Massachusetts
Highway Safety Improvement Program
2014 Annual Report

Prepared by: MA
Disclaimer

Protection of Data from Discovery & Admission into Evidence

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

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

SAFETEA-LU first instituted the Highway Safety Improvement Program (HSIP) in 2005 and MAP-21 continued the program in 2012. Although Massachusetts was in fact designing and constructing safety projects, it was using other funding categories. In 2009 Massachusetts began obligating funds from the HSIP funding category, only after an HSIP Task Force was developed and HSIP guidelines were implemented. Massachusetts is now in the sixth year of an active HSIP program. This report summarizes the HSIP management and structure in Massachusetts as well as describing the selected HSIP programs and projects. We are submitting the HSIP report on line for the second year but challenges remain in gaining access to the reporting system so that the HSIP reporting all falls to one person. Please note that while 2013 information is listed in this report, the information is incorrect and should not be used. We were unable to eliminate 2013 fields even though we have not supplied 2013 data and 2013 is not yet available in MA.
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 The STIP provided for approximately $40 million in 2014 HSIP funds. $15M administered in HQ and $25M was allocated to the regions (by MARPA formula) through MPO project selection process.

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

The HSIP project selection criteria were based on locations being identified as top crash locations (based on the number and severity of crashes) regardless of road ownership. Additionally, programs were established to reduce injuries and fatalities based on several key focus areas based on our Strategic Highway Safety Plan, regardless of roadway jurisdiction. There was also one low cost systemic approach project to reduce crashes along horizontal curves that was restricted to locally owned roads. Finally, other eligible projects / programs were selected based on HSIP-eligible criteria such as statewide
improvements to data or assistance with SHSP. These programs impact safety on all roadways regardless of roadway jurisdiction

**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 HSIP Task Force consists of seven members: 2 FHWA representatives (one from Massachusetts Division Office in Planning and one from the Massachusetts Division Office in Safety), 2 representatives from MassDOT Highway Division (Chief Engineer and Safety Engineer), one from MassDOT Office of Transportation Planning and two representatives from the Regional Planning Agencies (RPAs), the technical arm of the Metropolitan Planning Organizations (MPOs). The initial role of the Task Force was to establish HSIP guidelines based on input and feedback from others. Once the guidelines were finalized, the role of the Task Force is to meet annually or more frequently, (“meetings” could be via email or in person) and to confirm the selection of HSIP projects and update the guidelines as needed. The HSIP Guidelines are being updated based on MAP-21 and should be finalized in July 2014.

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

- Metropolitan Planning Organizations
- Governors Highway Safety Office
- Local Government Association
Identify any program administration practices used to implement the HSIP that have changed since the last reporting period.

☐ Multi-disciplinary HSIP steering committee

☒ Other: Other-Guidelines have changed on HSIP-eligible programs / projects based on MAP-21

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

None

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

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

Date of Program Methodology: 10/1/2013

What data types were used in the program methodology?

- **Crashes**
  - All crashes
  - Fatal crashes only
  - Fatal and serious injury crashes only
  - Other- CRASH SEVERITY WEIGHTING

- **Exposure**
  - Traffic
  - Volume
  - Population

- **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
- 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

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-MPO

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
Program: Bicycle Safety

Date of Program Methodology: 5/1/2014

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-percent commuting by biking</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 SPF

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-proportion of non-motorist crashes, EMS non-motorist crashes, percent commuting by bike

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-participating communities based on data driven 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).

☐ Relative Weight in Scoring
☒ Rank of Priority Consideration

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

Program: Crash Data
Date of Program Methodology: 10/1/2013

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
☐ Lane miles
☐ Other

Roadway
☐ Median width
☐ Horizontal curvature
☐ Functional classification
☐ 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
☐ 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-STATEWIDE CRASH PROGRAM

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

☐ Relative Weight in Scoring

☐ Rank of Priority Consideration

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

☐ STATEWIDE NEED

Program: Roadway Departure

Date of Program Methodology: 6/18/2014

What data types were used in the program methodology?

