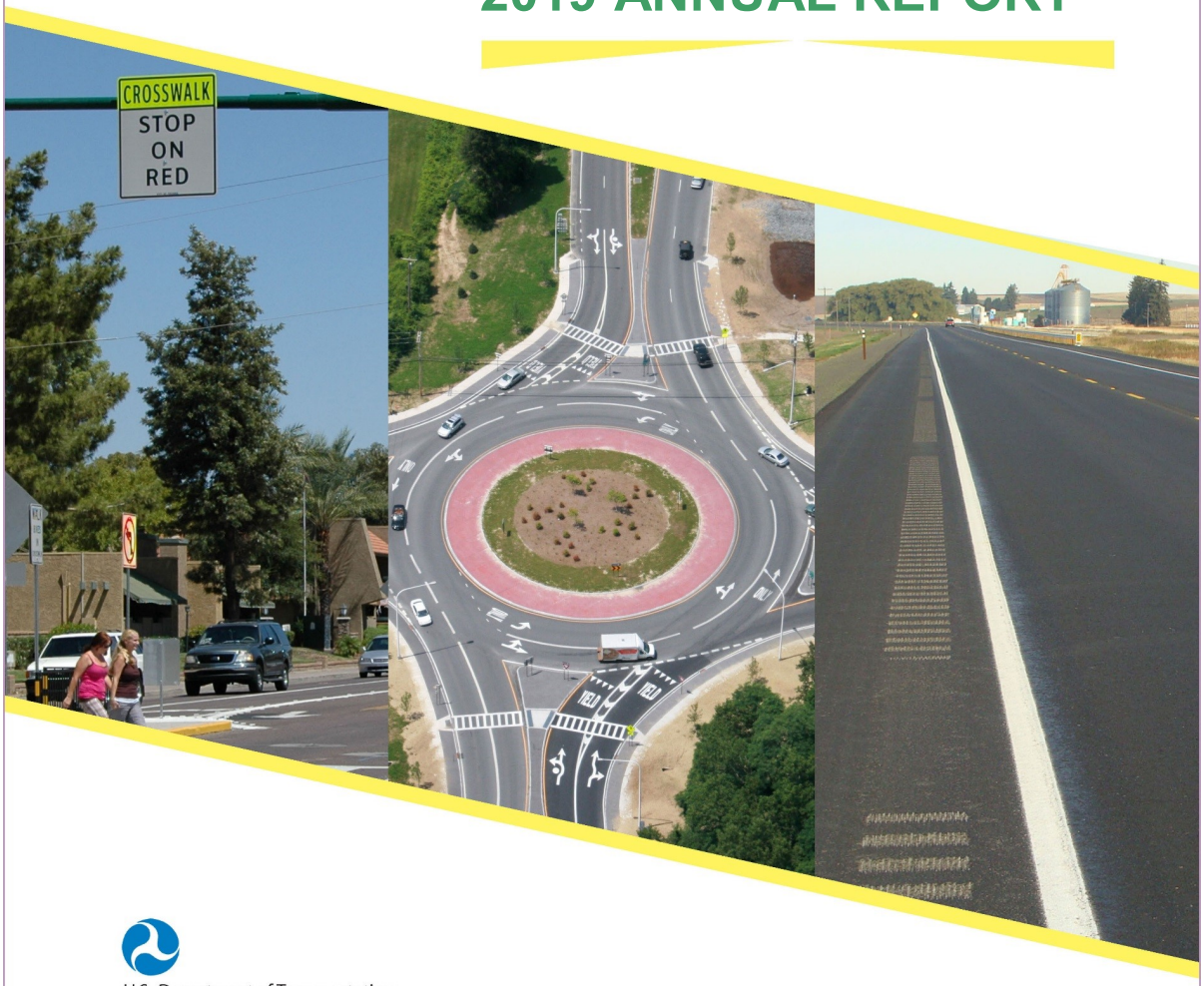
NORTH CAROLINA

HIGHWAY SAFETY IMPROVEMENT PROGRAM

2019 ANNUAL REPORT



U.S. Department of Transportation
Federal Highway Administration

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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.”

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 2018, there were over 310,000 reported traffic crashes that resulted in 1,443 persons killed and over 120,000 injuries on our roadways. The socioeconomic impact of these crashes is severe, resulting in a loss of over $27.1 billion to the economy of North Carolina annually. This impact translates to a crash cost to the state of over $3.1 million every hour and approximately $74 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 Executive Committee for Highway Safety established a goal to cut the fatalities and serious injuries in North Carolina in half based on the 2013 figures, reducing the total annual fatalities to 630 fatalities and the total serious injuries to 1,055 serious injuries before 2030.

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 2018 Calendar Year as the reporting period for the “HSIP Report”; however, some of our 2019 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 Reporting Guidance dated December 29, 2016 and consists of five sections: program structure, progress in implementing highway safety improvement projects, progress in achieving safety outcomes and performance targets, effectiveness of the improvements and compliance assessment.

Program Structure

Program Administration

Describe the general structure of the HSIP in the State.

Each year the Transportation Mobility and Safety Division (TMSD) conducts network screening to identify potentially hazardous intersections and sections. Crash data and collision diagrams are compiled for the higher ranked locations. These tools are then used to conduct a field investigations of these sites. NCDOT staff also conduct numerous field investigations resulting from specific fatal sites and concerns from law enforcement, municipalities and citizens. Data from the field investigation is used to determine feasible countermeasures. In many cases low-cost countermeasures can be funded by highway maintenance programs. Other improvements are developed into projects that compete for state and federal highway safety program funds. Selection of projects is determined by a statewide data-driven selection process each quarter. The selected projects are approved by the NCDOT Board of Transportation. Project designs are developed and contracts are advertised. Contracts are awarded and projects are constructed, then final field inspections are conducted by division and/or TMSD personnel to make sure that the project is completed according to the approved plans and specifications. All significant safety projects are evaluated individually and once enough projects of a particular countermeasure have been implemented, the effectiveness of the countermeasure is evaluated.

Where is HSIP staff located within the State DOT?

Operations

NCDOT's Traffic Safety Unit has approximately 40 positions dedicated to improving safety and mobility. There are also Traffic Engineering staff in the 14 Highway Divisions who are charged with maintaining and improving our transportation network.

How are HSIP funds allocated in a State?

- Central Office via Statewide Competitive Application Process

The HSIP program is funded with 90% federal funds and 10% matching state funds. Competing HSIP candidate projects are submitted and reviewed quarterly by an interdisciplinary Safety Project review team that recommends approval of federally funded safety projects. These projects are prioritized for funding according to a safety benefit-to-cost (B/C) ratio, with the safety benefit being based on crash and injury reductions. Once programmed HSIP (W-Projects) become part of NCDOT's State Transportation Improvement Program (STIP). NCDOT has also funded systemic Vulnerable User, Pedestrian and Bicycle, and Signal System projects.

Describe how local and tribal roads are addressed as part of HSIP.

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

Several communities including several Planning Organization staff 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.

We are not aware of any crashes on tribal roads and are not certain if they are required to report crashes. We will make a concerted effort to reach out to tribes to determine the number and severity of crashes on their roadways, as well as identify potentially hazardous locations.

Identify which internal partners (e.g., State departments of transportation (DOTs) Bureaus, Divisions) are involved with HSIP planning.

- Design
- Governors Highway Safety Office
- Operations
- Planning
- Traffic Engineering/Safety

Describe coordination with internal partners.

The design, planning, and operations units within NCDOT play a significant role within the Strategic Highway Safety Plan. These units utilize safety data during their planning phase in many ways. NCDOT's Strategic Prioritization 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. Many resurfacing projects are utilizing safety edge treatments to reduce the potential for over-correction 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.". The NCDOT Rail Division and GHSP participate on our safety project selection committee. The Transportation Mobility and Safety Division, GHSP, and the State Highway Patrol (external partner) have developed a collaborative program to identify and improve rural highway corridors that have high fatal and serious injury rates.

Identify which external partners are involved with HSIP planning.

- Local Government Agency
- Regional Planning Organizations (e.g. MPOs, RPOs, COGs)
- Other-NC State Highway Patrol

Describe coordination with external partners.

Planning Organizations utilize traffic safety data to develop and prioritize transportation plans. Members of the NC State Highway Patrol and local government transportation agencies also regularly participate in NCDOT's Road Safety Audit Program. The NC Transportation Secretary chairs the NC Executive Committee for Highway Safety and partner agency representatives are actively involved in the committee. The partner agency representatives currently includes members from the following: NC Conference of District Attorneys, UNC Highway Safety Research Center, City of Greensboro, NC Association of MPOs, FMCSA, NCSHP, Students Against Destructive Decisions (SADD), FHWA, NC Department of Health and Human Services, AARP, AAA Carolinas, NC Department of Insurance and Eastern Carolina Injury Prevention Program.

Describe other aspects of HSIP Administration on which the State would like to elaborate.

An update of the Strategic Highway Safety Plan (SHSP) for the State of North Carolina was launched 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 (suspected serious 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 revised plan of 2006 identified 14 emphasis 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 2017 fatality rate is above 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 2017, 1,400 people died on North Carolina's roadways, and another 4,602 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.

In 2016, North Carolina dedicated $50 million to improving highway safety and reducing the number of traffic accidents throughout North Carolina. Improvements supported by the funds included high friction surface treatments, turn lanes, guardrails and traffic signals. The $50 million are state funds advanced to the projects that NCDOT will request reimbursement payments through the federal HSIP.

In the fall of 2015, FHWA conducted a national HSIP scan tour. The tour team visited North Carolina, because the state was identified as a high-performing state. The scan tour report noted several noteworthy practices in North Carolina including:

I-Documentation of HSIP Processes

II-Coordination with Internal and External Partners

III-Understanding the Relationship between the SHSP and HSIP

IV-Making Data-Driven Safety Decisions

V -Addressing Local Road Needs

VI -Considering All "4E's"

VII -Identifying Opportunites to Streamline Project Delivery

IIX-Evaluating the Success of the Program

Program Methodology

Does the State have an HSIP manual or similar that clearly describes HSIP planning, implementation and evaluation processes?

No

The Traffic Safety Systems Section has began developing an HSIP manual that will detail the multi-step HSIP process by the end of 2020.

The North Carolina DOT maintains several HSIP documents and information on https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-andProjects.aspx. This includes mapped HSIP locations from 2015-2019, HSIP Potentially Hazardous Location Detailed Reports by county, intersection reports, bike/pedestrian reports, the active spot safety project list, all safety project evaluations and the NCDOT Crash Reduction Factor list.

NCDOT also conducted an HSIP assessment in 2017.

Select the programs that are administered under the HSIP.

- Bicycle Safety
- Intersection
- Pedestrian Safety
- Roadway Departure

Program: Bicycle Safety

Date of Program Methodology:8/31/2016

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway

Other-Bicycle Crashes

What project identification methodology was used for this program?

- Crash frequency
- Other-Bicycle Crashes

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

Yes

Are local road projects identified using the same methodology as state roads?

Yes

How are projects under this program advanced for implementation?

- Competitive application process
- selection committee

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

Rank of Priority Consideration

Ranking based on B/C:1

Program: Intersection

Date of Program Methodology:5/31/2019

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
All crashes		

What project identification methodology was used for this program?

- Crash frequency

- Other-Frequency of Crashes during Dark Conditions
- Other-Frontal Impact Crashes
- Other-Percent Frontal Impact Crashes
- Relative severity index

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

Yes

Are local road projects identified using the same methodology as state roads?

Yes

How are projects under this program advanced for implementation?

- Competitive application process
- selection committee

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

Rank of Priority Consideration

Ranking based on B/C:1

Program: Pedestrian Safety

Date of Program Methodology:8/31/2016

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
All Other-Pedestrian Crashes	crashes	

What project identification methodology was used for this program?

- Other-Pedestrian Crashes

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

Yes

Are local road projects identified using the same methodology as state roads?

Yes

How are projects under this program advanced for implementation?

- Competitive application process

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

Rank of Priority Consideration

Ranking based on B/C:1

Program: Roadway Departure

Date of Program Methodology:8/31/2016

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
All crashes Other-Roadway Departure Crashes		

What project identification methodology was used for this program?

- Crash frequency
- Other-Percent Night Crashes
- Other-Percent Roadway Departure Crashes
- Other-Percent Wet Condition Crashes

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

Yes

Are local road projects identified using the same methodology as state roads?

Yes

How are projects under this program advanced for implementation?

- Competitive application process
- selection committee

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

Rank of Priority Consideration

Ranking based on B/C:1

What percentage of HSIP funds address systemic improvements?

45

HSIP funds are used to address which of the following systemic improvements?

- Add/Upgrade/Modify/Remove Traffic Signal
- Install/Improve Lighting
- Install/Improve Pavement Marking and/or Delineation
- Install/Improve Signing
- Other-Pedestrian Accomodations
- Rumble Strips
- Safety Edge
- Upgrade Guard Rails

What process is used to identify potential countermeasures?

- Engineering Study
- Road Safety Assessment

Our regional traffic engineering staff annually investigate about 250 locations identified by our network screening process but other investigations are initiated by other means. Hundreds of fatal site locations are investigated each year. The Traffic Safety Unit from central headquarters also conducts approximately 8 Road Safety Audits annually utilizing independent, multi-disciplinary teams. Also NCDOT staff conduct numerous field investigations resulting from concerns of law enforcement, local government officials and citizens. NCDOT traffic engineers can also uncover safety issues during their study of traffic operations. Data from the numerous field investigations is used to determine feasible safety countermeasures.

Does the State HSIP consider connected vehicles and ITS technologies?

No

Does the State use the Highway Safety Manual to support HSIP efforts?

Yes

Please describe how the State uses the HSM to support HSIP efforts.

