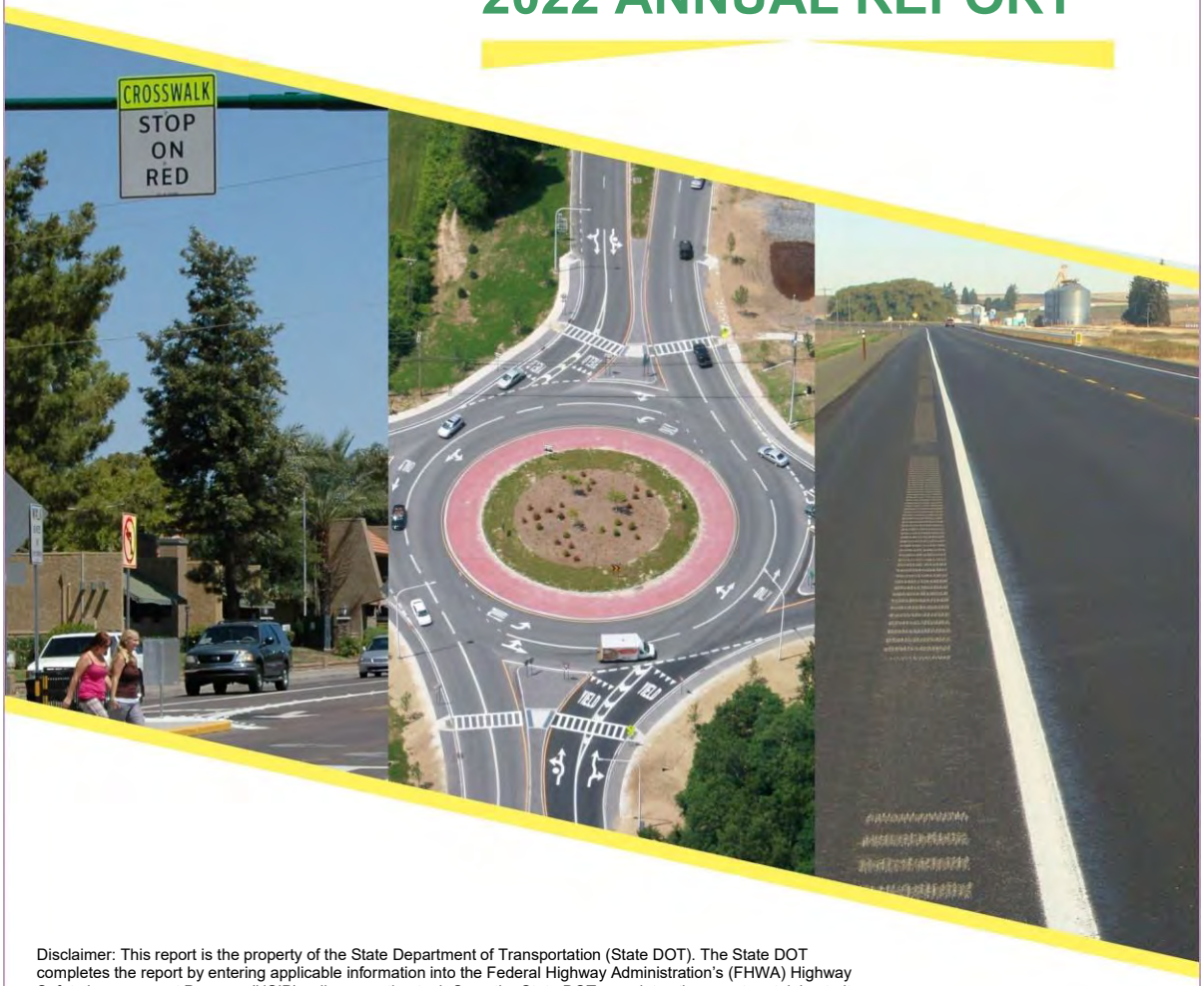
NORTH CAROLINA

HIGHWAY SAFETY IMPROVEMENT PROGRAM

2022 ANNUAL REPORT



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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. 407 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 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 2021, there were over 300,000 reported traffic crashes that resulted in 1,788 persons killed and over 110,000 injuries on our roadways. The socioeconomic impact of these crashes is severe, resulting in a loss of over $35 billion to the economy of North Carolina annually. This impact translates to a crash cost to the state of over $3.9 million every hour and approximately $96 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. In 2019, North Carolina updated the 2014 Strategic Highway Safety Plan (SHSP) in coordination through the Executive Committee for Highway Safety. The goals established in the 2019 SHSP are to reduce fatalities and serious injuries by half by 2035 based on 2018 data and mover towards zero by 2050.

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 2021 Calendar Year as the reporting period for the “HSIP Report”; however, some of our 2022 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 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

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.

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

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 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.

The North Carolina Strategic Highway Safety Plan (SHSP) (herein referred to as the Plan) is essential to addressing highway safety in our State. The Plan is a key component of North Carolina’s Highway Safety Improvement Program, a core-Federal-aid program directed at reducing fatalities and serious injuries on all public roads. North Carolina’s Executive Committee for Highway Safety first developed the SHSP in 2004. Updates in 2006 and 2014 were implementation focused, identifying significant contributing factors in crashes and implementation strategies with the most potential to address those crashes. Information about the previous Plan, developed in 2014, can be found here . In 2015, the Federally funded legislation Fixing America’s Surface Transportation Act continued the requirements that States develop an SHSP that is data- and multidisciplinary stakeholder-driven and that analyzes highway safety concerns and identifies opportunities to improve safety on all public roads. The 2019 Plan is an update to the 2014 Plan and the fourth iteration of the Plan since 2004, and the first 5-year update under recent Federal regulations.

The North Carolina Department of Transportation updated the SHSP in 2019 through the collaborative efforts of diverse safety stakeholders representing the users of State’s 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.

The Plan is organized by Focus Areas, which group Emphasis Areas addressing similar crash types, road users, or other characteristics. This framework supports the importance of overlaps and provides a roadmap for implementation. Safety partners representing the Emphasis Areas will work together under the umbrella of the Focus Area to prioritize and implement the actions in each Emphasis Area Action Plan. The following briefly introduces the Focus Areas and corresponding Emphasis Areas.

- Roadway Infrastructure
  - Intersections
  - Lane Departure
- Human Behavior
  - Alertness
  - Occupant Protection
  - Substance Impaired Driving
  - Speed
- All Users
  - Younger Drivers
  - Older Drivers
  - Motorcyclists
  - Pedestrians, Bicyclists, and Personal Mobility
- Data and Evaluation
  - Emerging Issues and Data
- Safety Culture
  - All Emphasis Areas

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

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

Program Methodology

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

No

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 2018-2022, 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 last conducted an HSIP assessment in 2017. Also further details can be found in the 2021 North Carolina HSIP Implementation Plan that was completed in August 2021.

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

- All crashes

Exposure

- Volume

Roadway

- Other-Urban/Rural Location

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
- Other-Recent year 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 crashes • Other-Pedestrian 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

- All crashes

Exposure

Roadway

- Other-Access Control
- Other-Route Classification

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?

18

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

- Add/Upgrade/Modify/Remove Traffic Signal
- Install/Improve Pavement Marking and/or Delineation

- Install/Improve Signing
- Traffic Control Device Rehabilitation
- Upgrade Guard Rails

What process is used to identify potential countermeasures?

- Crash data analysis
- Engineering Study
- Road Safety Assessment

Our regional traffic engineering staff annually investigate about 600 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 (currently, the RSR Program has been paused due to COVID-19 safety measures). 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 program methodology practices that have changed since the last reporting period.

Systemic Programs in North Carolina

In NC, the HSIP has been traditionally focused on identifying locations with a history of injury crashes and treatable crash patterns that can be corrected by engineering countermeasures. The responsive process is crash data driven and crash pattern focused and includes but is not limited to citizen and safety partner participation. The systemic process includes the analysis of crash data and roadway characteristics that identify economically effective countermeasures for a broad network application.

Highway Sections

NCDOT has established a process for identifying curves and segments for updated signing, chevrons, and rumble strips along two-lane rural roads. In 2020, a pilot project in one county identified sections for updated signing and chevrons. This same process was used in two NCDOT Divisions in 2021 and will be in two more NCDOT Divisions in 2022.

In 2022, NCDOT established a process to identify lane departure corridors for rural, two-lane roadways. These corridors will be reviewed for potential lane departure treatments such as edge line and centerline rumble strips, long life pavement markings and curve/corridor signing needs.

In 2022, NCDOT will pilot a “reduce speed when raining” static sign program for freeways to reduce wet road lane departure crashes.

Intersections

In 2021, NCDOT utilized an all-way stop warrant, which considers entering traffic volumes, to examine 250 two-way stop-controlled intersections for conversion to all-way stop control. Beginning in 2022, the Traffic Safety Unit will examine 200 additional intersections for all-way stop conversion.

NCDOT is also establishing a process to modify two-way stop-controlled intersections to signal controlled, roundabouts or reduced conflict applications. Additionally, the Traffic Safety Unit is developing basic intersection warning sign set templates for locations that do not warrant modification of intersection control.

NCDOT is developing an intersection database to further develop the systemic identification program.

Vulnerable Users

As part of NCDOT’s Pedestrian Safety Improvement Program (PSIP), a corridor program has been established to identify corridors based on risk factors. The PSIP will also be used to identify municipalities that are overrepresented in pedestrian crashes. The PSIP will work with local governments to establish processes and plans to improve safety for vulnerable users.

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.

See the North Carolina 2021 HSIP implementation Plan for additional information and details.

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

State Fiscal Year

(7/1/2021 - 6/30/2022)

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

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	$52,684,200	$119,347,711	226.53%
HRRR Special Rule (23 U.S.C. 148(g)(1))	$4,864,500	$4,864,500	100%
Penalty Funds (23 U.S.C. 154)	$0	$0	0%
Penalty Funds (23 U.S.C. 164)	$0	$2,162	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	$14,158,500	$14,158,500	100%
Totals	$71,707,200	$138,372,873	192.97%