Crashes Exposure Roadway

☐ All crashes ☐ Traffic ☐ Median width
☐ Fatal crashes only ☐ Volume ☐ Horizontal curvature
2014 Massachusetts Highway Safety Improvement Program

- Fatal and serious injury crashes only
- Population
- Functional classification
- Other-local curve program locations identified by locals based on need, State curves based on District input for need
- 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
- Crash rate
- Critical rate
- Level of service of safety (LOSS)
- Excess expected crash frequency using SPF
- 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-local curve program locations identified by locals based on need, State curves based on District input for need

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

If no, describe the methodology used to identify local road projects as part of this program.

An application was submitted to all 351 cities and towns asking for participation. Approximately 15% applied and were accepted.

How are highway safety improvement projects advanced for implementation?

☐ Competitive application process
☐ Selection committee
☒ Other—all communities are eligible

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

☐ Relative Weight in Scoring
☐ Rank of Priority Consideration

☐ Ranking based on B/C
☐ Available funding
☐ Incremental B/C
☐ Ranking based on net benefit
☐ Other
☒ for local curves, all communities invited to submit locations (we budgeted for 350
Program: Sign Replacement And Improvement

Date of Program Methodology: 10/1/2013

What data types were used in the program methodology?

- **Crashes**
  - All crashes
  - Fatal crashes only
  - Fatal and serious injury crashes only
  - Other-SYSTEMATIC APPROACH NOT BASED ON CRASHES

- **Exposure**
  - Traffic
  - Volume
  - Population

- **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
- 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 - ALL SECONDARY STATE HIGHWAYS

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 - ALL SECONDARY ROADS

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

☐ Relative Weight in Scoring
☐ Rank of Priority Consideration

☐ Ranking based on B/C
☐ Available funding
Incremental B/C

Ranking based on net benefit

Other

ALL SECONDARY ROADS

<table>
<thead>
<tr>
<th>Program:</th>
<th>Pedestrian Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Program Methodology:</td>
<td>10/1/2013</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-ratio of ped crashes to all crashes by town</td>
<td>Lane miles</td>
<td>Roadside features</td>
</tr>
<tr>
<td></td>
<td>Other-commuting by walking (journey to work census data)</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
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-based on priority of towns selected by above criteria

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

- Relative Weight in Scoring
- Rank of Priority Consideration

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

☑ number of communities involved in programs is based on available funding

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

8

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

- Cable Median Barriers
- Rumble Strips
- Traffic Control Device Rehabilitation
- Pavement/Shoulder Widening
- Install/Improve Signing
- Install/Improve Pavement Marking and/or Delineation
- Upgrade Guard Rails
- Clear Zone Improvements
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: Other-no change since last reporting period. Already use RSAs and systemic
Describe any other aspects of the Highway Safety Improvement Program methodology on which you would like to elaborate.

none
## Progress in Implementing Projects

### Funds Programmed

Reporting period for Highway Safety Improvement Program funding.

- [ ] Calendar Year
- [ ] State Fiscal Year
- [x] 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><strong>HSIP (Section 148)</strong></td>
<td>35175718</td>
<td>31590858</td>
</tr>
<tr>
<td><strong>HRRRP (SAFETEA-LU)</strong></td>
<td>0</td>
<td>250200</td>
</tr>
<tr>
<td><strong>HRRR Special Rule</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Penalty Transfer - Section 154</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Penalty Transfer - Section 164</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Incentive Grants - Section 163</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Incentive Grants (Section 406)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other Federal-aid Funds (i.e. STP, NHPP)</strong></td>
<td>95346788</td>
<td>107937120</td>
</tr>
<tr>
<td><strong>State and Local Funds</strong></td>
<td>28014510</td>
<td>30522153</td>
</tr>
</tbody>
</table>
### How much funding is programmed to local (non-state owned and maintained) safety projects?

$10,596,170.00

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

$10,393,080.00

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

$1,950,000.00

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

$1,050,300.00

### 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.

Not enough shovel-ready projects in the pipeline because local communities must fund the design on locally owned roadways and funding is tight. Previously, in 2009 and 2010, in order to get the HSIP projects moving, MassDOT and FHWA allowed the use of HSIP funding for design as long as the project was HSIP eligible and was programmed on the STIP in an outlying year. This enabled a full HSIP program for the next few years. We revisited this with FHWA for the HRRRP and used HSIP for design to get the project in the pipeline. We may work with FHWA and revisit the idea of using HSIP funding for design in the future. Local communities may also work through their MPOs to push projects that are more systematic with minimal design efforts like a retroreflective sign upgrade program. Right now several things are being considered. Finally, we tied our HSIP funds programs / strategies identified in the updated 2013 SHSP. However, the strategies developed from the emphasis areas teams are in the process of being worked out through the public process and several have been finalized but there will be more to come.

