Highway Safety Improvement Program

Data Driven Decisions

North Carolina
Highway Safety Improvement Program
2015 Annual Report

Prepared by: NC

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 purpose of the North Carolina Highway Safety Improvement Program (HSIP) is to provide a continuous and systematic procedure that identifies, investigates and addresses specific safety concerns throughout the state. The ultimate goal of the HSIP is to reduce the number of traffic crashes, injuries, and fatalities by reducing the potential for and the severity of these incidents of public roadways.

North Carolina recognizes traffic crashes as a significant problem that continues to challenge the state. In 2014, there were over 250,000 reported traffic crashes that resulted in 1,277 persons killed and over 110,000 injuries on our roadways. The socioeconomic impact of these crashes is severe, resulting in a loss of over $22.2 billion to the economy of North Carolina annually. This impact translates to a crash cost to the state of over $2.5 million every hour and approximately $61 million every day and a staggering social impact as well.

North Carolina has established a vision to have a multi-disciplinary, multi-agency highway safety approach to research, planning, investigation, design, construction, maintenance, operation and evaluation of transportation systems, which results in reduced fatalities, injuries and economic losses, related to crashes. In addition, there is a coordinated strategic effort to address emerging safety issues. The 2014 North Carolina Strategic Highway Safety Plan (SHSP) has been developed in an effort to reduce the number of crashes, injuries, and fatalities on our State's roadways. The goal of the SHSP is to cut the fatalities and serious injuries in North Carolina in half based on the 2013 figures, reducing the total annual fatalities by 630 fatalities and the total serious injuries by 1,055 serious injuries before 2030. The progress in achieving the goals of the SHSP and in implementing the strategies of the nine selected emphasis areas will be monitored by the Executive Committee for Highway Safety at regular intervals throughout the year.

This “HSIP Report” describes North Carolina DOT’s implementation and effectiveness of its Highway Safety Improvement Program. These reports satisfy the requirements under Title 23 of the Code of Federal Regulations, Part 924 (23 CFR 924). The NCDOT Rail Division is developing the “Railway-Highway Crossing Report” as a separate report submission. North Carolina DOT has opted to use the 2014 Calendar Year as the reporting period for the “HSIP Report”; however, some of our 2015 plans, goals, and methods are included in this report.

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.

In North Carolina, the local county governments are not responsible for the maintenance of rural highways. NCDOT highway network covers nearly 80,000 roadway miles which includes rural roadways classified as local; municipal governments maintain some downtown streets, residential streets and subdivision roads.

Several Pilot Communities have been formally trained in identifying low cost countermeasures with the ultimate goal of reducing fatalities and serious injuries in their cities. Technical training included understanding crash data, identifying potential treatment locations, preparing collision

diagrams, selecting countermeasures, and evaluating those countermeasures. Quarterly conference calls are being held to allow city representatives to brainstorm ideas and offer feedback on the program. A process was established to federally fund some of these projects through the Local Programs Management Office (LPMO). *By training these municipalities to analyze, identify treatments, and set up and evaluate projects, the municipalities should see reductions in the severity and number of crashes on their roadways.*

NCDOT receives crash data from the Department of Motor Vehicles and has the capability to identify potentially hazardous locations on all publicly traveled North Carolina roadways.

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.

The design, planning, and operations units within NCDOT play a significant role within the State Highway Safety Plan. These units utilize safety data during their planning phase in many ways. NCDOT's Policy to Projects process uses data regarding pavement condition, traffic congestion and road safety, as well as input from local government and NCDOT staff to determine transportation priorities. MPO's and RPO's utilize traffic crash data to develop transportation plans. Many resurfacing projects are utilizing safety edge treatments to reduce the potential for overcorrection-type crashes. The Governor’s Highways Safety Program oversees a variety of important safety campaigns, including "Booze It and Lose It" and "Click It or Ticket It."

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

☒Metropolitan Planning Organizations

☒Governors Highway Safety Office

☒Local Government Association

☒Other: Other-NC State Highway Patrol

☒Other: Other-Rail Division and Bike/Ped Division

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

☒Multi-disciplinary HSIP steering committee

☐Other:

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

The Strategic Highway Safety Plan (SHSP) for the State of North Carolina was updated in 2014. This SHSP (also referenced herein as the Plan) is an important component of North Carolina's Highway Safety Improvement Program (HSIP). The need for a SHSP was established by the federal transportation funding legislation, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), and strengthened by the passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) in July 2012. MAP-21 specifies that the SHSP must be developed based on safety data on all public roads, be developed in consultation with stakeholders, employ a multidisciplinary approach, describe a program of safety strategies, and consider other highway safety plans and processes.

This updated SHSP was developed through the collaborative efforts of diverse safety stakeholders representing the users of the North Carolina highway system and encompassing the 4 E's of highway safety—education, enforcement, engineering, and emergency services. These safety stakeholders include State, regional, local, and tribal agencies, as well as other public and private partners. This Plan presents a statewide, comprehensive, and collaborative approach for reducing fatalities and serious injuries on North Carolina's roadways. Serious injuries are those obviously serious enough to prevent the injured person from performing his or her normal activities for at least one day beyond the day of the crash. These are also called Type A injuries.

The North Carolina SHSP was first developed in 2004 by the North Carolina Executive Committee for Highway Safety (ECHS) in support of the American Association of State Highway and Transportation Officials (AASHTO) Strategic Highway Safety Plan. The ECHS adopted AASHTO's goal to reduce the statewide fatality rate to 1.0 fatalities per 100 million vehicle miles traveled (MVMT).

The Plan was revised in 2006, and 14 emphasis areas were identified to achieve its goal:

- Lane Departure
- Ensuring Drivers Are Fully Licensed
- Curbing Aggressive Driving
- Increasing Safety Belt Usage
- Keeping Drivers Alert
- Speed
- Intersection Safety
- Older Drivers
- Motorcycles
- Commercial Motor Vehicles
- Public Information
- Bicycle and Pedestrian Safety
- Incident Management
- Driver Education

The 2006 Plan provided a strategic framework for the implementation of strategies across the 4 E's in these 14 areas. Significant progress was made toward the Plan's overall goal, resulting in a dramatic decrease in the number of fatalities per 100 million vehicle miles traveled (MVMT) over the eight-year period from 2006 to 2013. The 2013 fatality rate is just under 1.2 fatalities per 100 MVMT. Nationally, the fatality rate has also declined during the same period, although not as sharply as in North Carolina. Evaluations of North Carolina's engineering safety programs have demonstrated that the collaborative and focused statewide efforts of the SHSP in recent years have contributed to the reductions in fatalities and serious injuries. Many other factors may also have contributed to this decline, such as vehicle enhancements and economic influences.

Although the safety stakeholders implementing the Plan have made significant progress in achieving the statewide goal since 2006, there is still work to be done. In 2013, 1,260 people died on North Carolina's roadways, and another 2,109 people were seriously injured. Additionally, the downward trend in fatalities and serious injuries has flattened over the last few years. The update of the original State SHSP—presents refined goals and objectives, new safety emphasis areas, and additional strategies and actions to build on past success and to continue to reduce fatalities and serious injuries on North Carolina's roadways. This document can be found on the web at http://ncshsp.org/.

The goals of the Plan will be achieved through the implementation of strategies and actions in nine safety emphasis areas. These emphasis areas represent the greatest opportunity for the safety stakeholders to focus their efforts to achieve the goals of this Plan. The safety stakeholders selected these emphasis areas cooperatively through a data-driven approach, noting that many individual crashes can be attributed to more than one emphasis area. For example, a crash may involve speeding, intersection safety, and occupant protection. Therefore, the following nine emphasis areas provide an opportunity to address crashes from multiple perspectives.

1. Demographic Considerations
2. Driving While Impaired
3. Emerging Issues and Data
4. Intersection Safety
5. Keeping Drivers Alert
6. Lane Departure
7. Occupant Protection/Motorcycles
8. Pedestrians and Bicyclists
9. Speed

To achieve the Plan's goals to reduce fatalities and serious injuries by half and to move North Carolina closer to Vision Zero, significant reductions are needed in each emphasis area.

In general, the goal for each emphasis area is to reduce fatalities and injuries by half. Some emphasis areas present a greater opportunity to reduce fatalities and serious injuries than others. Factors such as trends in exposure rates and the availability of effective strategies are different for each emphasis area and affect the opportunity to reduce fatalities and serious injuries. For example, several lane departure strategies are known to be effective at reducing crashes on North Carolina's roads; their increased implementation presents an opportunity to greatly reduce fatalities and serious injuries. Conversely, because motorcycle ridership is increasing in North Carolina, crash reductions from effective strategies must outpace the growth in crashes that is attributed to the increased ridership (e.g., exposure).

Overall, the strategies in the emphasis areas work collectively toward the Plan goal, with some emphasis areas expected to contribute more reductions in fatalities and serious injuries than others.

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: **8/27/2013**

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-Freeway

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-Median Width

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

☐ 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

☐ Available funding

☐ Incremental B/C

☐ Ranking based on net benefit

☐ Other

Program: **Intersection**

Date of Program Methodology: **8/27/2013**

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-Frontal Impact Crashes

☒Other-Percent Frontal Impact Crashes

☒Other-Frequency of Crashes during Dark Conditions

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	
☒ Regional Priority	2
☒ Division Priority	2
☒ Severity Index	4
☒ Potential Hazardous Listing or RSA Location	5

Program: **Safe Corridor**

Date of Program Methodology: **8/27/2013**

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

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
- ☐ Available funding
- ☐ Incremental B/C
- ☐ Ranking based on net benefit
- ☐ Other

Program: **Horizontal Curve**

Date of Program Methodology: **8/27/2013**

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-Road Departure Crashes in a Curve

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

☐ 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
- ☐ Available funding
- ☐ Incremental B/C
- ☐ Ranking based on net benefit
- ☐ Other

Program: **Bicycle Safety**

Date of Program Methodology: **8/27/2013**

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-Bicycle Crashes	☐ 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-Bicycle Crashes

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

☒ Regional Priority 2

☒ Division Priority 2

☒ Severity Index 4

☒ Potentially Hazardous Listing 5

Program: **Roadway Departure**

Date of Program Methodology: **8/27/2013**

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-Roadway Departure Crashes	☐ 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-Percent Roadway Departure Crashes

☒ Other-Percent Night Crashes

☒ Other-Percent Wet Condition Crashes

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	
☒ Regional Priority	2
☒ Division Priority	2
☒ Severity Index	4
☒ Potentially Hazardous Listing or RSA Location	5

Program: **Pedestrian Safety**

Date of Program Methodology: **8/27/2013**

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-Pedestrian Crashes	☐ 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-Pedestrian Crashes

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	
☒Regional Priority	2
☒Division Priority	2
☒Severity Index	4

☒Potentially Hazardous Listing or RSA 5

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

0

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

☐Cable Median Barriers

☐Rumble Strips

☐Traffic Control Device Rehabilitation

☐Pavement/Shoulder Widening

☐Install/Improve Signing

☐Install/Improve Pavement Marking and/or Delineation

☐Upgrade Guard Rails

☐Clear Zone Improvements

☐Safety Edge

☐Install/Improve Lighting

☐Add/Upgrade/Modify/Remove Traffic Signal

☐Other

What process is used to identify potential countermeasures?

☒Engineering Study

☒Road Safety Assessment

☐Other:

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.

NCDOT is continuing to develop safety performance functions and will utilize the ISDM application on future STIP projects. NCDOT is actively working on new systemic programs to implement wide edge lines, enhanced curve warning signs and safety edge treatments.

Highway Safety Improvement Program(HSIP) provides a continuous and systematic transportation network screening process that identifies, analyzes, investigates, diagnoses and treats specific traffic safety concerns throughout the state. The goal of the federally required HSIP is to reduce the number of traffic crashes, injuries, and fatalities by reducing the potential and the severity of public roadway collisions. *The collaboration between HSIP Project Group Analysts and the Regional Traffic Engineers that research, investigate, recommend treatments, and develop realistic cost effective safety projects has yielded highly effective safety performance even during a time of continued growth in North Carolina.*

The emphasis of the state-funded Spot Safety and federally-funded Highway Safety Improvement Programs is to identify and treat high crash and/or high severity locations with relatively low cost solutions in order to address safety concerns along NC roadways. These

programs are a vital tool in improving safety at intersections and segments of roadway where safety needs have been identified by citizens, government officials, internal staff, or through one of NCDOT's safety initiatives. With these programs, Regional Traffic Engineers collaborate with designers and project managers on project scope and prioritization in order to develop realistic, time-sensitive, and cost effective projects that address safety issues.

The projects developed and constructed under these safety programs are inspected upon completion to ensure the identified safety issues have been mitigated and the project was constructed according to the plans. *Management of this program by the State Traffic Engineer and his staff provide statewide consistency in treating areas in a systematic, evidence driven and needs based approach. These vital safety funding program efforts have shown an average return on investment of 14:1.*

The Alternative Analysis Initiative quantifies the safety performance of different transportation project alternatives selected for study during the National Environmental Policy Act (NEPA) process. Using Highway Safety Manual (HSM) predictive methodologies, we compare the expected safety performance of different alternatives based on the specific design elements associated with each alternative (curve radius, lane widths, shoulder widths, number of driveways, grades, intersection features, etc.). The predicted crash numbers give some scale of the number of crashes to expect, but the percentages give a really good comparison regarding the effects of the specific design elements on each alternative that are expected to have on safety.

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)	49488855	81 %	63442322	79 %
HRRRP (SAFETEA-LU)	0	0 %	2847395	4 %
HRRR Special Rule				
Penalty Transfer - Section 154				
Penalty Transfer – Section 164	0	0 %	1723200	2 %
Incentive Grants - Section 163				
Incentive Grants (Section 406)				
Other Federal-aid Funds (i.e. STP, NHPP)				
State and Local Funds	11842121	19 %	11842121	15 %

Totals	61330976	100%	79855038	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?

$450,000.00

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

$450,000.00

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?

$0.00

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

NCDOT is responsible for the safety of nearly 80,000 miles of rural and urban highways. Cities and towns are responsible for over 21,000 miles of streets; most of this mileage is downtown and residential streets. While NCDOT administers HSIP funds, most municipalities are hesitant to participate due to the federal guidelines. Local governments are unwilling to administer the competitive bidding process. The complex federal safety program process discourages many opportunities to utilize the HSIP for low-cost safety projects. In some cases administrative costs may be higher than the project costs.

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

In an attempt to assess the safety of our roads, the Safety Evaluation Group of the Traffic Safety Systems Management Section has evaluated hundreds of countermeasure projects. The methodologies used in these evaluations offer various philosophies and ideas, in an effort to provide objective countermeasure crash reduction results. This information is provided so the benefit or lack of benefit for this type of project can be recognized and utilized for future projects. As the Safety Evaluation Group completes additional reviews for these types of countermeasures, we will be able to provide objective and definite information regarding actual crash reduction factors. These evaluations can be found on our website at: https://connect.ncdot.gov/resources/safety/Pages/Safety-Evaluation.aspx.