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
HS-2006C	Access management	Access management - other	3	Intersections	$90000	$100000	HSIP (23 U.S.C. 148)			11,500		State Highway Agency	Spot	Pedestrians	
HS-2010A	Access management	Change in access - close or restrict existing access	1	Intersections	$157500	$175000	HSIP (23 U.S.C. 148)			26,000		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	
HS-2002E	Access management	Change in access - close or restrict existing access	1	Intersections	$90000	$100000	HSIP (23 U.S.C. 148)			28,000		State Highway Agency	Spot	Intersections	
HS-2002C	Access management	Median crossover - directional crossover	1	Intersections	$272500	$302778	HSIP (23 U.S.C. 148)			22,500		State Highway Agency	Spot	Intersections	
HS-2002D	Access management	Median crossover - directional crossover	1	Intersections	$813600	$904000	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Intersections	
HS-2002K	Access management	Median crossover - directional crossover	3	Crossovers	$67500	$75000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	12,500	60	State Highway Agency	Spot	Intersections	
HS-2010D	Access management	Median crossover - directional crossover	1	Intersections	$270900	$301000	HSIP (23 U.S.C. 148)			23,000		State Highway Agency	Spot	Intersections	
W-5203Q	Access management	Median crossover - directional crossover	2	Intersections	$61222	$68024	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Intersections	
W-5601B	Access management	Median crossover - directional crossover	2	Intersections	$156914	$174349	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Intersections	
W-5601CF	Access management	Median crossover - directional crossover	0.88	Miles	$421108	$467898	HSIP (23 U.S.C. 148)			13,000		State Highway Agency	Spot	Intersections	
W-5601DQ	Access management	Median crossover - directional crossover	2	Crossovers	$396251	$440279	HSIP (23 U.S.C. 148)			14,000		State Highway Agency	Spot	Intersections	
W-5601EV	Access management	Median crossover - directional crossover	1	Miles	$247419	$274910	HSIP (23 U.S.C. 148)			13,000		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-5601GA	Access management	Median crossover - directional crossover	1	Intersections	$2242800	$2492000	HSIP (23 U.S.C. 148)			19,000		State Highway Agency	Spot	Intersections	
W-5601IN	Access management	Median crossover - directional crossover	0.58	Miles	$44991	$49990	HSIP (23 U.S.C. 148)			22,000		State Highway Agency	Spot	Intersections	
W-5701B	Access management	Median crossover - directional crossover	6	Intersections	$270000	$300000	HSIP (23 U.S.C. 148)			4,700		State Highway Agency	Spot	Intersections	
W-5702N	Access management	Median crossover - directional crossover	1	Intersections	$298811	$332012	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Intersections	
W-5703D	Access management	Median crossover - directional crossover	2	Intersections	$1296577	$1440641	HSIP (23 U.S.C. 148)			35,000		State Highway Agency	Spot	Intersections	
W-5704B	Access management	Median crossover - directional crossover	1.194	Miles	$124868	$138742	HSIP (23 U.S.C. 148)			33,000		State Highway Agency	Spot	Intersections	
W-5705AE	Access management	Median crossover - directional crossover	1	Intersections	$56700	$63000	HSIP (23 U.S.C. 148)			70,215		State Highway Agency	Spot	Intersections	
W-5706S	Access management	Median crossover - directional crossover	2.1	Miles	$3717000	$4130000	HSIP (23 U.S.C. 148)			14,000		State Highway Agency	Spot	Intersections	
W-5708B	Access management	Median crossover - directional crossover	0.26	Miles	$135000	$150000	HSIP (23 U.S.C. 148)			14,000		State Highway Agency	Spot	Intersections	
W-5708G	Access management	Median crossover - directional crossover	2	Intersections	$2035350	$2261500	HSIP (23 U.S.C. 148)			21,000		State Highway Agency	Spot	Intersections	
W-5709H	Access management	Median crossover - directional crossover	2	Intersections	$234000	$260000	HSIP (23 U.S.C. 148)			34,000		State Highway Agency	Spot	Intersections	
W-5710AJ	Access management	Median crossover - directional crossover	1	Intersections	$172800	$192000	HSIP (23 U.S.C. 148)			17,000		State Highway Agency	Spot	Intersections	
W-5710AK	Access management	Median crossover - directional crossover	0.937	Miles	$1845000	$2050000	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Intersections	
W-5804A	Access management	Median crossover - directional crossover	1	Intersections	$2100600	$2334000	HSIP (23 U.S.C. 148)			9,700		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
HS-2002J	Access management	Raised island - install new	400	Feet	$22500	$25000	HSIP (23 U.S.C. 148)	Multiple/Varies	Minor Arterial	7,900	35	State Highway Agency	Spot	Intersections	
W-5702G	Access management	Raised island - install new	4000	Feet	$234000	$260000	HSIP (23 U.S.C. 148)			12,000		State Highway Agency	Spot	Intersections	
W-5702R	Access management	Raised island - install new	0.72	Miles	$157500	$175000	HSIP (23 U.S.C. 148)			13,000		State Highway Agency	Spot	Intersections	
W-5706A	Access management	Raised island - install new	0.66	Miles	$369000	$410000	HSIP (23 U.S.C. 148)			38,600		State Highway Agency	Spot	Intersections	
W-5706G	Access management	Raised island - install new	0.629	Miles	$1252800	$1392000	HSIP (23 U.S.C. 148)			35,000		State Highway Agency	Spot	Intersections	
W-5710C	Access management	Raised island - install new	3.11	Miles	$585900	$651000	HSIP (23 U.S.C. 148)			8,900		State Highway Agency	Spot	Intersections	
HS-2004L	Alignment	Horizontal curve realignment	0.23	Miles	$126000	$140000	HSIP (23 U.S.C. 148)			3,500		State Highway Agency	Spot	Lane Departure	
W-5601A	Alignment	Horizontal curve realignment	0.26	Miles	$24300	$27000	HSIP (23 U.S.C. 148)			4,800		State Highway Agency	Spot	Lane Departure	
W-5701C	Alignment	Horizontal curve realignment	0.8	Miles	$63000	$70000	HSIP (23 U.S.C. 148)			2,000		State Highway Agency	Spot	Lane Departure	
W-5705H	Alignment	Horizontal curve realignment	980	Feet	$67500	$75000	HSIP (23 U.S.C. 148)			2,100		State Highway Agency	Spot	Lane Departure	
W-5714E	Alignment	Horizontal curve realignment	0.68	Miles	$229500	$255000	HSIP (23 U.S.C. 148)			2,500		State Highway Agency	Spot	Lane Departure	
W-5601GC	Alignment	Vertical alignment or elevation change	1	Intersections	$90000	$100000	HSIP (23 U.S.C. 148)			3,400		State Highway Agency	Spot	Intersections	
W-5107	Interchange design	Convert at-grade intersection to interchange	4	Intersections	$1164400	$1293778	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
HS-2009B	Interchange design	Interchange design - other	4	Intersections	$405000	$450000	HSIP (23 U.S.C. 148)			14,500		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
HS-2004B	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$207900	$231000	HSIP (23 U.S.C. 148)			6,500		State Highway Agency	Spot	Intersections	
W-5203U	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$668700	$743000	HSIP (23 U.S.C. 148)			27,500		State Highway Agency	Spot	Intersections	
W-5601AH	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$49950	$55500	HSIP (23 U.S.C. 148)			13,000		State Highway Agency	Spot	Intersections	
W-5601AO	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$71899	$79888	HSIP (23 U.S.C. 148)			21,000		State Highway Agency	Spot	Intersections	
W-5601EY	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$76500	$85000	HSIP (23 U.S.C. 148)			11,000		State Highway Agency	Spot	Intersections	
W-5601FJ	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$165949	$184388	HSIP (23 U.S.C. 148)			21,900		State Highway Agency	Spot	Intersections	
W-5601FJ	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$859	$954	Penalty Funds (23 U.S.C. 164)			21,900		State Highway Agency	Spot	Intersections	
W-5601FN	Intersection geometry	Add/modify auxiliary lanes	600	Feet	$170736	$189707	HSIP (23 U.S.C. 148)			13,000		State Highway Agency	Spot	Intersections	
W-5601FV	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$119331	$132590	HSIP (23 U.S.C. 148)			6,200		State Highway Agency	Spot	Intersections	
W-5704F	Intersection geometry	Add/modify auxiliary lanes	2	Intersections	$1151100	$1279000	HSIP (23 U.S.C. 148)			7,900		State Highway Agency	Spot	Intersections	
W-5705AK	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$585000	$650000	HSIP (23 U.S.C. 148)			9,200		State Highway Agency	Spot	Intersections	
W-5705Y	Intersection geometry	Add/modify auxiliary lanes	500	Feet	$22500	$25000	HSIP (23 U.S.C. 148)			32,000		State Highway Agency	Spot	Intersections	
W-5706E	Intersection geometry	Add/modify auxiliary lanes	1	Lanes	$39600	$44000	HSIP (23 U.S.C. 148)			7,900		State Highway Agency	Spot	Intersections	
W-5708D	Intersection geometry	Add/modify auxiliary lanes	0.1	Miles	$633042	$703380	HSIP (23 U.S.C. 148)			6,700		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-5709C	Intersection geometry	Add/modify auxiliary lanes	1	Lanes	$55800	$62000	HSIP (23 U.S.C. 148)			8,400		State Highway Agency	Spot	Intersections	
W-5710AC	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$9819	$10910	HSIP (23 U.S.C. 148)			8,800		State Highway Agency	Spot	Intersections	
W-5814A	Intersection geometry	Add/modify auxiliary lanes	1	Lanes	$180000	$200000	HSIP (23 U.S.C. 148)			5,700		State Highway Agency	Spot	Intersections	
W-5601HO	Intersection geometry	Add/modify auxiliary lanes	0.19	Miles	$576000	$640000	HSIP (23 U.S.C. 148)			4,100		State Highway Agency	Spot	Intersections	
W-5703R	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$16200	$18000	HSIP (23 U.S.C. 148)			36,000		State Highway Agency	Spot	Intersections	
W-5703H	Intersection geometry	Intersection geometry - other	1	Intersections	$1822500	$2025000	HSIP (23 U.S.C. 148)			19,000		State Highway Agency	Spot	Intersections	
W-5601DY	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$33552	$37280	HSIP (23 U.S.C. 148)			3,300		State Highway Agency	Spot	Intersections	
W-5701E	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$692100	$769000	HSIP (23 U.S.C. 148)			3,000		State Highway Agency	Spot	Intersections	
W-5705G	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$90000	$100000	HSIP (23 U.S.C. 148)			9,100		State Highway Agency	Spot	Intersections	
W-5706AA	Intersection geometry	Add/modify auxiliary lanes	1	Intersections	$18000	$20000	HSIP (23 U.S.C. 148)			6,200		State Highway Agency	Spot	Intersections	
W-5709F	Intersection geometry	Add/modify auxiliary lanes	0.4	Miles	$360000	$400000	HSIP (23 U.S.C. 148)			4,600		State Highway Agency	Spot	Intersections	
HS-2006D	Intersection geometry	Intersection geometry - other	2	Intersections	$58500	$65000	HSIP (23 U.S.C. 148)			3,400		State Highway Agency	Spot	Intersections	
HS-2009C	Intersection geometry	Intersection geometry - other	1	Intersections	$135000	$150000	HSIP (23 U.S.C. 148)			18,000		State Highway Agency	Spot	Intersections	
HS-2009D	Intersection geometry	Intersection geometry - other	1	Lanes	$153000	$170000	HSIP (23 U.S.C. 148)			14,500		State Highway Agency	Spot	Intersections	

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HS-2012C	Intersection geometry	Intersection geometry - other	1	Intersections	$18000	$20000	HSIP (23 U.S.C. 148)			8,500		State Highway Agency	Spot	Intersections	
W-5212J	Intersection geometry	Intersection geometry - other	1	Intersections	$193500	$215000	HRRR Special Rule (23 U.S.C. 148(g)(1))			0		State Highway Agency	Spot	Intersections	
W-5703Q	Intersection geometry	Intersection geometry - other	2	Intersections	$870867	$967630	HSIP (23 U.S.C. 148)			4,350		State Highway Agency	Spot	Intersections	
W-5706J	Intersection geometry	Intersection geometry - other	3	Intersections	$1147500	$1275000	HSIP (23 U.S.C. 148)			2,800		State Highway Agency	Spot	Intersections	
W-5707H	Intersection geometry	Intersection geometry - other	2	Intersections	$436500	$485000	HSIP (23 U.S.C. 148)			4,100		State Highway Agency	Spot	Intersections	
HS-2006G	Intersection geometry	Intersection realignment	0.19	Miles	$27000	$30000	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	3,500	45	State Highway Agency	Spot	Intersections	
HS-2005D	Intersection traffic control	Intersection traffic control - other	1	Intersections	$4500	$5000	HSIP (23 U.S.C. 148)			5,400		State Highway Agency	Spot	Intersections	
W-5206AC	Intersection traffic control	Intersection traffic control - other	1	Intersections	$45439	$50488	HSIP (23 U.S.C. 148)			10,000		State Highway Agency	Spot	Intersections	
W-5601AX	Intersection traffic control	Intersection traffic control - other	1	Intersections	$13880	$15422	HSIP (23 U.S.C. 148)			25,000		State Highway Agency	Spot	Intersections	
W-5601FC	Intersection traffic control	Intersection traffic control - other	1	Intersections	$278379	$309310	HSIP (23 U.S.C. 148)			18,000		State Highway Agency	Spot	Intersections	
W-5705AL	Intersection traffic control	Intersection traffic control - other	1	Intersections	$508	$564	HSIP (23 U.S.C. 148)			14,000		State Highway Agency	Spot	Intersections	
W-5705O	Intersection traffic control	Intersection traffic control - other	1	Intersections	$8938	$9931	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Intersections	
W-5705Q	Intersection traffic control	Intersection traffic control - other	1	Intersections	$12794	$14216	HSIP (23 U.S.C. 148)			34,000		State Highway Agency	Spot	Intersections	

