Protection of Data from Discovery & Admission into Evidence

23 U.S.C. 148(h)(4) states “Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for any purpose relating to this section [HSIP], shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location identified or addressed in the reports, surveys, schedules, lists, or other data.”

23 U.S.C. 409 states “Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.”
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Executive Summary

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

North Carolina recognizes traffic crashes as a significant problem that continues to challenge the state. In 2012, there were over 240,000 reported traffic crashes that resulted in 1,276 persons killed and over 110,000 injuries on our roadways. The socioeconomic impact of these crashes is severe, resulting in a loss of over $10.3 billion to the economy of North Carolina annually. This impact translates to a crash cost to the state of over $1 million every hour and approximately $28 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 January 2008 the Executive Committee for Highway Safety met to reexamine their goals. The committee agreed to adopt a 2.5% reduction in annual fatalities each year over the next 20 years as the new goal.

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 2012 Calendar Year as the reporting period for the “HSIP Report”; however, some of our 2013 plans, goals, and methods are included in this report.
Introduction

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

Program Structure

Program Administration

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

- Central
- District
- Other

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

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

As a future goal, NCDOT is currently working with the UNC Highway Safety Research Center (HSRC) to develop a low cost safety improvements training course that will focus on municipalities. NCDOT is hopeful that the low cost safety improvements training course will
help municipalities gain confidence with problem identification, countermeasure selection and project evaluation.

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

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

- Design
- Planning
- Maintenance
- Operations
- Governors Highway Safety Office
- Other:

Briefly describe coordination with internal partners.

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

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

- Metropolitan Planning Organizations
- Governors Highway Safety Office
Local Government Association
Other: Other-NC State Highway Patrol

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

Multi-disciplinary HSIP steering committee
Other:

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

NCDOT continues to enhance the HSIP steering committee by utilizing various stakeholders.

Program Methodology
Select the programs that are administered under the HSIP.

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

<table>
<thead>
<tr>
<th>Program:</th>
<th>Median Barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Program Methodology:</td>
<td>8/27/2013</td>
</tr>
</tbody>
</table>

What data types were used in the program methodology?

<table>
<thead>
<tr>
<th>Crashes</th>
<th>Exposure</th>
<th>Roadway</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ All crashes</td>
<td>☐ Traffic</td>
<td>☒ Median width</td>
</tr>
<tr>
<td>☐ Fatal crashes only</td>
<td>☐ Volume</td>
<td>☐ Horizontal curvature</td>
</tr>
<tr>
<td>☐ Fatal and serious injury crashes only</td>
<td>☐ Population</td>
<td>☐ Functional classification</td>
</tr>
<tr>
<td>☐ Other</td>
<td>☒ Lane miles</td>
<td>☐ Roadside features</td>
</tr>
<tr>
<td></td>
<td>☐ Other</td>
<td>☒ Other-Freeway</td>
</tr>
</tbody>
</table>

What project identification methodology was used for this program?

☐ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate
Critical rate

Level of service of safety (LOSS)

Excess expected crash frequency using SPFs

Excess expected crash frequency with the EB adjustment

Excess expected crash frequency using method of moments

Probability of specific crash types

Excess proportions of specific crash types

Other-Median Width

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

Yes

No

How are highway safety improvement projects advanced for implementation?

Competitive application process

selection committee

Other

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

Relative Weight in Scoring

Rank of Priority Consideration

Ranking based on B/C
Program: Intersection
Date of Program Methodology: 8/27/2013

What data types were used in the program methodology?

Crashes
- All crashes
- Fatal crashes only
- Fatal and serious injury crashes only
- Other

Exposure
- Traffic
- Volume
- Population
- Other

Roadway
- Median width
- Horizontal curvature
- Functional classification
- Lane miles
- Roadside features
- Other

What project identification methodology was used for this program?
- Crash frequency
- Expected crash frequency with EB adjustment
- Equivalent property damage only (EPDO Crash frequency)
- EPDO crash frequency with EB adjustment
- Relative severity index
Are local roads (non-state owned and operated) included or addressed in this program?
- Yes
- No

If yes, are local road projects identified using the same methodology as state roads?
- Yes
- No

How are highway safety improvement projects advanced for implementation?
- Competitive application process
- Selection committee
- Other

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

☐ Relative Weight in Scoring
☒ Rank of Priority Consideration

☒ Ranking based on B/C
☐ Available funding
☐ Incremental B/C
☐ Ranking based on net benefit
☐ Cost Effectiveness
☒ Regional Priority
☒ Division Priority
☒ Severity Index
☒ Potential Hazardous Listing or RSA Location

Program: Safe Corridor
Date of Program Methodology: 8/27/2013

What data types were used in the program methodology?