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

None
### 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>ADAMS-ROUNDABOUT CONSTRUCTION AT ROUTE 8 &amp; FRIEND STREET</td>
<td>Intersection traffic control Modify control - two-way stop to roundabout</td>
<td>1 Numbers</td>
<td>391560</td>
<td>1929451</td>
<td>Other Federal-aid Funds (i.e. STP, NHPP)</td>
<td>Urban Principal Arterial - Other</td>
<td>1600</td>
<td>35</td>
<td>Town or Townsh</td>
<td>Incorporate safety elements into intersect design</td>
</tr>
<tr>
<td>BROCKTON-RESURFACING &amp; RELATED WORK ON WEST ELM STREET, FROM WARREN AVENUE TO WEST STREET (6,800 FT.)</td>
<td>Roadway Roadway - other</td>
<td>1.3 Miles</td>
<td>659733</td>
<td>4875094</td>
<td>Other Federal-aid Funds (i.e. STP, NHPP)</td>
<td>Urban Major Collector</td>
<td>2300</td>
<td>35</td>
<td>City of Munici</td>
<td>Incorporate safety elements into intersect design</td>
</tr>
<tr>
<td>SEEKONK-INTERSECTION IMPROVEMENT</td>
<td>Intersection geometry Intersection</td>
<td>1 Numb</td>
<td>247500</td>
<td>3174660</td>
<td>Other Federal</td>
<td>Urban Minor</td>
<td>2200</td>
<td>35</td>
<td>State Highwa</td>
<td>Incorporate safety</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Project Description</th>
<th>Geometrics - miscellaneous/other/ unspecified</th>
<th>Numbers</th>
<th>Other Federal-aid Funds (i.e. STP, NHPP)</th>
<th>Arterial Agency</th>
<th>Incorporate safety elements into intersection design</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS AT ROUTE 114A, ARCADE AVENUE AND MILL ROAD</td>
<td>geometrics - miscellaneous/other/ unspecified</td>
<td>1 Numb 8</td>
<td>474946 482632</td>
<td>State Highway Agency</td>
<td>Incorporate safety elements into intersection design</td>
</tr>
<tr>
<td>CONCORD-LINCOLN-LIMITED ACCESS HIGHWAY IMPROVEMENTS AT ROUTE 2 &amp; 2A, BETWEEN CROSBY'S CORNER &amp; BEDFORD ROAD, INCLUDES C-19-024</td>
<td>Interchange design Convert at-grade intersection to interchange</td>
<td>1 Numb 8</td>
<td>474946 482632</td>
<td>State Highway Agency</td>
<td>Incorporate safety elements into intersection design</td>
</tr>
<tr>
<td>WEST Tisbury-Intersection Improvements at State Road (Vineyard Haven Road) and Old</td>
<td>Intersection geometry Intersection geometrics - modify skew angle</td>
<td>1 Numb 8</td>
<td>31471.9 367761</td>
<td>State Highway Agency</td>
<td>Incorporate safety elements into intersection design</td>
</tr>
<tr>
<td>COUNTY ROAD</td>
<td>Intersection geometry</td>
<td>Intersection geometry - other</td>
<td>Numbers</td>
<td>1868043</td>
<td>3593519</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------</td>
<td>-------------------------------</td>
<td>--------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>LOWELL- SIGNAL &amp; INTERSECTION IMPROVEMENTS AT VFW HIGHWAY, BRIDGE STREET &amp; LAKEVIEW AVENUE</td>
<td>Intersection geometry</td>
<td>Intersection geometry - other</td>
<td>Numbers</td>
<td>1868043</td>
<td>3593519</td>
</tr>
<tr>
<td>WORCESTER - RECONSTRUCTION OF LINCOLN STREET (ROUTE 70), FROM MARSH AVENUE TO AMESBURY STREET (PHASE II)</td>
<td>Roadway Roadway - other</td>
<td>Roadway Roadway - other</td>
<td>Miles</td>
<td>0.99</td>
<td>2760300</td>
</tr>
<tr>
<td>SALEM - RECONSTRUCTION ON CANAL STREET, FROM WASHINGTON STREET &amp; MILL</td>
<td>Roadway Roadway - other</td>
<td>Roadway Roadway - other</td>
<td>Miles</td>
<td>1.2</td>
<td>1800000</td>
</tr>
<tr>
<td>STREET TO LORING AVENUE &amp; JEFFERSON AVENUE</td>
<td>Interchange design Interchange design - other</td>