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W-5705R	Intersection traffic control	Intersection traffic control - other	1	Intersections	$152024	$168916	HSIP (23 U.S.C. 148)			18,000		State Highway Agency	Spot	Intersections	
W-5708E	Intersection traffic control	Intersection traffic control - other	1	Intersections	$1538	$1709	HSIP (23 U.S.C. 148)			8,842		State Highway Agency	Spot	Intersections	
W-5709D	Intersection traffic control	Intersection traffic control - other	470	Feet	$510642	$567380	HSIP (23 U.S.C. 148)			14,000		State Highway Agency	Spot	Intersections	
W-5710L	Intersection traffic control	Intersection traffic control - other	1	Intersections	$1303	$1448	Penalty Funds (23 U.S.C. 164)			20,000		State Highway Agency	Spot	Intersections	
W-5710L	Intersection traffic control	Intersection traffic control - other	1	Intersections	$123332	$137036	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Intersections	
W-5712B	Intersection traffic control	Intersection traffic control - other	1	Intersections	$75392	$83769	HSIP (23 U.S.C. 148)			4,700		State Highway Agency	Spot	Intersections	
W-5704G	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$2475000	$2750000	HSIP (23 U.S.C. 148)			7,033		State Highway Agency	Spot	Intersections	
W-5706C	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$1800	$2000	HSIP (23 U.S.C. 148)			5,000		State Highway Agency	Spot	Intersections	
W-5706X	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$22500	$25000	HSIP (23 U.S.C. 148)			5,800		State Highway Agency	Spot	Intersections	
W-5710AO	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$468000	$520000	HSIP (23 U.S.C. 148)			10,500		State Highway Agency	Spot	Intersections	
HS-2004O	Intersection traffic control	Modify control – new traffic signal	2	Intersections	$9000	$10000	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	23,000	45	State Highway Agency	Spot	Intersections	
W-5704H	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$607500	$675000	HSIP (23 U.S.C. 148)			10,000		State Highway Agency	Spot	Intersections	
W-5706N	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$221400	$246000	HSIP (23 U.S.C. 148)			5,700		State Highway Agency	Spot	Intersections	
W-5710Z	Intersection traffic control	Modify control – Modern Roundabout	2	Intersections	$603900	$671000	HSIP (23 U.S.C. 148)			4,200		State Highway Agency	Spot	Intersections	

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W-5805A	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$81000	$90000	HSIP (23 U.S.C. 148)			4,800		State Highway Agency	Spot	Intersections	
HS-2002F	Intersection traffic control	Modify control – two-way stop to all-way stop	1	Intersections	$27000	$30000	HSIP (23 U.S.C. 148)			1,950		State Highway Agency	Spot	Intersections	
HS-2004C	Intersection traffic control	Modify control – two-way stop to all-way stop	1	Intersections	$22500	$25000	HSIP (23 U.S.C. 148)			1,550		State Highway Agency	Spot	Intersections	
HS-2004D	Intersection traffic control	Modify control – two-way stop to all-way stop	1	Intersections	$22500	$25000	HSIP (23 U.S.C. 148)			3,200		State Highway Agency	Spot	Intersections	
HS-2004E	Intersection traffic control	Modify control – two-way stop to all-way stop	1	Intersections	$43200	$48000	HSIP (23 U.S.C. 148)			4,000		State Highway Agency	Spot	Intersections	
HS-2004F	Intersection traffic control	Modify control – two-way stop to all-way stop	1	Intersections	$27000	$30000	HSIP (23 U.S.C. 148)			2,400		State Highway Agency	Spot	Intersections	
HS-2004G	Intersection traffic control	Modify control – two-way stop to all-way stop	1	Intersections	$45000	$50000	HSIP (23 U.S.C. 148)			3,000		State Highway Agency	Spot	Intersections	
HS-2004H	Intersection traffic control	Modify control – two-way stop to all-way stop	1	Intersections	$22500	$25000	HSIP (23 U.S.C. 148)			2,200		State Highway Agency	Spot	Intersections	
HS-2004I	Intersection traffic control	Modify control – two-way stop to all-way stop	1	Intersections	$25200	$28000	HSIP (23 U.S.C. 148)			2,150		State Highway Agency	Spot	Intersections	
HS-2004M	Intersection traffic control	Modify control – Modern Roundabout	2	Intersections	$216000	$240000	HSIP (23 U.S.C. 148)			11,000		State Highway Agency	Spot	Intersections	
W-5601AC	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$647632	$719591	HSIP (23 U.S.C. 148)			3,500		State Highway Agency	Spot	Intersections	
W-5702I	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$234000	$260000	HSIP (23 U.S.C. 148)			9,700		State Highway Agency	Spot	Intersections	
W-5702M	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$157500	$175000	HSIP (23 U.S.C. 148)			7,800		State Highway Agency	Spot	Intersections	
W-5702V	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$990000	$1100000	HSIP (23 U.S.C. 148)			1,400		State Highway Agency	Spot	Intersections	

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W-5704S	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$346500	$385000	HSIP (23 U.S.C. 148)			6,000		State Highway Agency	Spot	Intersections	
W-5705T	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$216000	$240000	HSIP (23 U.S.C. 148)			9,000		State Highway Agency	Spot	Lane Departure	
W-5706O	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$538200	$598000	HSIP (23 U.S.C. 148)			6,400		State Highway Agency	Spot	Intersections	
W-5706W	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$234900	$261000	HSIP (23 U.S.C. 148)			5,200		State Highway Agency	Spot	Intersections	
W-5708A	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$1890000	$2100000	HSIP (23 U.S.C. 148)			4,700		State Highway Agency	Spot	Intersections	
W-5710AA	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$45000	$50000	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Intersections	
W-5710AB	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$2763	$3070	HSIP (23 U.S.C. 148)			1,800		State Highway Agency	Spot	Intersections	
W-5710AH	Intersection traffic control	Modify control – Modern Roundabout	2	Intersections	$220500	$245000	HSIP (23 U.S.C. 148)			3,500		State Highway Agency	Spot	Intersections	
W-5710AI	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$216000	$240000	HSIP (23 U.S.C. 148)			7,900		State Highway Agency	Spot	Intersections	
W-5710AR	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$135000	$150000	HSIP (23 U.S.C. 148)			9,200		State Highway Agency	Spot	Intersections	
W-5710AS	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$90000	$100000	HSIP (23 U.S.C. 148)			14,000		State Highway Agency	Spot	Intersections	
W-5710J	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$1059300	$1177000	HSIP (23 U.S.C. 148)			10,000		State Highway Agency	Spot	Intersections	
W-5710Q	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$112500	$125000	HSIP (23 U.S.C. 148)			5,300		State Highway Agency	Spot	Intersections	
W-5710U	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$688500	$765000	HSIP (23 U.S.C. 148)			7,300		State Highway Agency	Spot	Intersections	

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W-5710Y	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$57843	$64270	HSIP (23 U.S.C. 148)			6,500		State Highway Agency	Spot	Intersections	
W-5712A	Intersection traffic control	Modify control – Modern Roundabout	3	Intersections	$342000	$380000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5805E	Intersection traffic control	Modify control – Modern Roundabout	1	Intersections	$148500	$165000	HSIP (23 U.S.C. 148)			7,800		State Highway Agency	Spot	Intersections	
W-5806C	Intersection traffic control	Modify control – Modern Roundabout	2	Intersections	$283500	$315000	HSIP (23 U.S.C. 148)			12,000		State Highway Agency	Spot	Intersections	
HS-2003N	Intersection traffic control	Modify traffic signal – add additional signal heads	1	Intersections	$56700	$63000	HSIP (23 U.S.C. 148)			9,700		State Highway Agency	Spot	Intersections	
W-5712L	Intersection traffic control	Modify traffic signal – add backplates with retroreflective borders	1	Intersections	$225000	$250000	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Intersections	
W-5803C	Intersection traffic control	Modify traffic signal – add backplates with retroreflective borders	1	Intersections	$73800	$82000	HSIP (23 U.S.C. 148)			31,000		State Highway Agency	Spot	Intersections	
HS-2004N	Intersection traffic control	Modify traffic signal – add flashing yellow arrow	1	Intersections	$4500	$5000	HSIP (23 U.S.C. 148)	Rural	Minor Collector	4,500	55	State Highway Agency	Spot	Intersections	
W-5601HY	Intersection traffic control	Modify traffic signal – add flashing yellow arrow	1	Intersections	$16776	$18640	HSIP (23 U.S.C. 148)			35,000		State Highway Agency	Spot	Intersections	
W-5705AA	Intersection traffic control	Modify traffic signal – add flashing yellow arrow	1	Intersections	$73800	$82000	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	$62100	$69000	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	$45000	$50000	HSIP (23 U.S.C. 148)			29,000		State Highway Agency	Spot	Intersections	
W-5705AD	Intersection traffic control	Modify traffic signal – add flashing yellow arrow	1	Intersections	$90900	$101000	HSIP (23 U.S.C. 148)			11,000		State Highway Agency	Spot	Intersections	
W-5705AF	Intersection traffic control	Modify traffic signal – add flashing yellow arrow	1	Intersections	$57600	$64000	HSIP (23 U.S.C. 148)			5,750		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-5705AH	Intersection traffic control	Modify traffic signal – add flashing yellow arrow	1	Intersections	$66600	$74000	HSIP (23 U.S.C. 148)			15,000		State Highway Agency	Spot	Intersections	
W-5705B	Intersection traffic control	Modify traffic signal – add flashing yellow arrow	1	Intersections	$29218	$32464	HSIP (23 U.S.C. 148)			44,000		State Highway Agency	Spot	Intersections	
W-5705D	Intersection traffic control	Modify traffic signal – add flashing yellow arrow	1	Intersections	$65302	$72558	HSIP (23 U.S.C. 148)			19,000		State Highway Agency	Spot	Intersections	
W-5705L	Intersection traffic control	Modify traffic signal – add flashing yellow arrow	1	Intersections	$1179	$1310	HSIP (23 U.S.C. 148)			17,000		State Highway Agency	Spot	Intersections	
W-5705V	Intersection traffic control	Modify traffic signal – add flashing yellow arrow	1	Intersections	$65700	$73000	HSIP (23 U.S.C. 148)			46,000		State Highway Agency	Spot	Intersections	
W-5712M	Intersection traffic control	Modify traffic signal – add flashing yellow arrow	1	Intersections	$90000	$100000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5702U	Intersection traffic control	Modify traffic signal – modernization/replacement	2	Intersections	$643500	$715000	HSIP (23 U.S.C. 148)			36,000		State Highway Agency	Spot	Intersections	
W-5803E	Intersection traffic control	Modify traffic signal timing – adjust clearance interval (yellow change and/or all-red)	1	Intersections	$51300	$57000	HSIP (23 U.S.C. 148)			26,000		State Highway Agency	Spot	Intersections	
W-5700	Intersection traffic control	Modify traffic signal timing – general retiming	99	Intersections	$133348	$148164	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Intersections	
W-5715	Intersection traffic control	Modify traffic signal timing – general retiming	3333	Intersections	$6300000	$7000000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Intersections	
W-5601GI	Intersection traffic control	Systemic improvements – signal-controlled	1	Intersections	$3356	$3729	HSIP (23 U.S.C. 148)			20,178		State Highway Agency	Spot	Intersections	
W-5705C	Lighting	Intersection lighting	4	Intersections	$241505	$268339	HSIP (23 U.S.C. 148)			20,000		State Highway Agency	Spot	Intersections	
W-5717	Miscellaneous	Miscellaneous - other	555	Multiple Locations	$900000	$1000000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Intersections	