NCDOT's Roadway Safety Management Process uses many HSM techniques for diagnosis, countermeasure selection, economic appraisal, project prioritization and safety evaluations. TSU's Alternative Analysis Initiative utilizes Highway Safety Manual (HSM) predictive methodologies to compare the expected safety performance of different project alternatives based on specific roadway design elements.

Describe other aspects of the HSIP methodology on which the State would like to elaborate.

NCDOT is continuing to develop safety performance functions and will utilize the Interactive Highway Safety Design Model (IHSDM) 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.

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

State Fiscal Year

Reporting period is SFY 2019 (7/1/2018 to 6/30/2019)

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

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	$72,090,000	$120,365,138	166.97%
HRRR Special Rule (23 U.S.C. 148(g)(1))	$0	$25,042	0%
Penalty Funds (23 U.S.C. 154)	$0	$171	0%
Penalty Funds (23 U.S.C. 164)	$0	$0	0%
RHCP (for HSIP purposes) (23 U.S.C. 130(e)(2))	$0	$0	0%
Other Federal-aid Funds (i.e. STBG, NHPP)	$0	$0	0%
State and Local Funds	$10,878,250	$10,878,250	100%
Totals	$82,968,250	$131,268,601	158.22%

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

$0

How much funding is obligated to local or tribal safety projects?

$0

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

$0

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

$0

How much funding was transferred in to the HSIP from other core program areas during the reporting period under 23 U.S.C. 126?

$0

How much funding was transferred out of the HSIP to other core program areas during the reporting period under 23 U.S.C. 126?

$0

Discuss impediments to obligating HSIP funds and plans to overcome this challenge in the future.

NCDOT is responsible for the safety of nearly 80,000 miles of rural and urban highways. Cities, towns, other state agencies and federal agencies are responsible for over 26,000 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, restrictions and limitations on funding. Local governments are unwilling to administer the competitive bidding process. The complex federal safety program process and lack of flexibility 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 State's progress in implementing HSIP projects on which the State would like to elaborate.

NCDOT is utilizing and evaluating a variety of methods to improve project delivery times and reduce the overall cost of delivering HSIP projects. This includes combining multiple safety improvements in a single contract, the use of design-build delivery mechanisms for fast-track project delivery with well-defined scope, and the use of on-call contractors to facilitate immediate delivery of identified projects.

General Listing of Projects

List the projects obligated using HSIP funds for the reporting period.

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
SF-4903F	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$2767	$3074	HRRR Special Rule (23 U.S.C. 148(g)(1))			6,500		State Highway Agency	Spot	Intersections	
SS-PE	Non-infrastructure	Non-infrastructure - other	165	Locations	$599356	$665951	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Data	
U-5112	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$500000	$555555	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5103	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$100239	$111376	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5107	Interchange design	Convert at-grade intersection to interchange	4	Intersections	$1516689	$1685210	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5203I	Alignment	Horizontal curve realignment	1	Curves	$186026	$206695	HSIP (23 U.S.C. 148)			5,700		State Highway Agency	Spot	Lane Departure	
W-5203J	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$600	$666	HSIP (23 U.S.C. 148)			8,800		State Highway Agency	Spot	Intersections	
W-5203L	Shoulder treatments	Widen shoulder - paved or other	3.6	Miles	$22275	$24750	HRRR Special Rule (23 U.S.C. 148(g)(1))			3,100		State Highway Agency	Spot	Lane Departure	
W-5203X	Access management	Median crossover - directional crossover	2	Intersections	$116987	$129985	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Intersections	
W-5204F	Roadway	Superelevation / cross slope	1	Intersections	$12120	$13466	HSIP (23 U.S.C. 148)			1,600		State Highway Agency	Spot	Lane Departure	
W-5205E	Roadside	Barrier- metal	6.2	Miles	$209501	$232778	HSIP (23 U.S.C. 148)			11,700		State Highway Agency	Spot	Lane Departure	
W-5206AD	Roadway	Superelevation / cross slope	1	Curves	$38402	$42668	HSIP (23 U.S.C. 148)			10,200		State Highway Agency	Spot	Lane Departure	

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
W-5206AF	Intersection geometry	Auxiliary lanes - add auxiliary through lane	1	Intersections	$13978	$15531	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Lane Departure	
W-5206AN	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$9934	$11037	HRRR Special Rule (23 U.S.C. 148(g)(1))			11,000		State Highway Agency	Spot	Intersections	
W-5206AN-1	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$15318	$17020	HRRR Special Rule (23 U.S.C. 148(g)(1))			11,000		State Highway Agency	Spot	Intersections	
W-5206AOR-5752	Access management	Median crossover - directional crossover	2	Intersections	$7463	$8292	HSIP (23 U.S.C. 148)			11,000		State Highway Agency	Spot	Intersections	
W-5206X	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$49851	$55390	HSIP (23 U.S.C. 148)			9,600		State Highway Agency	Spot	Intersections	
W-5207G	Alignment	Vertical alignment or elevation change	1	Intersections	$175464	$194960	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Lane Departure	
W-5210O	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$670919	$745465	HSIP (23 U.S.C. 148)			10,000		State Highway Agency	Spot	Intersections	
W-5212N	Roadway	Roadway widening - add lane(s) along segment	1.2	Miles	$16191226	$17990251	HSIP (23 U.S.C. 148)			12,000		State Highway Agency	Spot	Lane Departure	
W-5213G	Shoulder treatments	Widen shoulder - paved or other	3.6	Miles	$1102500	$1225000	HSIP (23 U.S.C. 148)			6,000		State Highway Agency	Spot	Lane Departure	
W-5300	Intersection traffic control	Modify traffic signal timing - general retiming	100	Intersections	$3758400	$4176000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Intersections	
W-5305	Intersection geometry	Intersection geometry - other	1	Intersections	$157770	$175300	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5305-1	Intersection geometry	Intersection geometry - other	1	Intersections	$32508	$36120	HRRR Special Rule (23 U.S.C. 148(g)(1))			0		State Highway Agency	Spot	Intersections	
W-5306	Intersection traffic control	Modify control - all-way stop to roundabout	1	Intersections	$115660	$128511	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
W-5313	Shoulder treatments	Widen shoulder - paved or other	7.4	Miles	$40345	$44827	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Lane Departure	
W-5314	Intersection geometry	Intersection geometry - other	1	Intersections	$189774	$210860	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5331	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Miles	$410329	$455921	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5510	Access management	Raised island - install new	0.3	Miles	$500	$555	HSIP (23 U.S.C. 148)			340,000		State Highway Agency	Spot	Intersections	
W-5511	Alignment	Horizontal curve realignment	0.4	Miles	$137956	$153284	HSIP (23 U.S.C. 148)			2,600		State Highway Agency	Spot	Lane Departure	
W-5512	Alignment	Horizontal curve realignment	2	Curves	$89443	$99381	HSIP (23 U.S.C. 148)			3,700		State Highway Agency	Spot	Lane Departure	
W-5515	Shoulder treatments	Widen shoulder - paved or other	4.8	Miles	$17847	$19830	HSIP (23 U.S.C. 148)			1,200		State Highway Agency	Spot	Lane Departure	
W-5516	Roadway	Roadway - other	3	Miles	$500	$555	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Lane Departure	
W-5518	Interchange design	Convert at-grade intersection to interchange	1	Intersections	$200304	$222560	HSIP (23 U.S.C. 148)			13,000		State Highway Agency	Spot	Intersections	
W-5520	Access management	Median crossover - directional crossover	12	Intersections	$352651	$391834	HSIP (23 U.S.C. 148)			60,000		State Highway Agency	Spot	Intersections	
W-5522	Pedestrians and bicyclists	Miscellaneous pedestrians and bicyclists	1	Intersections	$51993	$57770	HSIP (23 U.S.C. 148)			9,300		State Highway Agency	Spot	Pedestrians	
W-5601AB	Intersection traffic control	Intersection traffic control - other	1	Intersections	$12929	$14365	HSIP (23 U.S.C. 148)			6,000		State Highway Agency	Spot	Intersections	
W-5601AC	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$1144800	$1272000	HSIP (23 U.S.C. 148)			3,500		State Highway Agency	Spot	Intersections	
W-5601AD	Intersection geometry	Splitter island - install on one or more approaches	2	Intersections	$43065	$47850	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Intersections	

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W-5601AM	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Approaches	$356102	$395668	HSIP (23 U.S.C. 148)			6,950		State Highway Agency	Spot	Intersections	
W-5601AQ	Pedestrians and bicyclists	Install new crosswalk	1	Intersections	$16506	$18340	HSIP (23 U.S.C. 148)			32,000		State Highway Agency	Spot	Pedestrians	
W-5601AT	Roadway	Superelevation / cross slope	2	Curves	$19305	$21450	HSIP (23 U.S.C. 148)			3,400		State Highway Agency	Spot	Lane Departure	
W-5601AZ	Roadway	Roadway narrowing (road diet, roadway reconfiguration)	1	Miles	$4707	$5230	HSIP (23 U.S.C. 148)			4,000		State Highway Agency	Spot	Lane Departure	
W-5601BC	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$152839	$169821	HSIP (23 U.S.C. 148)			10,000		State Highway Agency	Spot	Intersections	
W-5601BD	Access management	Median crossover - directional crossover	1	Intersections	$600	$666	HSIP (23 U.S.C. 148)			22,000		State Highway Agency	Spot	Intersections	
W-5601BK	Intersection geometry	Intersection geometry - other	1	Intersections	$368280	$409200	HSIP (23 U.S.C. 148)			3,900		State Highway Agency	Spot	Intersections	
W-5601BT	Roadside	Barrier- metal	0.4	Miles	$62794	$69771	HSIP (23 U.S.C. 148)			12,500		State Highway Agency	Spot	Lane Departure	
W-5601BW	Intersection geometry	Auxiliary lanes - add right-turn lane	1	Intersections	$1267	$1407	HSIP (23 U.S.C. 148)			13,000		State Highway Agency	Spot	Intersections	
W-5601C	Access management	Median crossover - directional crossover	1	Intersections	$4318	$4797	HSIP (23 U.S.C. 148)			8,500		State Highway Agency	Spot	Intersections	
W-5601CH	Intersection traffic control	Intersection traffic control - other	1	Intersections	$45681	$50756	HSIP (23 U.S.C. 148)			9,500		State Highway Agency	Spot	Intersections	
W-5601CO	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$6711	$7456	HSIP (23 U.S.C. 148)			12,250		State Highway Agency	Spot	Intersections	
W-5601CT	Intersection geometry	Intersection geometry - other	1	Intersections	$92259	$102510	HSIP (23 U.S.C. 148)			27,000		State Highway Agency	Spot	Intersections	
W-5601CZ	Intersection traffic control	Modify traffic signal - add additional signal heads	1	Intersections	$1971	$2190	HSIP (23 U.S.C. 148)			22,000		State Highway Agency	Spot	Intersections	

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W-5601DA	Access management	Median crossover - directional crossover	1	Intersections	$500	$555	HSIP (23 U.S.C. 148)			23,000		State Highway Agency	Spot	Intersections	
W-5601DE	Pedestrians and bicyclists	Install new crosswalk	0.3	Miles	$9279	$10310	HSIP (23 U.S.C. 148)			18,000		State Highway Agency	Spot	Pedestrians	
W-5601DG	Access management	Median crossover - close crossover	3	Crossovers	$509111	$565678	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Lane Departure	
W-5601DH	Pedestrians and bicyclists	Install new crosswalk	1	Intersections	$301500	$335000	HSIP (23 U.S.C. 148)			15,000		State Highway Agency	Spot	Pedestrians	
W-5601DI	Alignment	Horizontal curve realignment	1	Curves	$69730	$77477	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Lane Departure	
W-5601DN	Roadway	Superelevation / cross slope	2	Curves	$697500	$775000	HSIP (23 U.S.C. 148)			4,750		State Highway Agency	Spot	Lane Departure	
W-5601DQ	Access management	Median crossover - directional crossover	2	Crossovers	$562500	$625000	HSIP (23 U.S.C. 148)			14,000		State Highway Agency	Spot	Intersections	
W-5601DU	Roadside	Barrier- metal	2.5	Miles	$31500	$35000	HSIP (23 U.S.C. 148)			4,000		State Highway Agency	Spot	Lane Departure	
W-5601DZ	Access management	Median crossover - directional crossover	1	Intersections	$46413	$51570	HSIP (23 U.S.C. 148)			15,000		State Highway Agency	Spot	Intersections	
W-5601E	Intersection traffic control	Modify traffic signal - miscellaneous/other/unspecified	1	Intersections	$3164	$3515	HSIP (23 U.S.C. 148)			23,000		State Highway Agency	Spot	Intersections	
W-5601EA	Alignment	Horizontal curve realignment	1	Curves	$5479	$6087	HSIP (23 U.S.C. 148)			3,200		State Highway Agency	Spot	Lane Departure	
W-5601EF	Access management	Change in access - close or restrict existing access	1	Intersections	$90000	$100000	HSIP (23 U.S.C. 148)			31,000		State Highway Agency	Spot	Intersections	
W-5601EK	Roadway	Roadway widening - add lane(s) along segment	0.4	Miles	$174084	$193426	HSIP (23 U.S.C. 148)			11,000		State Highway Agency	Spot	Lane Departure	
W-5601ER	Intersection traffic control	Intersection flashers - add "when flashing" warning sign-mounted	1	Intersections	$6063	$6736	HSIP (23 U.S.C. 148)			2,600		State Highway Agency	Spot	Intersections	