Crashes
☐ All crashes
☐ Fatal crashes only

Exposure
☐ Traffic
☐ Volume

Roadway
☐ Median width
☐ Horizontal curvature
What project identification methodology was used for this program?

- Crash frequency
- Expected crash frequency with EB adjustment
- Equivalent property damage only (EPDO Crash frequency)
- EPDO crash frequency with EB adjustment
- Relative severity index
- Crash rate
- Critical rate
- Level of service of safety (LOSS)
- Excess expected crash frequency using SPFs
- Excess expected crash frequency with the EB adjustment
- Excess expected crash frequency using method of moments
- Probability of specific crash types
- Excess proportions of specific crash types
- Other

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

- Yes
- No

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

- Relative Weight in Scoring
- Rank of Priority Consideration

- Ranking based on B/C
- Available funding
- Incremental B/C
- Ranking based on net benefit
- Cost Effectiveness

Program: Horizontal Curve
Date of Program Methodology: 8/27/2013

What data types were used in the program methodology?

Crashes
- All crashes
- Fatal crashes only

Exposure
- Traffic
- Volume

Roadway
- Median width
- Horizontal curvature
What project identification methodology was used for this program?

- Crash frequency
- Expected crash frequency with EB adjustment
- Equivalent property damage only (EPDO Crash frequency)
- EPDO crash frequency with EB adjustment
- Relative severity index
- Crash rate
- Critical rate
- Level of service of safety (LOSS)
- Excess expected crash frequency using SPFs
- Excess expected crash frequency with the EB adjustment
- Excess expected crash frequency using method of moments
- Probability of specific crash types
- Excess proportions of specific crash types
- Other - Road Departure Crashes in a Curve

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

- Yes
- No

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

- Relative Weight in Scoring
- Rank of Priority Consideration

- Ranking based on B/C
- Available funding
- Incremental B/C
- Ranking based on net benefit
- Cost Effectiveness

Program: Bicycle Safety

Date of Program Methodology: 8/27/2013

What data types were used in the program methodology?

<table>
<thead>
<tr>
<th>Crashes</th>
<th>Exposure</th>
<th>Roadway</th>
</tr>
</thead>
<tbody>
<tr>
<td>All crashes</td>
<td>Traffic</td>
<td>Median width</td>
</tr>
<tr>
<td>Fatal crashes only</td>
<td>Volume</td>
<td>Horizontal curvature</td>
</tr>
</tbody>
</table>
### What project identification methodology was used for this program?

- [ ] Crash frequency
- [ ] Expected crash frequency with EB adjustment
- [ ] Equivalent property damage only (EPDO Crash frequency)
- [ ] EPDO crash frequency with EB adjustment
- [ ] Relative severity index
- [ ] Crash rate
- [ ] Critical rate
- [ ] Level of service of safety (LOSS)
- [ ] Excess expected crash frequency using SPFs
- [ ] Excess expected crash frequency with the EB adjustment
- [ ] Excess expected crash frequency using method of moments
- [ ] Probability of specific crash types
- [ ] Excess proportions of specific crash types
- [ ] Other-Bicycle Crashes

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

- [x] Yes
- [ ] No

If yes, are local road projects identified using the same methodology as state roads?
Yes

No

How are highway safety improvement projects advanced for implementation?

- Competitive application process
- Selection committee
- Other

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

- Relative Weight in Scoring
- Rank of Priority Consideration

- Ranking based on B/C 1
- Available funding
- Incremental B/C
- Ranking based on net benefit
- Cost Effectiveness
- Regional Priority 2
- Division Priority 2
- Severity Index 4
- Potentially Hazardous Listing 5
Program: Roadway Departure

Date of Program Methodology: 8/27/2013

What data types were used in the program methodology?

