HMVMT)
0
2
4
6
8
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER
Roadway Functional Classification

"Rural Principal Arterial - Other Freeways and Expressways" data is included in the "Rural Principal Arterial - Other" Functional Classification.

"Urban Minor Collector" data is included in the "Urban Major Collector" Functional Classification.

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

In 2013, overall traffic crashes increased by 10% in Minnesota while traffic fatalities fell 2% from the previous year. A long, harsh winter contributed to an overall increase in property damage crashes. The 387 deaths in 2013, represent a 41% reduction in traffic deaths from a decade ago, when 655 people died on Minnesota roads. The 2013 fatality count is the second lowest annual death figure (behind 2011) since 1944.

Miles traveled increased again from 56.9B to 57B in the last year.

Motorcycle fatalities rose again in 2013, while pedestrian fatalities decreased. In addition to 60 motorcyclist deaths, the 2013 statistics include 68 fatalities that were caused by inattention and 94 motor vehicle occupants who were killed that weren't buckled. The VMT-based fatality rate for 2013 is 0.68, one of the lowest in the nation. The VMT fatality rate has shown dramatic improvement in the last five decades (it was 5.52 in 1966).

Application of Special Rules

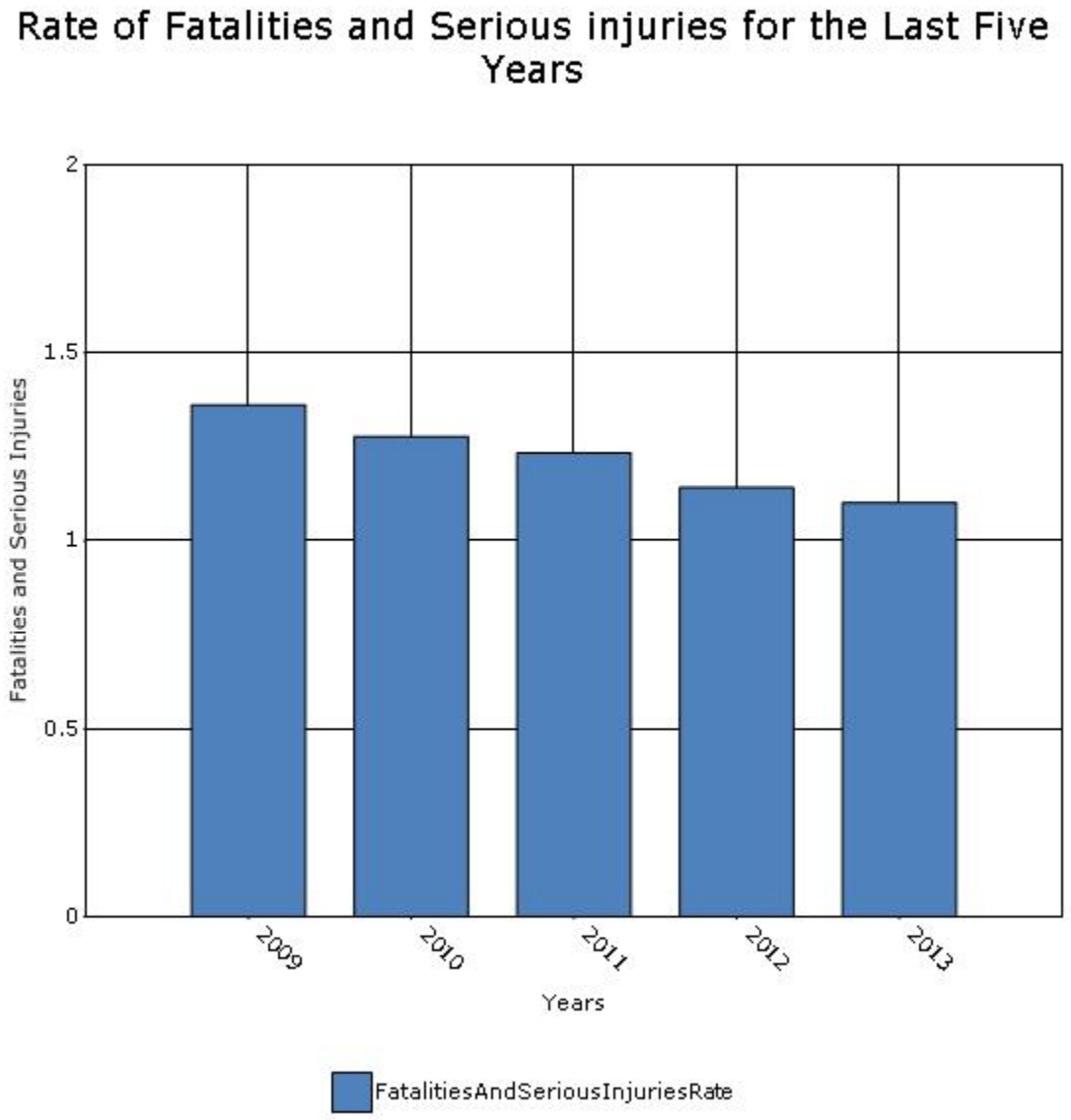
Present the rate of traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65.

Older Driver Performance Measures	**2009**	**2010**	**2011**	**2012**	**2013**
Fatality rate (per capita)	0.524	0.5	0.486	0.454	0.438
Serious injury rate (per capita)	0.822	0.764	0.734	0.692	0.668
Fatality and serious injury rate (per capita)	1.362	1.278	1.234	1.142	1.102

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

YEAR	FHWA METRIC(5-	POPULATION	FATALITIES	A	Fatality	Serious	Fatal

	year rolling average)					INJURIES	Rate	Injury Rate	and Serious Injury Rate
	Value	Comp. Year							
2005	-	-	-	116	60	116	0.52	1.00	1.52
2006	-	-	-	122	64	95	0.52	0.78	1.30
2007	-	-	-	122	84	108	0.69	0.89	1.57
2008	-	-	-	125	66	95	0.53	0.76	1.29
2009	1.36	2007	-	127	58	86	0.46	0.68	1.13
2010	1.28	2008	-	129	51	91	0.40	0.71	1.10
2011	1.24	2009	0.9	131	59	83	0.45	0.63	1.08
2012	1.14	2010	0.9	136	59	92	0.43	0.68	1.11
2013	1.10	2011	0.9	140	63	89	0.45	0.64	1.09



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-Minnesota is tracking the number of miles touched by HSIP as an indicator of success. Each group of countermeasures will be studied for their effectiveness at reducing fatal and serious injury crashes. Six-inch edgelines are the first countermeasure to have enough years to be studied properly. As more years of data are collected, Minnesota will conduct more studies.