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
I-5314	Roadway Pavement surface - high friction surface	7.35 Miles	700000	777778	HSIP (Section 148)		0	0	State Highway Agency		
R-5749	Interchange design Convert at-grade intersection to interchange	0.38 Miles	450000	500000	HSIP (Section 148)		0	0	State Highway Agency		
SF-4903F	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	21067	23408	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
SF-4905C	Roadside Barrier- metal	0.13 Miles	4500	5000	HSIP (Section 148)		0	0	State Highway Agency		
SF-4905C	Roadside Barrier- metal	0.13 Miles	58653	65170	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
SF-4912H	Roadway Rumble strips - unspecified or other	2.3 Miles	1176	1307	HRRRP (SAFETE		0	0	State Highway		

					A-LU)				Agency		
SS-PE	Non-infrastructure Transportation safety planning	300 Numbers	322038	357820	HSIP (Section 148)		0	0	State Highway Agency		
W-4705	Intersection traffic control Systemic improvements - signal-controlled	1 Numbers	117182	130202	HSIP (Section 148)		0	0	State Highway Agency		
W-4710	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	137502	152780	HSIP (Section 148)		0	0	State Highway Agency		
W-5000	Access management Change in access - close or restrict existing access	1 Numbers	119230	132478	HSIP (Section 148)		0	0	State Highway Agency		
W-5008	Intersection geometry Auxiliary lanes - add two-way left-turn lane	0.2 Miles	27000	30000	HSIP (Section 148)		0	0	State Highway Agency		
W-5107	Interchange design Convert at-grade intersection to interchange	4 Numbers	19805409	22006010	HSIP (Section 148)		0	0	State Highway Agency		
W-5108	Intersection geometry Auxiliary lanes - miscellaneous/other/unspecified	6.6 Miles	22817	25352	HSIP (Section 148)		0	0	State Highway Agency		

W-5110	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	46427	51586	HSIP (Section 148)		0	0	State Highway Agency		
W-5114	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	18000	20000	HSIP (Section 148)		0	0	State Highway Agency		
W-5115	Intersection geometry Auxiliary lanes - add two-way left-turn lane	0.54 Miles	66260	73622	HSIP (Section 148)		0	0	State Highway Agency		
W-5119	Shoulder treatments Widen shoulder - paved or other	4 Miles	495165	550183	HSIP (Section 148)		0	0	State Highway Agency		
W-5132	Intersection geometry Auxiliary lanes - add right-turn lane	1 Numbers	23185	25761	HSIP (Section 148)		0	0	State Highway Agency		
W-5142	Access management Median crossover - directional crossover	1 Numbers	45000	50000	HSIP (Section 148)		0	0	State Highway Agency		
W-5143	Alignment Horizontal curve realignment	0.25 Miles	14875	16528	HSIP (Section 148)		0	0	State Highway Agency		
W-5147	Pedestrians and bicyclists Crosswalk	2 Numbers	62063	68959	HSIP (Section 148)		0	0	State Highway Agency		

W-5201A	Intersection geometry Intersection geometrics - modify skew angle	1 Numbers	1795	1994	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
W-5201B	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	1640	1822	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
W-5201C	Intersection geometry Intersection geometrics - realignment to increase cross street offset	2 Numbers	1800	2000	HSIP (Section 148)		0	0	State Highway Agency		
W-5201C	Intersection geometry Intersection geometrics - realignment to increase cross street offset	2 Numbers	97580	108422	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
W-5202B	Intersection traffic control Modify control - two-way stop to roundabout	1 Numbers	53691	59657	HSIP (Section 148)		0	0	State Highway Agency		
W-5202E	Intersection geometry Auxiliary lanes - add two-way left-turn lane	6.6 Miles	1949416	2166018	HSIP (Section 148)		0	0	State Highway Agency		
W-5202F	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	420	467	HSIP (Section 148)		0	0	State Highway Agency		
W-5202H	Intersection geometry	1	3291	3657	HSIP		0	0	State		

	Auxiliary lanes - modify right-turn lane offset	Numbers			(Section 148)				Highway Agency		
W-5203AA	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	27000	30000	HSIP (Section 148)		0	0	State Highway Agency		
W-5203AB	Intersection traffic control Intersection traffic control - other	1 Numbers	31500	35000	HSIP (Section 148)		0	0	State Highway Agency		
W-5203C	Access management Median crossover - directional crossover	1 Numbers	450	500	HSIP (Section 148)		0	0	State Highway Agency		
W-5203I	Alignment Horizontal and vertical alignment	0.53 Miles	27563	30626	HSIP (Section 148)		0	0	State Highway Agency		
W-5203J	Intersection traffic control Modify control - two-way stop to roundabout	1 Numbers	11700	13000	HSIP (Section 148)		0	0	State Highway Agency		
W-5203K	Shoulder treatments Widen shoulder - paved or other	1.98 Miles	360000	400000	HSIP (Section 148)		0	0	State Highway Agency		
W-5203M	Shoulder treatments Widen shoulder - paved or other	6.2 Miles	13487	14986	HSIP (Section 148)		0	0	State Highway Agency		

W-5203N	Intersection geometry Auxiliary lanes - modify left-turn lane offset	1 Numbers	10106	11229	HSIP (Section 148)		0	0	State Highway Agency		
W-5203W	Access management Median crossover - directional crossover	1 Numbers	70200	78000	HSIP (Section 148)		0	0	State Highway Agency		
W-5203X	Access management Median crossover - directional crossover	1 Numbers	12600	14000	HSIP (Section 148)		0	0	State Highway Agency		
W-5203Z	Shoulder treatments Widen shoulder - paved or other	3.75 Miles	670500	745000	HSIP (Section 148)		0	0	State Highway Agency		
W-5204B	Alignment Horizontal and vertical alignment	0.36 Miles	126000	140000	HSIP (Section 148)		0	0	State Highway Agency		
W-5204G	Roadway Pavement surface - high friction surface	4.3 Miles	4808	5342	HSIP (Section 148)		0	0	State Highway Agency		
W-5205A	Roadway Rumble strips - edge or shoulder	8.9 Miles	3111	3457	HSIP (Section 148)		0	0	State Highway Agency		
W-5205B	Intersection traffic control Intersection traffic control - other	1 Numbers	3527	3919	HSIP (Section 148)		0	0	State Highway Agency		

W-5205C	Roadway Roadway - other	0.19 Miles	453	503	HSIP (Section 148)		0	0	State Highway Agency		
W-5205F	Intersection traffic control Intersection traffic control - other	1 Numbers	36194	40216	HSIP (Section 148)		0	0	State Highway Agency		
W-5205I	Intersection traffic control Intersection traffic control - other	1 Numbers	159300	177000	HSIP (Section 148)		0	0	State Highway Agency		
W-5205J	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	14932	16591	HSIP (Section 148)		0	0	State Highway Agency		
W-5205K	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	27614	30682	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
W-5205L	Roadside Barrier- metal	0.35 Miles	156	173	HSIP (Section 148)		0	0	State Highway Agency		
W-5205M	Access management Change in access - close or restrict existing access	0.09 Miles	52925	58806	HSIP (Section 148)		0	0	State Highway Agency		
W-5205N	Intersection traffic control Intersection traffic control - other	1 Numbers	20225	22472	HSIP (Section 148)		0	0	State Highway Agency		

W-5205Q	Roadway Pavement surface - high friction surface	0.1 Miles	3058	3398	HSIP (Section 148)		0	0	State Highway Agency		
W-5205R	Intersection traffic control Intersection traffic control - other	1 Numbers	4646	5162	HSIP (Section 148)		0	0	State Highway Agency		
W-5205S	Shoulder treatments Widen shoulder - paved or other	4.3 Miles	121500	135000	HSIP (Section 148)		0	0	State Highway Agency		
W-5205T	Intersection traffic control Intersection traffic control - other	1 Numbers	9000	10000	HSIP (Section 148)		0	0	State Highway Agency		
W-5205U	Roadway Roadway widening - curve	0.19 Miles	31500	35000	HSIP (Section 148)		0	0	State Highway Agency		
W-5205W	Roadside Removal of roadside objects (trees, poles, etc.)	1 Numbers	13500	15000	HSIP (Section 148)		0	0	State Highway Agency		
W-5206AB	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	292500	325000	HSIP (Section 148)		0	0	State Highway Agency		
W-5206AC	Intersection traffic control Intersection traffic control - other	1 Numbers	361301	401446	HSIP (Section 148)		0	0	State Highway Agency		

W-5206AD	Roadway Superelevation / cross slope	1 Numbers	6722	7469	HSIP (Section 148)		0	0	State Highway Agency		
W-5206AE	Intersection geometry Auxiliary lanes - add two-way left-turn lane	1 Numbers	45000	50000	HSIP (Section 148)		0	0	State Highway Agency		
W-5206AF	Intersection geometry Auxiliary lanes - add auxiliary through lane	1 Numbers	54000	60000	HSIP (Section 148)		0	0	State Highway Agency		
W-5206AG	Pedestrians and bicyclists Pedestrian bridge	1 Numbers	2106000	2340000	HSIP (Section 148)		0	0	State Highway Agency		
W-5206AH	Access management Raised island - install new	1 Numbers	108000	120000	HSIP (Section 148)		0	0	State Highway Agency		
W-5206AJ	Intersection geometry Auxiliary lanes - add two-way left-turn lane	0.27 Miles	1161000	1290000	HSIP (Section 148)		0	0	State Highway Agency		
W-5206AL	Roadside Barrier- metal	0.5 Miles	40500	45000	HSIP (Section 148)		0	0	State Highway Agency		
W-5206AN	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	36698	40776	HSIP (Section 148)		0	0	State Highway Agency		

W-5206AO/ R-5752	Access management Median crossover - directional crossover	0.76 Miles	450000	500000	HSIP (Section 148)		0	0	State Highway Agency		
W-5206B	Access management Change in access - close or restrict existing access	1 Numbers	100000	111111	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
W-5206B	Access management Median crossover - directional crossover	1 Numbers	200166	222407	HSIP (Section 148)		0	0	State Highway Agency		
W-5206G	Alignment Horizontal curve realignment	1 Numbers	238756	265284	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
W-5206L	Alignment Horizontal curve realignment	1 Numbers	22867	25408	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
W-5206M	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	4536	5040	HSIP (Section 148)		0	0	State Highway Agency		
W-5206O	Roadway Superelevation / cross slope	1 Numbers	163	181	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
W-5206P	Roadside Drainage improvements	0.62 Miles	5251	5834	HSIP (Section 148)		0	0	State Highway Agency		

W-5206Q	Intersection geometry Auxiliary lanes - add two-way left-turn lane	0.65 Miles	990000	1100000	HSIP (Section 148)		0	0	State Highway Agency		
W-5206S	Roadside Barrier - cable	18.6 Miles	2351	2612	HSIP (Section 148)		0	0	State Highway Agency		
W-5206U	Intersection traffic control Intersection traffic control - other	1 Numbers	288000	320000	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
W-5206W	Pedestrians and bicyclists Pedestrian signal - install new at intersection	1 Numbers	6921	7690	HSIP (Section 148)		0	0	State Highway Agency		
W-5206X	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	4612	5124	HSIP (Section 148)		0	0	State Highway Agency		
W-5206Z	Intersection geometry Intersection geometrics - miscellaneous/other/unspecified	3 Numbers	193171	214634	HSIP (Section 148)		0	0	State Highway Agency		
W-5207D	Intersection geometry Intersection geometrics - realignment to align offset cross streets	1 Numbers	206338	229264	HSIP (Section 148)		0	0	State Highway Agency		
W-5207E	Intersection geometry	1	39659	44066	HSIP		0	0	State		

	Auxiliary lanes - add left-turn lane	Numbers			(Section 148)				Highway Agency		
W-5207G	Alignment Vertical alignment or elevation change	1 Numbers	517500	575000	HSIP (Section 148)		0	0	State Highway Agency		
W-5208I	Lighting Intersection lighting	1 Numbers	2913	3237	HSIP (Section 148)		0	0	State Highway Agency		
W-5208J	Roadway Roadway widening - add lane(s) along segment	0.19 Miles	4627	5141	HSIP (Section 148)		0	0	State Highway Agency		
W-5208L	Roadside Barrier- metal	1.61 Miles	679950	755500	HSIP (Section 148)		0	0	State Highway Agency		
W-5209B	Roadway Rumble strips - edge or shoulder	43 Miles	11345	12606	HSIP (Section 148)		0	0	State Highway Agency		
W-5209E	Alignment Horizontal curve realignment	1 Miles	9799	10888	HSIP (Section 148)		0	0	State Highway Agency		
W-5209G	Roadway Pavement surface - high friction surface	1.99 Miles	45000	50000	HSIP (Section 148)		0	0	State Highway Agency		

W-5210E	Intersection traffic control Modify control - two-way stop to roundabout	1 Numbers	4385	4872	HSIP (Section 148)		0	0	State Highway Agency		
W-5210F	Intersection traffic control Modify control - two-way stop to roundabout	1 Numbers	7353	8170	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
W-5210H	Access management Raised island - install new	5 Numbers	1026000	1140000	HSIP (Section 148)		0	0	State Highway Agency		
W-5210I	Intersection geometry Intersection geometrics - re-assign existing lane use	1 Numbers	135000	150000	HSIP (Section 148)		0	0	State Highway Agency		
W-5212F	Access management Median crossover - directional crossover	1 Numbers	990	1100	HSIP (Section 148)		0	0	State Highway Agency		
W-5212H	Roadway Roadway - other	1 Miles	1248	1387	HSIP (Section 148)		0	0	State Highway Agency		
W-5213E	Roadside Barrier- metal	0.47 Miles	1237	1374	HSIP (Section 148)		0	0	State Highway Agency		
W-5214H	Access management Median crossover - directional crossover	1 Numbers	193500	215000	HSIP (Section 148)		0	0	State Highway Agency		

W-5214I	Roadside Barrier- metal	0.04 Miles	480	533	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
W-5214L	Shoulder treatments Pave existing shoulders	3 Miles	810000	900000	HSIP (Section 148)		0	0	State Highway Agency		
W-5214O	Shoulder treatments Widen shoulder - paved or other	0.9 Miles	738000	820000	HSIP (Section 148)		0	0	State Highway Agency		
W-5300	Intersection traffic control Modify traffic signal timing - general retiming	39 Numbers	144171	160190	HSIP (Section 148)		0	0	State Highway Agency		
W-5302	Roadside Barrier - cable	2 Miles	117580	130644	HSIP (Section 148)		0	0	State Highway Agency		
W-5304	Intersection geometry Intersection geometrics - modify skew angle	1 Numbers	877500	975000	HSIP (Section 148)		0	0	State Highway Agency		
W-5306	Intersection traffic control Modify control - two-way stop to roundabout	1 Numbers	477675	530750	HSIP (Section 148)		0	0	State Highway Agency		
W-5307	Alignment Horizontal curve realignment	0.2 Miles	54282	60313	HSIP (Section 148)		0	0	State Highway Agency		

W-5311	Intersection traffic control Intersection traffic control - other	1 Numbers	31500	35000	HSIP (Section 148)		0	0	State Highway Agency		
W-5313	Roadside Barrier- metal	4.8 Miles	6871500	7635000	HSIP (Section 148)		0	0	State Highway Agency		
W-5315	Roadside Barrier- metal	4.8 Miles	18000	20000	HSIP (Section 148)		0	0	State Highway Agency		
W-5316	Intersection geometry Auxiliary lanes - add left-turn lane	0.16 Miles	827036	918929	HSIP (Section 148)		0	0	State Highway Agency		
W-5319	Intersection traffic control Intersection traffic control - other	4 Numbers	84223	93581	HSIP (Section 148)		0	0	State Highway Agency		
W-5325	Alignment Horizontal curve realignment	1.1 Miles	3150	3500	HSIP (Section 148)		0	0	State Highway Agency		
W-5329	Intersection geometry Auxiliary lanes - add left-turn lane	0.6 Miles	280689	311877	HSIP (Section 148)		0	0	State Highway Agency		
W-5330	Roadway Pavement surface - high friction surface	1.5 Miles	8578	9531	HSIP (Section 148)		0	0	State Highway Agency		

W-5501	Intersection traffic control Modify control - two-way stop to roundabout	1 Numbers	16914	18793	HSIP (Section 148)		0	0	State Highway Agency		
W-5506	Intersection geometry Auxiliary lanes - add two-way left-turn lane	1.72 Miles	450000	500000	HSIP (Section 148)		0	0	State Highway Agency		
W-5508	Non-infrastructure Data/traffic records	20000 Miles	450000	500000	Penalty Transfer Section 164		0	0	State Highway Agency		
W-5509	Shoulder treatments Widen shoulder - paved or other	8 Miles	1980251	2200279	HRRRP (SAFETEA-LU)		0	0	State Highway Agency		
W-5511	Alignment Horizontal curve realignment	0.39 Miles	522300	580333	HSIP (Section 148)		0	0	State Highway Agency		
W-5511	Alignment Horizontal curve realignment	0.39 Miles	1273200	1414667	Penalty Transfer Section 164		0	0	State Highway Agency		
W-5512	Alignment Horizontal curve realignment	1 Numbers	2835000	3150000	HSIP (Section 148)		0	0	State Highway Agency		
W-5513	Intersection traffic control	4	110340	122600	HSIP		0	0	State		

	Modify control - two-way stop to roundabout	Numbers	0	0	(Section 148)				Highway Agency		
W-5514	Access management Raised island - install new	1 Numbers	3847500	4275000	HSIP (Section 148)		0	0	State Highway Agency		
W-5516	Alignment Horizontal and vertical alignment	2.95 Miles	1000000	1111111	HSIP (Section 148)		0	0	State Highway Agency		
W-5519	Access management Median crossover - directional crossover	7 Miles	121500	135000	HSIP (Section 148)		0	0	State Highway Agency		
W-5522	Pedestrians and bicyclists Miscellaneous pedestrians and bicyclists	1 Numbers	270000	300000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601A	Alignment Horizontal curve realignment	0.26 Miles	56250	62500	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AA	Intersection traffic control Intersection traffic control - other	1 Numbers	59400	66000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AB	Intersection traffic control Intersection traffic control - other	1 Numbers	2700	3000	HSIP (Section 148)		0	0	State Highway Agency		