<table>
<thead>
<tr>
<th>Crashes</th>
<th>Exposure</th>
<th>Roadway</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ All crashes</td>
<td>☐ Traffic</td>
<td>☐ Median width</td>
</tr>
<tr>
<td>☐ Fatal crashes only</td>
<td>☐ Volume</td>
<td>☐ Horizontal curvature</td>
</tr>
<tr>
<td>☐ Fatal and serious injury</td>
<td>☐ Population</td>
<td>☐ Functional classification</td>
</tr>
<tr>
<td>crashes only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☒ Other-Roadway Departure</td>
<td>☐ Lane miles</td>
<td>☐ Roadside features</td>
</tr>
<tr>
<td>Crashes</td>
<td>☐ Other</td>
<td></td>
</tr>
<tr>
<td>☐ Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What project identification methodology was used for this program?

☒ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☐ Probability of specific crash types
☐ Excess proportions of specific crash types
☒ Other-Percent Roadway Departure Crashes
☒ Other-Percent Night Crashes
☒ Other-Percent Wet Condition Crashes

Are local roads (non-state owned and operated) included or addressed in this program?
☒ Yes
☐ No

If yes, are local road projects identified using the same methodology as state roads?
☒ Yes
☐ No

How are highway safety improvement projects advanced for implementation?
☐ Competitive application process
☐ selection committee
☐ Other

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

☐ Relative Weight in Scoring
☒ Rank of Priority Consideration

☒ Ranking based on B/C 1
☐ Available funding
- Incremental B/C
- Ranking based on net benefit
- Cost Effectiveness

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

**Program:** Pedestrian Safety

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

**What data types were used in the program methodology?**

<table>
<thead>
<tr>
<th>Crashes</th>
<th>Exposure</th>
<th>Roadway</th>
</tr>
</thead>
<tbody>
<tr>
<td>All crashes</td>
<td>Traffic</td>
<td>Median width</td>
</tr>
<tr>
<td>Fatal crashes only</td>
<td>Volume</td>
<td>Horizontal curvature</td>
</tr>
<tr>
<td>Fatal and serious injury</td>
<td>Population</td>
<td>Functional classification</td>
</tr>
<tr>
<td>crashes only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other-Pedestrian Crashes</td>
<td>Lane miles</td>
<td>Roadside features</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>Other</td>
</tr>
</tbody>
</table>

**What project identification methodology was used for this program?**

- Crash frequency
Expected crash frequency with EB adjustment

Equivalent property damage only (EPDO Crash frequency)

EPDO crash frequency with EB adjustment

Relative severity index

Crash rate

Critical rate

Level of service of safety (LOSS)

Excess expected crash frequency using SPFs

Excess expected crash frequency with the EB adjustment

Excess expected crash frequency using method of moments

Probability of specific crash types

Excess proportions of specific crash types

Other-Pedestrian Crashes

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

☑ Yes

☐ No

If yes, are local road projects identified using the same methodology as state roads?

☑ Yes

☐ No

How are highway safety improvement projects advanced for implementation?

☑ Competitive application process

☑ selection committee

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

☐ Relative Weight in Scoring
☒ Rank of Priority Consideration

☐ Ranking based on B/C  1
☐ Available funding
☐ Incremental B/C
☐ Ranking based on net benefit
☐ Cost Effectiveness
☒ Regional Priority  2
☒ Division Priority  2
☒ Severity Index  4
☒ Potentially Hazardous Listing or RSA  5

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

0

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

☐ Cable Median Barriers
☐ Rumble Strips
What process is used to identify potential countermeasures?

☒ Engineering Study

☒ Road Safety Assessment

☐ Other:

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

☒ Highway Safety Manual

☐ Road Safety audits

☒ Systemic Approach

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

NCDOT is continuing to develop safety performance functions and will utilize the ISDM 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.