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W-5601EV	Access management	Median crossover - directional crossover	2.4	Miles	$9340443	$10378270	HSIP (23 U.S.C. 148)			13,000		State Highway Agency	Spot	Intersections	
W-5601FC	Intersection traffic control	Intersection traffic control - other	1	Intersections	$337500	$375000	HSIP (23 U.S.C. 148)			18,000		State Highway Agency	Spot	Intersections	
W-5601FK	Intersection geometry	Auxiliary lanes - add left-turn lane	2	Intersections	$1058548	$1176164	HSIP (23 U.S.C. 148)			12,000		State Highway Agency	Spot	Intersections	
W-5601FM	Roadside	Barrier- metal	0.7	Miles	$69460	$77177	HSIP (23 U.S.C. 148)			3,300		State Highway Agency	Spot	Lane Departure	
W-5601FN	Intersection geometry	Auxiliary lanes - add left-turn lane	0.1	Miles	$497250	$552500	HSIP (23 U.S.C. 148)			13,000		State Highway Agency	Spot	Intersections	
W-5601FO	Intersection traffic control	Modify control - modifications to roundabout	1	Intersections	$1530000	$1700000	HSIP (23 U.S.C. 148)			4,200		State Highway Agency	Spot	Intersections	
W-5601FR	Roadside	Removal of roadside objects (trees, poles, etc.)	1	Intersections	$18377	$20418	HSIP (23 U.S.C. 148)			2,000		State Highway Agency	Spot	Intersections	
W-5601GC	Alignment	Vertical alignment or elevation change	1	Intersections	$91800	$102000	HSIP (23 U.S.C. 148)			3,400		State Highway Agency	Spot	Intersections	
W-5601HM	Intersection traffic control	Intersection flashers - add "when flashing" warning sign-mounted	1	Intersections	$171	$190	Penalty Funds (23 U.S.C. 164)			4,200		State Highway Agency	Spot	Intersections	
W-5601HP	Intersection geometry	Intersection geometrics - realignment to align offset cross streets	2	Intersections	$207000	$230000	HSIP (23 U.S.C. 148)			6,500		State Highway Agency	Spot	Intersections	
W-5601HQ	Intersection geometry	Auxiliary lanes - add right-turn lane	1	Intersections	$157500	$175000	HSIP (23 U.S.C. 148)			11,000		State Highway Agency	Spot	Intersections	
W-5601HS	Roadway delineation	Raised pavement markers	229	Miles	$5570	$6188	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5601HZ	Roadside	Barrier end treatments (crash cushions, terminals)	5	Numbers	$390353	$433725	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5601IC	Roadside	Barrier end treatments (crash cushions, terminals)	3	Numbers	$34998	$38886	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	

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W-5601IJ	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$405000	$450000	HSIP (23 U.S.C. 148)			10,000		State Highway Agency	Spot	Intersections	
W-5601IK	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$19674	$21860	HSIP (23 U.S.C. 148)			35,000		State Highway Agency	Spot	Intersections	
W-5601IN	Access management	Median crossover - directional crossover	0.5	Miles	$270000	$300000	HSIP (23 U.S.C. 148)			22,000		State Highway Agency	Spot	Intersections	
W-5601J	Pedestrians and bicyclists	Pedestrian signal - install new at intersection	4	Intersections	$30852	$34280	HSIP (23 U.S.C. 148)			32,000		State Highway Agency	Spot	Pedestrians	
W-5601O	Access management	Median crossover - directional crossover	1	Intersections	$18477	$20530	HSIP (23 U.S.C. 148)			23,000		State Highway Agency	Spot	Intersections	
W-5601P	Access management	Median crossover - directional crossover	1	Intersections	$21474	$23860	HSIP (23 U.S.C. 148)			24,000		State Highway Agency	Spot	Intersections	
W-5601Q	Intersection geometry	Intersection geometry - other	2	Intersections	$855000	$950000	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Intersections	
W-5602	Roadway	Roadway widening - add lane(s) along segment	11	Miles	$6241287	$6934763	HSIP (23 U.S.C. 148)			11,100		State Highway Agency	Spot	Lane Departure	
W-5700	Intersection traffic control	Modify traffic signal timing - general retiming	99	Intersections	$1350000	$1500000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Intersections	
W-5701B	Access management	Median crossover - directional crossover	6	Crossovers	$180000	$200000	HSIP (23 U.S.C. 148)			4,700		State Highway Agency	Spot	Intersections	
W-5701C	Alignment	Horizontal curve realignment	0.8	Miles	$117000	$130000	HSIP (23 U.S.C. 148)			2,000		State Highway Agency	Spot	Lane Departure	
W-5701D	Access management	Median crossover - directional crossover	1	Intersections	$108000	$120000	HSIP (23 U.S.C. 148)			17,000		State Highway Agency	Spot	Intersections	
W-5701E	Intersection geometry	Intersection geometrics - modify skew angle	1	Intersections	$82800	$92000	HSIP (23 U.S.C. 148)			3,000		State Highway Agency	Spot	Intersections	
W-5701G	Roadside	Barrier end treatments (crash cushions, terminals)	1	Numbers	$6750	$7500	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	

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W-5701H	Intersection geometry	Intersection geometrics - realignment to increase cross street offset	1	Intersections	$94500	$105000	HSIP (23 U.S.C. 148)			4,100		State Highway Agency	Spot	Intersections	
W-5702A	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$73763	$81958	HSIP (23 U.S.C. 148)			6,050		State Highway Agency	Spot	Intersections	
W-5702C	Intersection geometry	Auxiliary lanes - add left-turn lane	2	Curves	$526500	$585000	HSIP (23 U.S.C. 148)			1,400		State Highway Agency	Spot	Lane Departure	
W-5702E	Intersection traffic control	Intersection flashers - add "when flashing" warning sign-mounted	3	Intersections	$639000	$710000	HSIP (23 U.S.C. 148)			28,000		State Highway Agency	Spot	Intersections	
W-5702G	Access management	Raised island - install new	0.8	Miles	$99000	$110000	HSIP (23 U.S.C. 148)			12,000		State Highway Agency	Spot	Intersections	
W-5702I	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$157500	$175000	HSIP (23 U.S.C. 148)			9,700		State Highway Agency	Spot	Intersections	
W-5702J	Roadway delineation	Longitudinal pavement markings - new	0.5	Miles	$49500	$55000	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Roadway Departure	
W-5702K	Intersection traffic control	Intersection flashers - add "when flashing" warning sign-mounted	1	Signal heads	$88200	$98000	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Intersections	
W-5702L	Roadway	Superelevation / cross slope	2	Curves	$193500	$215000	HSIP (23 U.S.C. 148)			3,400		State Highway Agency	Spot	Lane Departure	
W-5702M	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$335700	$373000	HSIP (23 U.S.C. 148)			7,800		State Highway Agency	Spot	Intersections	
W-5702N	Access management	Median crossover - directional crossover	1	Intersections	$744300	$827000	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Intersections	
W-5702O	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	3	Approaches	$13500	$15000	HSIP (23 U.S.C. 148)			17,000		State Highway Agency	Spot	Intersections	
W-5702P	Roadway delineation	Improve retroreflectivity	646.8	Miles	$10209986	$11344428	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Lane Departure	
W-5702Q	Intersection traffic control	Intersection signing - add enhanced regulatory sign (double-up and/or oversize)	1	Signs	$1800	$2000	HSIP (23 U.S.C. 148)			6,800		State Highway Agency	Spot	Intersections	

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W-5702R	Access management	Raised island - install new	0.7	Miles	$245790	$273100	HSIP (23 U.S.C. 148)			13,000		State Highway Agency	Spot	Intersections	
W-5702S	Access management	Change in access - close or restrict existing access	1	Intersections	$45000	$50000	HSIP (23 U.S.C. 148)			23,000		State Highway Agency	Spot	Intersections	
W-5702T	Roadside	Barrier end treatments (crash cushions, terminals)	2	Numbers	$4500	$5000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5703C	Pedestrians and bicyclists	Install sidewalk	0.8	Miles	$373500	$415000	HSIP (23 U.S.C. 148)			29,000		State Highway Agency	Spot	Pedestrians	
W-5703I	Intersection traffic control	Intersection flashers - add "when flashing" warning sign-mounted	1	Intersections	$89100	$99000	HSIP (23 U.S.C. 148)			7,900		State Highway Agency	Spot	Intersections	
W-5703J	Pedestrians and bicyclists	Modify existing crosswalk	1	Intersections	$4500	$5000	HSIP (23 U.S.C. 148)			22,000		State Highway Agency	Spot	Pedestrians	
W-5703K	Intersection traffic control	Modify traffic signal - add additional signal heads	1	Intersections	$60300	$67000	HSIP (23 U.S.C. 148)			39,000		State Highway Agency	Spot	Intersections	
W-5703L	Intersection traffic control	Modify traffic signal - add backplates	1	Intersections	$13500	$15000	HSIP (23 U.S.C. 148)			44,000		State Highway Agency	Spot	Intersections	
W-5703M	Pedestrians and bicyclists	Pedestrian signal - audible device	1	Intersections	$23400	$26000	HSIP (23 U.S.C. 148)			12,000		State Highway Agency	Spot	Pedestrians	
W-5703N	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	1	Intersections	$6300	$7000	HSIP (23 U.S.C. 148)			17,000		State Highway Agency	Spot	Intersections	
W-5703O	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	1	Intersections	$3150	$3500	HSIP (23 U.S.C. 148)			56,000		State Highway Agency	Spot	Intersections	
W-5703P	Intersection traffic control	Modify traffic signal - add backplates	1	Intersections	$1800	$2000	HSIP (23 U.S.C. 148)			45,000		State Highway Agency	Spot	Intersections	
W-5703Q	Intersection geometry	Intersection geometry - other	2	Intersections	$247500	$275000	HSIP (23 U.S.C. 148)			4,350		State Highway Agency	Spot	Intersections	
W-5703R	Intersection geometry	Auxiliary lanes - modify left-turn lane offset	1	Intersections	$100800	$112000	HSIP (23 U.S.C. 148)			36,000		State Highway Agency	Spot	Intersections	

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W-5704AA	Roadside	Barrier end treatments (crash cushions, terminals)	185	Numbers	$2700	$3000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5704C	Intersection traffic control	Modify traffic signal - add additional signal heads	4	Approaches	$500	$555	HSIP (23 U.S.C. 148)			10,000		State Highway Agency	Spot	Intersections	
W-5704D	Roadway delineation	Longitudinal pavement markings - new	14.7	Miles	$90000	$100000	HSIP (23 U.S.C. 148)			2,300		State Highway Agency	Spot	Lane Departure	
W-5704E	Roadway	Roadway widening - add lane(s) along segment	1	Miles	$882180	$980200	HSIP (23 U.S.C. 148)			8,400		State Highway Agency	Spot	Lane Departure	
W-5704F	Intersection geometry	Auxiliary lanes - add left-turn lane	2	Intersections	$227176	$252417	HSIP (23 U.S.C. 148)			7,900		State Highway Agency	Spot	Intersections	
W-5704G	Intersection traffic control	Modify control - all-way stop to roundabout	1	Intersections	$186300	$207000	HSIP (23 U.S.C. 148)			7,033		State Highway Agency	Spot	Intersections	
W-5704H	Intersection traffic control	Modify control - traffic signal to roundabout	1	Intersections	$30600	$34000	HSIP (23 U.S.C. 148)			10,000		State Highway Agency	Spot	Intersections	
W-5704I	Roadside	Barrier end treatments (crash cushions, terminals)	2	Bridge	$164700	$183000	HSIP (23 U.S.C. 148)			1,300		State Highway Agency	Spot	Lane Departure	
W-5704J	Roadway delineation	Longitudinal pavement markings - remarking	209.2	Miles	$2070000	$2300000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5704K	Roadway	Superelevation / cross slope	1	Curves	$70200	$78000	HSIP (23 U.S.C. 148)			5,300		State Highway Agency	Spot	Lane Departure	
W-5704L	Intersection geometry	Intersection geometrics - modify intersection corner radius	1	Intersections	$72000	$80000	HSIP (23 U.S.C. 148)			13,500		State Highway Agency	Spot	Intersections	
W-5704M	Intersection traffic control	Modify control - two-way stop to all-way stop	1	Intersections	$14400	$16000	HSIP (23 U.S.C. 148)			3,800		State Highway Agency	Spot	Intersections	
W-5704N	Intersection geometry	Intersection geometrics - modify skew angle	1	Intersections	$92700	$103000	HSIP (23 U.S.C. 148)			2,150		State Highway Agency	Spot	Intersections	
W-5704O	Pedestrians and bicyclists	Pedestrian signal - install new at intersection	1	Intersections	$4500	$5000	HSIP (23 U.S.C. 148)			31,000		State Highway Agency	Spot	Pedestrians	

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
W-5704P	Roadside	Barrier end treatments (crash cushions, terminals)	71	Numbers	$225000	$250000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5704Q	Roadside	Barrier end treatments (crash cushions, terminals)	71	Numbers	$225000	$250000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5704R	Roadside	Barrier end treatments (crash cushions, terminals)	71	Numbers	$225000	$250000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5704S	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$225000	$250000	HSIP (23 U.S.C. 148)			6,000		State Highway Agency	Spot	Intersections	
W-5704T	Roadside	Barrier end treatments (crash cushions, terminals)	8.1	Miles	$162900	$181000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5704U	Roadside	Barrier end treatments (crash cushions, terminals)	10	Miles	$207900	$231000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5704V	Roadside	Barrier end treatments (crash cushions, terminals)	11.4	Miles	$216900	$241000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5704W	Roadway	Pavement surface - high friction surface	1.4	Miles	$18000	$20000	HSIP (23 U.S.C. 148)			9,600		State Highway Agency	Spot	Lane Departure	
W-5704X	Roadside	Barrier end treatments (crash cushions, terminals)	30.5	Miles	$536400	$596000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5704Y	Roadside	Barrier end treatments (crash cushions, terminals)	2	Numbers	$27000	$30000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5704Z	Roadway delineation	Longitudinal pavement markings - remarking	337.3	Miles	$5256000	$5840000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Lane Departure	
W-5705AA	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	1	Intersections	$2700	$3000	HSIP (23 U.S.C. 148)			23,000		State Highway Agency	Spot	Intersections	
W-5705AB	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	1	Intersections	$2700	$3000	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Intersections	
W-5705AC	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	1	Intersections	$2700	$3000	HSIP (23 U.S.C. 148)			29,000		State Highway Agency	Spot	Intersections	