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.

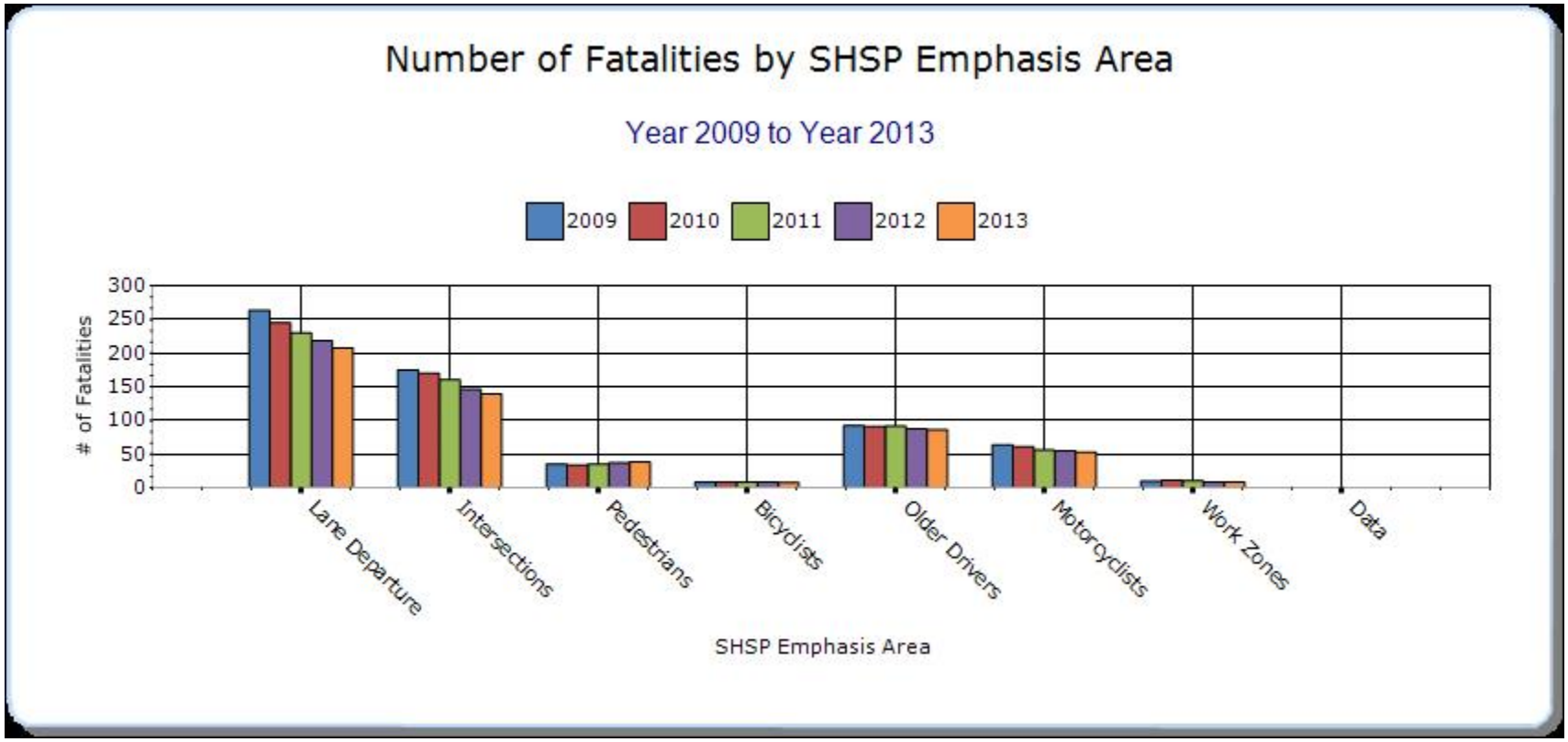
N/A

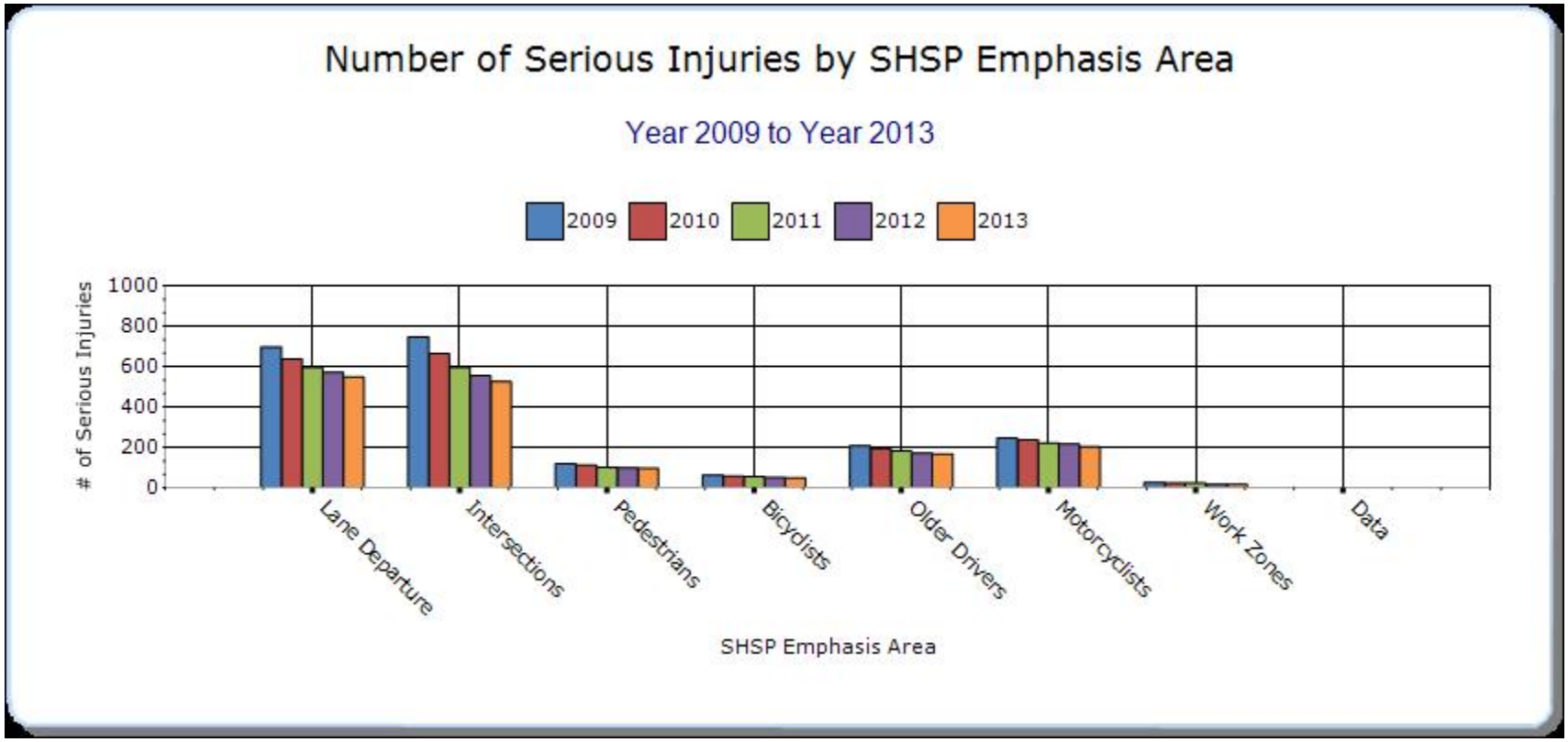