### Progress in Implementing Projects

#### Funds Programmed

_Reporting period for Highway Safety Improvement Program funding._

- [x] Calendar Year
- [] State Fiscal Year
- [] Federal Fiscal Year

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

<table>
<thead>
<tr>
<th>Funding Category</th>
<th>Programmed*</th>
<th>Obligated</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSIP (Section 148)</td>
<td>55356010</td>
<td>40862419</td>
</tr>
<tr>
<td></td>
<td>78 %</td>
<td>66 %</td>
</tr>
<tr>
<td>HRRRP (SAFETEA-LU)</td>
<td>8901450</td>
<td>3101530</td>
</tr>
<tr>
<td></td>
<td>12 %</td>
<td>5 %</td>
</tr>
<tr>
<td>HRRR Special Rule</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penalty Transfer - Section 154</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Highway Safety Improvement Program

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penalty Transfer – Section 164</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incentive Grants - Section 163</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incentive Grants (Section 406)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Federal-aid Funds (i.e. STP, NHPP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State and Local Funds</td>
<td>7139718</td>
<td>10%</td>
<td>18069788</td>
<td>29%</td>
</tr>
<tr>
<td>Totals</td>
<td>71397178</td>
<td>100%</td>
<td>62033737</td>
<td>100%</td>
</tr>
</tbody>
</table>

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

$0.00

**How much funding is obligated to local safety projects?**

$0.00

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

$5,200,000.00

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

$5,200,000.00
How much funding was transferred in to the HSIP from other core program areas during the reporting period?

$0.00

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

$0.00

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

NCDOT is responsible for the safety of nearly 80,000 miles of rural and urban highways. Cities and towns are responsible for over 21,000 miles of streets; most of this mileage is downtown and residential streets. While NCDOT administers HSIP funds, most municipalities are hesitant to participate due to the federal guidelines. Local governments are unwilling to administer the competitive bidding process.

The complex federal safety program process discourages many opportunities to utilize the HSIP for low-cost safety projects. In some cases administrative costs may be higher than the project costs.

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

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

<table>
<thead>
<tr>
<th>Project</th>
<th>Improvement Category</th>
<th>Output</th>
<th>HSIP Cost</th>
<th>Total Cost</th>
<th>Funding Category</th>
<th>Functional Classification</th>
<th>AADT</th>
<th>Speed</th>
<th>Roadway Ownership</th>
<th>Relationship to SHSP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>See attached files</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See attached files
Progress in Achieving Safety Performance Targets

Overview of General Safety Trends
Present data showing the general highway safety trends in the state for the past five years.

<table>
<thead>
<tr>
<th>Performance Measures*</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of fatalities</td>
<td>1466</td>
<td>1347</td>
<td>1328</td>
<td>1226</td>
<td>1277</td>
</tr>
<tr>
<td>Number of serious injuries</td>
<td>2773</td>
<td>2479</td>
<td>2283</td>
<td>2365</td>
<td>2278</td>
</tr>
<tr>
<td>Fatality rate (per HMVMT)</td>
<td>1.56</td>
<td>1.5</td>
<td>1.45</td>
<td>1.38</td>
<td>1.29</td>
</tr>
<tr>
<td>Serious injury rate (per HMVMT)</td>
<td>3.54</td>
<td>3.14</td>
<td>2.82</td>
<td>2.55</td>
<td>2.37</td>
</tr>
</tbody>
</table>

*Performance measure data is presented using a five-year rolling average.
Number of Fatalities and Serious Injuries for the Last Five Years

![Graph showing the number of fatalities and serious injuries from 2008 to 2012.](image)

- **# Serious Injuries**
- **# Fatalities**
Rate of Fatalities and Serious injuries for the Last Five Years

![Graph showing the rate of fatalities and serious injuries from 2006 to 2012. The graph indicates a decrease in serious injury rates and a slight increase in fatality rates.](image)

- **Fatalities Rate (per HMVMT)**
- **Serious Injuries Rate (per HMVMT)**
To the maximum extent possible, present performance measure* data by functional classification and ownership.

**Year - 2012**

<table>
<thead>
<tr>
<th>Function Classification</th>
<th>Number of Fatalities</th>
<th>Number of Serious Injuries</th>
<th>Fatality rate (per HMVMT)</th>
<th>Serious injury rate (per HMVMT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RURAL PRINCIPAL ARTERIAL - INTERSTATE</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RURAL PRINCIPAL ARTERIAL - OTHER</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FREEWAYS AND EXPRESSWAYS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RURAL PRINCIPAL ARTERIAL - OTHER</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>RURAL MINOR COLLECTOR</td>
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<td>0</td>
</tr>
<tr>
<td>RURAL LOCAL ROAD OR STREET</td>
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<td>0</td>
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<td>URBAN MAJOR COLLECTOR</td>
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<td>Code</td>
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<td>Value</td>
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<tr>
<td>UNKNOWN</td>
<td>273</td>
<td>1052</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
# Fatalities by Roadway Functional Classification