W-5601AJ	Roadway delineation Longitudinal pavement markings - remarking	3.1 Miles	1600	1778	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AK	Intersection traffic control Intersection traffic control - other	1 Numbers	64800	72000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AL	Roadside Barrier- metal	1.76 Miles	28800	32000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AM	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	72000	80000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AN	Miscellaneous	2 Numbers	13500	15000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AO	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	19950	22167	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AP	Shoulder treatments Pave existing shoulders	1 Numbers	36000	40000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AQ	Pedestrians and bicyclists Install new crosswalk	1 Numbers	40500	45000	HSIP (Section 148)		0	0	State Highway Agency		

W-5601AR	Roadway Superelevation / cross slope	1 Numbers	22500	25000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AS	Roadway Roadway widening - travel lanes	1 Numbers	9000	10000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AT	Roadway Superelevation / cross slope	1 Numbers	18000	20000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AU	Intersection traffic control Intersection traffic control - other	5 Numbers	9000	10000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AV	Pedestrians and bicyclists Pedestrian signal - install new at intersection	1 Numbers	4500	5000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AW	Intersection traffic control Intersection flashers - add "when flashing" warning sign-mounted	1 Numbers	4500	5000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AX	Intersection traffic control Intersection traffic control - other	1 Numbers	4500	5000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601AY	Roadside Barrier- metal	2.65 Miles	22500	25000	HSIP (Section		0	0	State Highway		

					148)				Agency		
W-5601AZ	Roadway Roadway narrowing (road diet, roadway reconfiguration)	1.1 Miles	5400	6000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601B	Access management Median crossover - directional crossover	2 Numbers	90000	100000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601BA	Roadway Roadway narrowing (road diet, roadway reconfiguration)	0.38 Miles	7200	8000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601BB	Pedestrians and bicyclists Install new crosswalk	1 Numbers	28800	32000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601BM	Roadway Superelevation / cross slope	1 Numbers	1813500	2015000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601C	Access management Median crossover - directional crossover	1 Numbers	49500	55000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601D	Shoulder treatments Widen shoulder - paved or other	6.1 Miles	135000	150000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601E	Intersection traffic control Pavement markings -	1 Numbe	13500	15000	HSIP (Section		0	0	State Highway		

	miscellaneous/other/unspecified	rs			148)				Agency		
W-5601F	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	22500	25000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601G	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	180000	200000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601H	Railroad grade crossings Protective devices	1 Numbers	9900	11000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601I	Intersection geometry Intersection geometrics - modify skew angle	1 Numbers	13050	14500	HSIP (Section 148)		0	0	State Highway Agency		
W-5601J	Pedestrians and bicyclists Pedestrian signal - install new at intersection	4 Numbers	86400	96000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601K	Roadway Superelevation / cross slope	1 Numbers	40500	45000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601L	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	36000	40000	HSIP (Section 148)		0	0	State Highway Agency		

W-5601M	Roadway Roadway widening - travel lanes	1.77 Miles	767292	852547	HSIP (Section 148)		0	0	State Highway Agency		
W-5601N	Intersection traffic control Modify control - two-way stop to roundabout	1 Numbers	36000	40000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601O	Access management Median crossover - directional crossover	1 Numbers	90000	100000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601P	Access management Median crossover - directional crossover	1 Numbers	100800	112000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601Q	Intersection geometry Auxiliary lanes - add right-turn lane	2 Numbers	90000	100000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601R	Alignment Horizontal curve realignment	1.37 Miles	90000	100000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601S	Intersection traffic control Modify traffic signal - miscellaneous/other/unspecified	2 Numbers	7200	8000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601T	Intersection traffic control Modify control - two-way	1 Numbe	81000	90000	HSIP (Section		0	0	State Highway		

	stop to roundabout	rs			148)				Agency		
W-5601U	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	45000	50000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601V	Roadway Roadway widening - travel lanes	7.39 Miles	261000	290000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601W	Intersection geometry Intersection geometrics - realignment to increase cross street offset	2 Numbers	136800	152000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601X	Intersection geometry Auxiliary lanes - add left-turn lane	1 Numbers	49500	55000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601Y	Roadway Pavement surface - high friction surface	0.68 Miles	9000	10000	HSIP (Section 148)		0	0	State Highway Agency		
W-5601Z	Access management Median crossover - directional crossover	1 Numbers	69300	77000	HSIP (Section 148)		0	0	State Highway Agency		
W-5602	Intersection geometry Auxiliary lanes - add two-way left-turn lane	3.4 Miles	283500	315000	HSIP (Section 148)		0	0	State Highway Agency		

Y-4805F	Railroad grade crossings Railroad grade crossings - other	1 Numbers	700000	777778	HSIP (Section 148)		0	0	State Highway Agency		
Y-4809K	Railroad grade crossings Railroad grade crossings - other	1 Numbers	70750	78611	HSIP (Section 148)		0	0	State Highway Agency		
Y-4813B	Railroad grade crossings Railroad grade crossings - other	1 Numbers	750000	833333	HSIP (Section 148)		0	0	State Highway Agency		

Progress in Achieving Safety Performance Targets

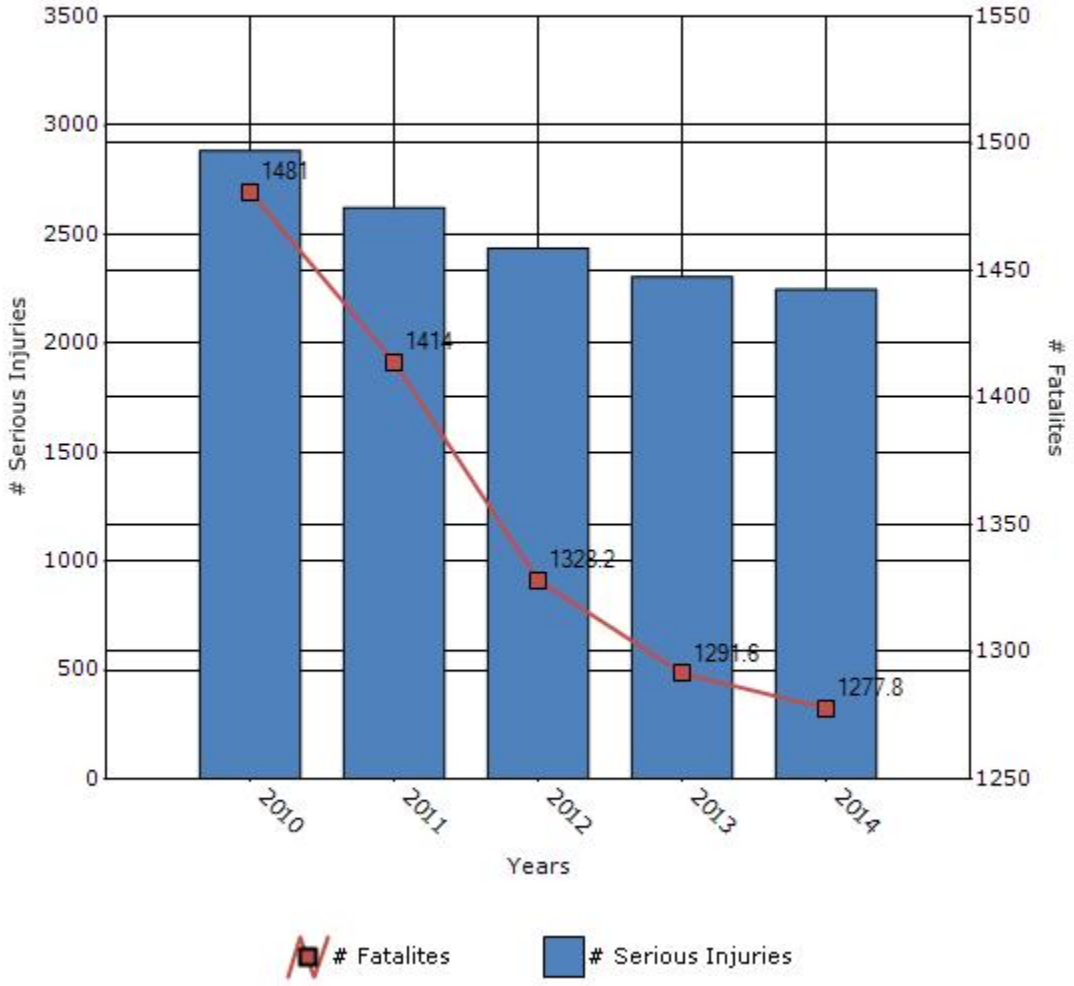
Overview of General Safety Trends

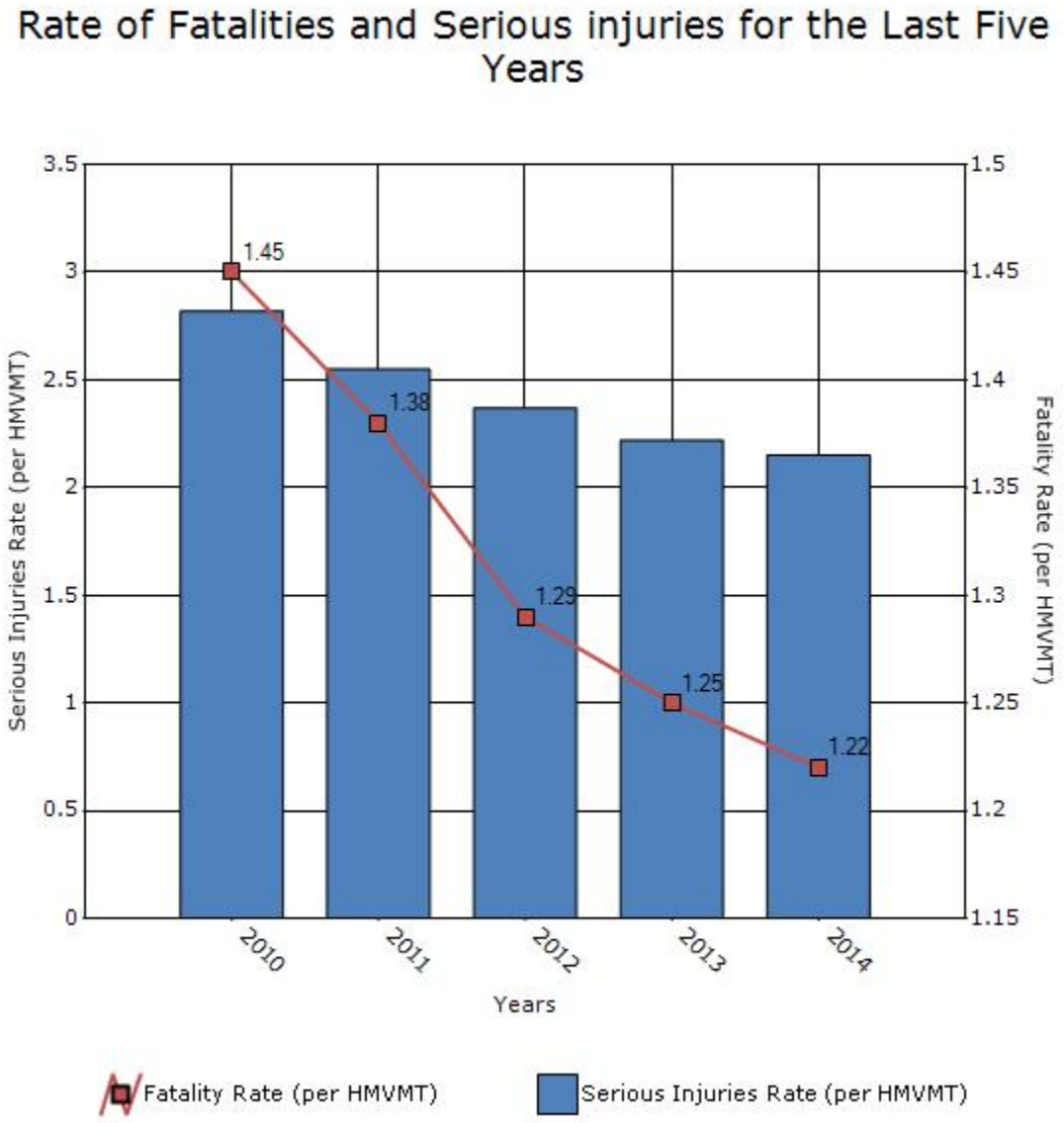
Present data showing the general highway safety trends in the state for the past five years.

Performance Measures*	2010	2011	2012	2013	2014
Number of fatalities	1481	1414	1328.2	1291.6	1277.8
Number of serious injuries	2882.8	2622.4	2436	2304.4	2247.2
Fatality rate (per HMVMT)	1.45	1.38	1.29	1.25	1.22
Serious injury rate (per HMVMT)	2.82	2.55	2.37	2.22	2.15

*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)
3.5
3
2.5
2
1.5
1
0.5
0
1.5
1.45
1.4
1.35
1.3
1.25
1.2
1.15
1.45
1.38
1.29
1.25
1.22
2010
2011
2012
2013
2014
Years
Fatality Rate (per HMVMT)
Serious Injuries Rate (per HMVMT)

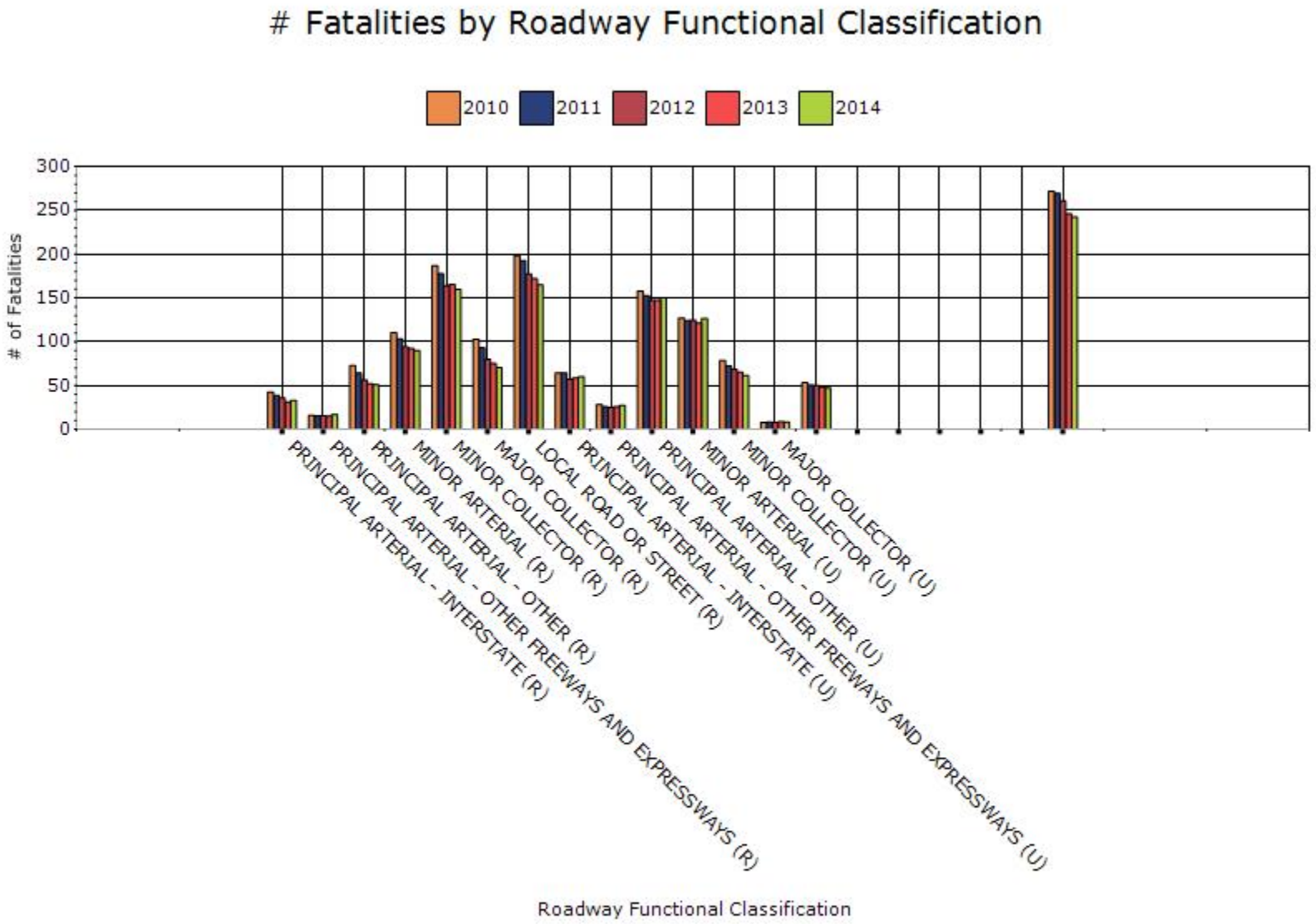
To the maximum extent possible, present performance measure* data by functional classification and ownership.