SHSP Emphasis Areas

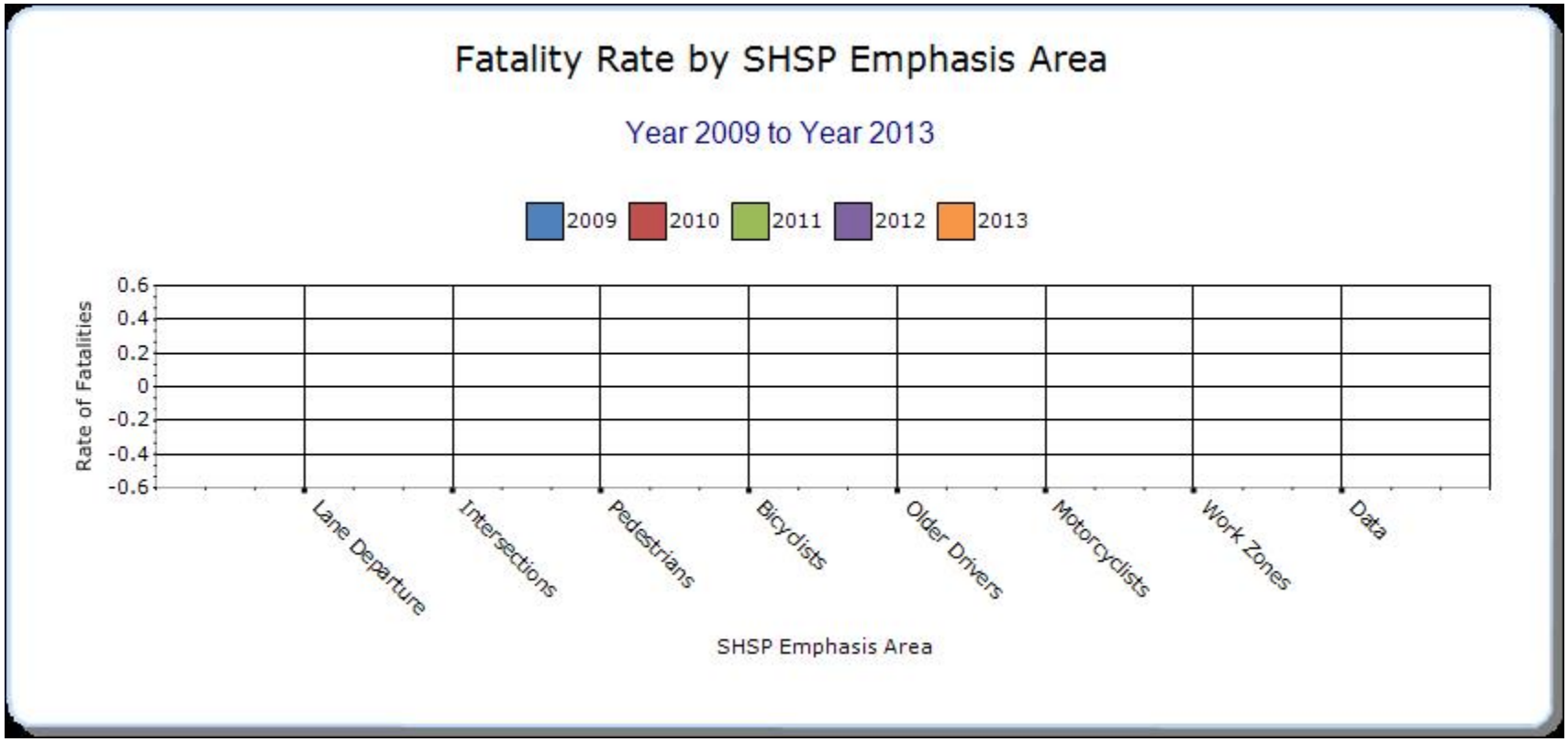
For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.