<td>1 Numbers</td>
<td>398660.4</td>
<td>56450977</td>
<td>Other Federa l-aid Funds (i.e. STP, NHPP)</td>
</tr>
<tr>
<td>STREET TO LORING AVENUE &amp; JEFFERSON AVENUE</td>
<td>Interchange design Interchange design - other</td>
<td>1 Numbers</td>
<td>398660.4</td>
<td>56450977</td>
<td>Other Federa l-aid Funds (i.e. STP, NHPP)</td>
</tr>
<tr>
<td>SPRINGFIELD-SIGNAL &amp; INTERSECTION IMPROVEMENTS AT SUMNER AVENUE, ALLEN STREET, ABBOT STREET &amp; HARKNESS</td>
<td>Intersection geometry Intersection geometry - other</td>
<td>1 Numbers</td>
<td>1115937.9</td>
<td>2187798</td>
<td>HSIP (Section 148)</td>
</tr>
<tr>
<td>AVENUE</td>
<td>$2,057,600</td>
<td>EASTON-SIGNAL &amp; INTERSECTION IMPROVEMENTS @ ROUTE 138 (TURNPIKE STREET) AND ROUTE 106 (FOUNDRY STREET)</td>
<td>Intersection geometry Auxiliary lanes - add left-turn lane</td>
<td>1 Numbers</td>
<td>609969</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
<td>-----------</td>
<td>-------</td>
</tr>
<tr>
<td>BOURNE-RESURFACING &amp; SAFETY UPGRADE ON ROUTE 28 (GENERAL MACARTHUR BOULEVARD)</td>
<td>4.8 Miles</td>
<td>Roadway Roadway - other</td>
<td>479040. 3</td>
<td>709729 3</td>
<td>State and Local Funds</td>
</tr>
<tr>
<td>ANDOVER - TEWKSBURY-INTERSECTION &amp; SIGNAL IMPROVEMENTS AT DASCOMB</td>
<td>1 Numbers</td>
<td>164684 9.16</td>
<td>162720 2</td>
<td>HSIP (Section 148)</td>
<td>Urban Minor Arterial</td>
</tr>
<tr>
<td>Project Description</td>
<td>Design/Improvement Details</td>
<td>Numbers</td>
<td>Source/Type</td>
<td>Traffic Impact</td>
<td>Agency/Contact</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
<td>---------</td>
<td>-------------</td>
<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td>ROAD, EAST STREET, &amp; SHAWSEN STREET</td>
<td>Interchange design</td>
<td>1</td>
<td>4134126</td>
<td>4134126</td>
<td>Agency</td>
</tr>
<tr>
<td>ATTLEBORO - RTE 1-95 SB to Route I-295 SB RAMP RECONSTRUCTION (MassDOT Project)</td>
<td>Installation of new lane on ramp</td>
<td></td>
<td>HSIP (Section 148)</td>
<td>Urban Principal Arterial - Interstate</td>
<td>1900 0</td>
</tr>
<tr>
<td>GREENFIELD, ROUTE 2A AND SHELBRUNE RD/ RIVER ST INTERSECTION IMPROVEMENTS</td>
<td>Intersection geometry</td>
<td>1</td>
<td>349215</td>
<td>1344545</td>
<td>Agency</td>
</tr>
<tr>
<td>RAYNHAM-SIGNAL AND INTERSECTION IMPROVEMENT @ ROUTE 44 (NEW STATE HIGHWAY), ORCHARD STREET AND ROUTE 24 NB -</td>
<td>Intersection geometry</td>
<td>2</td>
<td>847064 89</td>
<td>379260 2</td>
<td>Agency</td>
</tr>
<tr>
<td>Project Description</td>
<td>Length</td>
<td>Milepost</td>
<td>Funding</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------</td>
<td>--------</td>
<td>----------</td>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>OFF RAMP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WEST SPRINGFIELD TO BERNARDSTON - TRAFFIC SIGN REPLACEMENT ON INTERSTATE 91</strong></td>
<td>46</td>
<td>311100</td>
<td>HSIP (Section 148)</td>
<td>Roadway signs and traffic control Sign sheeting - upgrade or replacement</td>
<td></td>
</tr>
<tr>
<td><strong>DISTRICT 5-MEDIAN DELINEATION REPLACEMENT ON ROUTE 6, FROM DENNIS T.L. TO ORLEANS</strong></td>
<td>13</td>
<td>110772</td>
<td>State and Local Funds</td>
<td>Roadside Barrier - other</td>
<td></td>
</tr>
<tr>
<td><strong>STATEWIDE-IMPLEMENTATION (PHASE II) OF THE FLASHING YELLOW ARROW AT SIGNALIZED</strong></td>
<td>50</td>
<td>180000</td>
<td>HSIP (Section 148)</td>
<td>Intersection traffic control Modify traffic signal - add flashing yellow arrow</td>
<td></td>
</tr>
</tbody>
</table>