![Graph showing fatalities by roadway functional classification from 2008 to 2012.](image_url)
# Serious Injuries by Roadway Functional Classification

![Graph showing serious injuries by roadway functional classification for different years (2008-2012).](image)

- **2008**
- **2009**
- **2010**
- **2011**
- **2012**

**Roadway Functional Classification**

- Local Road or Street (U)
- Principal Arterial (U)
- Minor Collector (U)
- Principal Arterial - Other (R)
- Minor Collector - Other (R)
- Principal Arterial - Other Freeways and Expressways (U)
- Local Road or Street - Interstate (R)
- Principal Arterial - Interstate (U)
- Other (U)
- Other Freeways and Expressways (R)
Fatality Rate by Roadway Functional Classification
<table>
<thead>
<tr>
<th>Roadway Ownership</th>
<th>Number of fatalities</th>
<th>Number of serious injuries</th>
<th>Fatality rate (per HMVMT)</th>
<th>Serious injury rate (per HMVMT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATE HIGHWAY AGENCY</td>
<td>808</td>
<td>2772</td>
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<td>0</td>
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<tr>
<td>COUNTY HIGHWAY AGENCY</td>
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<td>0</td>
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<tr>
<td>TOWN OR TOWNSHIP HIGHWAY AGENCY</td>
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<tr>
<td>CITY OF MUNICIPAL HIGHWAY AGENCY</td>
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<td>0</td>
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<td>LOCAL PARK, FOREST OR RESERVATION AGENCY</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>OTHER STATE AGENCY</td>
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<td>2015</td>
<td>2016</td>
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<tr>
<td>RAILROAD</td>
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</tr>
<tr>
<td>STATE TOLL AUTHORITY</td>
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</tr>
<tr>
<td>LOCAL TOLL AUTHORITY</td>
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<td>0</td>
</tr>
<tr>
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<tr>
<td>INDIAN TRIBE NATION</td>
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</tr>
<tr>
<td>UNKNOWN</td>
<td>273</td>
<td>1052</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Number of Fatalities by Roadway Ownership

Roadway Functional Classification

- State
- County
- City
- State Park
- Other State
- Private
- Railroad
- State Toll
- Local Toll
- Other Public
- Tribe
- Other

# of Fatalities

- 2008
- 2009
- 2010
- 2011
- 2012
Fatality Rate by Roadway Ownership

- 2008
- 2009
- 2010
- 2011
- 2012

Roadway Functional Classification

- STATE
- COUNTY
- TOWN
- CITY
- LOCAL PARK
- OTHER STATE
- PRIVATE
- RAILROAD
- STATE TOLL
- LOCAL TOLL
- OTHER PUBLIC
- TRIBE
- OTHER

Fatality Rate (per HHVNT)
Serious Injury Rate by Roadway Ownership

Roadway Functional Classification

2008 2009 2010 2011 2012
Describe any other aspects of the general highway safety trends on which you would like to elaborate.

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

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

**Application of Special Rules**

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

<table>
<thead>
<tr>
<th>Older Driver Performance Measures</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatality rate (per capita)</td>
<td>0</td>
<td>1.43</td>
<td>1.39</td>
<td>1.3</td>
<td>0</td>
</tr>
<tr>
<td>Serious injury rate (per capita)</td>
<td>0</td>
<td>1.35</td>
<td>1.21</td>
<td>1.18</td>
<td>0</td>
</tr>
<tr>
<td>Fatality and serious injury rate (per capita)</td>
<td>0</td>
<td>2.78</td>
<td>2.6</td>
<td>2.47</td>
<td>0</td>
</tr>
</tbody>
</table>

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

For each year:

Fatal rate = (Number of fatalities for drivers and pedestrians over the age of 65) / (Population Figure shown in "Section 142: Older Drivers and Pedestrians Special Rule Interim Guidance")

The numbers shown above are the 5-year rolling average.
Does the older driver special rule apply to your state?

No
Assessment of the Effectiveness of the Improvements (Program Evaluation)

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

- [ ] None
- [x] Benefit/cost
- [ ] Policy change
- [x] Other: Other-Decline in the fatal rates
What significant programmatic changes have occurred since the last reporting period?