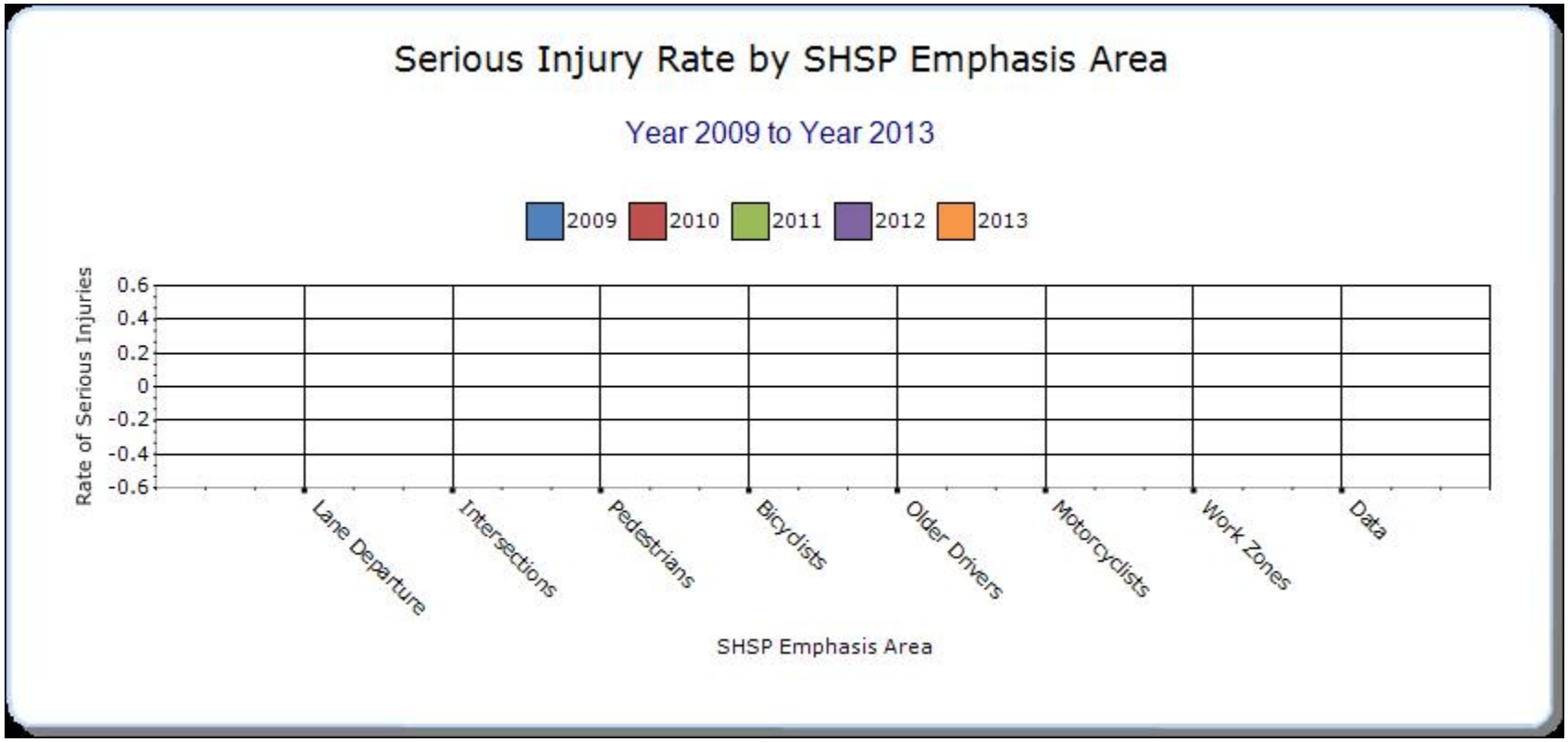
Year - 2013

HSIP-related SHSP Emphasis Areas	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Lane Departure		207.8	548.4	0	0	0	0	0
Intersections		139.4	525.8	0	0	0	0	0
Pedestrians		38.4	96.2	0	0	0	0	0
Bicyclists		7.6	48.6	0	0	0	0	0
Older Drivers		86.2	167.6	0	0	0	0	0
Motorcyclists		53	204.2	0	0	0	0	0
Work Zones		8.4	16.6	0	0	0	0	0


Number of Fatalities by SHSP Emphasis Area
Year 2009 to Year 2013
2009
2010
2011
2012
2013
# of Fatalities
300
250
200
150
100
50
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
SHSP Emphasis Area


Number of Serious Injuries by SHSP Emphasis Area
Year 2009 to Year 2013
2009
2010
2011
2012
2013
# of Serious Injuries
1000
800
600
400
200
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
SHSP Emphasis Area

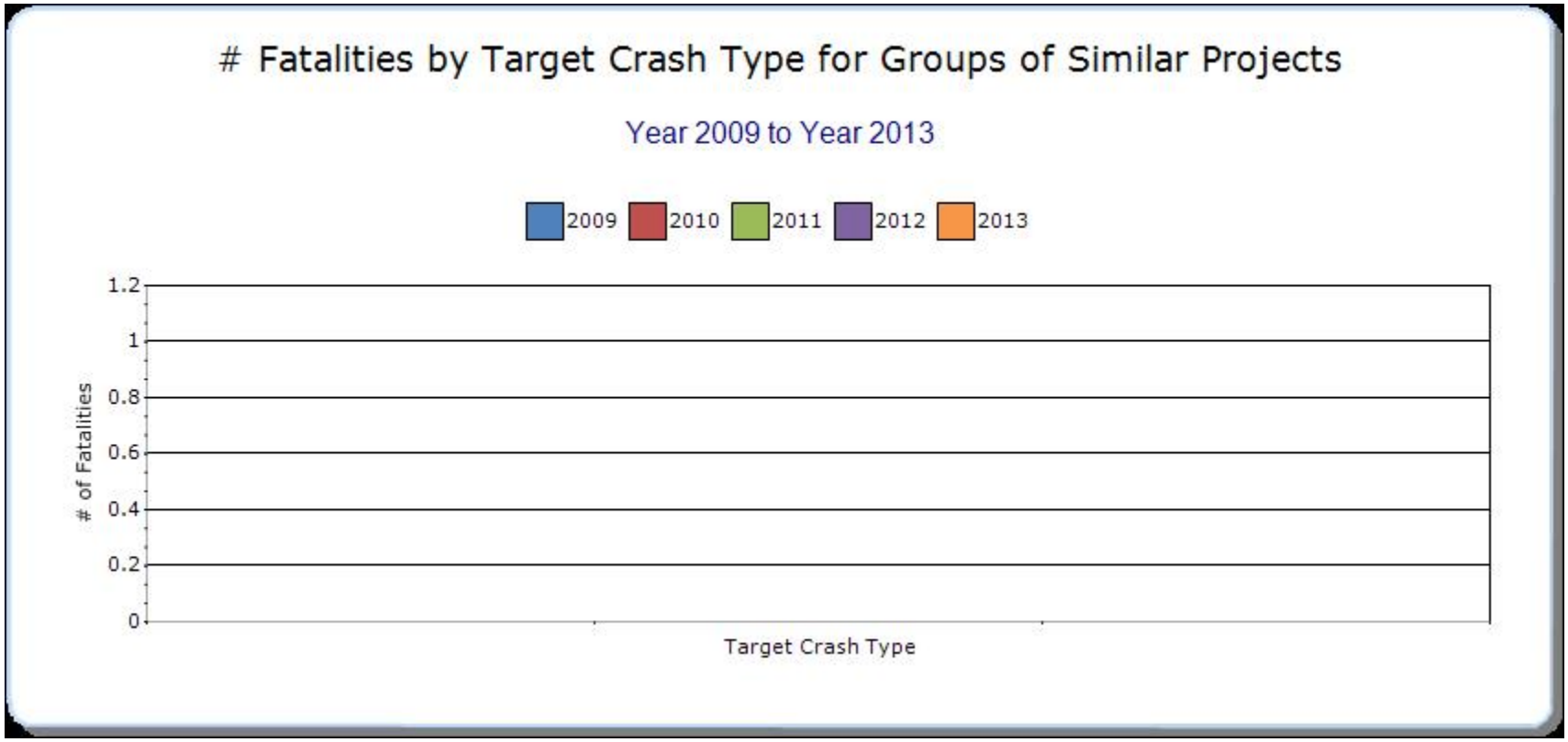

Fatality Rate by SHSP Emphasis Area
Year 2009 to Year 2013
2009
2010
2011
2012
2013
Rate of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
SHSP Emphasis Area