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HS-2002G	Pedestrians and bicyclists	Install new crosswalk	1	Intersections	$23400	$26000	HSIP (23 U.S.C. 148)			5,100		State Highway Agency	Spot	Pedestrians	
HS-2002I	Pedestrians and bicyclists	Install new crosswalk	1	Crosswalks	$16200	$18000	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	10,000	35	State Highway Agency	Spot	Pedestrians	
HS-2004P	Pedestrians and bicyclists	Install new crosswalk	2	Crosswalks	$45000	$50000	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	17,000	35	State Highway Agency	Spot	Pedestrians	
W-5601DE	Pedestrians and bicyclists	Install new crosswalk	0.336	Miles	$284256	$315840	HSIP (23 U.S.C. 148)			18,000		State Highway Agency	Spot	Pedestrians	
W-5601DH	Pedestrians and bicyclists	Install new crosswalk	1	Intersections	$386550	$429500	HSIP (23 U.S.C. 148)			15,000		State Highway Agency	Spot	Pedestrians	
W-5703C	Pedestrians and bicyclists	Install sidewalk	0.76	Miles	$176400	$196000	HSIP (23 U.S.C. 148)			29,000		State Highway Agency	Spot	Pedestrians	
W-5703E	Pedestrians and bicyclists	Install sidewalk	750	Feet	$44429	$49366	HSIP (23 U.S.C. 148)			51,000		State Highway Agency	Spot	Pedestrians	
W-5706K	Pedestrians and bicyclists	Install sidewalk	1000	Feet	$805318	$894798	HSIP (23 U.S.C. 148)			24,000		State Highway Agency	Systemic	Pedestrians	
W-5713X/BL-0005	Pedestrians and bicyclists	Install sidewalk	0.16	Miles	$40500	$45000	HSIP (23 U.S.C. 148)			10,700		State Highway Agency	Spot	Pedestrians	
W-5601AG	Pedestrians and bicyclists	Medians and pedestrian refuge areas	1	Miles	$245885	$273206	HSIP (23 U.S.C. 148)			11,000		State Highway Agency	Spot	Pedestrians	
HS-2005F	Pedestrians and bicyclists	Pedestrians and bicyclists – other	100	Intersections	$180000	$200000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Pedestrians	
W-5522	Pedestrians and bicyclists	Pedestrians and bicyclists – other	1	Intersections	$864900	$961000	HSIP (23 U.S.C. 148)			9,300		State Highway Agency	Spot	Pedestrians	
W-5601CK	Pedestrians and bicyclists	Pedestrians and bicyclists – other	1400	Feet	$354382	$393758	HSIP (23 U.S.C. 148)			21,000		State Highway Agency	Spot	Pedestrians	
W-5601GG	Pedestrians and bicyclists	Pedestrians and bicyclists – other	3	Intersections	$2561	$2846	HSIP (23 U.S.C. 148)			22,000		State Highway Agency	Spot	Pedestrians	

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W-5813G	Pedestrians and bicyclists	Pedestrians and bicyclists – other	3	Intersections	$121500	$135000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Pedestrians	
HS-2002H	Pedestrians and bicyclists	Modify existing crosswalk	2	Signal heads	$3600	$4000	HSIP (23 U.S.C. 148)	Multiple/Varies	Minor Arterial	10,000	35	State Highway Agency	Spot	Pedestrians	
HS-2014D	Pedestrians and bicyclists	Pedestrian beacons	3	Crosswalks	$53100	$59000	HSIP (23 U.S.C. 148)			4,000		State Highway Agency	Spot	Pedestrians	
HS-2005G	Pedestrians and bicyclists	Pedestrian signal	2	Intersections	$137700	$153000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	16,500	45	State Highway Agency	Spot	Pedestrians	
W-5705AM	Pedestrians and bicyclists	Pedestrian signal	5	Intersections	$55800	$62000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Pedestrians	
W-5707A	Pedestrians and bicyclists	Pedestrian signal	4	Intersections	$100755	$111950	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Pedestrians	
W-5803D	Pedestrians and bicyclists	Pedestrian signal	1	Intersections	$14886	$16540	HSIP (23 U.S.C. 148)			32,000		State Highway Agency	Spot	Pedestrians	
HS-2006A	Pedestrians and bicyclists	Pedestrian signal	3	Intersections	$27000	$30000	HSIP (23 U.S.C. 148)			23,000		State Highway Agency	Spot	Pedestrians	
HS-2011B	Pedestrians and bicyclists	Pedestrian signal	3	Intersections	$15300	$17000	HSIP (23 U.S.C. 148)			44,000		State Highway Agency	Spot	Pedestrians	
W-5705J	Pedestrians and bicyclists	Pedestrian signal	2	Intersections	$1890	$2100	HSIP (23 U.S.C. 148)			35,000		State Highway Agency	Spot	Pedestrians	
W-5806E	Pedestrians and bicyclists	Pedestrian signal	1	Intersections	$103500	$115000	HSIP (23 U.S.C. 148)			14,000		State Highway Agency	Spot	Pedestrians	
W-5705K	Pedestrians and bicyclists	Pedestrian beacons	2	Intersections	$5962	$6624	HSIP (23 U.S.C. 148)			12,000		State Highway Agency	Spot	Pedestrians	
Z-5700EA	Railroad grade crossings	Railroad grade crossings - other	408	Locations	$345304	$383671	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5601GJ	Roadside	Barrier - other	8500	Feet	$317672	$352969	HSIP (23 U.S.C. 148)			7,500		State Highway Agency	Spot	Lane Departure	

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W-5601GW	Roadside	Barrier end treatments (crash cushions, terminals)	46	Locations	$450000	$500000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5601IF	Roadside	Barrier end treatments (crash cushions, terminals)	216	Locations	$330100	$366778	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5701G	Roadside	Barrier end treatments (crash cushions, terminals)	1	Locations	$97200	$108000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5705Z	Roadside	Barrier end treatments (crash cushions, terminals)	145	Locations	$13808	$15342	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5713G	Roadside	Barrier end treatments (crash cushions, terminals)	64	Locations	$12735	$14150	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5713H	Roadside	Barrier end treatments (crash cushions, terminals)	69	Locations	$26879	$29866	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5713I	Roadside	Barrier end treatments (crash cushions, terminals)	73	Locations	$49538	$55042	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
HS-2005B	Roadside	Barrier- metal	6100	Feet	$92700	$103000	HSIP (23 U.S.C. 148)			2,800		State Highway Agency	Systemic	Lane Departure	
HS-2005E	Roadside	Barrier- metal	360	Feet	$159300	$177000	HSIP (23 U.S.C. 148)			18,500		State Highway Agency	Spot	Lane Departure	
HS-2011C	Roadside	Barrier- metal	264	Feet	$13500	$15000	HSIP (23 U.S.C. 148)			220		State Highway Agency	Spot	Lane Departure	
HS-2013G	Roadside	Barrier- metal	7600	Feet	$19800	$22000	HSIP (23 U.S.C. 148)			4,125		State Highway Agency	Spot	Lane Departure	
HS-2014B	Roadside	Barrier- metal	3000	Feet	$144000	$160000	HSIP (23 U.S.C. 148)			1,000		State Highway Agency	Spot	Lane Departure	
W-5601DU	Roadside	Barrier- metal	13400	Feet	$450000	$500000	HSIP (23 U.S.C. 148)			4,000		State Highway Agency	Spot	Lane Departure	
W-5601GV	Roadside	Barrier- metal	24.43	Miles	$3600	$4000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	

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W-5702B	Roadside	Barrier- metal	1	Miles	$5074	$5638	HSIP (23 U.S.C. 148)			4,700		State Highway Agency	Spot	Lane Departure	
W-5702D	Roadside	Barrier- metal	10	Locations	$109802	$122002	HSIP (23 U.S.C. 148)			4,000		State Highway Agency	Spot	Lane Departure	
W-5713W	Roadside	Barrier- metal	4000	Feet	$50699	$56332	HSIP (23 U.S.C. 148)			710		State Highway Agency	Spot	Lane Departure	
W-5813H	Roadside	Barrier- metal	14075	Feet	$426600	$474000	HSIP (23 U.S.C. 148)			1,450		State Highway Agency	Spot	Lane Departure	
W-5813I	Roadside	Barrier- metal	7200	Feet	$414000	$460000	HSIP (23 U.S.C. 148)			2,100		State Highway Agency	Spot	Lane Departure	
HS-2014E	Roadway	Pavement surface - other	11.73	Miles	$22500	$25000	HSIP (23 U.S.C. 148)			31,200		State Highway Agency	Spot	Lane Departure	
HS-2006B	Roadway	Roadway narrowing (road diet, roadway reconfiguration)	0.334	Miles	$660600	$734000	HSIP (23 U.S.C. 148)			17,500		State Highway Agency	Spot	Intersections	
W-5602	Roadway	Roadway widening - add lane(s) along segment	3.42	Miles	$79200	$88000	HSIP (23 U.S.C. 148)			11,100		State Highway Agency	Spot	Lane Departure	
W-5708L	Roadway	Roadway widening - add lane(s) along segment	0.37	Miles	$166500	$185000	HSIP (23 U.S.C. 148)			15,000		State Highway Agency	Spot	Intersections	
W-5500	Roadway	Roadway widening - curve	1	Locations	$720000	$800000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Lane Departure	
W-5707D	Roadway	Roadway widening - curve	0.25	Miles	$63000	$70000	HSIP (23 U.S.C. 148)			2,800		State Highway Agency	Spot	Lane Departure	
HS-2014A	Roadway	Rumble strips – center	5.77	Miles	$234000	$260000	HSIP (23 U.S.C. 148)			8,575		State Highway Agency	Spot	Lane Departure	
W-5813J	Roadway	Rumble strips – center	18.797	Miles	$450900	$501000	HSIP (23 U.S.C. 148)			6,500		State Highway Agency	Spot	Lane Departure	
W-5701F (new)	Roadway	Rumble strips – center	27.3	Miles	$936900	$1041000	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	5,500	55	State Highway Agency	Spot	Lane Departure	

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HS-2010C	Roadway	Rumble strips – edge or shoulder	27.24	Miles	$695700	$773000	HSIP (23 U.S.C. 148)			22,500		State Highway Agency	Spot	Lane Departure	
W-5706Q	Roadway	Rumble strips – edge or shoulder	16.594	Miles	$104	$116	HSIP (23 U.S.C. 148)			6,700		State Highway Agency	Spot	Lane Departure	
W-5710G (A&B)	Roadway	Rumble strips – edge or shoulder	7.885	Miles	$290124	$322360	HSIP (23 U.S.C. 148)			7,500		State Highway Agency	Spot	Lane Departure	
W-5806B	Roadway	Rumble strips – edge or shoulder	10.616	Miles	$421200	$468000	HSIP (23 U.S.C. 148)			9,800		State Highway Agency	Spot	Lane Departure	
HS-2006F	Roadway	Rumble strips – edge or shoulder	9.485	Miles	$9000	$10000	HSIP (23 U.S.C. 148)	Rural	Major Collector	2,800	55	State Highway Agency	Spot	Lane Departure	
W-5809A	Roadway	Rumble strips –other	45.06	Miles	$922500	$1025000	HSIP (23 U.S.C. 148)			11,000		State Highway Agency	Spot	Lane Departure	
HS-2006H	Roadway	Rumble strips –other	28.961	Miles	$7200	$8000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	5,500	55	State Highway Agency	Systemic	Lane Departure	
W-5601AF	Roadway	Superelevation / cross slope	2	Intersections	$5400	$6000	HSIP (23 U.S.C. 148)			3,100		State Highway Agency	Spot	Roadway Departure	
W-5601CC	Roadway	Superelevation / cross slope	0.3	Miles	$231267	$256963	HSIP (23 U.S.C. 148)			930		State Highway Agency	Spot	Lane Departure	
W-5601DN	Roadway	Superelevation / cross slope	0.5	Miles	$939513	$1043903	HSIP (23 U.S.C. 148)			4,750		State Highway Agency	Spot	Lane Departure	
W-5704K	Roadway	Superelevation / cross slope	1	Miles	$13263	$14737	HSIP (23 U.S.C. 148)			5,300		State Highway Agency	Spot	Lane Departure	
W-5705W	Roadway	Superelevation / cross slope	450	Feet	$304200	$338000	HSIP (23 U.S.C. 148)			9,800		State Highway Agency	Spot	Lane Departure	
W-5706Z	Roadway	Superelevation / cross slope	0.5	Miles	$11700	$13000	HSIP (23 U.S.C. 148)			2,000		State Highway Agency	Spot	Lane Departure	
W-5702P	Roadway delineation	Improve retroreflectivity	646.8	Miles	$166940	$185489	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	