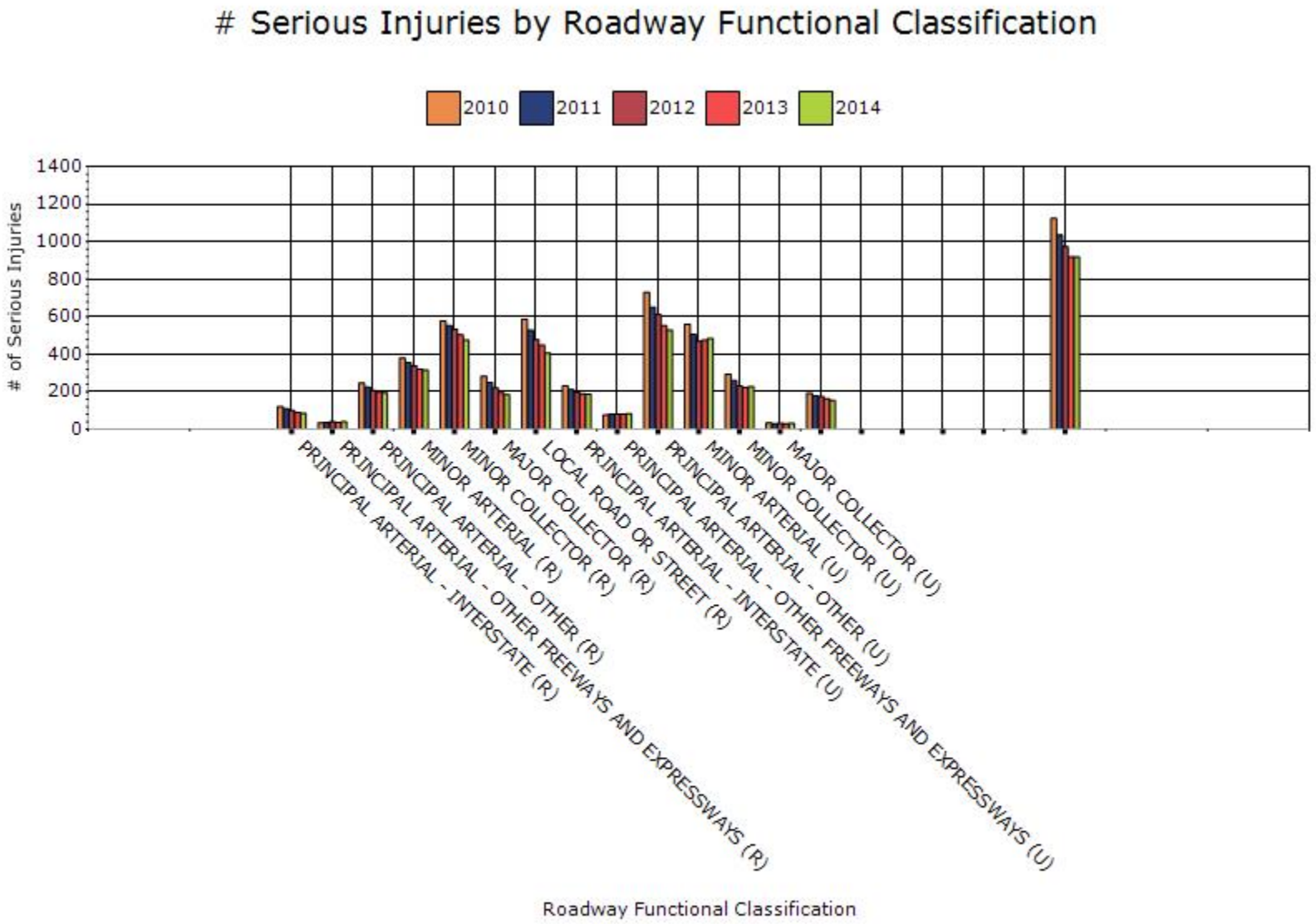
Year - 2014

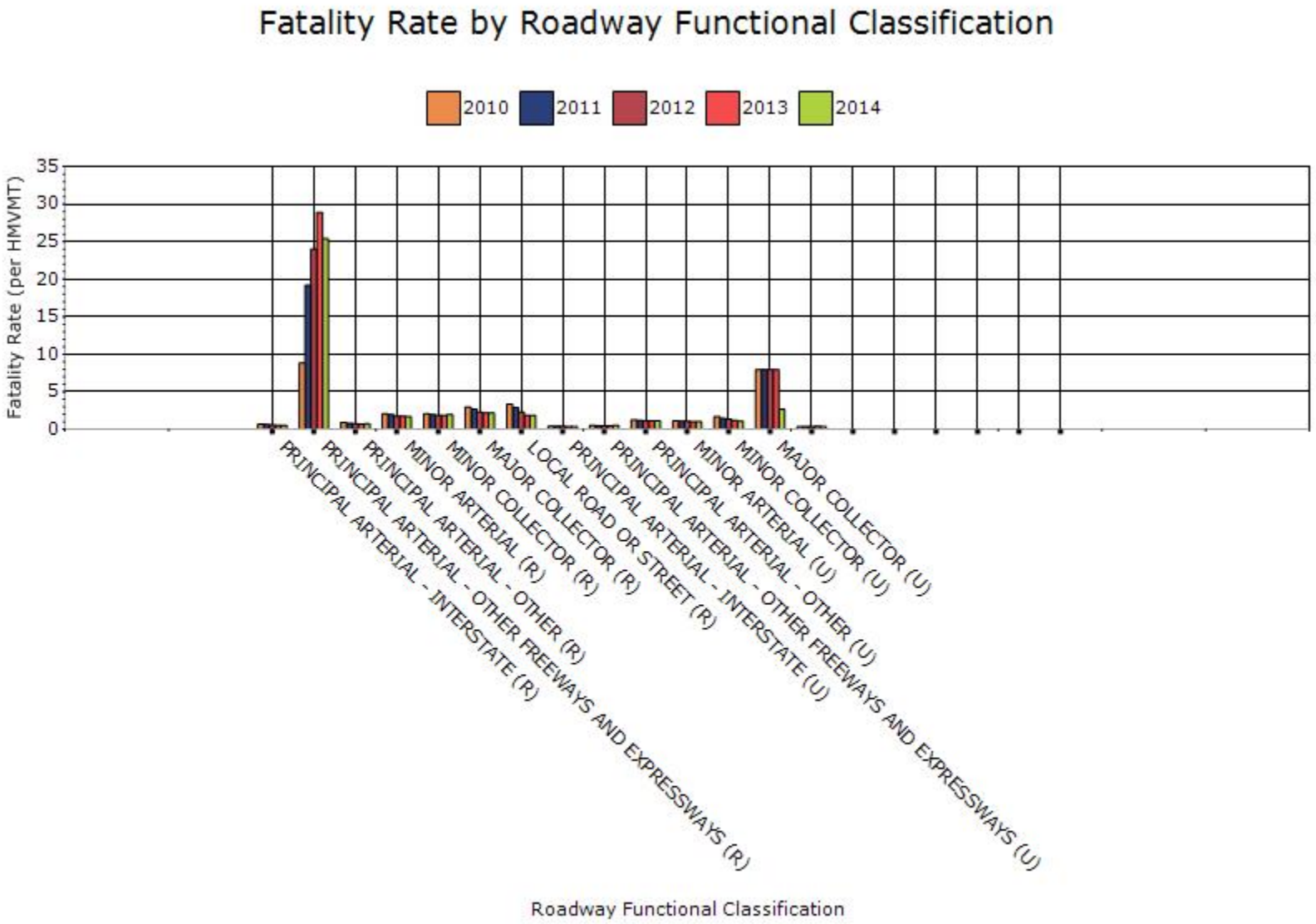
Function Classification	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
RURAL PRINCIPAL ARTERIAL - INTERSTATE	32.8	85	0.54	1.4
RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	17	40.2	25.37	69.34
RURAL PRINCIPAL ARTERIAL - OTHER	50.8	193.6	0.73	2.74
RURAL MINOR ARTERIAL	89.8	316	1.68	5.92
RURAL MINOR COLLECTOR	159.8	476	1.94	5.73
RURAL MAJOR COLLECTOR	70.6	185.2	2.16	5.66
RURAL LOCAL ROAD OR STREET	165	407.2	1.83	4.52
URBAN PRINCIPAL	60	188.2	0.38	1.2

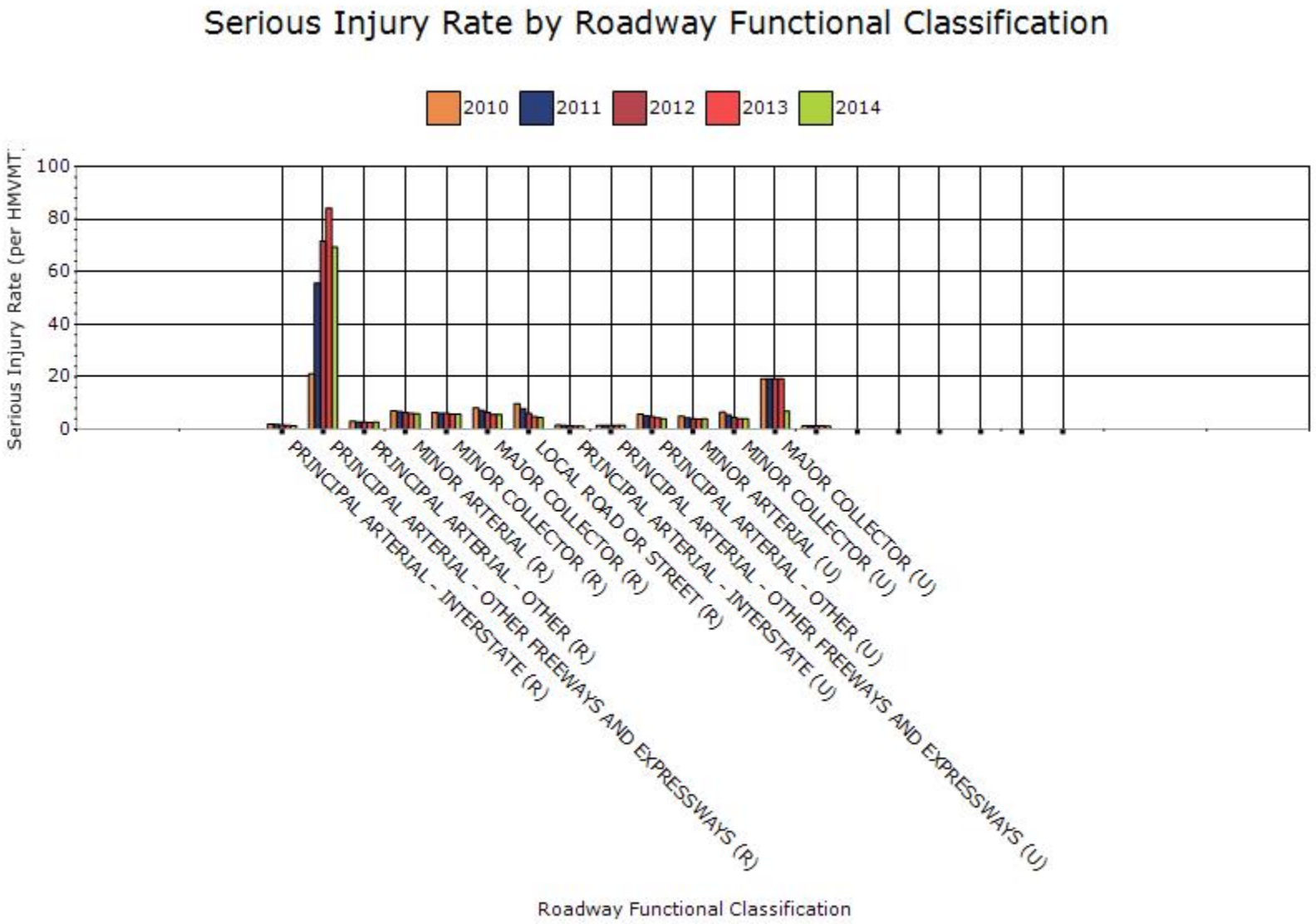
ARTERIAL - INTERSTATE				
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	27.4	82.8	0.5	1.52
URBAN PRINCIPAL ARTERIAL - OTHER	150.2	528.6	1.14	4.04
URBAN MINOR ARTERIAL	126.6	484	1.04	3.96
URBAN MINOR COLLECTOR	61.4	227.6	1.09	4.03
URBAN MAJOR COLLECTOR	8.4	31	2.67	6.86
URBAN LOCAL ROAD OR STREET	47.2	153.2	0.37	1.2
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0

UNKNOWN	242.4	918.4	0	0


Fatalities by Roadway Functional Classification
2010
2011
2012
2013
2014
300
250
200
150
100
50
0
# of Fatalities
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
Roadway Functional Classification

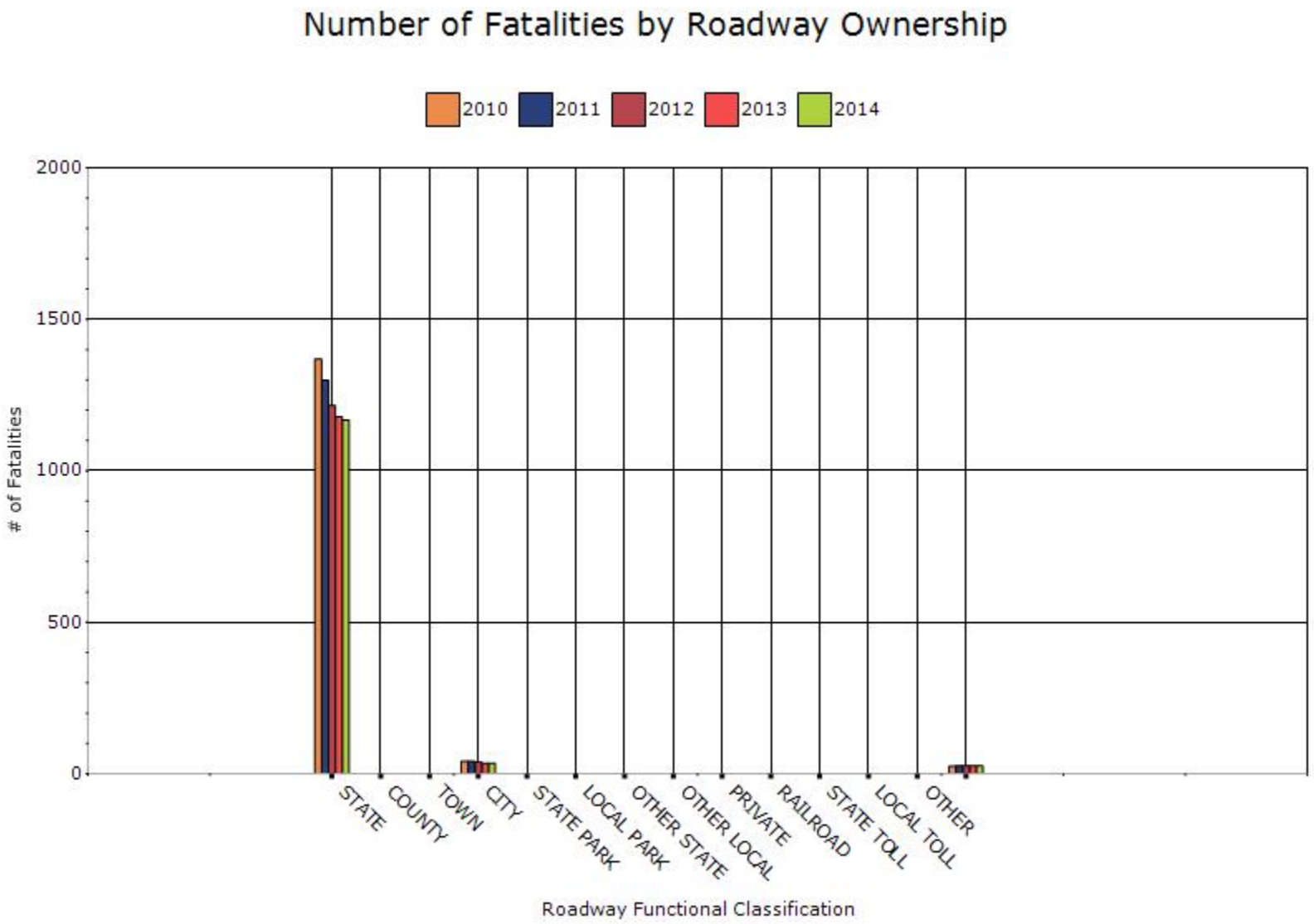

Serious Injuries by Roadway Functional Classification
2010
2011
2012
2013
2014
# of Serious Injuries
1400
1200
1000
800
600
400
200
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR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