- [ ] Shift Focus to Fatalities and Serious Injuries
- [ ] Include Local Roads in Highway Safety Improvement Program
- [ ] Organizational Changes
- [x] None
- [ ] Other: Other—Many NCDOT staff member have a performance metric for highway safety listed in their year-end appraisal
- [ ] Other: Other—More systemic programs are being incorporated in the HSIP
Briefly describe significant program changes that have occurred since the last reporting period.

The use of safety edge is being accepted by highway operations staff as not simply a safety enhancement but also a maintenance enhancement. Safety edge will be required on all contract resurfacing that is let by the Central and Division offices.

NCDOT has initiated a project to study the impacts of wide edge markings on two-lane rural roads.

60% of all highway fatalities in North Carolina are a result of roadway departure crashes. The Traffic Safety Systems Section is working with all 14 highway divisions to systemically treat hundreds of identified curve locations with enhanced warning signs.
SHSP Emphasis Areas
For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.

### Year - 2012

<table>
<thead>
<tr>
<th>HSIP-related SHSP Emphasis Areas</th>
<th>Target Crash Type</th>
<th>Number of fatalities</th>
<th>Number of serious injuries</th>
<th>Fatality rate (per HMVMT)</th>
<th>Serious injury rate (per HMVMT)</th>
<th>Other-1</th>
<th>Other-2</th>
<th>Other-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curbing aggressive driving</td>
<td>Speed-related</td>
<td>504</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>42542</td>
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<tr>
<td>Reducing impaired driving</td>
<td>Alcohol-Involved</td>
<td>439</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8750</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Increasing seat belt use and improving airbag effectiveness</td>
<td>Unbelted Persons</td>
<td>465</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Making walking and street crossing easier</td>
<td>Vehicle/pedestrian</td>
<td>165</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1773</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Ensuring safer bicycle travel</td>
<td>Vehicle/bicycle</td>
<td>21</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>794</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Improving motorcycle safety and increasing motorcycle awareness</td>
<td>Motorcycle</td>
<td>163</td>
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<td>0</td>
<td>0</td>
<td>3824</td>
<td>0</td>
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</tr>
<tr>
<td>Making truck travel</td>
<td>Commercial Motor</td>
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<td>0</td>
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<td>2458</td>
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</table>
### Minimizing the consequences of leaving the road

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<tr>
<th></th>
<th>Run-off-road</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
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<tbody>
<tr>
<td>safer Veh.</td>
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<td>30673</td>
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</table>

**Number of Fatalities by SHSP Emphasis Area**

*Year 2008 to Year 2012*

- **Aggressive driving**: 600
- **Impaired driving**: 400
- **Seat Belt**: 100
- **Pedestrian**: 50
- **Bicycle**: 30
- **Motorcycle**: 20
- **Truck**: 10
- **Fixed object**: 10

SHSP Emphasis Area
Number of Serious Injuries by SHSP Emphasis Area

Year 2008 to Year 2012

# of Serious Injuries

SHSP Emphasis Area
Serious Injury Rate by SHSP Emphasis Area

Year 2008 to Year 2012

Rate of Serious Injury

SHSP Emphasis Area
Groups of similar project types
Present the overall effectiveness of groups of similar types of projects.

### Year - 2012

<table>
<thead>
<tr>
<th>HSIP Sub-program Types</th>
<th>Target Crash Type</th>
<th>Number of fatalities</th>
<th>Number of serious injuries</th>
<th>Fatality rate (per HMVMT)</th>
<th>Serious injury rate (per HMVMT)</th>
<th>Other-1</th>
<th>Other-2</th>
<th>Other-3</th>
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<td>0</td>
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</tr>
</tbody>
</table>


#Serious Injuries by Target Crash Type for Groups of Similar Projects

Year 2008 to Year 2012

Target Crash Type

- Air
- Angle
- Cross-median
- Fixed object
- Sideswipe
- Head-on
- Left-turn
- Night-time
- Non-intersection
- Rear-end
- Right-turn
- Run-off-road
- Speed-related
- Truck-related
- Vehicle/animal
- Vehicle/bicycle
- Vehicle/wet-road
Fatality Rate by Target Crash Type for Groups of Similar Projects

Year 2008 to Year 2012

Target Crash Type

Rate of Fatalities

-0.6  -0.4  -0.2  0.0  0.2  0.4  0.6
Project evaluation for safety projects can be found at this link.