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
W-5705AD	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	1	Intersections	$2700	$3000	HSIP (23 U.S.C. 148)			11,000		State Highway Agency	Spot	Intersections	
W-5705AE	Access management	Median crossover - directional crossover	1	Intersections	$10800	$12000	HSIP (23 U.S.C. 148)			70,215		State Highway Agency	Spot	Intersections	
W-5705AF	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	1	Intersections	$2700	$3000	HSIP (23 U.S.C. 148)			5,750		State Highway Agency	Spot	Intersections	
W-5705AG	Intersection traffic control	Modify traffic signal - miscellaneous/other/unspecified	1	Intersections	$2700	$3000	HSIP (23 U.S.C. 148)			15,000		State Highway Agency	Spot	Intersections	
W-5705AH	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	1	Intersections	$2700	$3000	HSIP (23 U.S.C. 148)			15,000		State Highway Agency	Spot	Intersections	
W-5705AI	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$157500	$175000	HSIP (23 U.S.C. 148)			14,000		State Highway Agency	Spot	Intersections	
W-5705AJ	Roadside	Barrier- metal	0.2	Miles	$1800	$2000	HSIP (23 U.S.C. 148)			9,300		State Highway Agency	Spot	Lane Departure	
W-5705C	Lighting	Intersection lighting	4	Intersections	$13500	$15000	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Intersections	
W-5705E	Intersection geometry	Auxiliary lanes - add right-turn lane	1	Intersections	$55800	$62000	HSIP (23 U.S.C. 148)			11,000		State Highway Agency	Spot	Intersections	
W-5705G	Intersection geometry	Intersection geometrics - modify skew angle	1	Intersections	$51300	$57000	HSIP (23 U.S.C. 148)			9,100		State Highway Agency	Spot	Intersections	
W-5705H	Alignment	Horizontal curve realignment	0.2	Miles	$81000	$90000	HSIP (23 U.S.C. 148)			2,100		State Highway Agency	Spot	Lane Departure	
W-5705I	Intersection traffic control	Intersection traffic control - other	1	Intersections	$500	$555	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Intersections	
W-5705M	Roadway signs and traffic control	Roadway signs and traffic control - other	0.3	Miles	$72000	$80000	HSIP (23 U.S.C. 148)			154,000		State Highway Agency	Systemic	Lane Departure	
W-5705O	Intersection traffic control	Intersection traffic control - other	1	Intersections	$112500	$125000	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Intersections	

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W-5705P	Intersection traffic control	Intersection traffic control - other	1	Intersections	$45000	$50000	HSIP (23 U.S.C. 148)			25,000		State Highway Agency	Spot	Intersections	
W-5705Q	Intersection traffic control	Intersection traffic control - other	1	Intersections	$180000	$200000	HSIP (23 U.S.C. 148)			34,000		State Highway Agency	Spot	Intersections	
W-5705R	Intersection traffic control	Intersection traffic control - other	1	Intersections	$117000	$130000	HSIP (23 U.S.C. 148)			18,000		State Highway Agency	Spot	Intersections	
W-5705S	Interchange design	Acceleration / deceleration / merge lane	0.2	Miles	$99000	$110000	HSIP (23 U.S.C. 148)			64,000		State Highway Agency	Spot	Lane Departure	
W-5705T	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$184500	$205000	HSIP (23 U.S.C. 148)			9,000		State Highway Agency	Spot	Lane Departure	
W-5705U	Pedestrians and bicyclists	Modify existing crosswalk	1	Crosswalks	$4500	$5000	HSIP (23 U.S.C. 148)			5,600		State Highway Agency	Spot	Pedestrians	
W-5705V	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	1	Intersections	$2700	$3000	HSIP (23 U.S.C. 148)			46,000		State Highway Agency	Spot	Intersections	
W-5705W	Roadway	Superelevation / cross slope	0.1	Miles	$69300	$77000	HSIP (23 U.S.C. 148)			9,800		State Highway Agency	Spot	Lane Departure	
W-5705X	Roadway delineation	Longitudinal pavement markings - remarking	99	Miles	$1172700	$1303000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5705Y	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Miles	$22500	$25000	HSIP (23 U.S.C. 148)			32,000		State Highway Agency	Spot	Intersections	
W-5705Z	Roadside	Barrier end treatments (crash cushions, terminals)	55	Numbers	$625500	$695000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5706A	Access management	Raised island - install new	0.9	Miles	$1207800	$1342000	HSIP (23 U.S.C. 148)			38,600		State Highway Agency	Spot	Intersections	
W-5706AA	Intersection geometry	Intersection geometrics - modify skew angle	1	Intersections	$540000	$600000	HSIP (23 U.S.C. 148)			6,200		State Highway Agency	Spot	Intersections	
W-5706C	Intersection traffic control	Modify control - modifications to roundabout	1	Intersections	$1800000	$2000000	HSIP (23 U.S.C. 148)			5,000		State Highway Agency	Spot	Intersections	

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W-5706D	Intersection traffic control	Intersection traffic control - other	1	Intersections	$157500	$175000	HSIP (23 U.S.C. 148)			35,000		State Highway Agency	Spot	Intersections	
W-5706E	Intersection geometry	Auxiliary lanes - add left-turn lane	2	Approaches	$598500	$665000	HSIP (23 U.S.C. 148)			7,900		State Highway Agency	Spot	Intersections	
W-5706M	Roadway delineation	Improve retroreflectivity	99	Miles	$2250000	$2500000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5706N	Intersection traffic control	Modify control - traffic signal to roundabout	1	Intersections	$369000	$410000	HSIP (23 U.S.C. 148)			5,700		State Highway Agency	Spot	Intersections	
W-5706O	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$126000	$140000	HSIP (23 U.S.C. 148)			6,400		State Highway Agency	Spot	Intersections	
W-5706P	Roadway delineation	Improve retroreflectivity	99	Miles	$1890000	$2100000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Lane Departure	
W-5706Q	Roadway	Rumble strips - edge or shoulder	16.6	Miles	$640800	$712000	HSIP (23 U.S.C. 148)			6,700		State Highway Agency	Spot	Lane Departure	
W-5706R	Pedestrians and bicyclists	Install new crosswalk	1	Crosswalks	$315000	$350000	HSIP (23 U.S.C. 148)			9,600		State Highway Agency	Systemic	Pedestrians	
W-5706S	Access management	Median crossover - directional crossover	2.1	Miles	$225000	$250000	HSIP (23 U.S.C. 148)			14,000		State Highway Agency	Spot	Intersections	
W-5706T	Roadway	Rumble strips - unspecified or other	19.3	Miles	$793800	$882000	HSIP (23 U.S.C. 148)			3,200		State Highway Agency	Spot	Lane Departure	
W-5706U	Intersection traffic control	Modify traffic signal - miscellaneous/other/unspecified	1	Intersections	$9000	$10000	HSIP (23 U.S.C. 148)			25,000		State Highway Agency	Spot	Intersections	
W-5707E	Intersection traffic control	Intersection traffic control - other	1	Intersections	$40500	$45000	HSIP (23 U.S.C. 148)			9,000		State Highway Agency	Spot	Intersections	
W-5707G	Intersection traffic control	Intersection traffic control - other	1	Intersections	$82800	$92000	HSIP (23 U.S.C. 148)			4,300		State Highway Agency	Spot	Intersections	
W-5707I	Roadside	Barrier- metal	1.1	Miles	$216000	$240000	HSIP (23 U.S.C. 148)			11,500		State Highway Agency	Systemic	Lane Departure	

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W-5707J	Roadside	Barrier- metal	1	Miles	$216000	$240000	HSIP (23 U.S.C. 148)			15,000		State Highway Agency	Systemic	Lane Departure	
W-5707K	Pedestrians and bicyclists	Miscellaneous pedestrians and bicyclists	2	Intersections	$90000	$100000	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Pedestrians	
W-5707L	Roadway delineation	Longitudinal pavement markings - remarking	379.3	Miles	$2169000	$2410000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5708A	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$1422000	$1580000	HSIP (23 U.S.C. 148)			4,700		State Highway Agency	Spot	Intersections	
W-5708B	Access management	Median crossover - directional crossover	2	Intersections	$36000	$40000	HSIP (23 U.S.C. 148)			14,000		State Highway Agency	Spot	Intersections	
W-5708D	Intersection geometry	Auxiliary lanes - add left-turn lane	0.1	Miles	$482400	$536000	HSIP (23 U.S.C. 148)			6,700		State Highway Agency	Spot	Intersections	
W-5708G	Access management	Median crossover - directional crossover	2	Intersections	$108450	$120500	HSIP (23 U.S.C. 148)			21,000		State Highway Agency	Spot	Intersections	
W-5708I	Roadway delineation	Longitudinal pavement markings - remarking	66	Miles	$852300	$947000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5708J	Intersection traffic control	Intersection traffic control - other	1	Intersections	$4500	$5000	HSIP (23 U.S.C. 148)			4,760		State Highway Agency	Spot	Intersections	
W-5708K	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	2	Intersections	$5400	$6000	HSIP (23 U.S.C. 148)			36,600		State Highway Agency	Spot	Intersections	
W-5708L	Roadway	Roadway widening - add lane(s) along segment	0.4	Miles	$37800	$42000	HSIP (23 U.S.C. 148)			15,000		State Highway Agency	Spot	Intersections	
W-5709C	Intersection geometry	Auxiliary lanes - add left-turn lane	2	Approaches	$450000	$500000	HSIP (23 U.S.C. 148)			8,400		State Highway Agency	Spot	Intersections	
W-5709E	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$495000	$550000	HSIP (23 U.S.C. 148)			5,800		State Highway Agency	Spot	Intersections	
W-5709F	Intersection geometry	Intersection geometrics - modify skew angle	1	Intersections	$180000	$200000	HSIP (23 U.S.C. 148)			4,600		State Highway Agency	Spot	Intersections	

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W-5709G	Roadside	Barrier end treatments (crash cushions, terminals)	41	Numbers	$4500	$5000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5709H	Access management	Median crossover - directional crossover	1	Intersections	$90000	$100000	HSIP (23 U.S.C. 148)			34,000		State Highway Agency	Spot	Intersections	
W-5709I	Roadway delineation	Longitudinal pavement markings - remarking	357.5	Miles	$2700900	$3001000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5710A	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$1721	$1912	HSIP (23 U.S.C. 148)			12,000		State Highway Agency	Spot	Intersections	
W-5710AD	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$67500	$75000	HSIP (23 U.S.C. 148)			1,400		State Highway Agency	Spot	Intersections	
W-5710AE	Roadside	Barrier end treatments (crash cushions, terminals)	70	Numbers	$239066	$265628	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5710AF	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$270000	$300000	HSIP (23 U.S.C. 148)			3,300		State Highway Agency	Spot	Intersections	
W-5710AG	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$135000	$150000	HSIP (23 U.S.C. 148)			1,800		State Highway Agency	Spot	Intersections	
W-5710AH	Intersection traffic control	Modify control - two-way stop to roundabout	2	Intersections	$157500	$175000	HSIP (23 U.S.C. 148)			3,500		State Highway Agency	Spot	Intersections	
W-5710AI	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$135000	$150000	HSIP (23 U.S.C. 148)			7,900		State Highway Agency	Spot	Intersections	
W-5710AJ	Access management	Median crossover - directional crossover	1	Intersections	$45000	$50000	HSIP (23 U.S.C. 148)			17,000		State Highway Agency	Spot	Intersections	
W-5710AK	Access management	Median crossover - directional crossover	0.9	Miles	$90000	$100000	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Intersections	
W-5710AL	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$67500	$75000	HSIP (23 U.S.C. 148)			3,400		State Highway Agency	Spot	Intersections	
W-5710AM	Intersection traffic control	Modify control - all-way stop to roundabout	1	Intersections	$76500	$85000	HSIP (23 U.S.C. 148)			2,200		State Highway Agency	Spot	Intersections	

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W-5710AN	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$58500	$65000	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Intersections	
W-5710AO	Intersection traffic control	Modify control - modifications to roundabout	1	Intersections	$76500	$85000	HSIP (23 U.S.C. 148)			10,500		State Highway Agency	Spot	Intersections	
W-5710D	Access management	Median crossover - directional crossover	1	Intersections	$2286	$2540	HSIP (23 U.S.C. 148)			13,000		State Highway Agency	Spot	Intersections	
W-5710F	Intersection traffic control	Intersection traffic control - other	1	Intersections	$225000	$250000	HSIP (23 U.S.C. 148)			15,000		State Highway Agency	Spot	Intersections	
W-5710G (A&B)	Roadway	Rumble strips - edge or shoulder	7.9	Miles	$1245150	$1383500	HSIP (23 U.S.C. 148)			7,500		State Highway Agency	Spot	Lane Departure	
W-5710H	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$1057500	$1175000	HSIP (23 U.S.C. 148)			9,000		State Highway Agency	Spot	Intersections	
W-5710K	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$832500	$925000	HSIP (23 U.S.C. 148)			3,900		State Highway Agency	Spot	Intersections	
W-5710L	Intersection traffic control	Intersection traffic control - other	1	Intersections	$90000	$100000	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Intersections	
W-5710M	Roadway	Rumble strips - edge or shoulder	2.3	Miles	$2097	$2330	HSIP (23 U.S.C. 148)			11,000		State Highway Agency	Systemic	Lane Departure	
W-5710N	Roadway	Rumble strips - edge or shoulder	16.3	Miles	$3852	$4280	HSIP (23 U.S.C. 148)			6,700		State Highway Agency	Systemic	Lane Departure	
W-5710P	Access management	Median crossover - directional crossover	1	Intersections	$492022	$546691	HSIP (23 U.S.C. 148)			29,000		State Highway Agency	Spot	Intersections	
W-5710Q	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$855000	$950000	HSIP (23 U.S.C. 148)			5,300		State Highway Agency	Spot	Intersections	
W-5710R	Access management	Raised island - install new	1.1	Miles	$540000	$600000	HSIP (23 U.S.C. 148)			35,000		State Highway Agency	Spot	Intersections	
W-5710S	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$45000	$50000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	