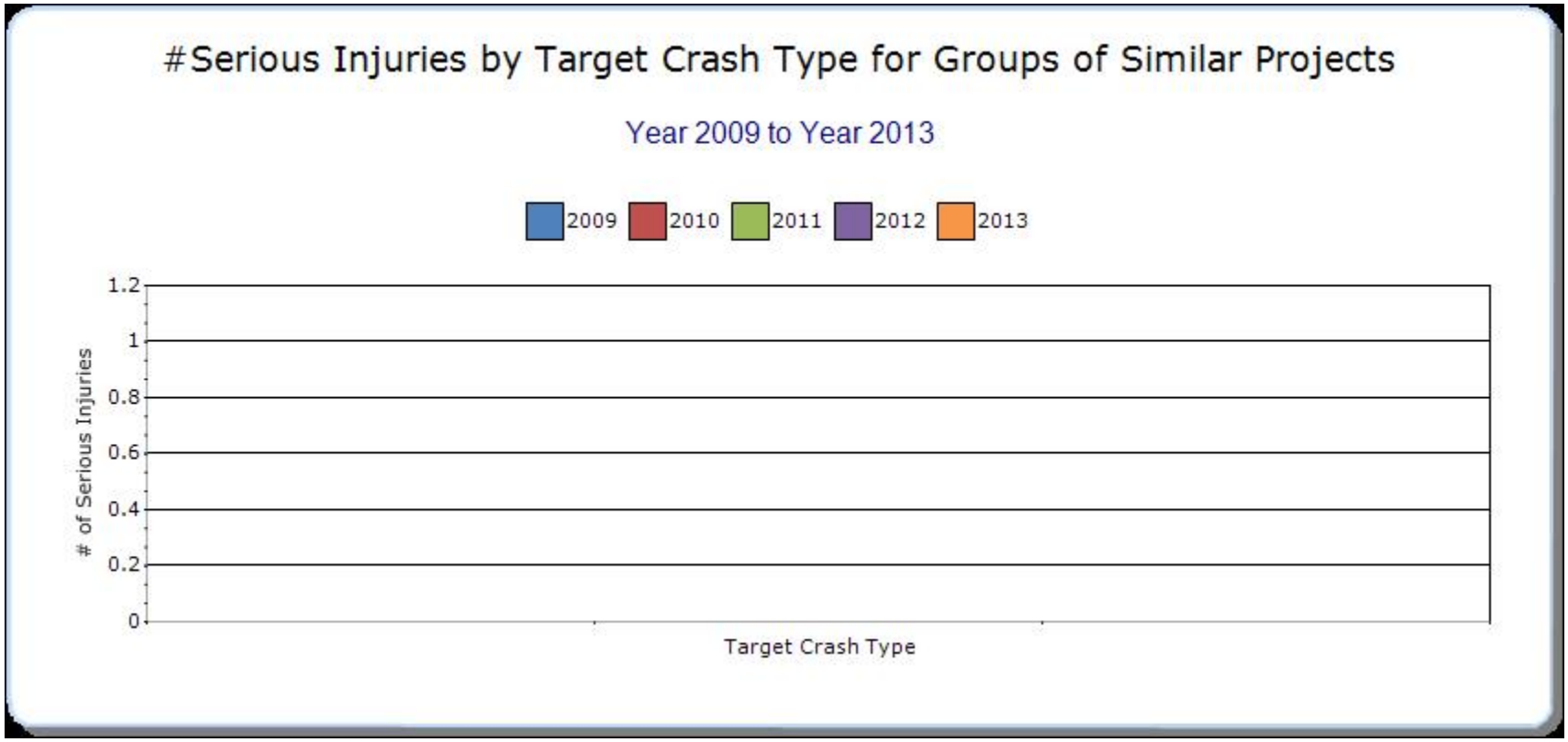

Serious Injury Rate by SHSP Emphasis Area
Year 2009 to Year 2013
2009
2010
2011
2012
2013
Rate of Serious Injuries
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
SHSP Emphasis Area