Systemic Treatments
Present the overall effectiveness of systemic treatments.

**Year - 2012**

<table>
<thead>
<tr>
<th>Systemic improvement</th>
<th>Target Crash Type</th>
<th>Number of fatalities</th>
<th>Number of serious injuries</th>
<th>Fatality rate (per HMVMT)</th>
<th>Serious injury rate (per HMVMT)</th>
<th>Other-1</th>
<th>Other-2</th>
<th>Other-3</th>
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</tbody>
</table>
# Serious Injuries by Target Crash Type for Systemic Safety Improvements

Year 2008 to Year 2012

Target Crash Type

- Air
- Angle
- Cross-median
- Fixed object
- Sideswipe
- Head on
- Left turn
- Night-time
- Non-intersection
- Rear end
- Right-turn
- Run-off-road
- Speed-related
- Truck-related
- Vehicle/animal
- Vehicle/bicycle
- Wet road

# of Serious Injuries

-0.6
-0.4
-0.2
0
0.2
0.4
0.6
Fatality Rate by Target Crash Type for Systemic Safety Improvements

Year 2008 to Year 2012
No evaluations for systemic treatments are available. These types of treatments will be studied at a later date.
Describe any other aspects of the overall Highway Safety Improvement Program effectiveness on which you would like to elaborate.

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

I. Development of warranting criteria  
II. Identification of potentially hazardous locations meeting minimum warrant criteria  
III. Detailed crash analysis of program locations  
IV. Engineering field investigation of program locations and evaluation of potential recommendations (where appropriate)  
V. Project development  
VI. Implement countermeasures  
VII. Evaluation of countermeasures implemented with HSIP funds

The warrants developed by the Traffic Safety Systems Section (TSSS) have consistently shown the ability to identify intersections, sections, and bicycle/pedestrian intersections with severe injuries and chronic crash patterns. The Regional Traffic Engineers utilize thorough investigations, traffic operations and safety expertise and proven tools such as signal warrant studies, sight distance measurements, Crash Reduction Factors and Benefit to Cost analysis to ensure to 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.
Provide project evaluation data for completed projects (optional).

<table>
<thead>
<tr>
<th>Location</th>
<th>Functional Class</th>
<th>Improvement Category</th>
<th>Improvement Type</th>
<th>Bef-Fatal</th>
<th>Bef-Serious Injury</th>
<th>Bef-Other Injury</th>
<th>Bef-PDO</th>
<th>Bef-Total</th>
<th>Aft-Fatal</th>
<th>Aft-Serious Injury</th>
<th>Aft-Other Injury</th>
<th>Aft-PDO</th>
<th>Aft-Total</th>
<th>Evaluation Results (Benefit/Cost Ratio)</th>
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</thead>
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<td></td>
</tr>
</tbody>
</table>

See information below.

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

Completed project evaluations can be found at the link below:

### Optional Attachments

<table>
<thead>
<tr>
<th>Sections</th>
<th>Files Attached</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progress in Implementing the Projects: General Listing of Projects</td>
<td>HSIP&amp;Hazard Elimination Program Projects that Received FUNDS IN CY2012.xlsx</td>
</tr>
<tr>
<td>Progress in Implementing the Projects: General Listing of Projects</td>
<td>HSIP&amp;Hazard Elimination Program Projects that Received FUNDS IN CY2012.xlsx</td>
</tr>
<tr>
<td>Progress in Implementing the Projects: General Listing of Projects</td>
<td>High Risk Rural Road Projects that Received FUNDS IN CY2012.xlsx</td>
</tr>
</tbody>
</table>
\textbf{Glossary}

\textbf{5 year rolling average} means the average of five individual, consecutive annual points of data (e.g., annual fatality rate).

\textbf{Emphasis area} means a highway safety priority in a State’s SHSP, identified through a data-driven, collaborative process.

\textbf{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.

\textbf{HMVMT} means hundred million vehicle miles traveled.

\textbf{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.

\textbf{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.

\textbf{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.

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

\textbf{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.

\textbf{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.

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

\textbf{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.