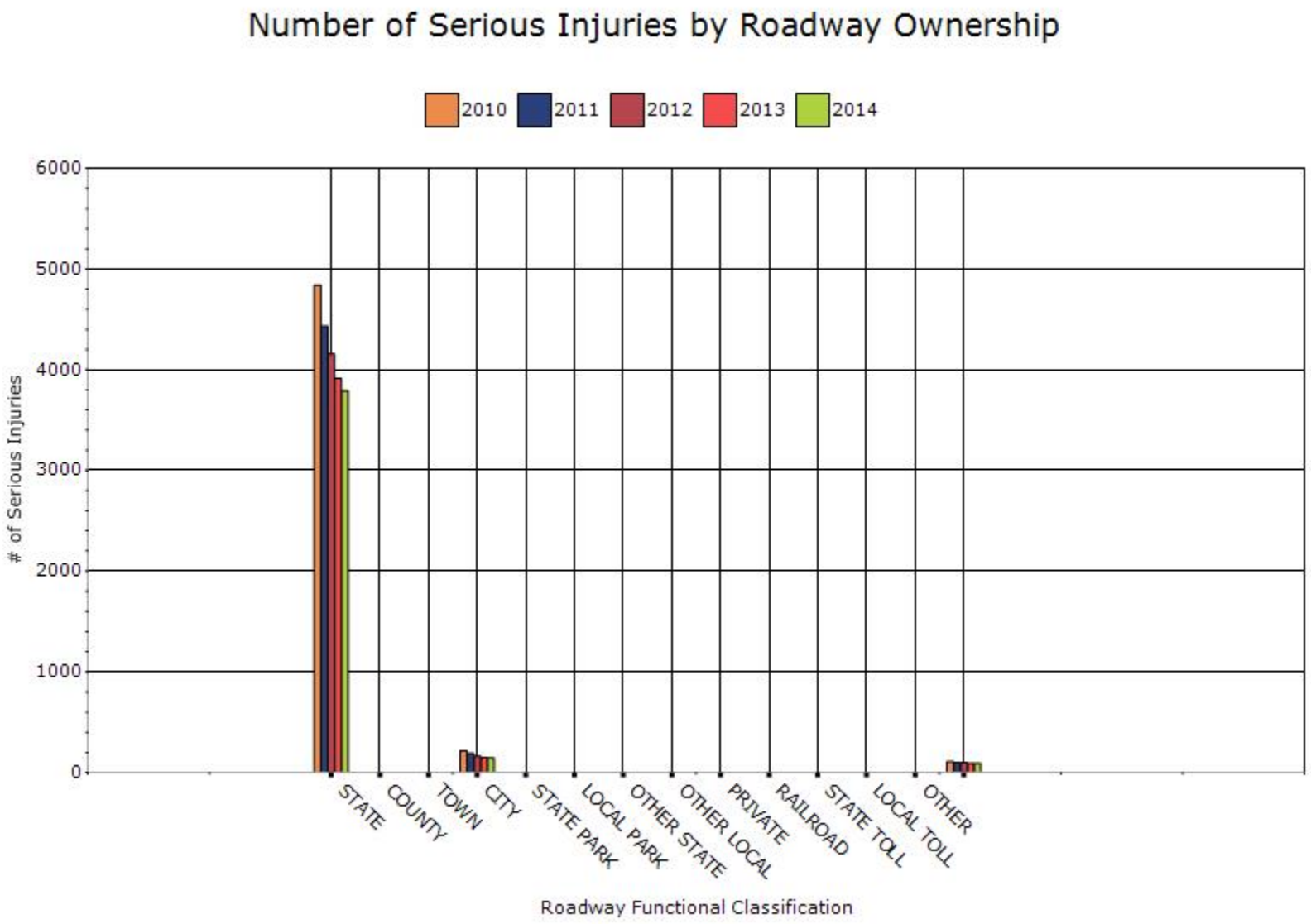

Fatality Rate by Roadway Functional Classification
2010
2011
2012
2013
2014
Fatality Rate (per HMVMT)
35
30
25
20
15
10
5
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (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

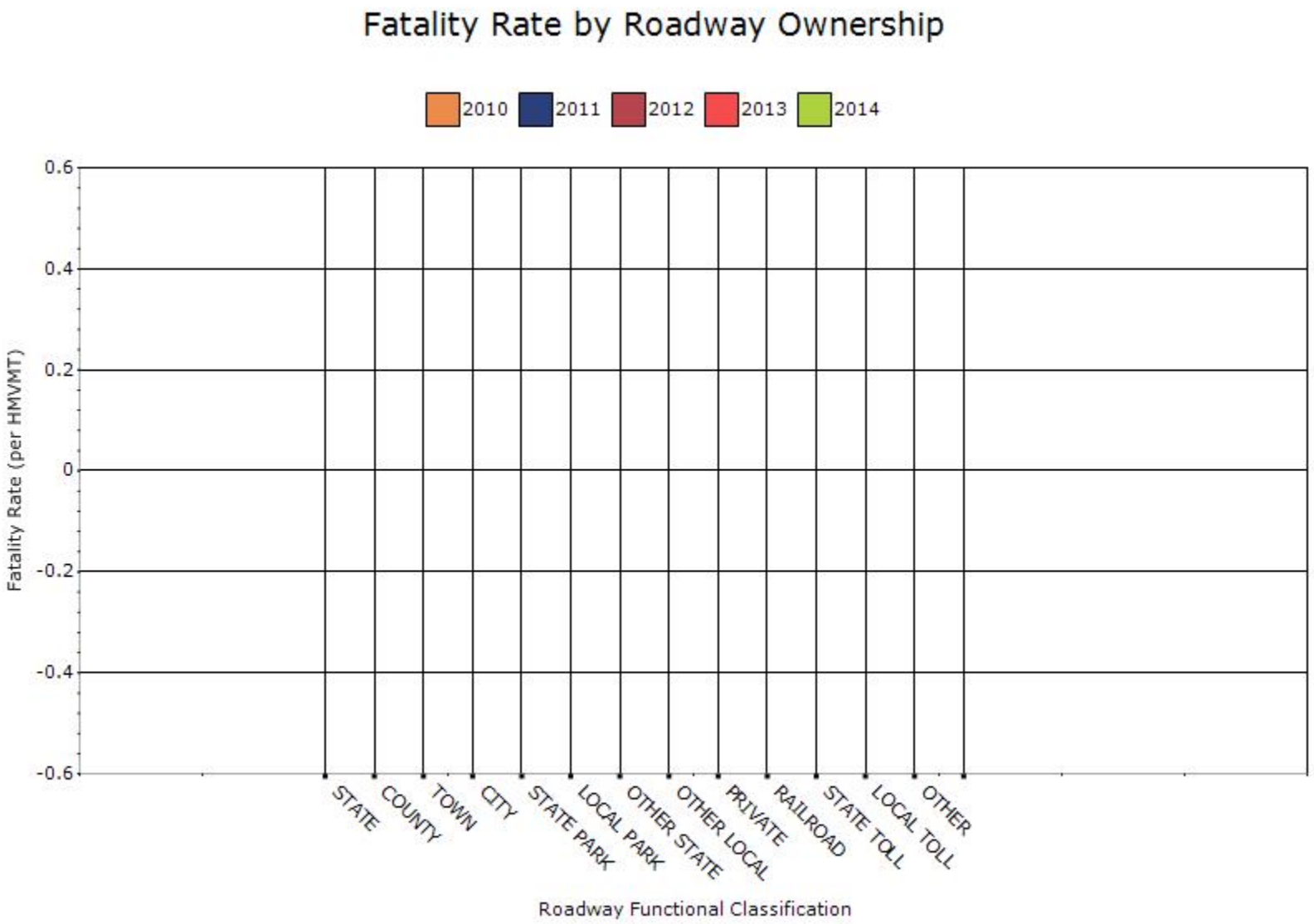

Serious Injury Rate by Roadway Functional Classification
2010
2011
2012
2013
2014
Serious Injury Rate (per HMVMT)
100
80
60
40
20
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (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

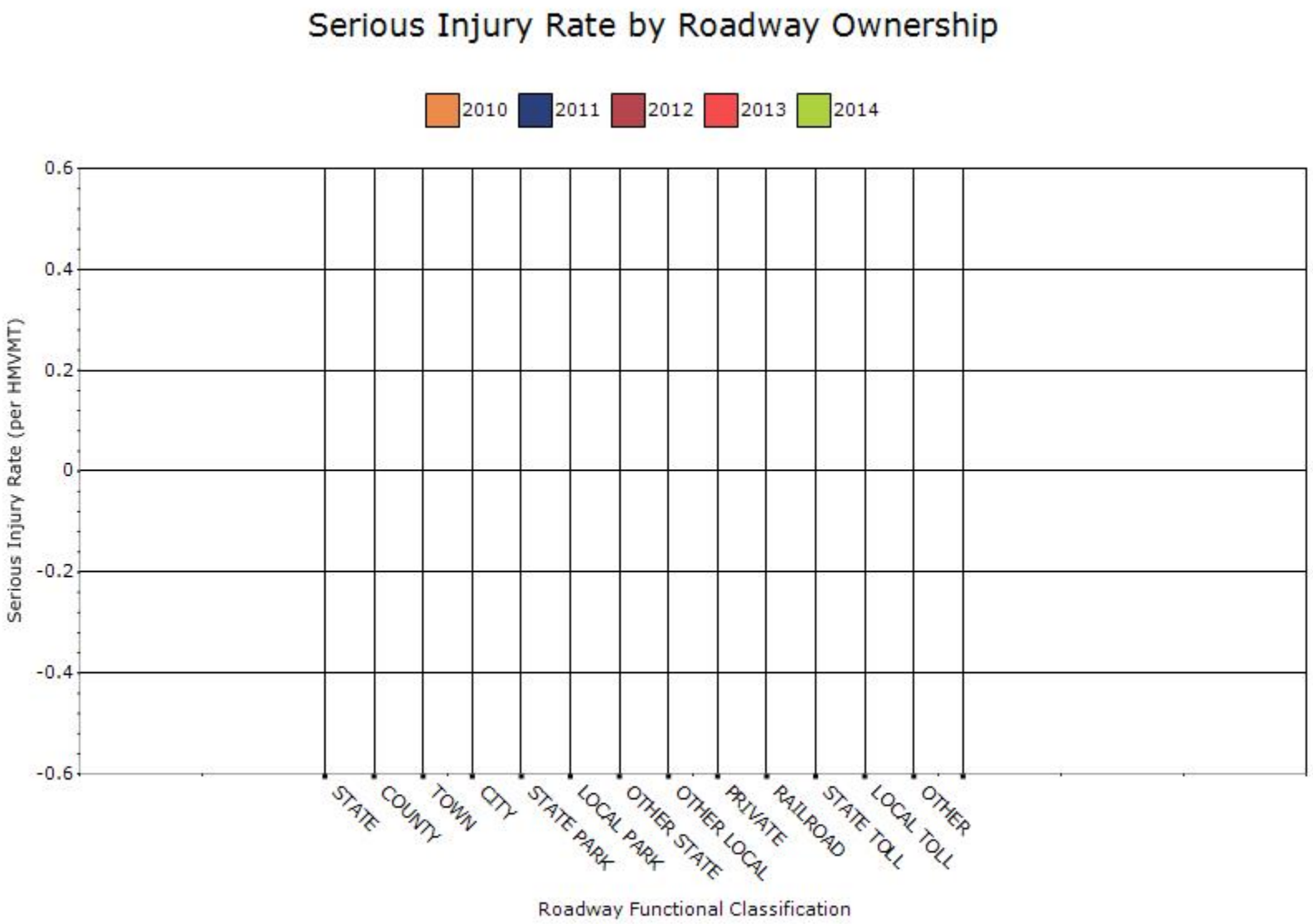
Year - 2014

Roadway Ownership	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
STATE HIGHWAY AGENCY	1168.2	3790	0	0
COUNTY HIGHWAY AGENCY	0	0	0	0
TOWN OR TOWNSHIP HIGHWAY AGENCY	0	0	0	0
CITY OF MUNICIPAL HIGHWAY AGENCY	35.4	146	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
UNKNOWN	26.2	94.4	0	0


Number of Fatalities by Roadway Ownership
2010
2011
2012
2013
2014
2000
1500
1000
500
0
# of Fatalities
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER
Roadway Functional Classification


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


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


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

Some data may not be accurate due to shifts in Functional Classification.

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

The N.C. Department of Transportation is committed to measuring and improving performance. The department's Organizational Performance Dashboard, which is featured on NCDOT's web page, serves as an indicator of how well we are meeting our mission and goals. One major NCDOT goal is **"Making our transportation network safer".** This is defined as the total number of statewide fatalities on NC roads per 100 million vehicle miles traveled for the calendar year to date. The fatality rate gauge shown on our Performance Dashboard is accompanied by a trend chart of the total number of fatalities, crashes and injuries by year. The Performance Dashboard can be found at https://apps.dot.state.nc.us/dot/dashboard/

Many staff members within NCDOT have a work performance metric for highway safety included in their year-end appraisal.

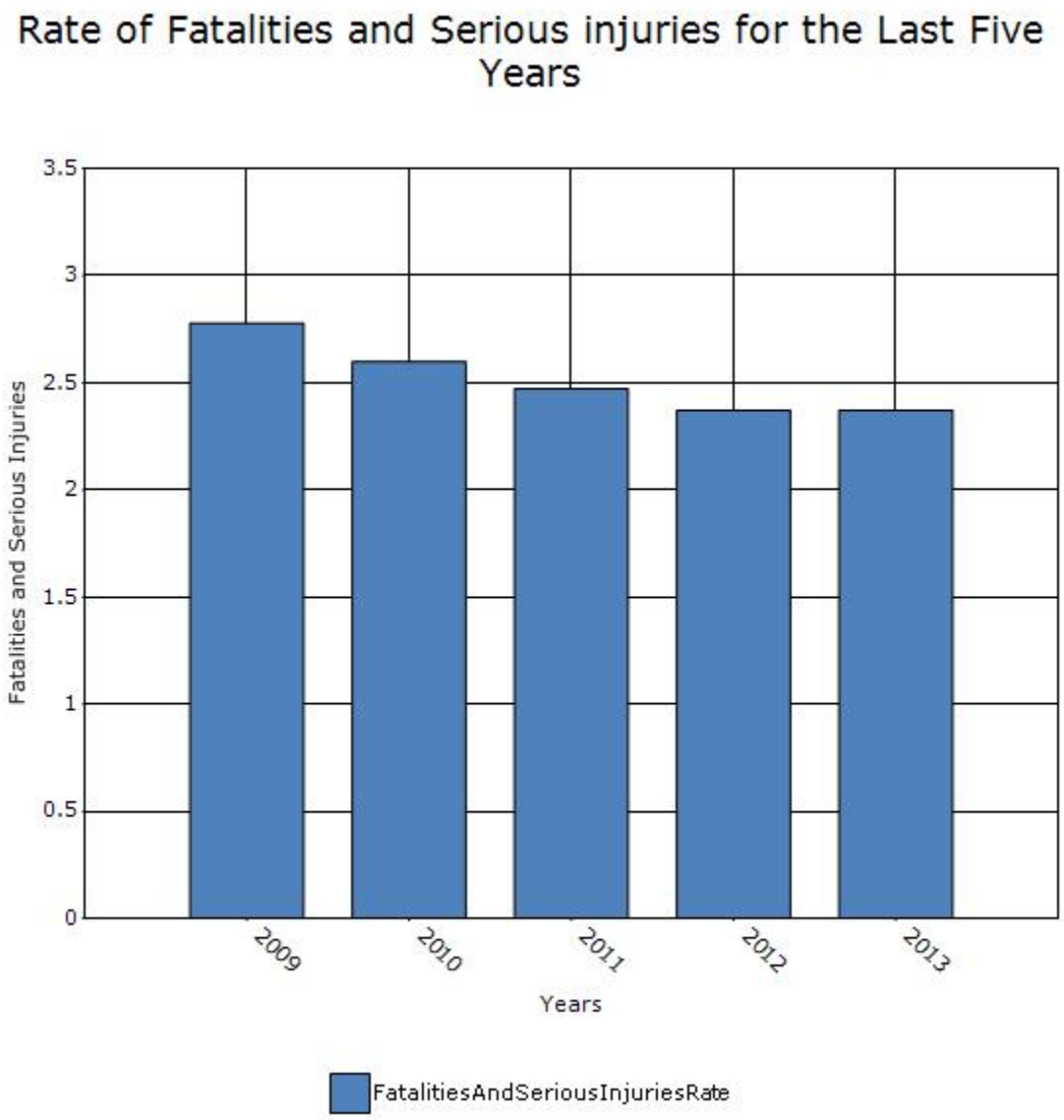
Application of Special Rules

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

Older Driver Performance Measures	2009	2010	2011	2012	2013
Fatality rate (per capita)	1.43	1.388	1.294	1.22	1.232
Serious injury rate (per capita)	1.352	1.214	1.18	1.154	1.142
Fatality and serious injury rate (per capita)	2.778	2.598	2.472	2.372	2.372

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

For each year: Fatal rate = (Number of fatalities for drivers and pedestrians over the age of 65) / (Population Figure shown in "Section 148: Older Drivers and Pedestrians Special Rule Interim Guidance") The numbers are presented as the 5-year rolling average.