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W-5712N	Roadway delineation	Longitudinal pavement markings – new	26.129	Miles	$96453	$107170	HSIP (23 U.S.C. 148)			3,300		State Highway Agency	Systemic	Lane Departure	
HS-2004J	Roadway delineation	Longitudinal pavement markings - remarking	366.384	Miles	$3902400	$4336000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
HS-2006E	Roadway delineation	Longitudinal pavement markings - remarking	363.591	Miles	$900	$1000	HSIP (23 U.S.C. 148)	Rural	Local Road or Street	0	55	State Highway Agency	Systemic	Lane Departure	
HS-2008C	Roadway delineation	Longitudinal pavement markings - remarking	1857728	Feet	$1422900	$1581000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5705A	Roadway delineation	Longitudinal pavement markings - remarking	33.3	Miles	$152955	$169950	HSIP (23 U.S.C. 148)			170,000		State Highway Agency	Systemic	Lane Departure	
W-5707C	Roadway delineation	Longitudinal pavement markings - remarking	1	Lanes	$23400	$26000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5709I	Roadway delineation	Longitudinal pavement markings - remarking	1887346.56	Feet	$1240	$1378	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5713T	Roadway delineation	Longitudinal pavement markings - remarking	55.8	Miles	$1087200	$1208000	HRRR Special Rule (23 U.S.C. 148(g)(1))			0		State Highway Agency	Systemic	Lane Departure	
W-5713U	Roadway delineation	Longitudinal pavement markings - remarking	65.1	Miles	$1202400	$1336000	HRRR Special Rule (23 U.S.C. 148(g)(1))			0		State Highway Agency	Systemic	Lane Departure	
W-5713V	Roadway delineation	Longitudinal pavement markings - remarking	49	Miles	$941400	$1046000	HRRR Special Rule (23 U.S.C. 148(g)(1))			0		State Highway Agency	Systemic	Lane Departure	
W-5805F	Roadway delineation	Longitudinal pavement markings - remarking	2997992	Feet	$2322346	$2580384	HSIP (23 U.S.C. 148)			0		State Highway Agency	Systemic	Lane Departure	
W-5813B	Roadway delineation	Longitudinal pavement markings - remarking	81.85	Miles	$1440000	$1600000	HRRR Special Rule (23 U.S.C. 148(g)(1))			0		State Highway Agency	Systemic	Lane Departure	
HS-2008D	Roadway signs and traffic control	Roadway signs and traffic control - other	9.975	Miles	$1800	$2000	HSIP (23 U.S.C. 148)			19,000		State Highway Agency	Systemic	Data	

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W-5601BU	Shoulder treatments	Pave existing shoulders	6.03	Miles	$2871	$3190	HSIP (23 U.S.C. 148)			1,000		State Highway Agency	Spot	Lane Departure	
W-5313	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	7.4	Miles	$894550	$993944	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Lane Departure	
HS-2001A	Intersection traffic control	Intersection flashers –sign-mounted or overhead	1	Intersections	$103500	$115000	HSIP (23 U.S.C. 148)			8,500		State Highway Agency	Spot	Intersections	
W-5103	Intersection traffic control	Intersection traffic control - other	7.8	Miles	$747458	$830509	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5203X	Intersection traffic control	Intersection traffic control - other	2	Crossovers	$114275	$126972	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Intersections	
W-5204C	Intersection geometry	Add/modify auxiliary lanes	0.99	Miles	$374544	$416160	HSIP (23 U.S.C. 148)			6,600		State Highway Agency	Spot	Lane Departure	
W-5204D	Roadway	Pavement surface - other	1.41	Miles	$774550	$860611	HSIP (23 U.S.C. 148)			11,000		State Highway Agency	Spot	Lane Departure	
W-5206AO, R-5752	Access management	Median crossover - directional crossover	4000	Feet	$535302	$594780	HSIP (23 U.S.C. 148)			11,000		State Highway Agency	Spot	Intersections	
W-5210K	Intersection traffic control	Modify control – Modern Roundabout	1.33	Miles	$425700	$473000	HSIP (23 U.S.C. 148)			7,600		State Highway Agency	Spot	Intersections	
W-5212M	Intersection geometry	Add/modify auxiliary lanes	0.16	Miles	$109979	$122199	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5213G	Shoulder treatments	Widen shoulder – paved or other (includes add shoulder)	3.63	Miles	$25118	$27909	HSIP (23 U.S.C. 148)			6,000		State Highway Agency	Spot	Lane Departure	
W-5314	Intersection geometry	Add/modify auxiliary lanes	4	Intersections	$423126	$470140	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5319	Intersection traffic control	Intersection traffic control - other	2.71	Miles	$117304	$130338	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Intersections	
W-5517	Miscellaneous	Miscellaneous - other	999	Multiple Locations	$23625000	$26250000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Multiple Emphases	

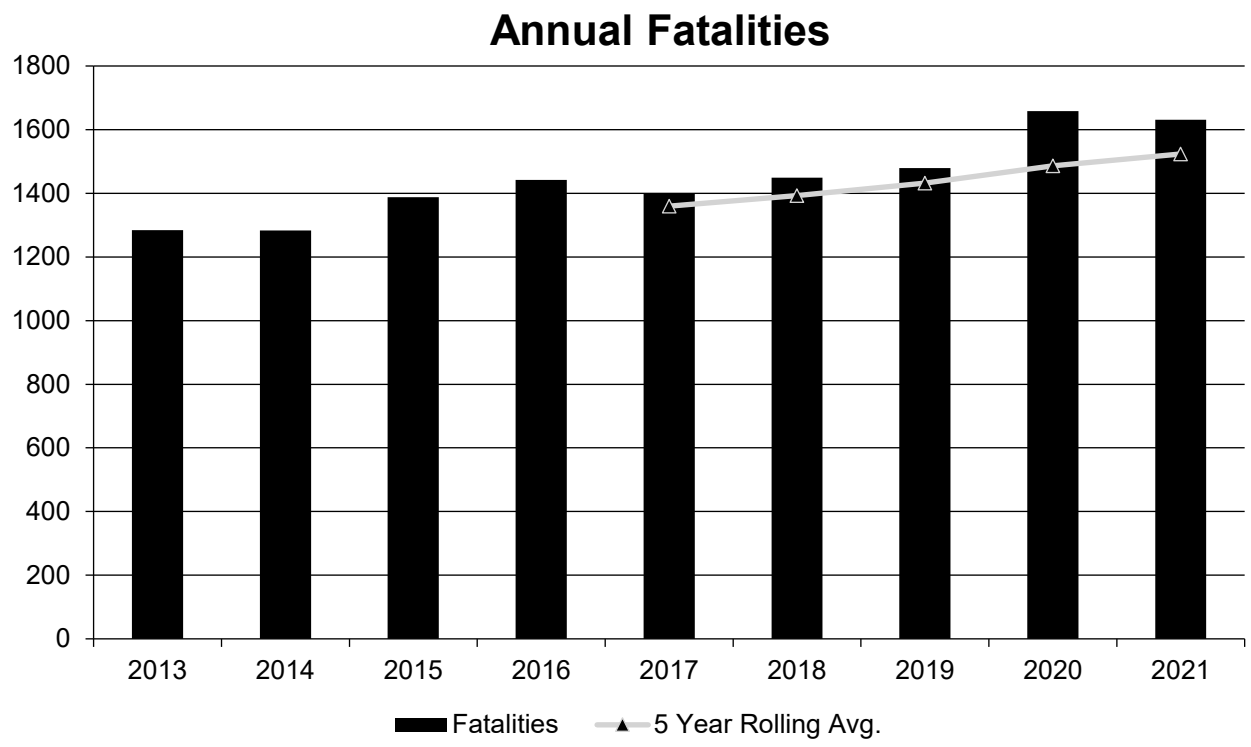
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
W-5601Q	Intersection geometry	Add/modify auxiliary lanes	2	Intersections	$855000	$950000	HSIP (23 U.S.C. 148)			16,000		State Highway Agency	Spot	Intersections	
W-5601U	Intersection geometry	Add/modify auxiliary lanes	1	Lanes	$160200	$178000	HSIP (23 U.S.C. 148)			15,000		State Highway Agency	Spot	Intersections	
W-5716	Miscellaneous	Miscellaneous - other	999	Multiple Locations	$9900000	$11000000	HSIP (23 U.S.C. 148)			0		State Highway Agency	Spot	Multiple Emphases	