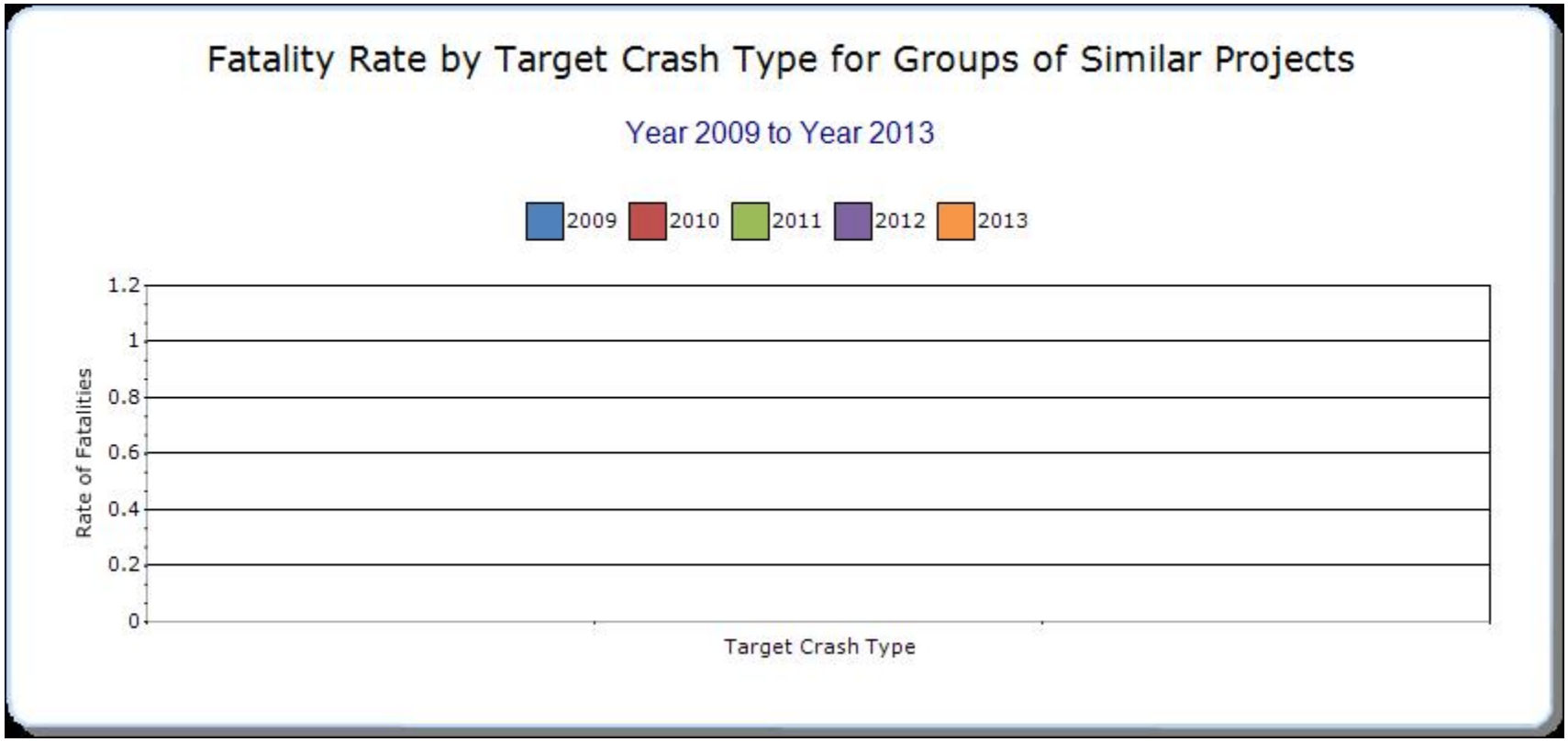
Groups of similar project types

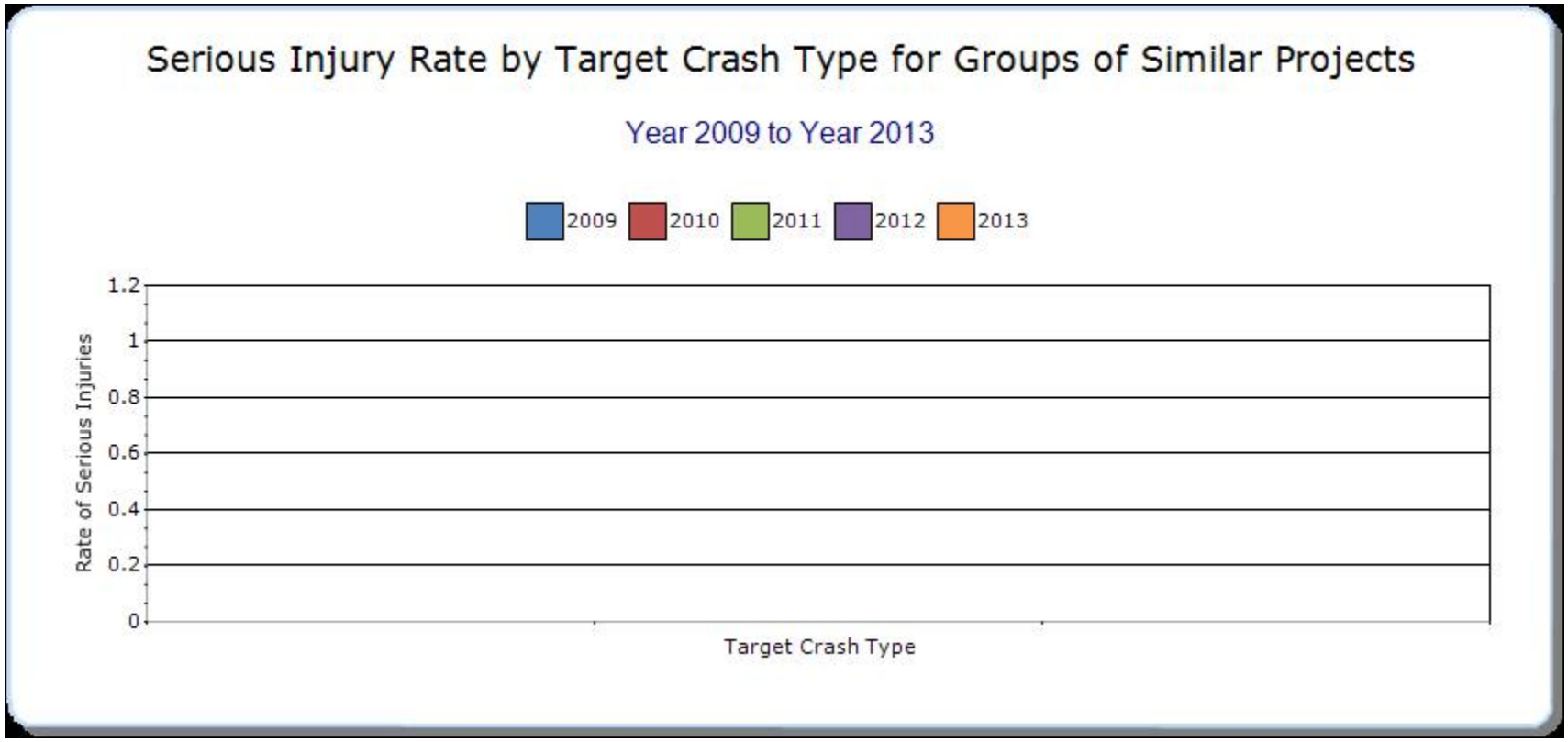
Present the overall effectiveness of groups of similar types of projects.

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


Fatalities by Target Crash Type for Groups of Similar Projects
Year 2009 to Year 2013
2009
2010
2011
2012
2013
1.2
1
0.8
0.6
0.4
0.2
0
# of Fatalities
Target Crash Type


#Serious Injuries by Target Crash Type for Groups of Similar Projects
Year 2009 to Year 2013
2009
2010
2011
2012
2013
1.2
1
0.8
0.6
0.4
0.2
0
# of Serious Injuries
Target Crash Type


Fatality Rate by Target Crash Type for Groups of Similar Projects
Year 2009 to Year 2013
2009
2010
2011
2012
2013
1.2
1
0.8
0.6
0.4
0.2
0
Rate of Fatalities
Target Crash Type