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-Decline in the Fatal Rates

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-Many NCDOT staff members have a performance metric for highway safety listed in their year-end appraisal.

☒ Other: Other-More systemic programs are being incorporated in the HSIP.

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

The use of safety edge is being accepted by highway operations staff as not simply a safety enhancement but also a maintenance enhancement. Safety edge will be required on all contract resurfacing that is let by the Central and Division offices. NCDOT has initiated a project to study the impacts of wide edge markings on two-lane rural roads. 60% of all highway fatalities in North Carolina are a result of roadway departure crashes. The Traffic Safety Systems Section is working with all 14 highway divisions to systemically treat hundreds of identified curve locations with enhanced warning signs.

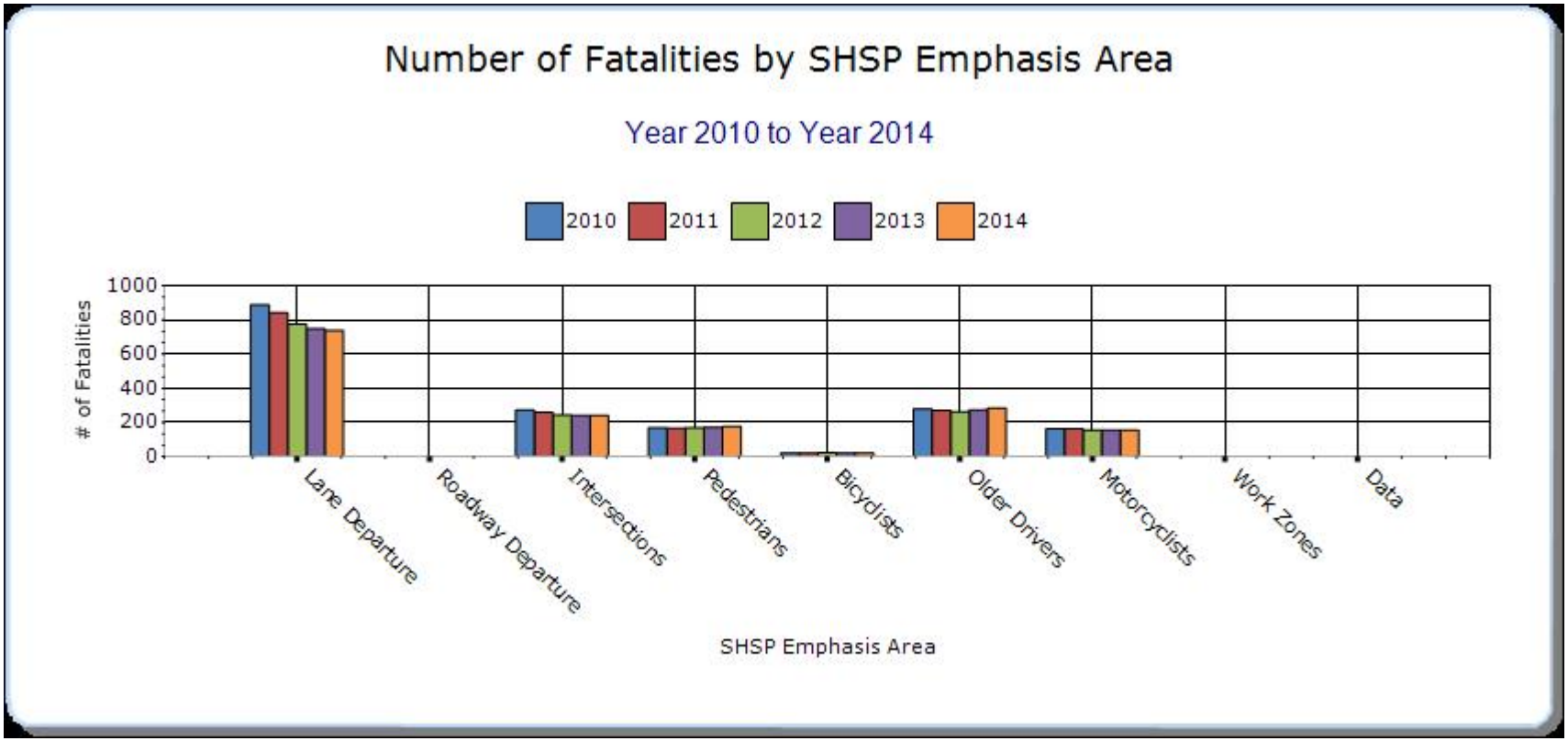
SHSP Emphasis Areas

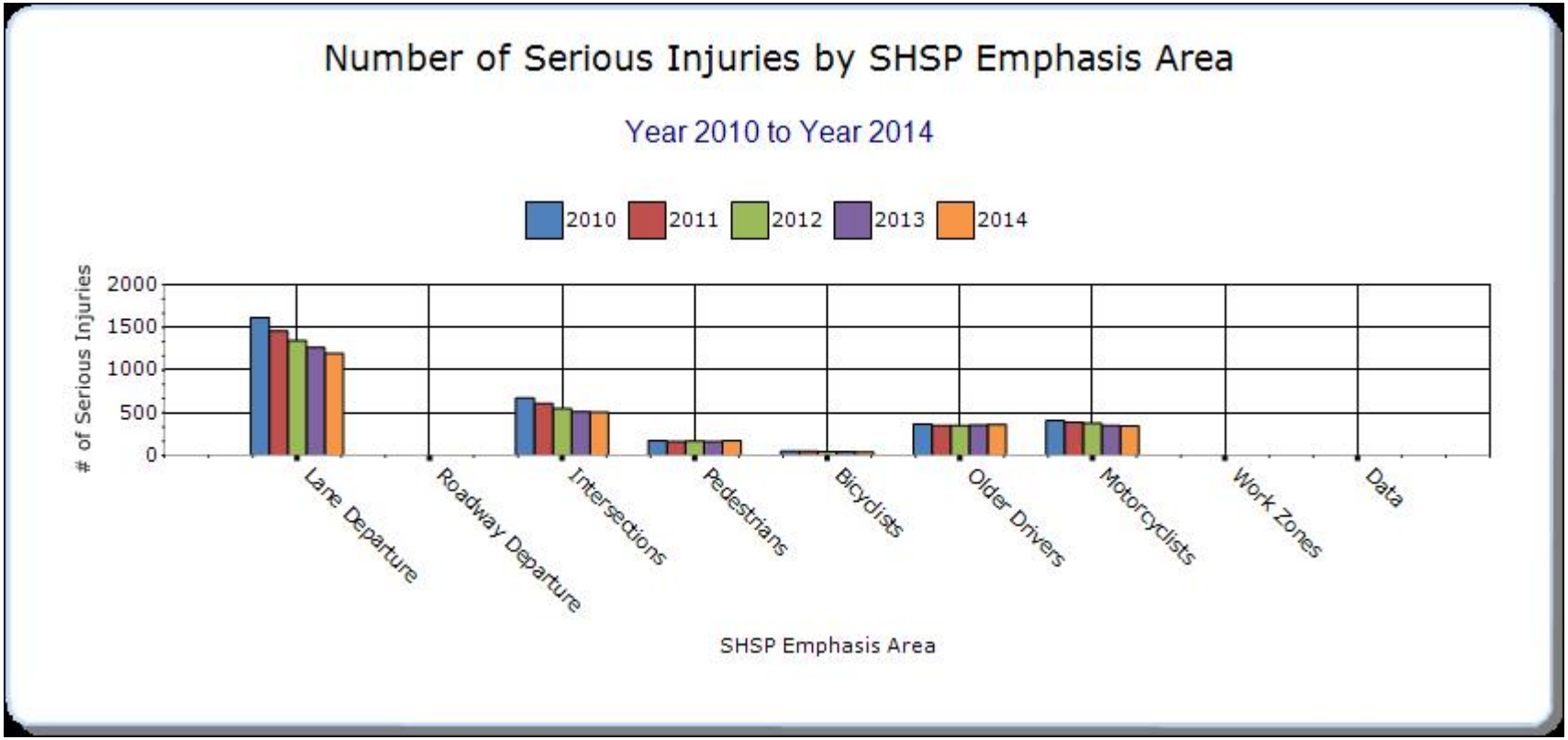
For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.

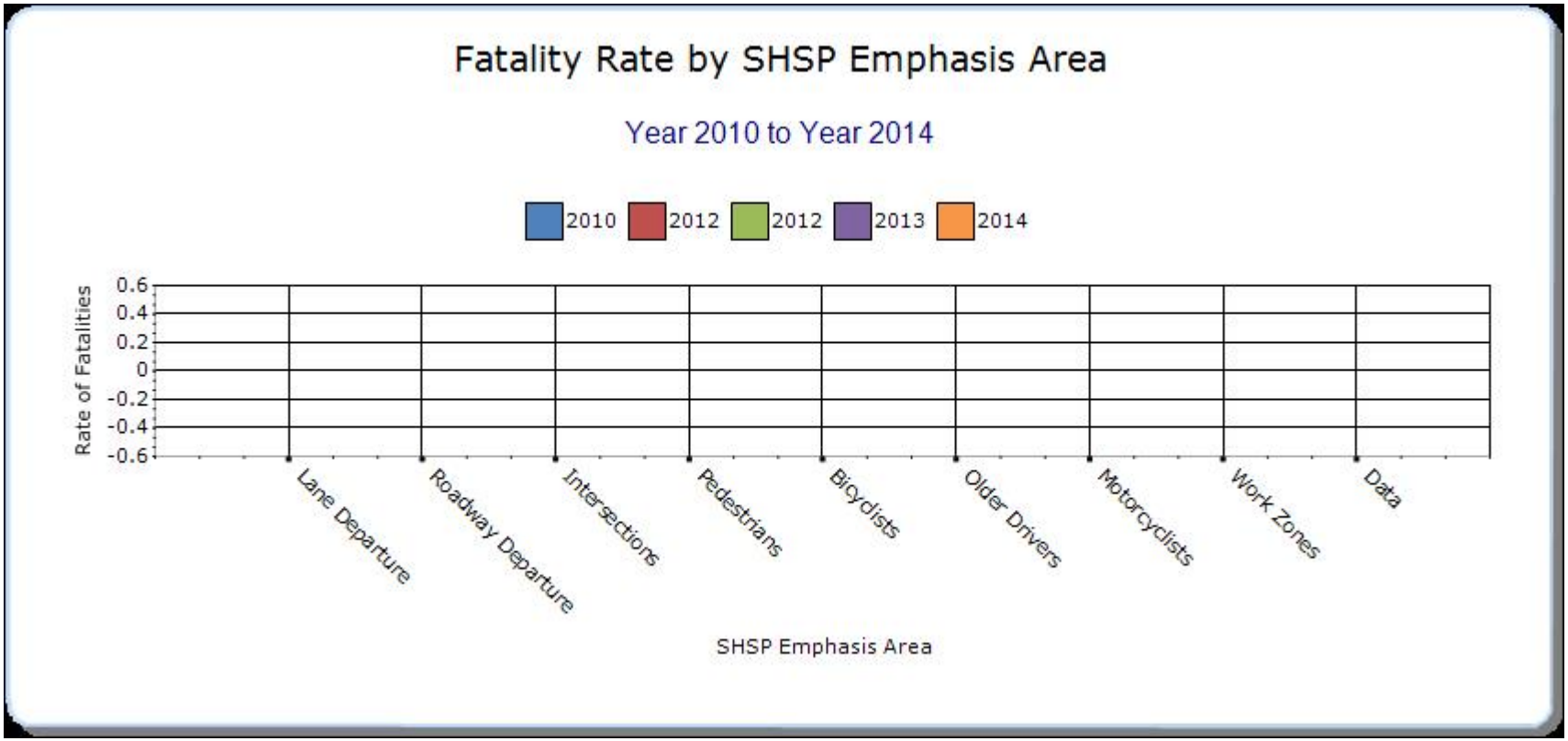
Year - 2014

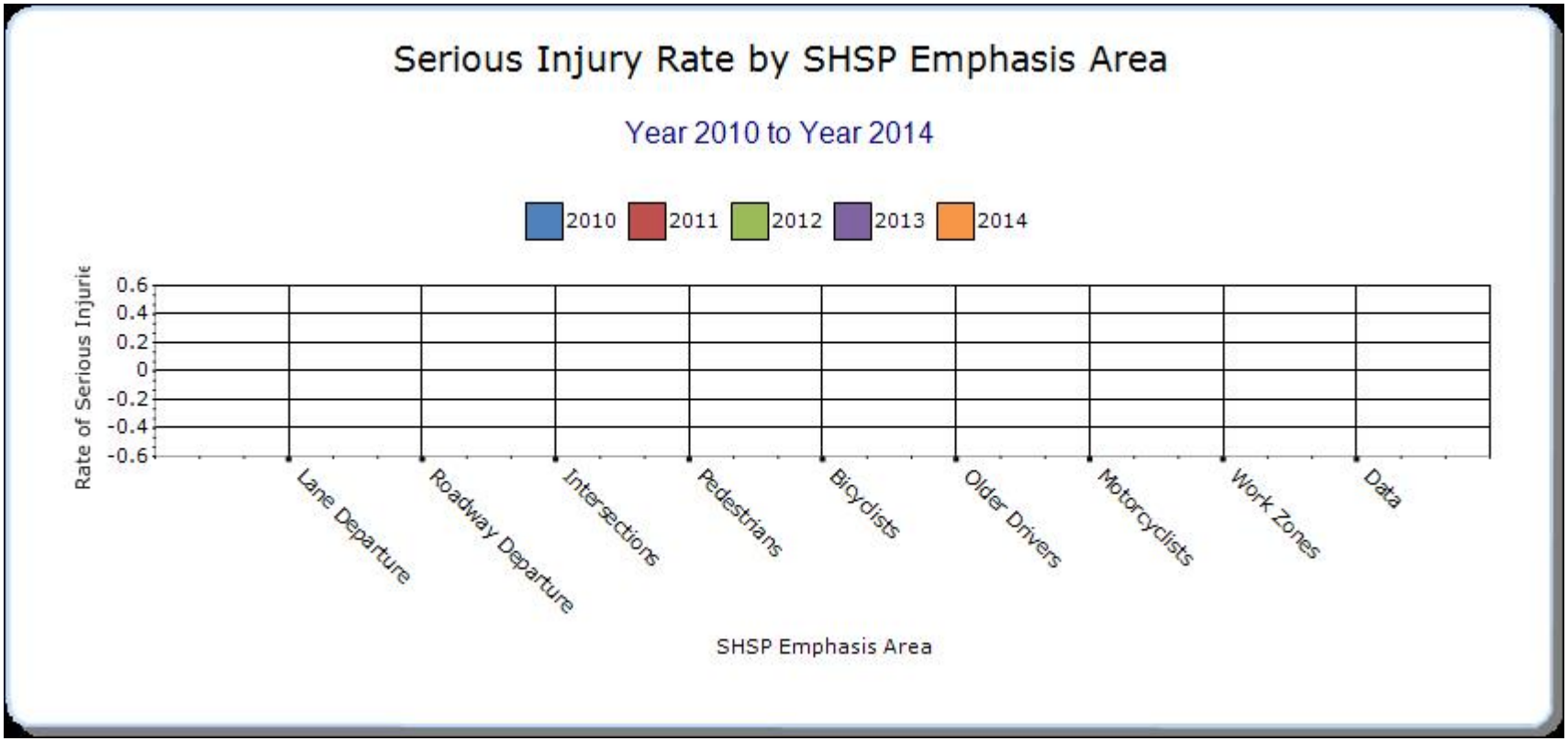
HSIP-related SHSP Emphasis Areas	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Lane Departure		738.6	1198.8	0	0	0	0	0
Intersections		240.8	508.4	0	0	0	0	0
Pedestrians		175.4	173.8	0	0	0	0	0
Bicyclists		21.4	41	0	0	0	0	0
Older Drivers		283.2	365	0	0	0	0	0
Motorcyclists		154.4	348.2	0	0	0	0	0
Reducing impaired driving		408.6	511	0	0	0	0	0
Increasing seat belt use		444	499.6	0	0	0	0	0
Younger Drivers		152.4	341.4	0	0	0	0	0
Drowsy Drivers		27.6	85	0	0	0	0	0
Distracted Drivers		145	343	0	0	0	0	0