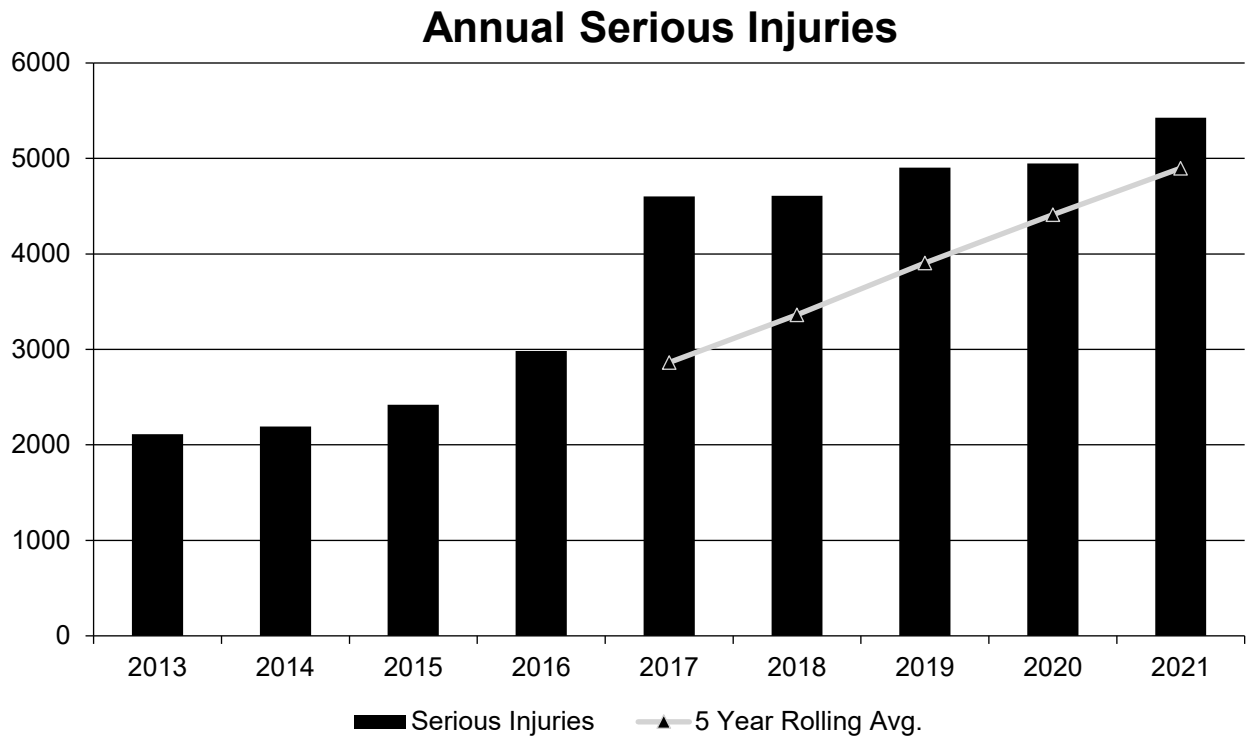
Safety Performance

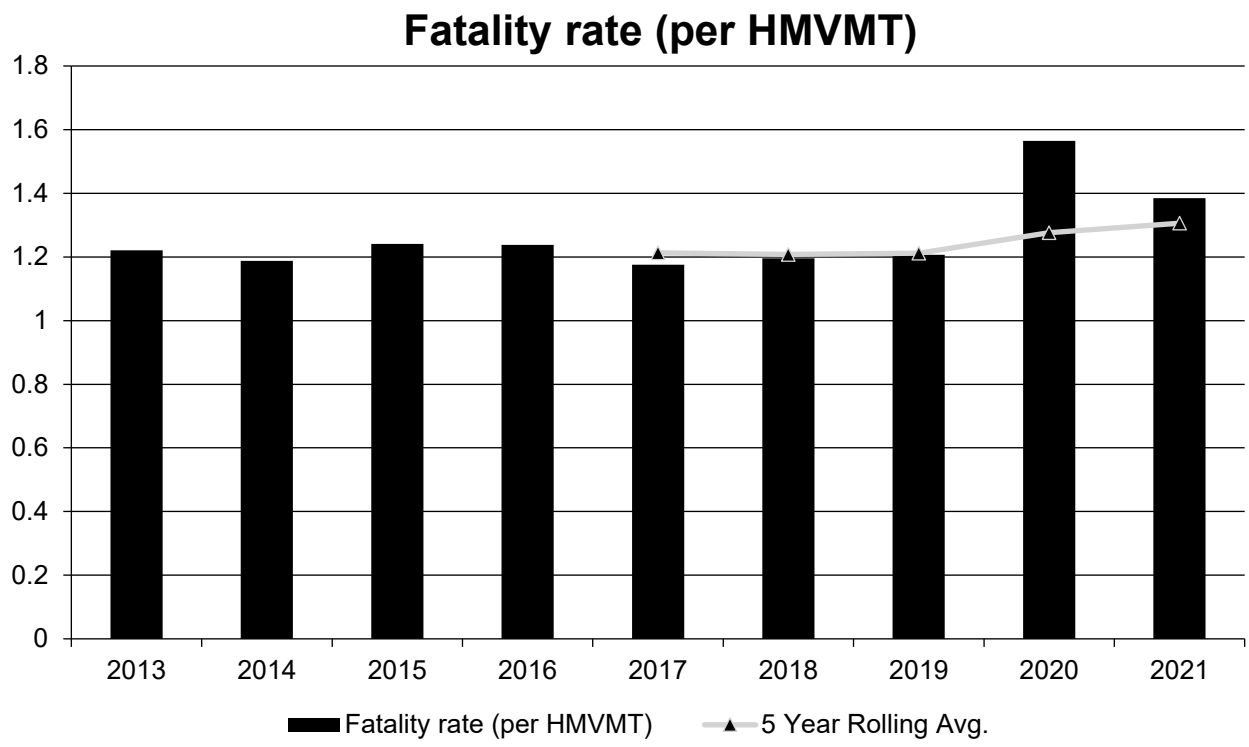
General Highway Safety Trends

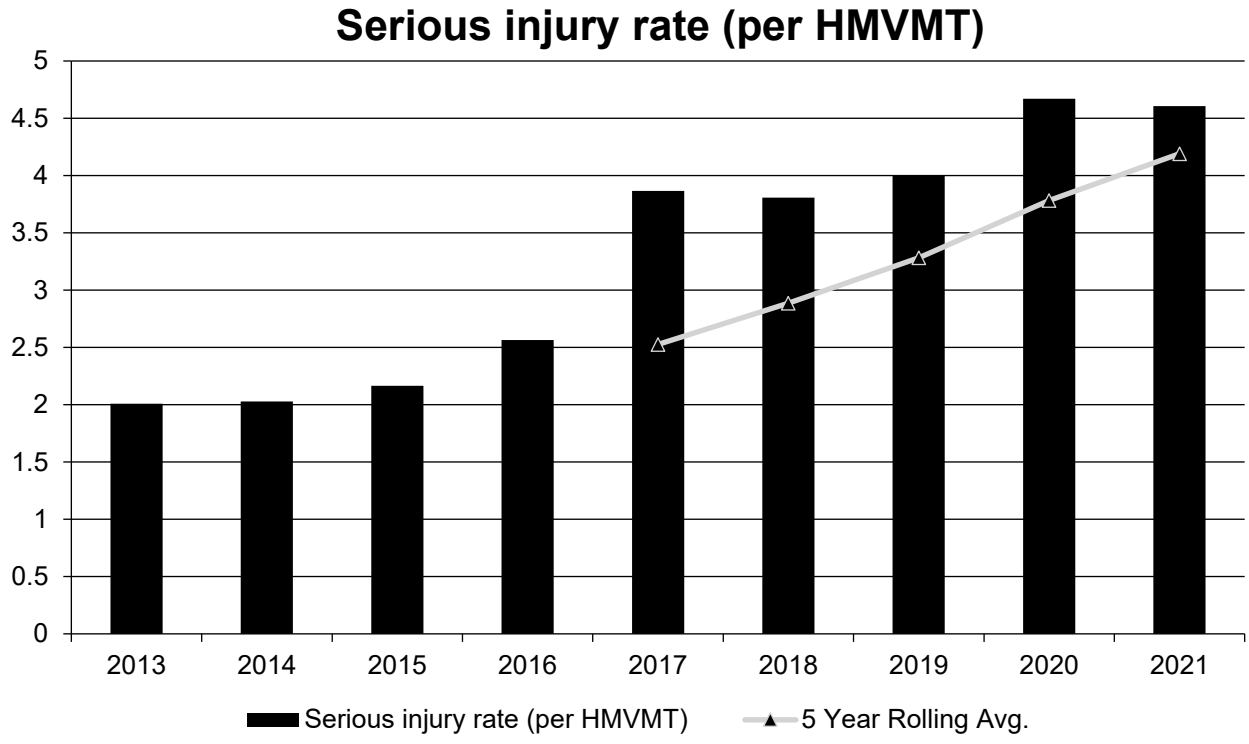
Present data showing the general highway safety trends in the State for the past five years.

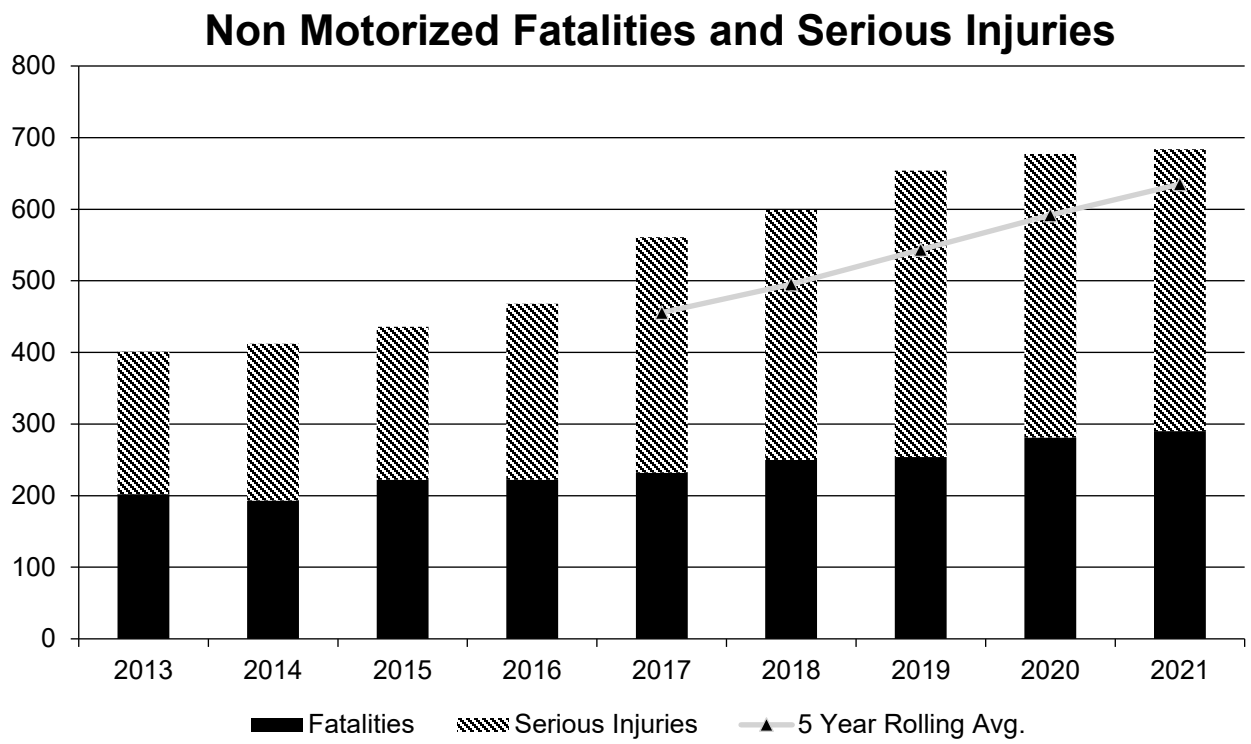
PERFORMANCE MEASURES	2013	2014	2015	2016	2017	2018	2019	2020	2021
Fatalities	1,284	1,283	1,388	1,442	1,401	1,449	1,479	1,658	1,631
Serious Injuries	2,112	2,192	2,421	2,985	4,604	4,610	4,905	4,947	5,426
Fatality rate (per HMVMT)	1.221	1.188	1.241	1.238	1.176	1.196	1.207	1.565	1.385
Serious injury rate (per HMVMT)	2.009	2.029	2.164	2.564	3.866	3.806	4.004	4.670	4.607
Number non-motorized fatalities	202	193	222	222	232	250	254	281	290
Number of non-motorized serious injuries	199	219	214	246	329	349	400	396	394


Annual Fatalities
1800
1600
1400
1200
1000
800
600
400
200
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
6000
5000
4000
3000
2000
1000
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
Fatality rate (per HMVMT)
5 Year Rolling Avg.


Serious injury rate (per HMVMT)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
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 2021

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	41	205	0.64	3.2
Rural Principal Arterial (RPA) - Other Freeways and Expressways	20.6	75.2	0.77	2.79
Rural Principal Arterial (RPA) - Other	80.2	438.4	1.31	7.13
Rural Minor Arterial	131	656	2.18	10.89
Rural Minor Collector	84.4	403.2	2.93	13.96
Rural Major Collector	189	893	2.66	12.53

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 Local Road or Street	164.4	799.6	1.89	9.21
Urban Principal Arterial (UPA) - Interstate	96	482.4	0.49	2.45
Urban Principal Arterial (UPA) - Other Freeways and Expressways	31.2	125.4	0.54	2.2
Urban Principal Arterial (UPA) - Other	203	971.8	1.33	6.35
Urban Minor Arterial	150.6	848.6	1.1	6.21
Urban Minor Collector	9.2	38.8	1.47	6.11
Urban Major Collector	75.6	431.6	1.07	6.1
Urban Local Road or Street	52.8	227.4	0.36	1.85

Year 2021

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	1,434.6	7,325.4	1.4	7.13
County Highway Agency				
Town or Township Highway Agency				
City or Municipal Highway Agency	62.2	277.4	0.5	2.17
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				

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 2023 Targets *

Number of Fatalities:1202.2

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

For the 2023 Highway Safety Improvement Plan (HSIP), the goal is to reduce total fatalities by 19.57 percent from 1,494.8 (2017-2021 average) to 1,202.2 (2019-2023 average) by December 31, 2023.