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W-5710T	Pedestrians and bicyclists	Medians and pedestrian refuge areas	1	Crosswalks	$27000	$30000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Pedestrians	
W-5710U	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$90000	$100000	HSIP (23 U.S.C. 148)			7,300		State Highway Agency	Spot	Intersections	
W-5710X	Intersection traffic control	Modify control - two-way stop to roundabout	2	Intersections	$180000	$200000	HSIP (23 U.S.C. 148)			9,400		State Highway Agency	Spot	Intersections	
W-5710Y	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$135000	$150000	HSIP (23 U.S.C. 148)			6,500		State Highway Agency	Spot	Intersections	
W-5710Z	Intersection traffic control	Modify control - traffic signal to roundabout	2	Intersections	$112500	$125000	HSIP (23 U.S.C. 148)			4,200		State Highway Agency	Spot	Intersections	
W-5711B	Roadway delineation	Longitudinal pavement markings - remarking	128.4	Miles	$652500	$725000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5712A	Intersection traffic control	Modify control - two-way stop to roundabout	3	Intersections	$945000	$1050000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5712B	Intersection traffic control	Intersection traffic control - other	1	Intersections	$882000	$980000	HSIP (23 U.S.C. 148)			4,700		State Highway Agency	Spot	Intersections	
W-5712C	Roadside	Barrier- metal	64	Numbers	$21209	$23565	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5712H	Intersection traffic control	Intersection traffic control - other	1	Intersections	$27000	$30000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5712K	Intersection geometry	Auxiliary lanes - add auxiliary through lane	1	Intersections	$13500	$15000	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Lane Departure	
W-5712L	Intersection traffic control	Modify traffic signal - add backplates with retroreflective borders	1	Intersections	$13500	$15000	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Intersections	
W-5712M	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	1	Intersections	$4500	$5000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5712N	Roadway delineation	Longitudinal pavement markings - new	26.1	Miles	$630900	$701000	HSIP (23 U.S.C. 148)			3,300		State Highway Agency	Spot	Lane Departure	

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
W-5712O	Roadway delineation	Longitudinal pavement markings - new	19.1	Miles	$459900	$511000	HSIP (23 U.S.C. 148)			3,100		State Highway Agency	Spot	Lane Departure	
W-5712P	Roadside	Barrier end treatments (crash cushions, terminals)	38	Numbers	$225900	$251000	HSIP (23 U.S.C. 148)			47,000		State Highway Agency	Systemic	Lane Departure	
W-5712Q	Intersection traffic control	Modify traffic signal - add flashing yellow arrow	2	Signal heads	$4500	$5000	HSIP (23 U.S.C. 148)			18,000		State Highway Agency	Spot	Intersections	
W-5712R	Intersection geometry	Intersection geometrics - realignment to increase cross street offset	1	Intersections	$90000	$100000	HSIP (23 U.S.C. 148)			3,000		State Highway Agency	Spot	Intersections	
W-5712S	Pedestrians and bicyclists	Install new crosswalk	1	Crosswalks	$16200	$18000	HSIP (23 U.S.C. 148)			19,000		State Highway Agency	Spot	Pedestrians	
W-5712T	Pedestrians and bicyclists	Install new crosswalk	1	Crosswalks	$9000	$10000	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Pedestrians	
W-5712U	Roadside	Barrier- metal	1.9	Miles	$29700	$33000	HSIP (23 U.S.C. 148)			8,800		State Highway Agency	Spot	Lane Departure	
W-5712V	Intersection geometry	Auxiliary lanes - modify left-turn lane offset	1	Intersections	$22500	$25000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5712W	Roadside	Barrier- metal	44	Numbers	$225900	$251000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5712X	Intersection traffic control	Intersection traffic control - other	1	Intersections	$3600	$4000	HSIP (23 U.S.C. 148)			5,200		State Highway Agency	Spot	Intersections	
W-5713E	Roadside	Barrier end treatments (crash cushions, terminals)	137	Numbers	$500	$555	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5713P	Roadside	Barrier- metal	0.7	Miles	$189000	$210000	HSIP (23 U.S.C. 148)			10,700		State Highway Agency	Spot	Lane Departure	
W-5713Q	Roadside	Barrier- metal	0.4	Miles	$103500	$115000	HSIP (23 U.S.C. 148)			2,800		State Highway Agency	Spot	Lane Departure	
W-5713R	Roadside	Barrier- metal	2.9	Miles	$738000	$820000	HSIP (23 U.S.C. 148)			3,200		State Highway Agency	Spot	Lane Departure	

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
W-5713S	Roadside	Barrier- metal	2.4	Miles	$55800	$62000	HSIP (23 U.S.C. 148)			1,700		State Highway Agency	Spot	Lane Departure	
W-5714C	Roadside	Barrier- metal	0.6	Miles	$500	$555	HSIP (23 U.S.C. 148)			785		State Highway Agency	Spot	Lane Departure	
W-5714E	Alignment	Horizontal curve realignment	1	Curves	$418500	$465000	HSIP (23 U.S.C. 148)			2,500		State Highway Agency	Spot	Lane Departure	
W-5714G	Roadway delineation	Longitudinal pavement markings - remarking	46	Miles	$459000	$510000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Lane Departure	
W-5714H	Roadside	Barrier- metal	0.5	Miles	$144000	$160000	HSIP (23 U.S.C. 148)			410		State Highway Agency	Spot	Lane Departure	
W-5714I	Roadway	Pavement surface - high friction surface	0.5	Miles	$261000	$290000	HSIP (23 U.S.C. 148)			22,000		State Highway Agency	Spot	Lane Departure	
W-5714J	Intersection traffic control	Intersection flashers - add stop sign-mounted	2	Approaches	$18900	$21000	HSIP (23 U.S.C. 148)			9,100		State Highway Agency	Spot	Intersections	
W-5714K	Roadway	Rumble strips - center	10.4	Miles	$4500	$5000	HSIP (23 U.S.C. 148)			3,300		State Highway Agency	Spot	Lane Departure	
W-5714L	Roadway delineation	Longitudinal pavement markings - remarking	163.5	Miles	$1612800	$1792000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Lane Departure	
W-5714M	Pedestrians and bicyclists	Pedestrian signal - install new at intersection	1	Intersections	$9000	$10000	HSIP (23 U.S.C. 148)			12,500		State Highway Agency	Spot	Pedestrians	
W-5714N	Roadway	Pavement surface - high friction surface	2.2	Miles	$18000	$20000	HSIP (23 U.S.C. 148)			14,000		State Highway Agency	Spot	Lane Departure	
Z-5400EE	Railroad grade crossings	Railroad grade crossing gates	1	Rail Crossing	$1726	$1917	HSIP (23 U.S.C. 148)			7,800		State Highway Agency	Spot	Intersections	
Z-5400FE	Railroad grade crossings	Surface treatment	1	Rail Crossing	$1673	$1858	HSIP (23 U.S.C. 148)			2,200		State Highway Agency	Spot	Lane Departure	
Z-5700FF	Railroad grade crossings	Upgrade railroad crossing signal	1	Rail Crossing	$421200	$468000	HSIP (23 U.S.C. 148)			3,569		State Highway Agency	Spot	Intersections	

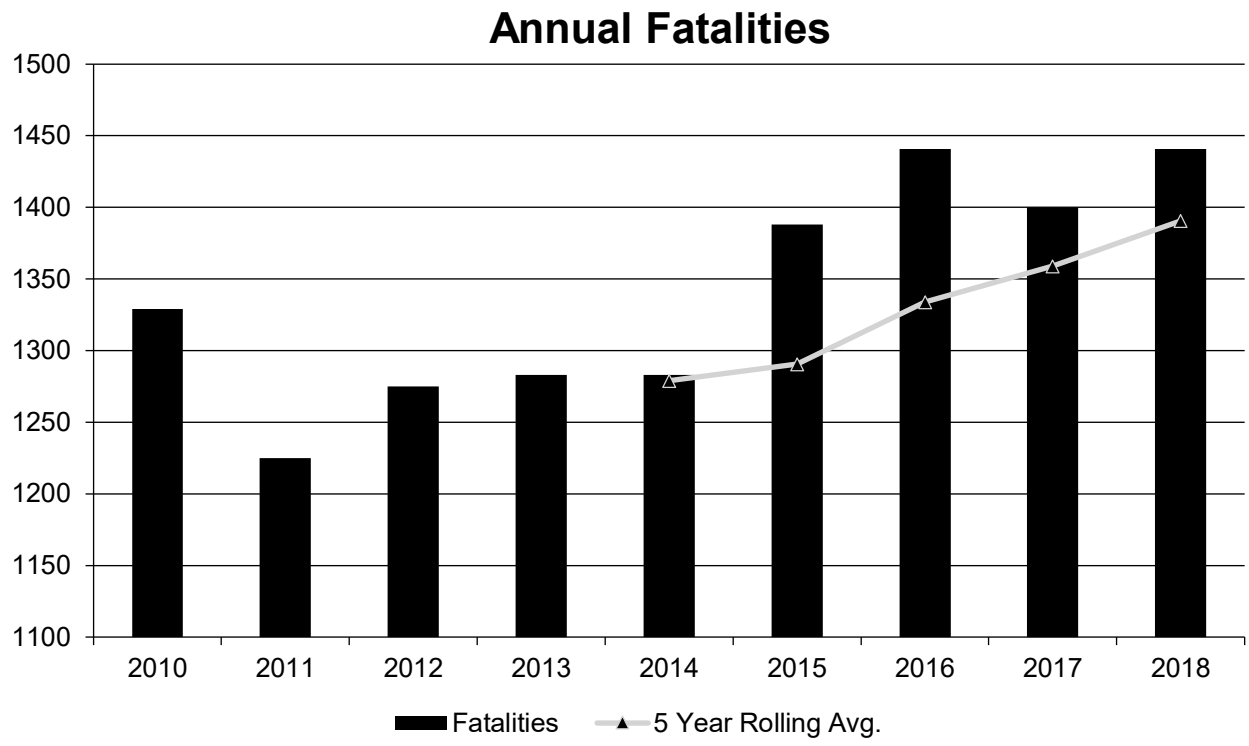
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Z-5700NA	Railroad grade crossings	Protective devices	1	Rail Crossing	$180900	$201000	HSIP (23 U.S.C. 148)			135		State Highway Agency	Spot	Intersections	