Excessive Speed		346.4	460.8	0	0	0	0	0




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

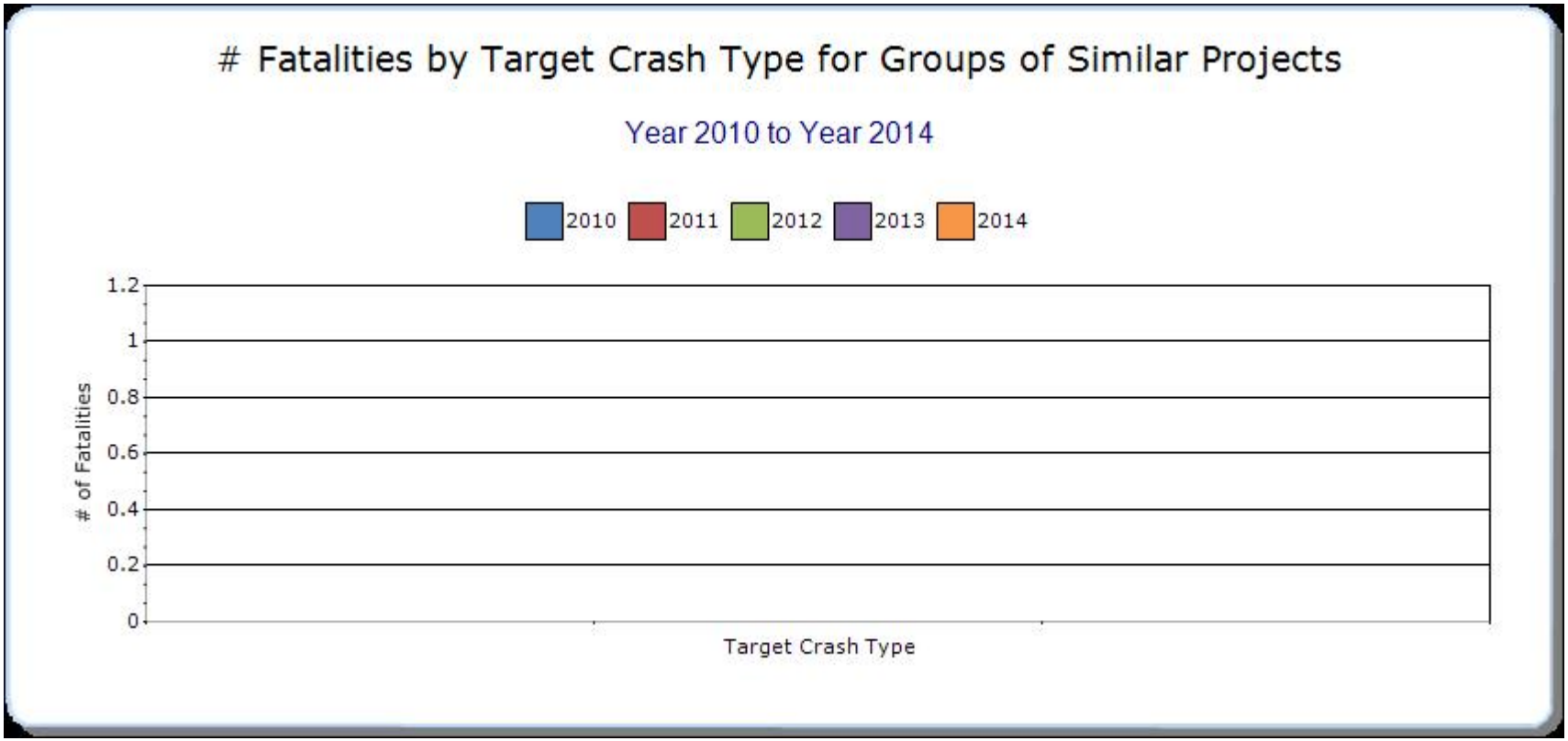

Fatality Rate by SHSP Emphasis Area
Year 2010 to Year 2014
2010
2012
2012
2013
2014
Rate of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Lane Departure
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
SHSP Emphasis Area

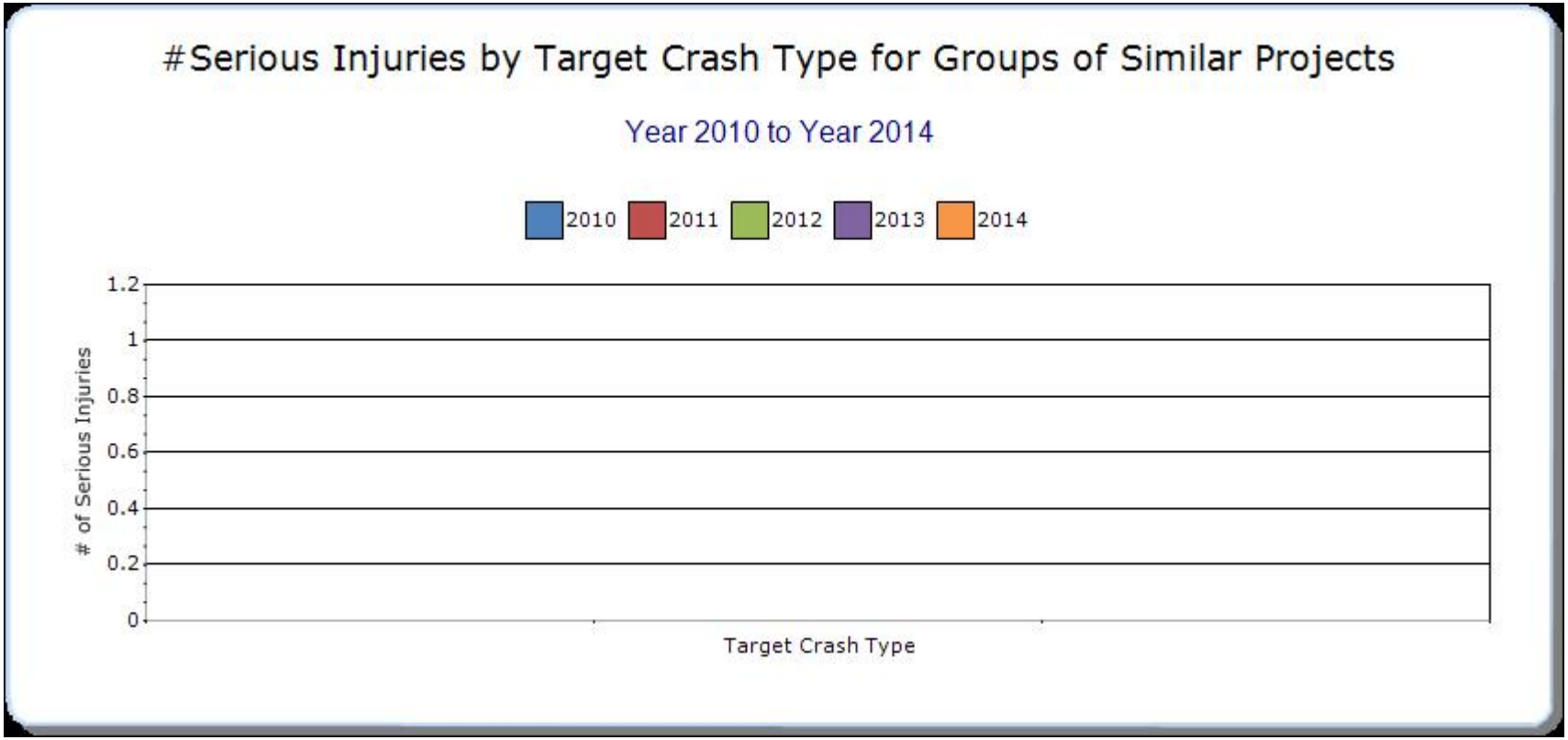

Serious Injury Rate by SHSP Emphasis Area
Year 2010 to Year 2014
2010
2011
2012
2013
2014
Rate of Serious Injurie
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Lane Departure
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
SHSP Emphasis Area

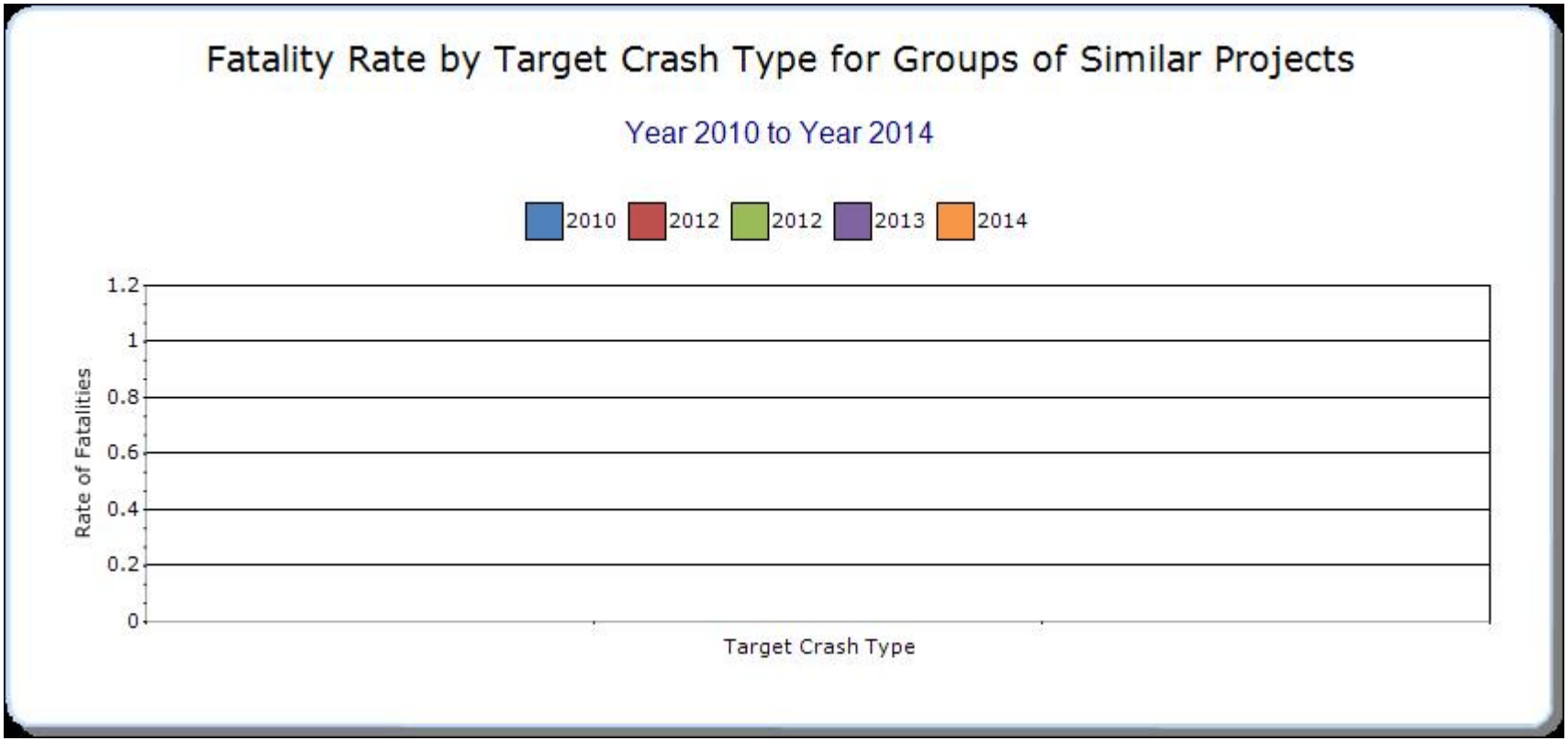
Groups of similar project types

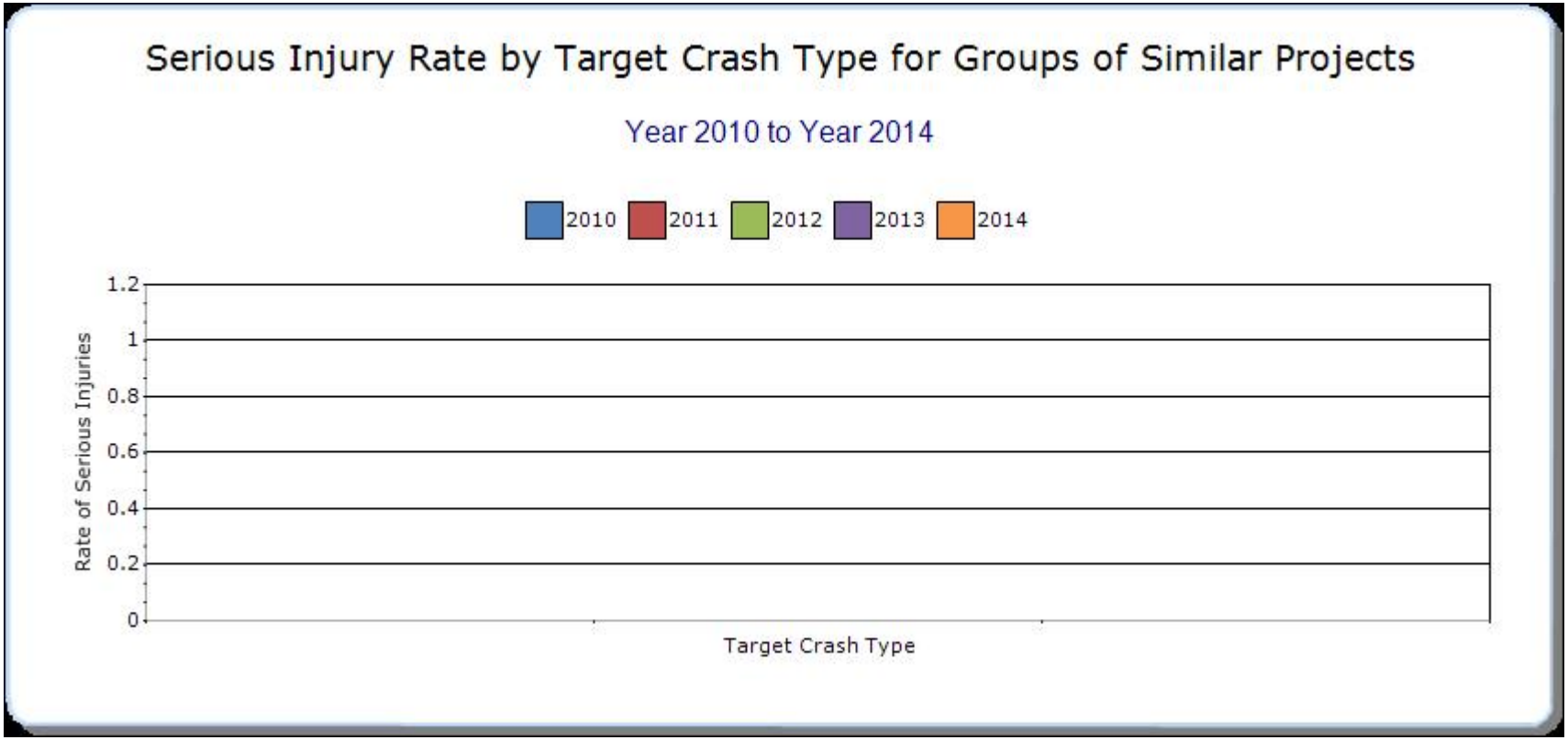
Present the overall effectiveness of groups of similar types of projects.