Number of Serious Injuries:3423.0

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

For the 2023 Highway Safety Improvement Plan (HSIP), the goal is to reduce total serious injuries by 30.19 percent from 4,903.4 (2017-2021 average) to 3,423.0 (2019-2023 average) by December 31, 2023.

Fatality Rate:1.011

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

For the 2023 Highway Safety Improvement Plan (HSIP), the goal is to reduce the fatality rate by 20.95 percent from 1.279 (2017-2021 average) to 1.011 (2019-2023 average) by December 31, 2023.

Serious Injury Rate:2.863

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

For the 2023 Highway Safety Improvement Plan (HSIP), the goal is to reduce the serious injury rate by 31.75 percent from 4.195 (2017-2021 average) to 2.863 (2019-2023 average) by December 31, 2023.

Total Number of Non-Motorized Fatalities and Serious Injuries:468.2

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

For the 2023 Highway Safety Improvement Plan (HSIP), the goal is to reduce the total non-motorized fatalities and serious injuries by 26.52 percent from 637.2 (2017-2021 average) to 468.2 (2019-2023 average) by December 31, 2023.

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 2019 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 set in accordance with the 2019 SHSP goal of reducing fatalities and

serious injuries by half by 2035, moving towards zero by 2050. NCDOT also continues to provide target setting crash data to each of the MPOs so they can establish their safety performance targets.

Does the State want to report additional optional targets?

No

Describe progress toward meeting the State's 2022 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.

PERFORMANCE MEASURES	TARGETS	ACTUALS
Number of Fatalities	1309.9	1523.6
Number of Serious Injuries	3656.1	4898.4
Fatality Rate	1.105	1.306
Serious Injury Rate	3.065	4.191
Non-Motorized Fatalities and Serious Injuries	504.4	635.0

Our state was determined to have not met or made significant progress toward the CY 2021 targets. In order to align with the goals of the 2019 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 2035. Because the safety targets are set based on the aspirational 2019 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.

Applicability of Special Rules

Does the HRRR special rule apply to the State for this reporting period?

Yes

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	2015	2016	2017	2018	2019	2020	2021
Number of Older Driver and Pedestrian Fatalities	206	194	192	219	238	203	263
Number of Older Driver and Pedestrian Serious Injuries	176	223	338	371	396	324	445

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. These evaluations include project background, before and after summary data tables, and before and after collision diagrams. The main objective of these evaluations is to provide feedback to our field personnel 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

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

Funding Allocation Model

The 2020 HSIP Implementation Plan included an adjusted funding model that North Carolina began moving forward with in late 2020. This funding model was established after the data review within the 2020 document. The breakdown of this funding model is show below:

- ROADWAY DEPARTURE - 50%
  - Systemic - 80%
  - Responsive - 20%
- INTERSECTION - 35%
  - Systemic - 40%
  - Responsive - 60%
- PEDESTRIAN & BIKE - 15%
  - Systemic - 40%
  - Responsive - 60%

This allocation will continue to be applied to the anticipated HSIP construction funds of approximately $45 million. The funding allocations above are soft targets with flexibility. Projects will be considered within the context of the funding allocation – systemic versus responsive and emphasis area. The project selection committee will continue to favor low cost, high need and high return projects.

Program Plan

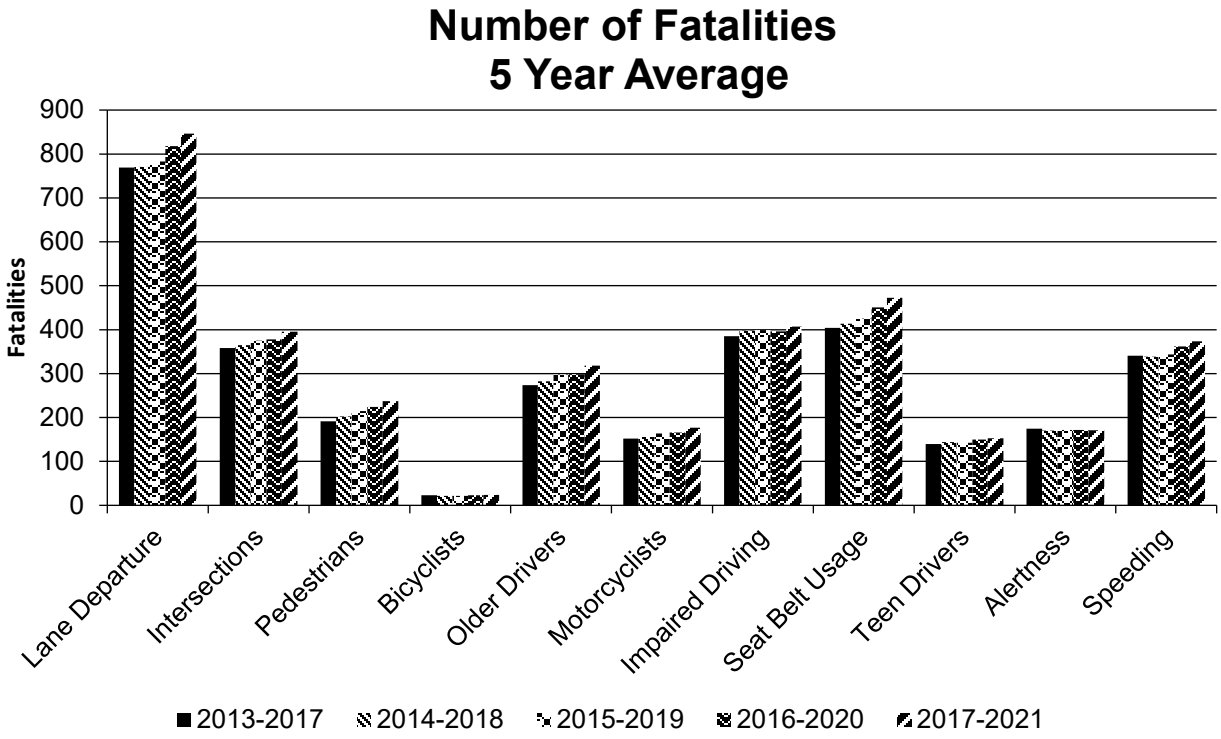
The systemic projects within the roadway departure category will focus on long life markings, rumbles, curve signing and guardrail. The systemic projects within the intersection category will focus on rural, all-way stop control. The systemic projects within the pedestrian category will focus on large city zones and smaller cities where corridors of need can be assessed through risk factors.

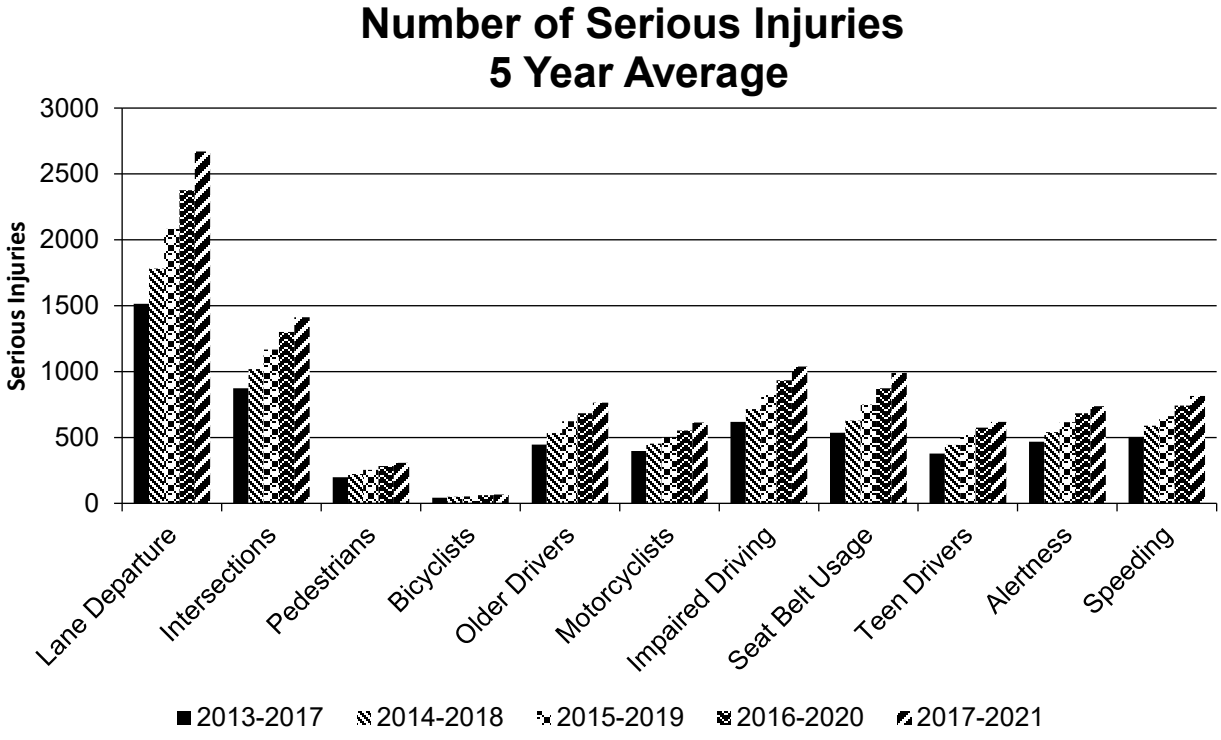
Effectiveness of Groupings or Similar Types of Improvements

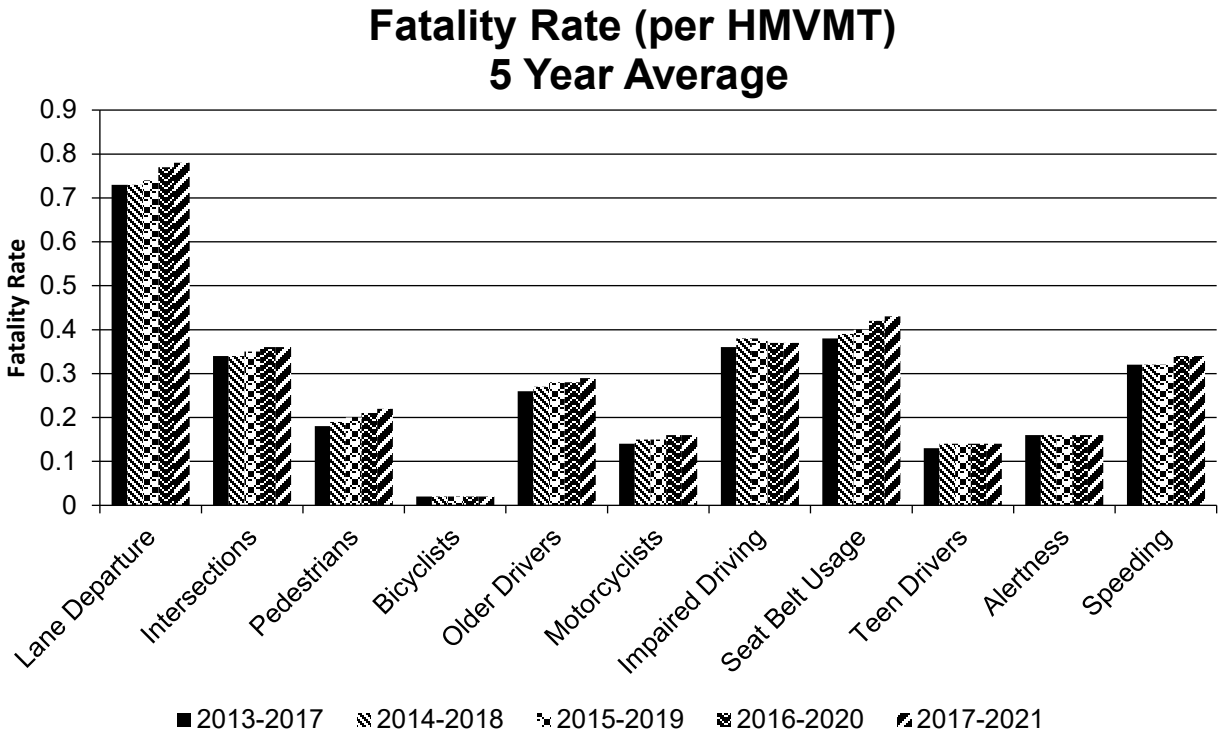
Present and describe trends in SHSP emphasis area performance measures.