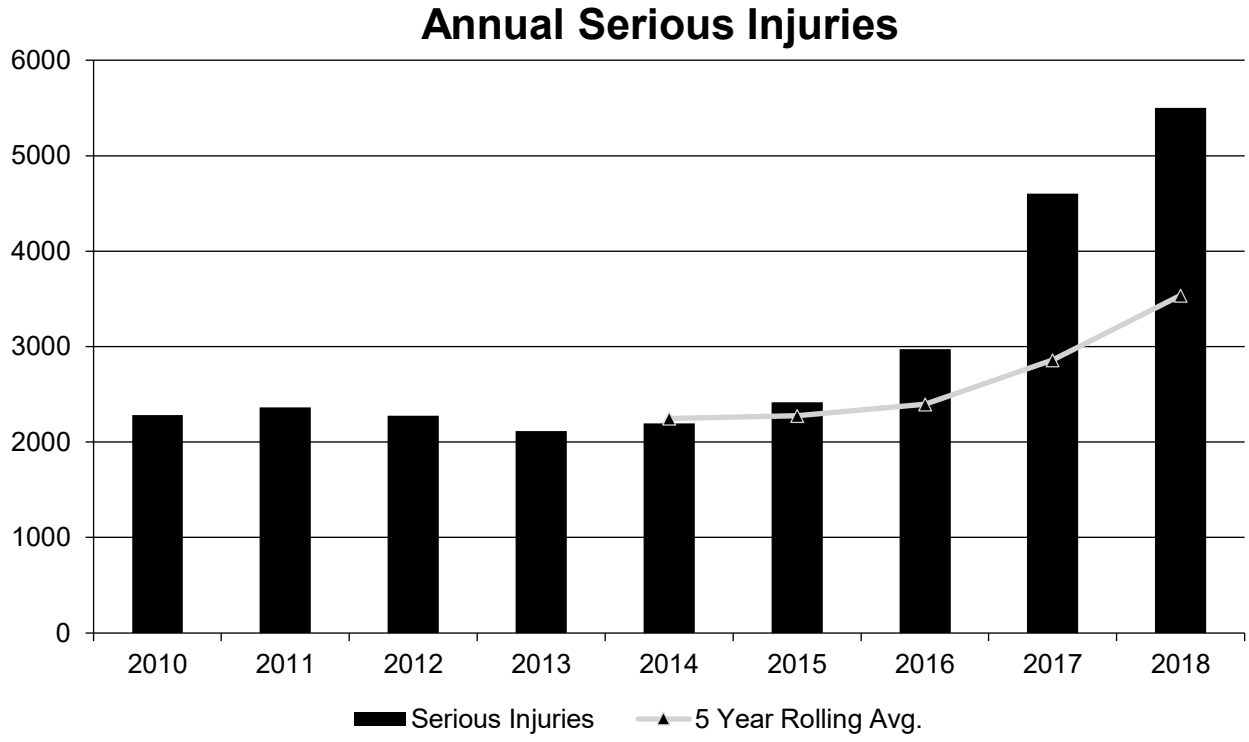
Safety Performance

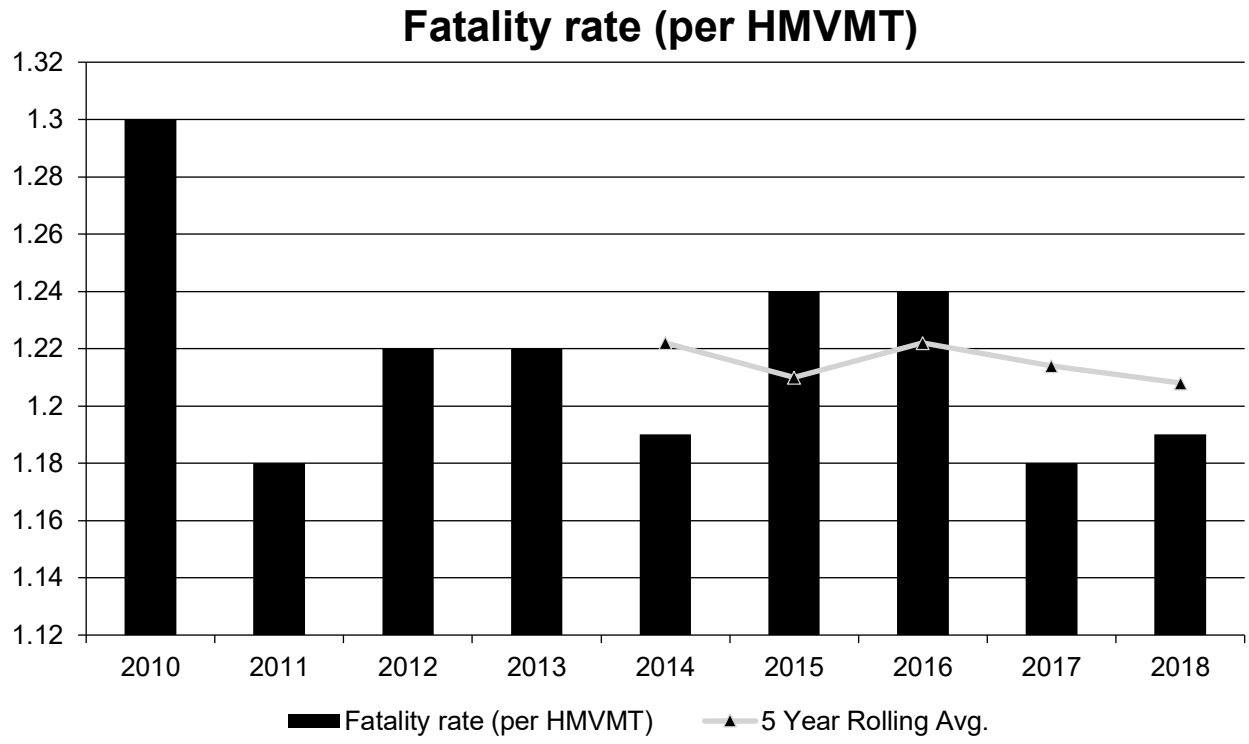
General Highway Safety Trends

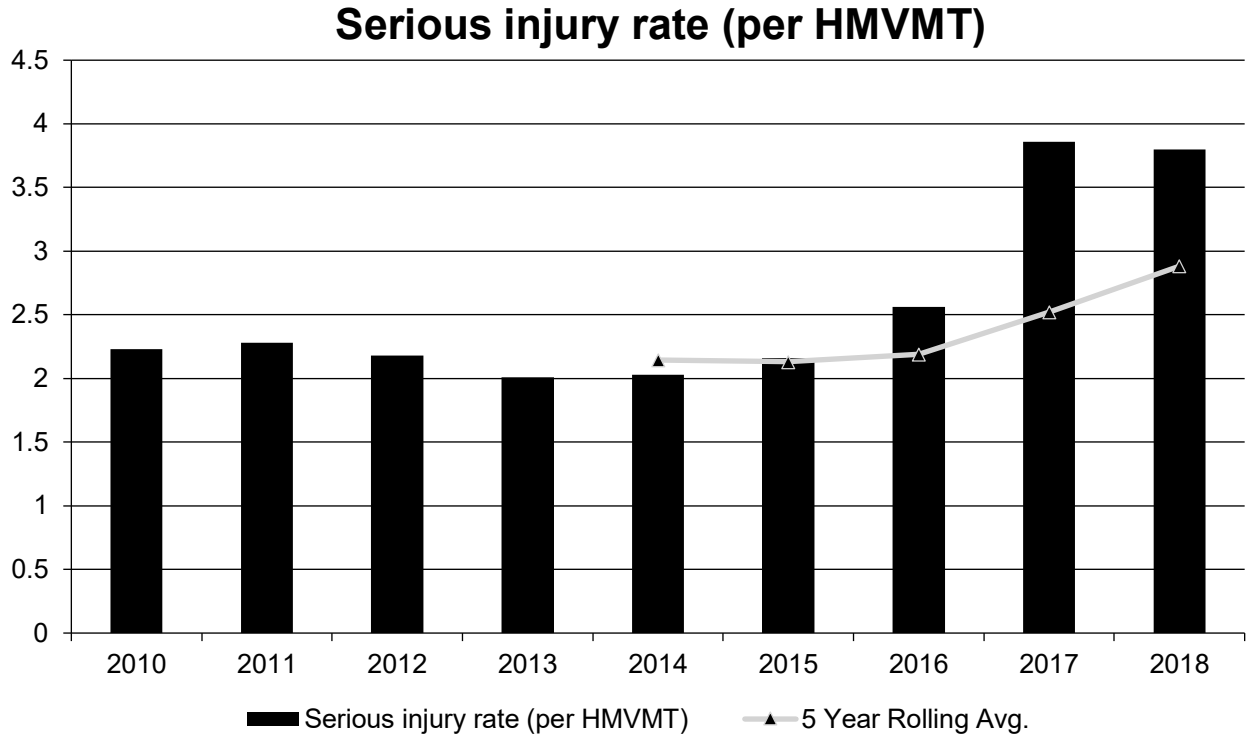
Present data showing the general highway safety trends in the State for the past five years.

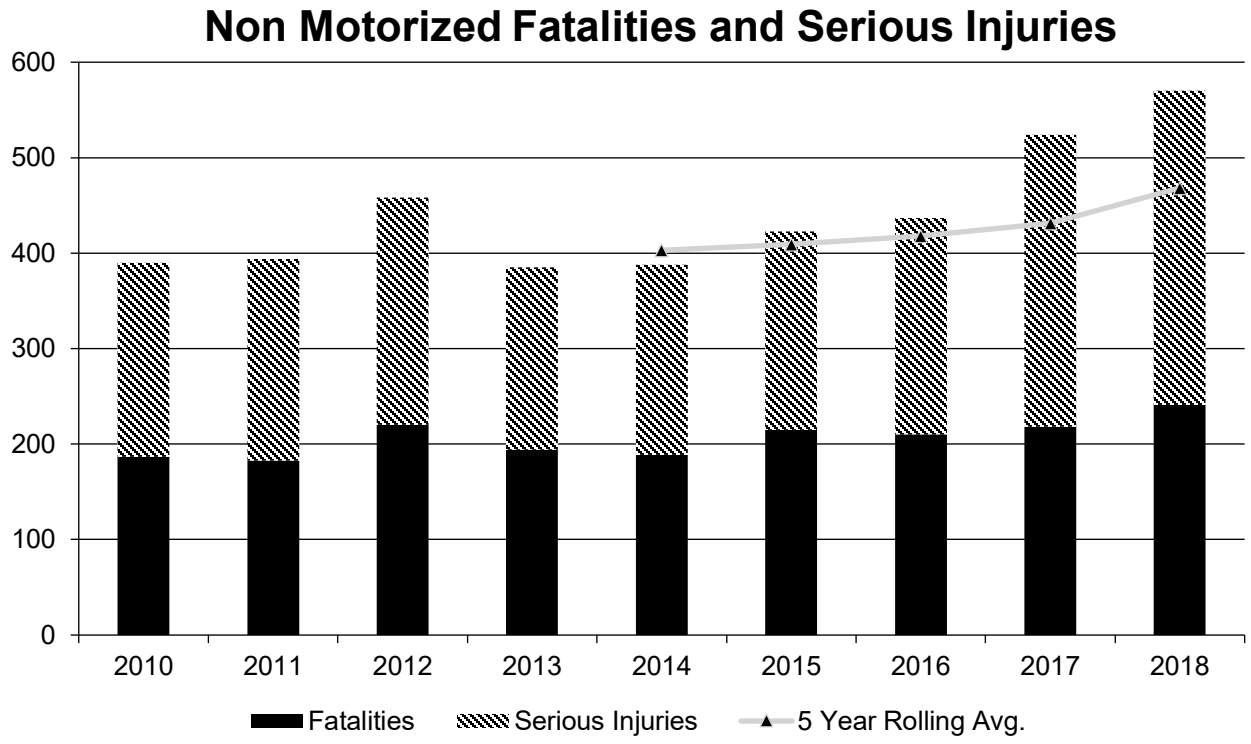
PERFORMANCE MEASURES	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fatalities	1,329	1,225	1,275	1,283	1,283	1,388	1,441	1,400	1,441
Serious Injuries	2,283	2,366	2,278	2,115	2,194	2,417	2,976	4,602	5,499
Fatality rate (per HMVMT)	1.300	1.180	1.220	1.220	1.190	1.240	1.240	1.180	1.190
Serious injury rate (per HMVMT)	2.230	2.280	2.180	2.010	2.030	2.160	2.560	3.860	3.800
Number non-motorized fatalities	187	183	220	194	189	215	210	218	241
Number of non-motorized serious injuries	203	211	238	191	199	208	227	306	329


Annual Fatalities
1500
1450
1400
1350
1300
1250
1200
1150
1100
2010
2011
2012
2013
2014
2015
2016
2017
2018
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
6000
5000
4000
3000
2000
1000
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
1.32
1.3
1.28
1.26
1.24
1.22
1.2
1.18
1.16
1.14
1.12
2010
2011
2012
2013
2014
2015
2016
2017
2018
Fatality rate (per HMVMT)
5 Year Rolling Avg.


Serious injury rate (per HMVMT)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
Serious injury rate (per HMVMT)
5 Year Rolling Avg.



Describe fatality data source.

State Motor Vehicle Crash Database

To the maximum extent possible, present this data by functional classification and ownership.

Year 2018

Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Rural Principal Arterial (RPA) - Interstate	37.4	142.8	0.61	2.32
Rural Principal Arterial (RPA) - Other Freeways and Expressways	18.4	63.6	0.73	2.47
Rural Principal Arterial (RPA) - Other	63.6	299	1.08	4.98
Rural Minor Arterial	109.6	469.8	1.84	7.85
Rural Minor Collector	158.8	607.8	2.59	9.56
Rural Major Collector	93.2	346.4	2.55	9.61
Rural Local Road or Street	161.2	562	1.88	6.48

Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Urban Principal Arterial (UPA) - Interstate	82.6	311.8	0.44	1.63
Urban Principal Arterial (UPA) - Other Freeways and Expressways	32	107.2	0.54	1.81
Urban Principal Arterial (UPA) - Other	178.4	752.8	1.16	4.89
Urban Minor Arterial	138.2	641.4	1	4.61
Urban Minor Collector	54.2	269.2	1.01	4.82
Urban Major Collector	17	76.8	0.96	4.97
Urban Local Road or Street	50	193	0.34	1.29
Unknown	204.8	1,096.6		

Year 2018

Roadways	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
State Highway Agency	1,291.4	5,363.2	1.24	5.12
County Highway Agency				
Town or Township Highway Agency				
City or Municipal Highway Agency	44.4	196.4	0.39	1.69
State Park, Forest, or Reservation Agency				
Local Park, Forest or Reservation Agency				
Other State Agency				
Other Local Agency				
Private (Other than Railroad)				
Railroad				
State Toll Authority				
Local Toll Authority				
Other Public Instrumentality (e.g. Airport, School, University)				
Indian Tribe Nation				
Unknown	19.4	114.4		

The revised national definition for Suspected Serious Injury crashes (Type A) has caused a significant increase in the number of North Carolina crashes reported as Serious Injury.

Provide additional discussion related to general highway safety trends.

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.

Safety Performance Targets

Safety Performance Targets

Calendar Year 2020 Targets *

Number of Fatalities:1227.8

Describe the basis for established target, including how it supports SHSP goals.

In order to align with the goals of the 2014 North Carolina Strategic Highway Safety Plan, our state's Executive Committee for Highway Safety (ECHS) has agreed to set our safety targets for each of the five safety performance measures so that they will support the reduction of our statewide fatalities and serious injuries by half before 2030.

Number of Serious Injuries:2812.8

Describe the basis for established target, including how it supports SHSP goals.

In order to align with the goals of the 2014 North Carolina Strategic Highway Safety Plan, our state's Executive Committee for Highway Safety (ECHS) has agreed to set our safety targets for each of the five safety performance measures so that they will support the reduction of our statewide fatalities and serious injuries by half before 2030.

Fatality Rate:1.084

Describe the basis for established target, including how it supports SHSP goals.

In order to align with the goals of the 2014 North Carolina Strategic Highway Safety Plan, our state's Executive Committee for Highway Safety (ECHS) has agreed to set our safety targets for each of the five safety performance measures so that they will support the reduction of our statewide fatalities and serious injuries by half before 2030.

Serious Injury Rate:2.462

Describe the basis for established target, including how it supports SHSP goals.

In order to align with the goals of the 2014 North Carolina Strategic Highway Safety Plan, our state's Executive Committee for Highway Safety (ECHS) has agreed to set our safety targets for each of the five safety performance measures so that they will support the reduction of our statewide fatalities and serious injuries by half before 2030.