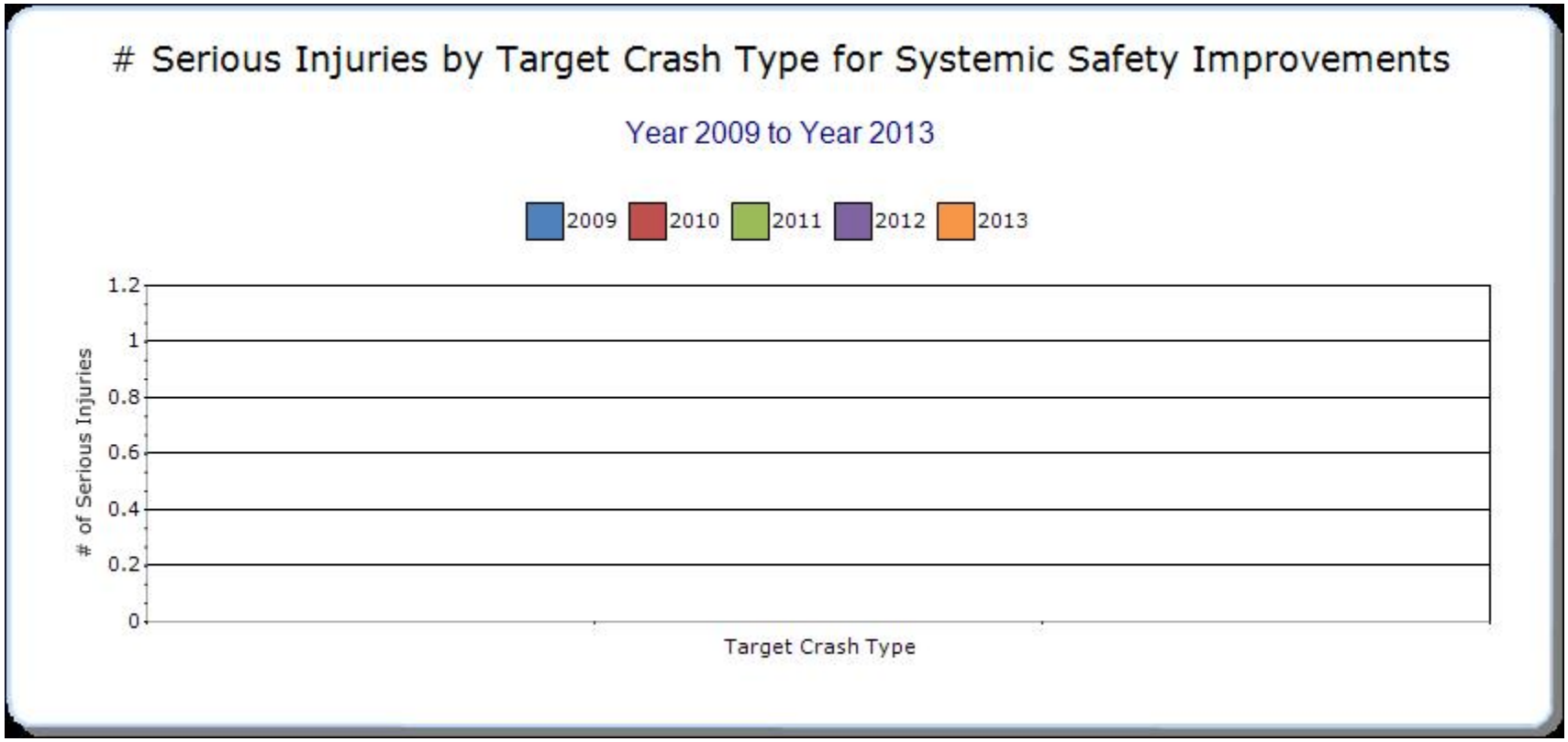

Serious Injury Rate by Target Crash Type for Groups of Similar Projects
Year 2009 to Year 2013
2009
2010
2011
2012
2013
1.2
1
0.8
0.6
0.4
0.2
0
Rate of Serious Injuries
Target Crash Type