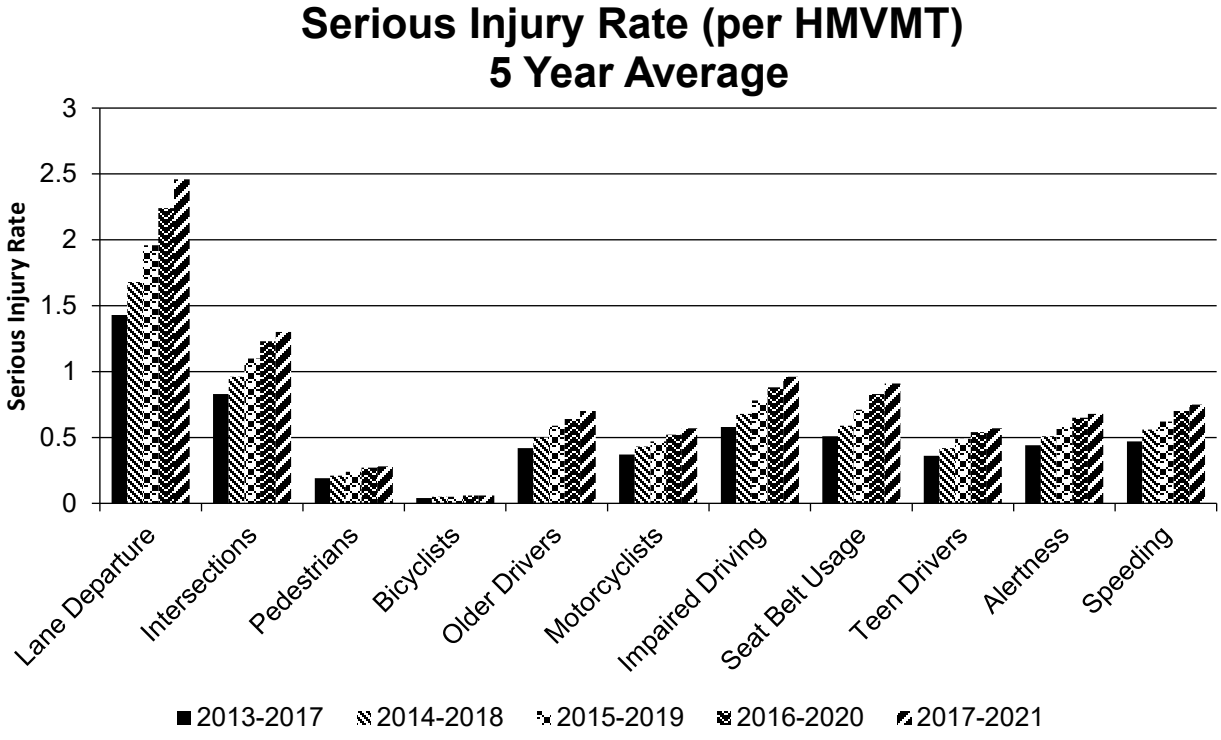
Year 2021

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		846.6	2,670.4	0.78	2.46
Intersections		395.4	1,412.6	0.36	1.3
Pedestrians		237	307.8	0.22	0.28
Bicyclists		23.8	66.2	0.02	0.06
Older Drivers		318.4	764.6	0.29	0.7
Motorcyclists		176.4	614.4	0.16	0.57
Impaired Driving		407.2	1,039.4	0.37	0.96
Seat Belt Usage		472.4	990.6	0.43	0.91
Teen Drivers		153	619	0.14	0.57
Alertness		171.2	736.8	0.16	0.68
Speeding		373.8	815.2	0.34	0.75


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
Impaired Driving
Seat Belt Usage
Teen Drivers
Alertness
Speeding
2013-2017
2014-2018
2015-2019
2016-2020
2017-2021


Number of Serious Injuries
5 Year Average
Serious Injuries
3000
2500
2000
1500
1000
500
0
Lane Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Impaired Driving
Seat Belt Usage
Teen Drivers
Alertness
Speeding
2013-2017
2014-2018
2015-2019
2016-2020
2017-2021





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

Yes

Please provide the following summary information for each countermeasure effectiveness evaluation.

CounterMeasures:	Dynamic Chevrons
Description:	Evaluation of dynamic curve warning systems in NC
Target Crash Type:	Run-off-road
Number of Installations:	16
Number of Installations:	16
Miles Treated:	
Years Before:	
Years After:	
Methodology:	Simple before/after
Results:	66

File Name: Dynamic Chevron Sites June 2021.pdf

CounterMeasures:	Dynamic All Red Extension System at Signals
Description:	Evaluation of dynamic red systems in NC
Target Crash Type:	Other (define)
Number of Installations:	16
Number of Installations:	16
Miles Treated:	
Years Before:	
Years After:	
Methodology:	Before/after using empirical Bayes or Full Bayes
Results:	7

File Name: TRR DARE Paper - Publication Version.pdf

CounterMeasures:	Advanced Activated Warning Flashers at Signals
Description:	Evaluation of AAWF (“Be Prepared to Stop when Flashing”) systems in NC
Target Crash Type:	Other (define)
Number of Installations:	38
Number of Installations:	38
Miles Treated:	
Years Before:	
Years After:	
Methodology:	Before/after using empirical Bayes or Full Bayes
Results:	30

File Name: AAWF Eval Results Presentation_20210825.pdf

CounterMeasures:	Multilane Roundabouts
Description:	Prelim evaluation of multilane roundabouts in NC

Target Crash Type:	Other (define)
Number of Installations:	14
Number of Installations:	14
Miles Treated:	
Years Before:	
Years After:	
Methodology:	Simple before/after
Results:	51

File Name: Multilane Roundabouts Dec 2021.pdf

Project Effectiveness

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

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 web page 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?

02/05/2020

What are the years being covered by the current SHSP?

From: 2019 To: 2023

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

2024

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

*Based on Functional Classification (MIRE 1.0 Element Number) [MIRE 2.0 Element Number]

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	
		STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
ROADWAY SEGMENT	Segment Identifier (12) [12]	100	100					100	100	100	100
	Route Number (8) [8]	100	100								
	Route/Street Name (9) [9]	100	100								
	Federal Aid/Route Type (21) [21]	100	100								
	Rural/Urban Designation (20) [20]	100	100					100	100		
	Surface Type (23) [24]	100						100			
	Begin Point Segment Descriptor (10) [10]	100	100					100	100	100	100
	End Point Segment Descriptor (11) [11]	100	100					100	100	100	100
	Segment Length (13) [13]	100	100								
	Direction of Inventory (18) [18]	100	100								
	Functional Class (19) [19]	100	100					100	100	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	
		STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
	Median Type (54) [55]	100									
	Access Control (22) [23]	100									
	One/Two Way Operations (91) [93]	100									
	Number of Through Lanes (31) [32]	100	100					10	10		
	Average Annual Daily Traffic (79) [81]	100	100					10	10		
	AADT Year (80) [82]	100	100								
	Type of Governmental Ownership (4) [4]	100						100		100	
INTERSECTION	Unique Junction Identifier (120) [110]			100	100						
	Location Identifier for Road 1 Crossing Point (122) [112]			100	100						
	Location Identifier for Road 2 Crossing Point (123) [113]			100	100						
	Intersection/Junction Geometry (126) [116]										
	Intersection/Junction Traffic Control (131) [131]										
	AADT for Each Intersecting Road (79) [81]										
	AADT Year (80) [82]										
	Unique Approach Identifier (139) [129]										
INTERCHANGE/RAMP	Unique Interchange Identifier (178) [168]					100	100				
	Location Identifier for Roadway at					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	
		STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
	Beginning of Ramp Terminal (197) [187]										
	Location Identifier for Roadway at Ending Ramp Terminal (201) [191]					100	100				
	Ramp Length (187) [177]					100	100				
	Roadway Type at Beginning of Ramp Terminal (195) [185]					100	100				
	Roadway Type at End Ramp Terminal (199) [189]					100	100				
	Interchange Type (182) [172]					100	100				
	Ramp AADT (191) [181]					100	100				
	Year of Ramp AADT (192) [182]					100	100				
	Functional Class (19) [19]					100	100				
	Type of Governmental Ownership (4) [4]					100	100				
Totals (Average Percent Complete):		**100.00**	**72.22**	**37.50**	**37.50**	**100.00**	**100.00**	**80.00**	**57.78**	**100.00**	**80.00**

*Based on Functional Classification (MIRE 1.0 Element Number) [MIRE 2.0 Element Number]

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.

Current Status of the MIRE FDE Collection

There are approximately 107,000 miles of public roads in the State of North Carolina. Of those, the NCDOT maintains approximately 80,000, which equates to approximately 75% of all public roadways in the State. 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 Operations Program Management Unit 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 maintain the LRS and many roadway inventory elements. A roadway characteristics file is published every quarter. Anyone can access the roadway inventory GIS files; they are available on the Connect NCDOT website, (https://connect.ncdot.gov/resources/gis/Pages/GIS-Data-Layers.aspx).

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 Operations Program Management Unit, with safety driving the need for new elements.

NCDOT completed a gap assessment in January 2017 comparing their roadway inventory to the FDE listing. This assessment was updated in 2022. 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. In early 2021, NCDOT published an interchange inventory that captures all the required MIRE FDE elements.

Local Paved Roads
Of the nine (9) FDEs on Local Paved Roads, all but one (1) (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.

Appropriate Data Collection Methodology

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.

NCDOT recently completed a research project that provided AADT values for all public roadways, as well as a methodology for generating and maintaining this data. That project was completed in 2020. NCDOT is also working with a vendor to obtain a snapshot of AADT estimates for all public roads in the state using probe data. NCDOT expects delivery of this data in mid-2022. NCDOT also completed an interchange inventory in 2021. This inventory contains all interchanges on all public roads in North Carolina, and has the elements need to satisfy MIRE FDE requirements.

NCDOT also became a member of the Applications of Enterprise GIS for Transportation, Guidance for a National Transportation Framework (AEGIST) pooled fund study in 2020. This pooled fund study will develop standards for a national transportation dataset as well as document best practices for linear referencing systems to maximize data quality and interoperability. One of the initial focuses of the group will be to evaluate preferred methods for managing intersection data in a linear referencing system. MIRE accommodations are a large part of this effort.

NCDOT began a project in early 2022 to develop a Traffic Safety specific intersection inventory, with a focus on the specific intersection attributes that are important to the Traffic Safety Unit and MIRE FDEs. The initial phase of this project is scheduled to wrap up in 2022. This effort is intended to supplement any enterprise intersection inventories that may developed in the future.

Coordination with Other Agencies

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. NCDOT is also exploring the use of non-traditional sources for this type of information on non-system roadways.

Prioritization Criteria for Collection MIRE FDE on All Public Roads

The FDE collection priorities are as follows:

- Short-term: Intersection elements, and any other remaining Non-Local paved road elements.

- Mid-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 Operations Program Management Unit. 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.

Costs and Resources for Data Collection

NCDOT has not yet developed any cost estimates, but recognizes that 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.

Optional Attachments

Program Structure:

Project Implementation:

Safety Performance:

Evaluation:

Dynamic Chevron Sites June 2021.pdf
TRR DARE Paper - Publication Version.pdf
AAWF Eval Results Presentation_20210825.pdf
Multilane Roundabouts Dec 2021.pdf
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.