Total Number of Non-Motorized Fatalities and Serious Injuries:426.6

Describe the basis for established target, including how it supports SHSP goals.

In order to align with the goals of the 2014 North Carolina Strategic Highway Safety Plan, our state's Executive Committee for Highway Safety (ECHS) has agreed to set our safety targets for each of the five safety performance measures so that they will support the reduction of our statewide fatalities and serious injuries by half before 2030.

Describe efforts to coordinate with other stakeholders (e.g. MPOs, SHSO) to establish safety performance targets.

Through collaboration with the Governor's Highway Safety Program (GHSP), Metropolitan Planning Organizations (MPOs) and the Executive Committee for Highway Safety (ECHS), we continue to work together to establish targets for the five safety performance measures. Initially, the safety performance targets were discussed, and a direction was set through our ECHS in September 2016. The ECHS includes partners from top level agency and department heads from various state and local agencies, including the GHSP. These safety champions are key policy and business funding decision makers in the highway safety arena. The direction set by the ECHS follows the goals set through our 2014 State Highway Safety Plan (SHSP) concerning the reduction of fatalities and serious injuries. The numbers and rates for the five safety performance measures/targets are annually gathered and adjusted in accordance with the 2014 SHSP goal of a 50% reduction of fatalities and serious injuries by the year 2030. NCDOT continually provides target setting crash data to each of the MPOs so they could establish their 2018, 2019 and upcoming 2020 safety performance targets. Our state is currently working on our 2019 SHSP update. As a part of the 2019 SHSP update, an MPO Listening Session was held in April 2019 to gather feedback on performance target setting. Based on feedback from the MPOs, other statewide safety partners and the ECHS, the goal of the 2019 SHSP update may be adjusted in hopes of providing a better opportunity for our state to make significant progress towards meeting our future safety performance targets.

Does the State want to report additional optional targets?

Yes
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Describe progress toward meeting the State's 2018 Safety Performance Targets (based on data available at the time of reporting). For each target, include a discussion of any reasons for differences in the actual outcomes and targets.

Based on our data as of 6/17/2019, our state was determined to have not met or made significant progress toward the CY 2018 targets. In order to align with the goals of the 2014 North Carolina Strategic Highway Safety Plan (SHSP), our state's Executive Committee for Highway Safety (ECHS) agreed to set our safety targets for each of the five safety performance measures so that they will support the reduction of our statewide fatalities and serious injuries by half before 2030. Because the safety targets are set based on the aspirational 2014 SHSP goal, it will be difficult to make significant progress towards meeting the fatalities, fatality rate, and non-motorized fatalities and serious injuries safety performance targets based on the currently increasing trends in our statewide fatalities and serious injuries. Additionally, due to the substantial increases in historical serious injury trends in September 2016 caused by the national definition change for "Suspected Serious Injury (A)", it will also be difficult to make significant progress towards meeting the serious injuries and serious injury rate safety performance targets.

Applicability of Special Rules

Does the HRRR special rule apply to the State for this reporting period?
No

The fatality rate is based on rural major collectors, rural minor collectors, and rural local roads using the most recent fatality data from the FARS and the most recent VMT data from the HPMS in accordance with MAP-21 HRRR Guidance. The average rural fatality rate in NC was 1.5 in year 2011-2015. The most recent average rural fatal rate was 1.1 in year 2013-2017.

Provide the number of older driver and pedestrian fatalities and serious injuries 65 years of age and older for the past seven years.

PERFORMANCE MEASURES	2012	2013	2014	2015	2016	2017	2018
Number of Older Driver and Pedestrian Fatalities	161	190	171	207	197	195	218
Number of Older Driver and Pedestrian Serious Injuries	152	152	152	175	226	338	374

Evaluation

Program Effectiveness

How does the State measure effectiveness of the HSIP?

- Benefit/Cost Ratio

Based on the measures of effectiveness selected previously, describe the results of the State's program level evaluations.

NCDOT has a robust project evaluation program. Every project that is funded through the federal HSIP dollars and the NC spot safety dollars are evaluated from a before and after perspective. The evaluation process is typically initiated three to five years after the safety project completion dates. Project evaluations include project background, before and after summary data tables, and before and after collision diagrams. The main objective is to provide our field personnel feedback as to whether the project was successful. The main thing measured is if the pattern of crashes the safety countermeasure was installed for actually reduced in the after period.

NCDOT also looks at all projects that are completed over a period of time and assesses how many crashes were reduced, with a crash cost attached to those crashes, versus the original project costs. Upon reviewing approximately 600 projects, the benefits of crashes reduced resulted in a 14:1 benefit cost. Our field personnel also have an annual expectation for developing safety projects and getting those projects on the ground.

What other indicators of success does the State use to demonstrate effectiveness and success of the Highway Safety Improvement Program?

- # RSAs completed
- Increased awareness of safety and data-driven process
- Increased focus on local road safety
- More systemic programs
- Policy change
- Other-Reduction in Target Crashes

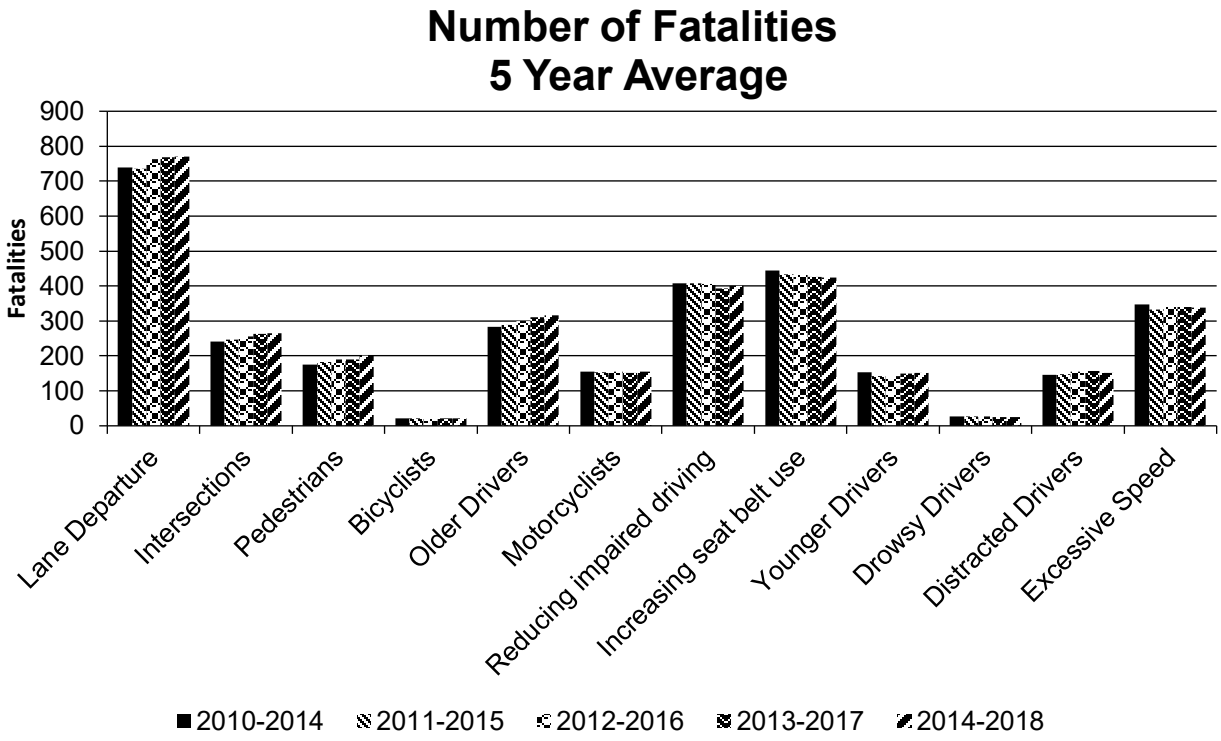
Effectiveness of Groupings or Similar Types of Improvements

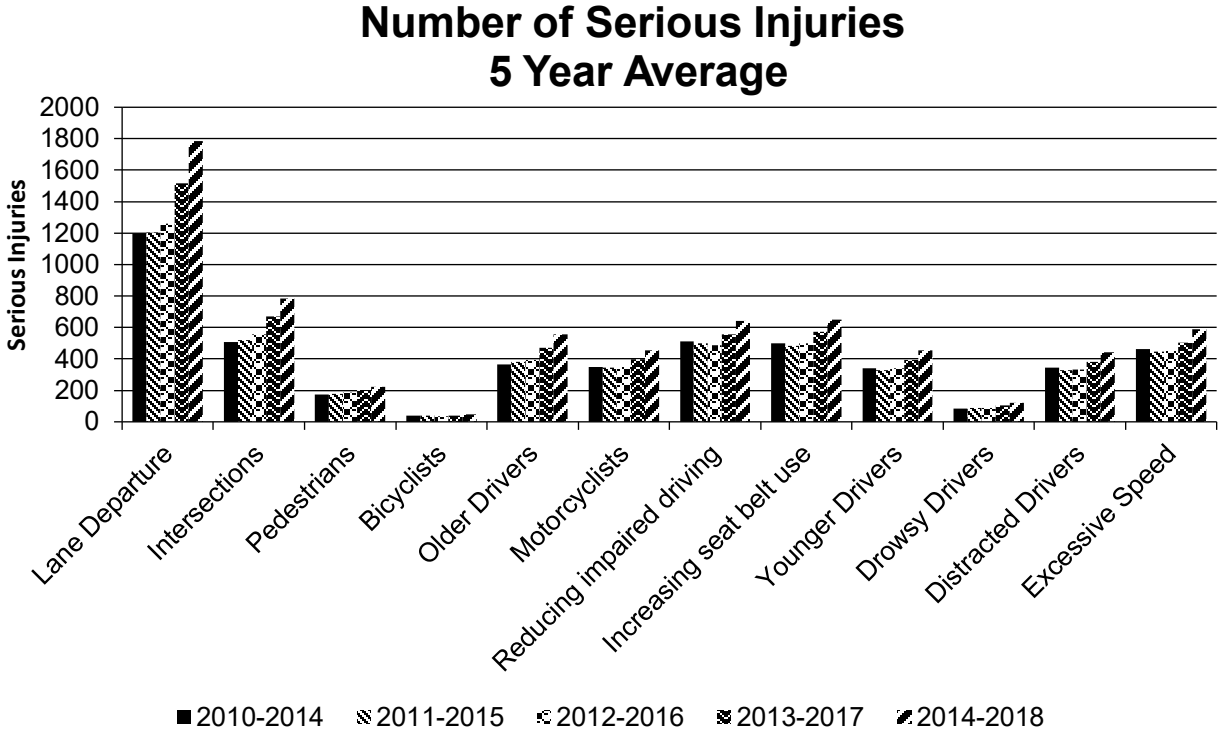
Present and describe trends in SHSP emphasis area performance measures.