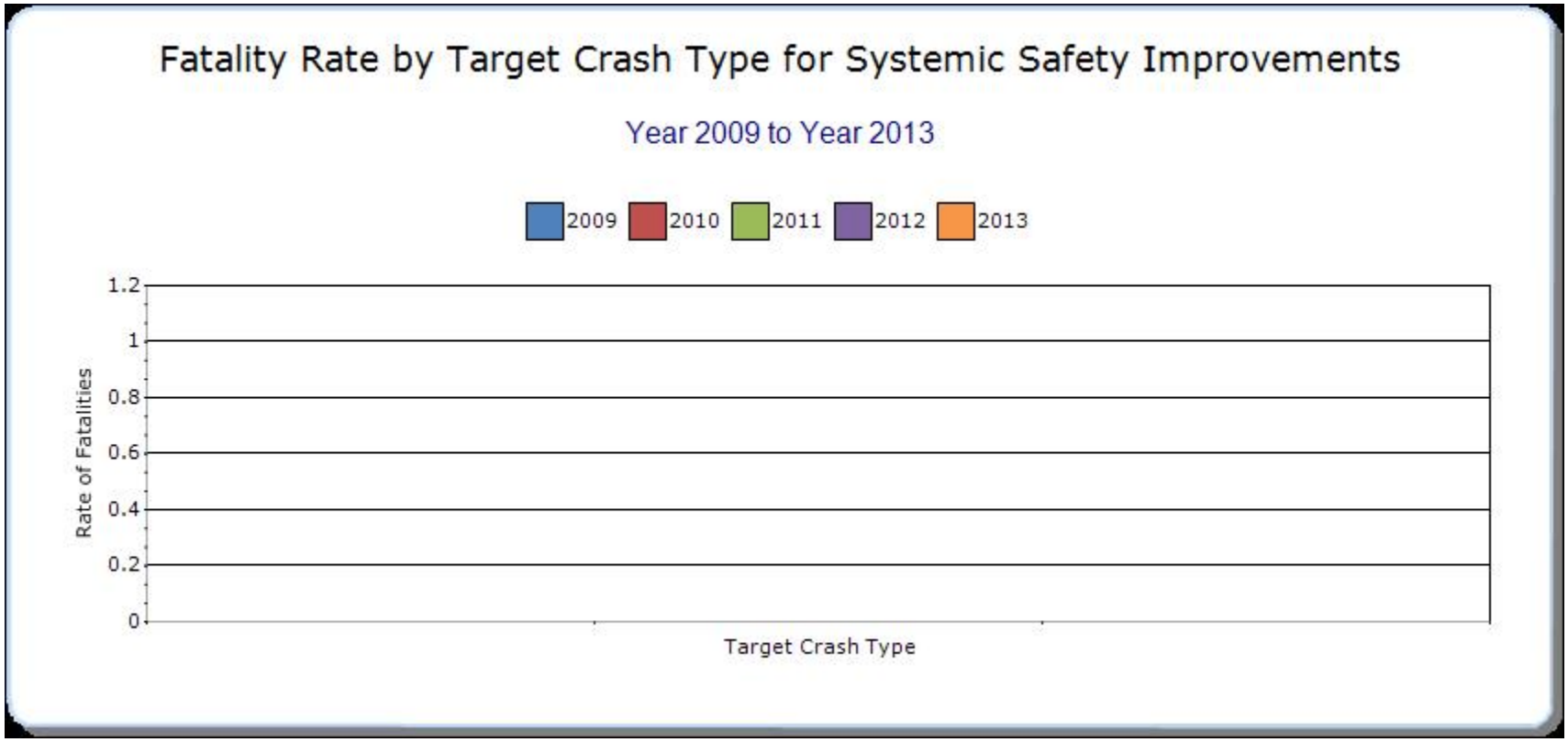
Systemic Treatments

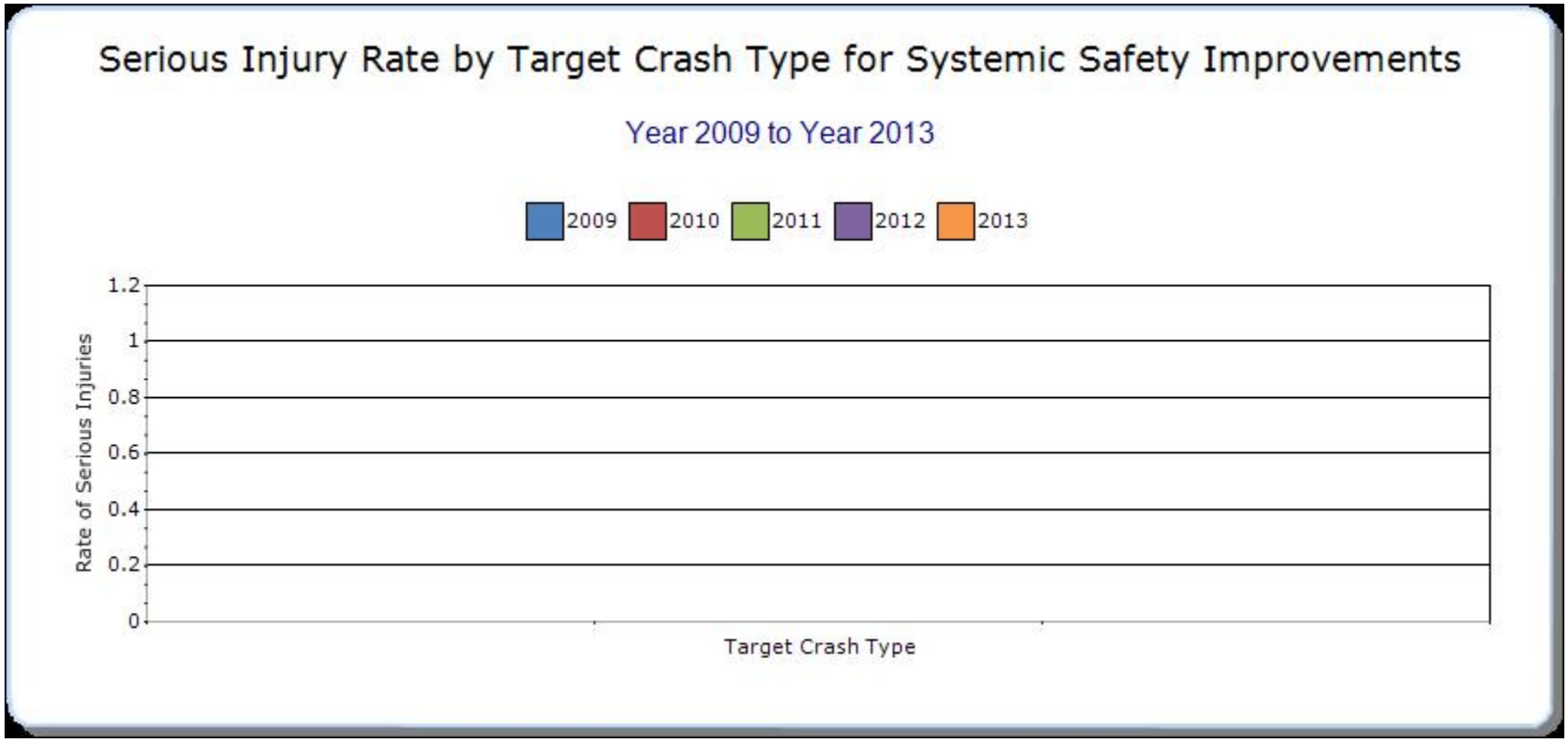
Present the overall effectiveness of systemic treatments.

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

Fatalities by Target Crash Type for Systemic Safety Improvements
Year 2009 to Year 2013
2009
2010
2011
2012
2013
1.2
1
0.8
0.6
0.4
0.2
0
# of Fatalities
Target Crash Type


Serious Injuries by Target Crash Type for Systemic Safety Improvements
Year 2009 to Year 2013
2009
2010
2011
2012
2013
1.2
1
0.8
0.6
0.4
0.2
0
# of Serious Injuries
Target Crash Type


Fatality Rate by Target Crash Type for Systemic Safety Improvements
Year 2009 to Year 2013
2009
2010
2011
2012
2013
1.2
1
0.8
0.6
0.4
0.2
0
Rate of Fatalities
Target Crash Type



See attached report on Minnesota's Six Inch Edgeline Project on Rural 2-lane/2-way Roads

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

Minnesota is trying to balance out our investment between prevention and reduction. Projects focusing on prevention tend to be low-cost systemic projects touching a large number of miles with our HSIP dollars. Local HSIP projects in rural areas tend to fall under the prevention category. Reduction refers to the high crash locations that focus more dollars on fewer miles. Projects in the Metro area tend to be in the reduction category.

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)
Minnesota Edgeline study		Roadway delineation	Longitudinal pavement markings - new		80			80		69			69	

Six-inch edge lines are an effective countermeasure for overall crashes and run-off-road right crashes. While crashes decreased across all four hypotheses tested, larger sample sizes may lead to more conclusive findings for severe crashes and severe run-off-road right crashes.

These analyses do not account for driver adaptation to six-inch edge lines. Future research should consider possible driver adaptation to well delineated roads – such as increased travel speeds.

See attached Six Inch Edgeline for study details.

Optional Attachments

Sections	Files Attached
Program Structure: Program Administration	dollar distribution.xls
Assessment of the Effectiveness of the Improvements (Program Evaluation): SHSP Emphasis Areas	Minnesota Critical Emphasis Areas.pdf
Assessment of the Effectiveness of the Improvements (Program Evaluation): Groups of similar project types	Cable Median Barrier Before-After Study, 11-2012.pdf
Assessment of the Effectiveness of the Improvements (Program Evaluation): Systemic Treatments	Six Inch Edge Lines Phase 1 and Phase II Final 9-25-2014.pdf

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.