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 2010 to Year 2014
2010
2011
2012
2013
2014
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 2010 to Year 2014
2010
2011
2012
2013
2014
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 2010 to Year 2014
2010
2012
2012
2013
2014
1.2
1
0.8
0.6
0.4
0.2
0
Rate of Fatalities
Target Crash Type

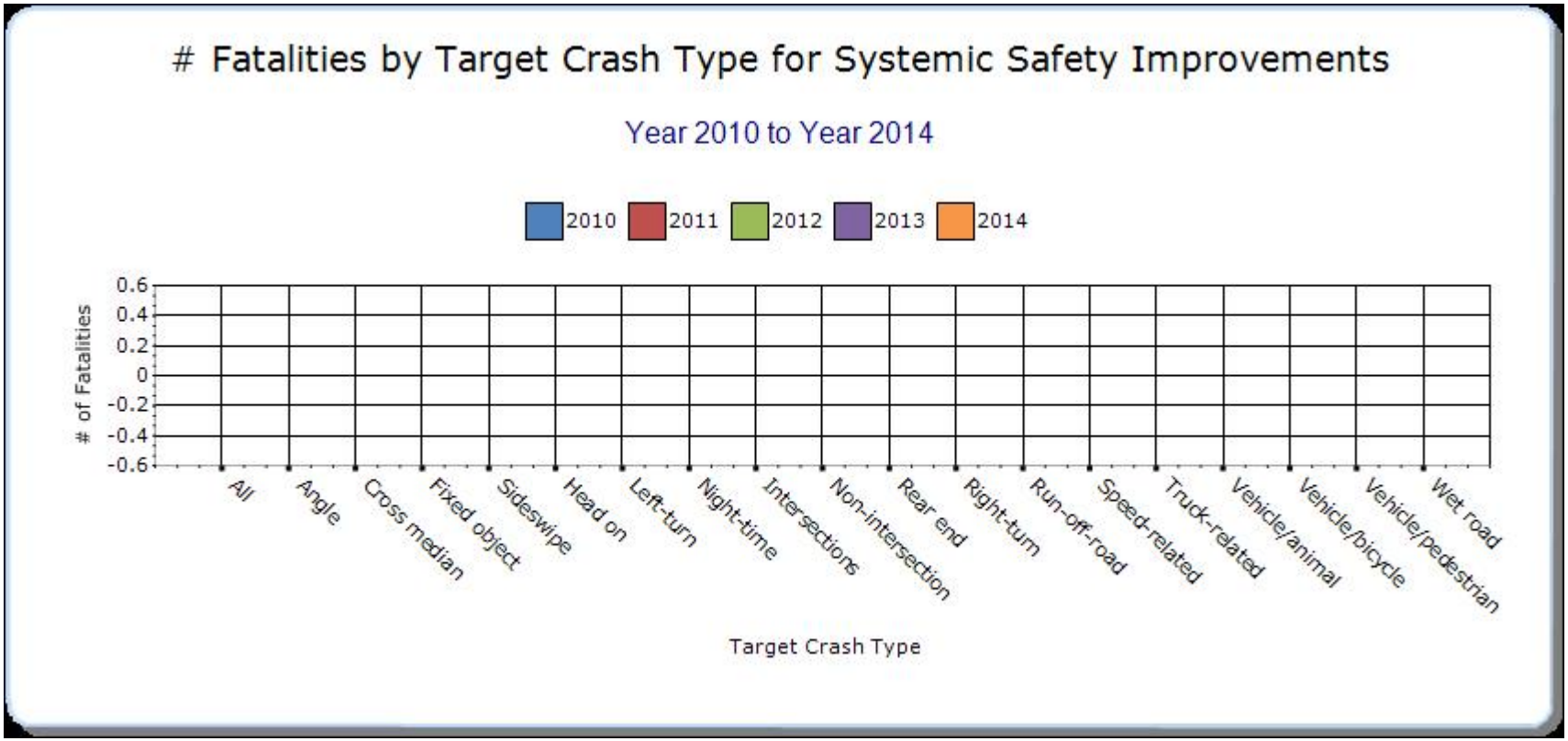

Serious Injury Rate by Target Crash Type for Groups of Similar Projects
Year 2010 to Year 2014
2010
2011
2012
2013
2014
1.2
1
0.8
0.6
0.4
0.2
0
Rate of Serious Injuries
Target Crash Type

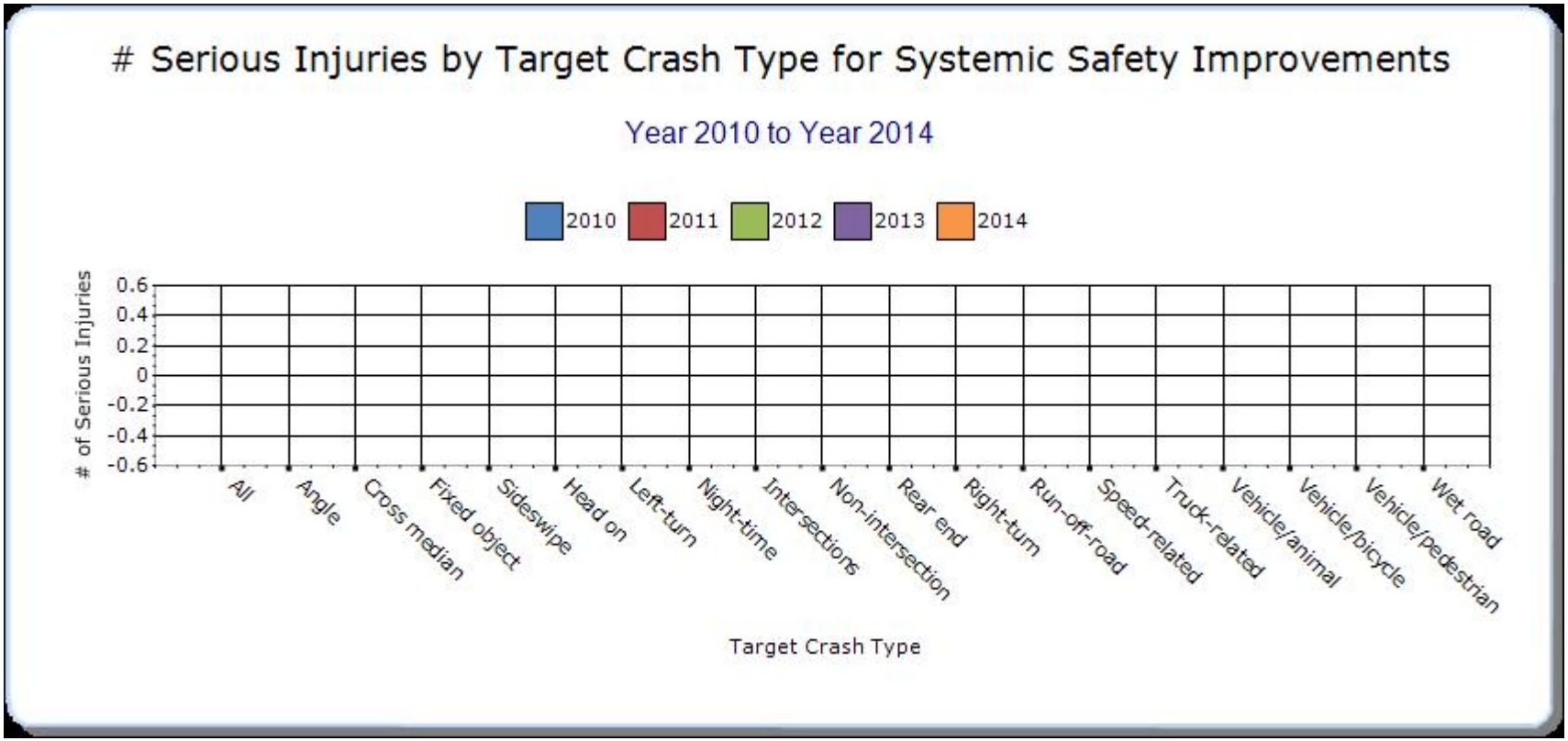
Systemic Treatments

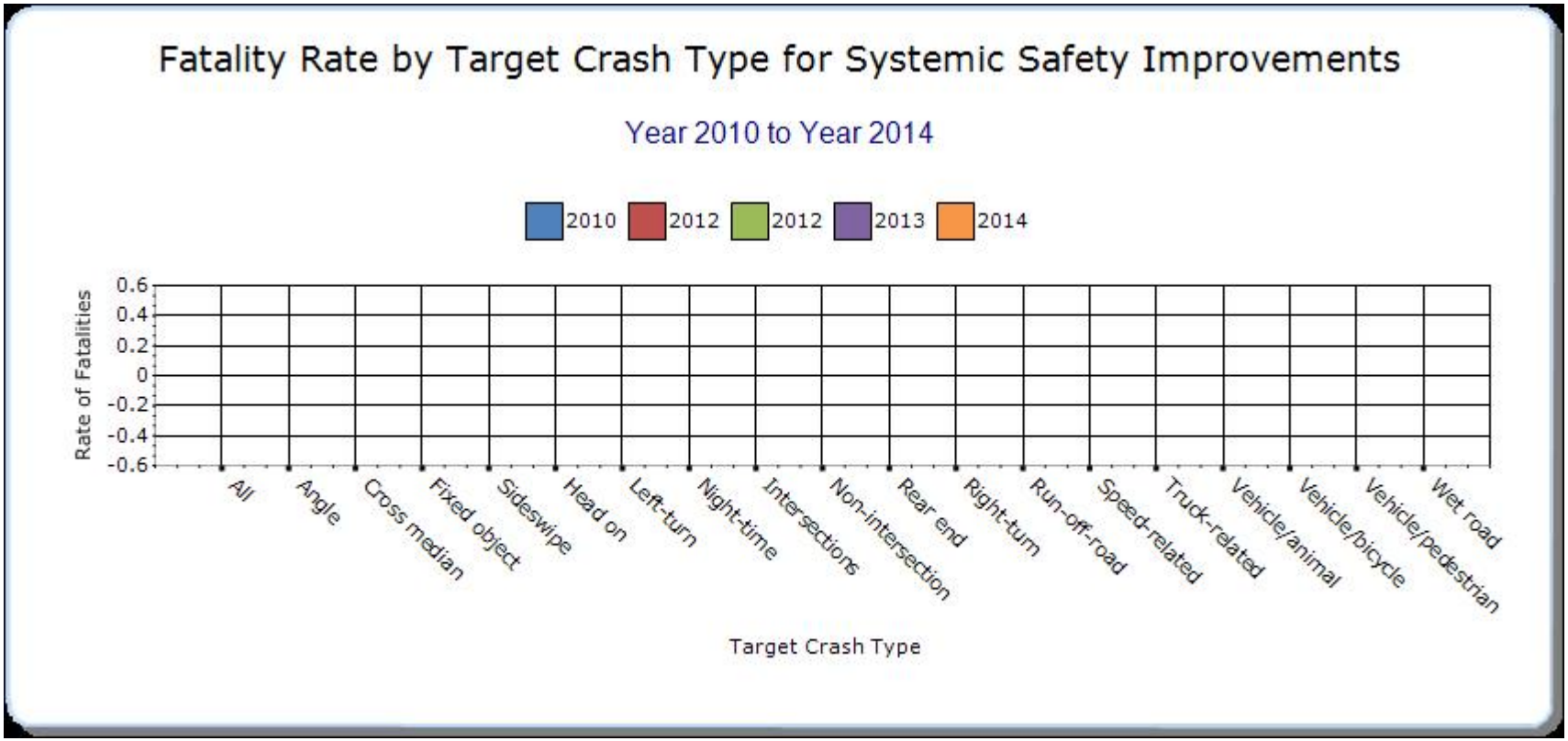
Present the overall effectiveness of systemic treatments.

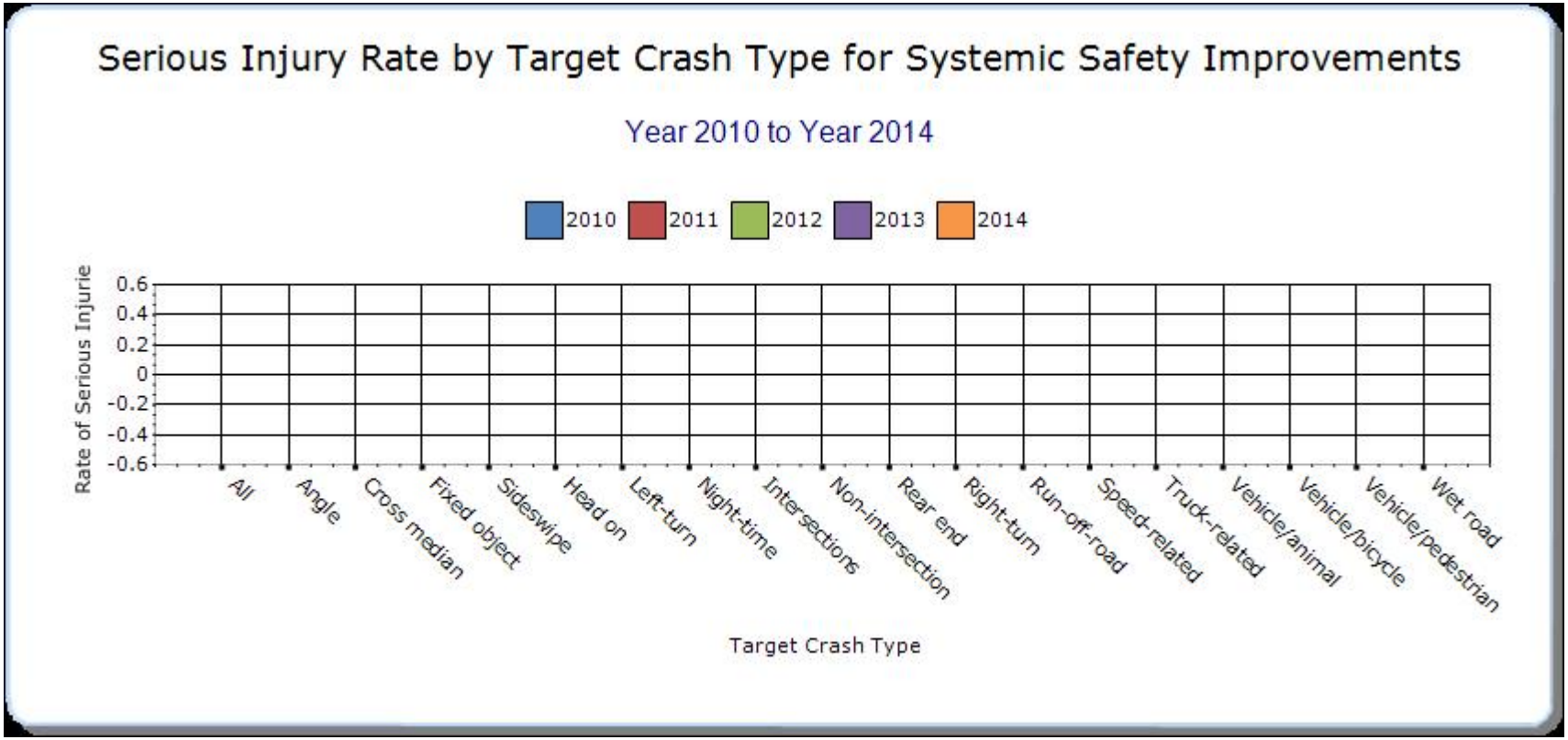
Year - 2014

Systemic improvement	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3


Fatalities by Target Crash Type for Systemic Safety Improvements
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type


Serious Injuries by Target Crash Type for Systemic Safety Improvements
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Serious Injuries
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type


Fatality Rate by Target Crash Type for Systemic Safety Improvements
Year 2010 to Year 2014
2010
2012
2012
2013
2014
Rate of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type



Currently, no evaluations for systemic treatments are available. Theses types of treatments will be studied at a later date.

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

The North Carolina Highway Safety Improvement Program (HSIP) is an organized and systematic safety process developed to identify, analyze, investigate and improve potentially hazardous locations with concentrations and patterns of correctable crashes. The program is able to determine locations that exceed minimum warranting criteria that are based on multiple factors that, in most cases, include severity, frequency, and crash type. The program is presently structured into six distinct phases:

I. Development of warranting criteria
II. Identification of of potentially hazardous locations meeting minimum warrant criteria
III. Detailed crash analysis of program locations
IV. Engineering field investigation of program locations and evaluation of potential recommendations (where appropriate)
V. Project development
VI. Implement countermeasures
VII.Evaluation of countermeasures implemented with HSIP funds
The warrants developed by the Traffic Safety Systems Section (TSSS) have consistently shown the ability to identify intersections, sections, and bicycle/pedestrian intersections with severe injuries and chronic crash patterns. The Regional Traffic Engineers utilize thorough investigations, traffic operations and safety expertise and proven tools such as signal warrant studies, sight distance measurements, Crash Reduction Factors and Benefit to Cost analysis to ensure that effective projects are developed. Projects are selected through a competitive Benefit to Cost based program. Evaluations completed by the Traffic Safety Systems Section have shown that the average project yields a 14 to one return.

Project Evaluation

Provide project evaluation data for completed projects (optional).

Location	Functional Class	Improvement Category	Improvement Type	Bef-Fatal	Bef-Serious Injury	Bef-All Injuries	Bef-PDO	Bef-Total	Aft-Fatal	Aft-Serious Injury	Aft-All Injuries	Aft-PDO	Aft-Total	Evaluation Results (Benefit/ Cost Ratio)
See Information Below														

In an attempt to assess the safety of our roads, the Safety Evaluation Group of the Traffic Safety Systems Management Section has evaluated hundreds of projects. The methodologies used in NCDOT's evaluations offer various philosophies and ideas, in an effort to provide objective countermeasure crash reduction results. This information is gathered so the benefit or lack of benefit for this type of project can be recognized and utilized for future projects. As the Safety Evaluation Group completes additional reviews for various types of countermeasures, we will be able to provide objective and definite information regarding actual crash reduction factors.

Completed project evaluations can be found at the link below:

https://connect.ncdot.gov/resources/safety/Pages/Safety-Evaluation.aspx

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.