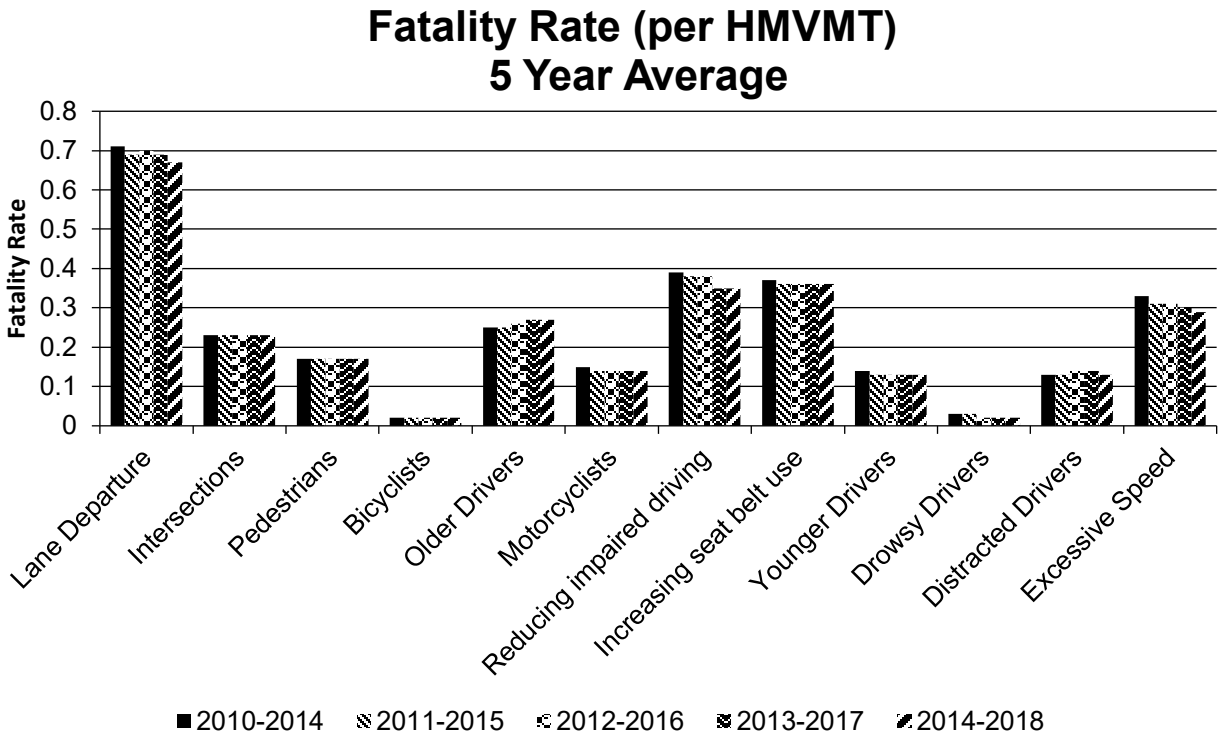
Year 2018

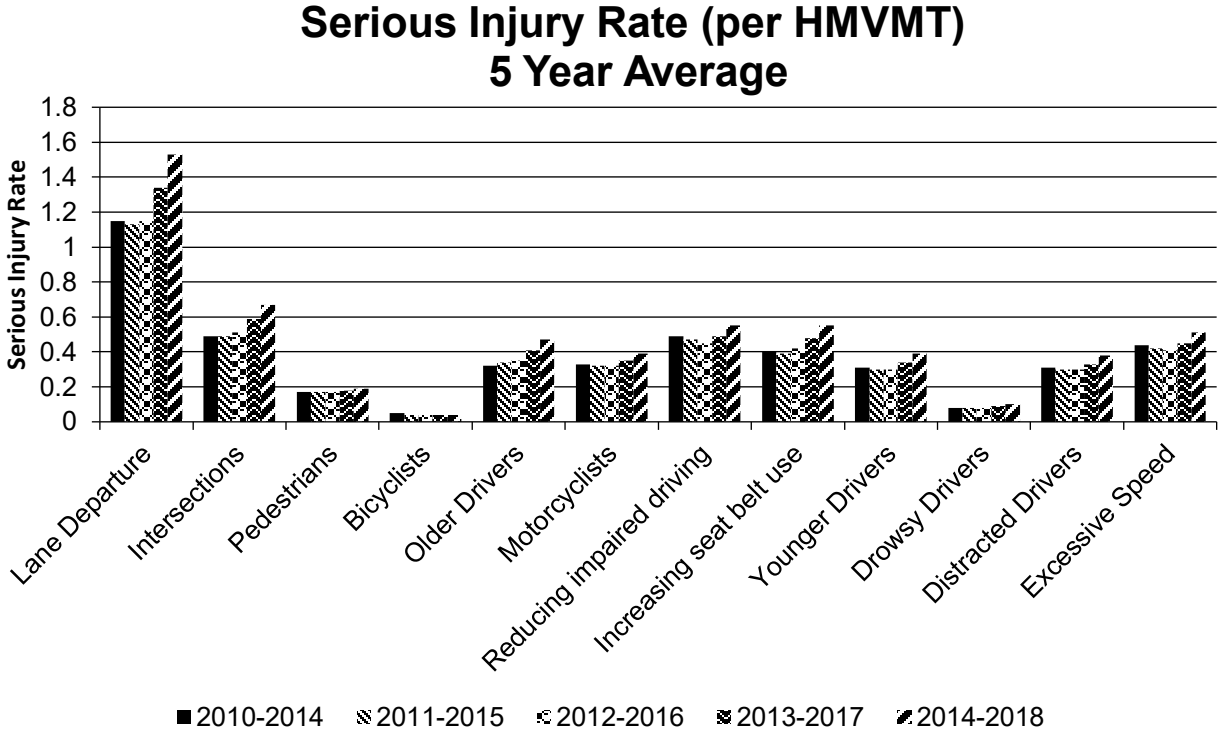
SHSP Emphasis Area	Targeted Crash Type	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Lane Departure		769.6	1,783.2	0.67	1.53
Intersections		265.4	783.6	0.23	0.67
Pedestrians		200.8	223.4	0.17	0.19
Bicyclists		21	47	0.02	0.04

SHSP Emphasis Area	Targeted Crash Type	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Older Drivers		317	558	0.27	0.47
Motorcyclists		155.6	452.4	0.14	0.39
Reducing impaired driving		399.6	640.2	0.35	0.55
Increasing seat belt use		423.6	651.2	0.36	0.55
Younger Drivers		152	453.8	0.13	0.39
Drowsy Drivers		24.2	119.2	0.02	0.1
Distracted Drivers		152.2	441	0.13	0.38
Excessive Speed		337.8	588.2	0.29	0.51


Number of Fatalities
5 Year Average
Fatalities
900
800
700
600
500
400
300
200
100
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Reducing impaired driving
Increasing seat belt use
Younger Drivers
Drowsy Drivers
Distracted Drivers
Excessive Speed
2010-2014
2011-2015
2012-2016
2013-2017
2014-2018


Number of Serious Injuries
5 Year Average
Serious Injuries
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Reducing impaired driving
Increasing seat belt use
Younger Drivers
Drowsy Drivers
Distracted Drivers
Excessive Speed
2010-2014
2011-2015
2012-2016
2013-2017
2014-2018





Has the State completed any countermeasure effectiveness evaluations during the reporting period?

No

The NCDOT Safety Evaluation Group (SEG) conducts large scale studies using data from locations across the

State. As we complete multiple evaluations for a particular type of countermeasure, we are able to provide objective and definite information regarding actual crash reduction factors. Some of the recent topic areas include: All-Way Stops, Roundabouts, Overhead Flashing Beacons, Flashing Yellow Arrow, Vehicle Entering When Flashing Signs, Flashers in School Zones, Speed Enforcement Programs, and Paved Shoulders. The methodologies used in the evaluations offer various philosophies and ideas. When possible and appropriate, we attempt to use statistical analysis to account for potential study biases. Numerous countermeasure-oriented safety studies completed by SEG have been published in peer-reviewed journals.

Project Effectiveness

Provide the following information for previously implemented projects that the State evaluated this reporting period.

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
See comments 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

Describe any other aspects of HSIP effectiveness on which the State 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:

- Development of warranting criteria and Identification of potentially hazardous locations meeting minimum warrant criteria
- Detailed crash analysis of program locations
- Engineering field investigation of program locations and evaluation of potential recommendations (where appropriate)
- Project development
- Implement countermeasures
- 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.

Compliance Assessment

What date was the State's current SHSP approved by the Governor or designated State representative?

04/06/2015

What are the years being covered by the current SHSP?

From: 2014 To: 2018

When does the State anticipate completing it's next SHSP update?

2019

Provide the current status (percent complete) of MIRE fundamental data elements collection efforts using the table below.

ROAD TYPE	MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	
ROADWAY SEGMENT	Segment Identifier (12)	100	100					100	100	100	100
	Route Number (8)	100	100								
	Route/Street Name (9)	100	100								
	Federal Aid/Route Type (21)	100	100								
	Rural/Urban Designation (20)	100	100					100	100		
	Surface Type (23)	100						100			
	Begin Point Segment Descriptor (10)	100	100					100	100	100	100
	End Point Segment Descriptor (11)	100	100					100	100	100	100
	Segment Length (13)	100	100								
	Direction of Inventory (18)	100	100								
	Functional Class (19)	100	100					100	100	100	100
	Median Type (54)	100									
	Access Control (22)	100									

ROAD TYPE	MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	
	One/Two Way Operations (91)	100									
	Number of Through Lanes (31)	100	100					10	10		
	Average Annual Daily Traffic (79)	100	100					10	10		
	AADT Year (80)	100	100								
	Type of Governmental Ownership (4)	100						100		100	
INTERSECTION	Unique Junction Identifier (120)			100	100						
	Location Identifier for Road 1 Crossing Point (122)			100	100						
	Location Identifier for Road 2 Crossing Point (123)			100	100						
	Intersection/Junction Geometry (126)										
	Intersection/Junction Traffic Control (131)										
	AADT for Each Intersecting Road (79)										
	AADT Year (80)										
	Unique Approach Identifier (139)										
INTERCHANGE/RAMP	Unique Interchange Identifier (178)										
	Location Identifier for Roadway at Beginning of Ramp Terminal (197)										
	Location Identifier for Roadway at Ending Ramp Terminal (201)					100	100				
	Ramp Length (187)					100	100				

ROAD TYPE	MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	
	Roadway Type at Beginning of Ramp Terminal (195)										
	Roadway Type at End Ramp Terminal (199)					100	100				
	Interchange Type (182)										
	Ramp AADT (191)					100	100				
	Year of Ramp AADT (192)					100	100				
	Functional Class (19)					100	100				
	Type of Governmental Ownership (4)					100	100				
Totals (Average Percent Complete):		**100.00**	**72.22**	**37.50**	**37.50**	**63.64**	**63.64**	**80.00**	**57.78**	**100.00**	**80.00**

*Based on Functional Classification

Describe actions the State will take moving forward to meet the requirement to have complete access to the MIRE fundamental data elements on all public roads by September 30, 2026.

There are approximately 106,500 miles of public roads in the State of North Carolina. Of those, the NCDOT maintains approximately 79,600, which equates to approximately 75% of all public roadways in the State, (https://connect.ncdot.gov/resources/State-Mapping/Documents/OfficialStateMileage.pdf). It is important to note that for the purposes of this plan, when referencing State and Non-State in terms of what the State collects it refers to ownership/maintenance; when referencing Non-Local and Local in terms of the MIRE FDE, it refers to functional class.

The Transportation Asset Analysis Group is responsible for collecting and maintaining the roadway inventory, and the GIS unit is responsible for the line work. ESRI Roads and Highways is used to publish the characteristics file. Anyone can access the roadway inventory GIS files; they are available on the Connect NCDOT website, (https://connect.ncdot.gov/).

The Division of Highways has the authority/responsibility for determining the improvements needed to achieve compliance with the MIRE FDE requirements. These decisions are made jointly between Safety, GIS, and the Transportation Asset Analysis Group, with safety driving the need for new elements.

NCDOT completed a gap assessment in January 2017 comparing their roadway inventory to the FDE listing. The gap assessments results are summarized in this section.

Non-Local Paved Roads - Segments
NCDOT collects and maintains all of the segment elements on all State-owned Non-Local Paved roads. NCDOT collects and maintains almost all of the segment elements on all Non-State owned, Non-Local Paved roads. The exceptions are Surface Type, Median Type, Access Control, One/Two Way Operations, and Type of Governmental Ownership.

Intersections
The largest gaps in the FDEs for NCDOT are for Intersection data elements. NCDOT does not currently have the majority of the intersection FDEs on Non-Local Paved roads.

Interchange/Ramp
Of the 11 Interchange/Ramp elements on non-local paved roads, NCDOT maintains 7 on both State and Non-State roads. The 4 missing elements are Interchange Identifier, Location Identifier for Beginning Ramp Terminal, Roadway Type at Beginning Ramp Terminal, and Interchange Type.

Local Paved Roads
Of the nine (9) FDEs on Local Paved Roads, all but two (2) (Number of Through Lanes, AADT) are collected on all State Roads; and all but 4 (Surface Type, Number of Through Lanes, AADT, and Type of Governmental Ownership) are collected on all Non-State roads.

Unpaved Roads
NCDOT intends to opt out of collecting FDEs on unpaved roads. NCDOT understands: no HSIP funds can be spent on these roadways; they must consult with affected Indian tribes; and they must notify their FHWA Division Office via letter to the Division Administrator.

For the MIRE FDE currently collected, the elements are updated as new roads are added. The GIS group updates the line work annually based on snapshots provided by the Counties.

There are business edits and data checks built into the system to help ensure the quality of the data, however there are no additional formal QA/QC processes. NCDOT is looking into developing performance measures to help formalize their quality practices.

There are two current pilot projects underway to help NCDOT fill the two biggest data gaps – Intersection elements and AADT. NCDOT conducted a pilot to collect data at 3,000 intersections, with the goal of developing a framework for a larger scale data collection effort. In regard to AADT, NCDOT has contracted with the University of North Carolina Charlotte on a research effort to develop a process for developing AADT on all public roads. The project is set to begin in August 2018 and be completed within two years.

The largest data gaps exist on Non-State roads. NCDOT plans to analyze the mileage and ownership for the roadways with missing FDEs. Once that effort is complete, NCDOT can determine where there are the largest data gaps and what outreach mechanism might be most effective to working with those local agencies. This will help NCDOT determine if they can utilize information already being collected by local agencies, or if a State sponsored data collection effort is needed to obtain the data on these roadways.

The FDE collection priorities are as follows:

- Short-term: Non-Local Paved Roads Segment elements and Intersection elements, as well as AADT on all public roads.
- Mid-term: Non-Local Paved Road Interchange elements, and any other remaining Non-Local paved road elements.
- Long-term: Remaining needed Local Paved Roads elements.

The data will be collected using a variety of tools including deriving elements from existing data, collecting from video logs, utilizing current pavement collection efforts to determine what else might be able to be collected at the same time, and utilizing data already being collected from local agencies. This includes exploring what additional information might be collected when the annual linework is collected from the Counties and what additional mechanisms might need to be put in place to be able to obtain these data. NCDOT is also exploring if the E911 effort might be able to be utilized to obtain additional data. NCDOT will also explore utilizing the available FHWA technical assistance programs, primarily the Roadway Data Extraction Technical Assistance Program (RDETAP), to help fill in data gaps.

The Safety Group will be responsible for the data collection effort, with support from the Transportation Asset Analysis Group. The data will be integrated into the existing GIS system and be made available through the same portal as other roadway inventory data. The update cycle will vary based on element.

NCDOT has not yet developed cost estimates but recognizes this is one of the next steps needed to be conducted. NCDOT will review the FHWA MIRE Fundamental Data Elements Cost-Benefit Estimation report as a starting point, https://safety.fhwa.dot.gov/rsdp/downloads/fhwasa16035_051916v10.pdf .

As mentioned above, NCDOT will also explore utilizing the available FHWA technical assistance programs, namely the RDETAP, to help fill in data gaps, as well as utilizing available TRCC funds for data collection efforts.

Did the State conduct an HSIP program assessment during the reporting period?

No

When does the State plan to complete its next HSIP program assessment.

2022

Optional Attachments

Program Structure:

Project Implementation:

Safety Performance:

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Evaluation:

Compliance Assessment:

Glossary

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

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

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

HMVMT: means hundred million vehicle miles traveled.

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

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

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

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

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

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

Systematic: refers to an approach where an agency deploys countermeasures at all locations across a system.

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

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