**Approvals**

**DEPARTMENT**

Older Drivers develop infrastructure improvements that accommodate older road user safety

**Funding**

State Highway Agency

**Implementation**

Incorporate safety elements into road design

**Intersections**

Incorporate safety elements into intersection design
<table>
<thead>
<tr>
<th>&quot;FHWA NINE PROVEN COUNTERMEASURES&quot;</th>
<th>...</th>
<th>...</th>
<th>...</th>
<th>...</th>
<th>...</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SHSP STRATEGIES - BIKE/PED SAFETY PROGRAM</strong></td>
<td>Pedestrians and bicyclists Miscellaneous pedestrians and bicyclists</td>
<td>12 Numbers</td>
<td>415800</td>
<td>100000</td>
<td>HSIP (Section 148)</td>
<td>program is community wide in 12 communities</td>
</tr>
<tr>
<td><strong>SHSP STRATEGIES - LOCAL CURVE PROGRAM</strong></td>
<td>Roadway signs and traffic control Curve-related warning signs and flashers</td>
<td>150 Numbers</td>
<td>853200</td>
<td>962000</td>
<td>HSIP (Section 148)</td>
<td>...</td>
</tr>
<tr>
<td><strong>SHSP STRATEGIES - WORK ZONE ENFORCEMENT</strong></td>
<td>Non-infrastructure Enforcement</td>
<td>1 Numbers</td>
<td>135000</td>
<td>150000</td>
<td>HSIP (Section 148)</td>
<td>multiple locations within work zones around the state</td>
</tr>
</tbody>
</table>
### ASHBURNHAM INTERSECTION IMPROVEMENTS AT ROUTE 101 & WILLIAMS & COREY HILL ROAD

<table>
<thead>
<tr>
<th>Improvement Details</th>
<th>1 Numbers</th>
<th>2 Numbers</th>
<th>HRRP (SAFETY-LU)</th>
<th>Rural Minor Arterial</th>
<th>3000</th>
<th>35</th>
<th>Town or Township Highway Agency</th>
<th>Intersection</th>
<th>Incorporate safety elements into intersection design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersection traffic control Modify control - two-way stop to roundabout</td>
<td>250200</td>
<td>278000</td>
<td>Rural Minor Arterial</td>
<td>3000</td>
<td>35</td>
<td>Town or Township Highway Agency</td>
<td>Incorporate safety elements into intersection design</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SHSP STRATEGIES - ROAD SAFETY AUDIT CONTRACT

<table>
<thead>
<tr>
<th>Description</th>
<th>2 Numbers</th>
<th>3 Numbers</th>
<th>HSSIP (Section 148)</th>
<th>Multiple locations across the state</th>
<th>0</th>
<th>0</th>
<th>Multiple locations across the state</th>
<th>Road Safety Audits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-infrastructure Road safety audits</td>
<td>180000</td>
<td>200000</td>
<td>Multiple locations across the state</td>
<td>0</td>
<td>0</td>
<td>Multiple locations across the state</td>
<td>Road Safety Audits</td>
<td></td>
</tr>
</tbody>
</table>

### SHSP STRATEGIES - SHSP UPDATE

<table>
<thead>
<tr>
<th>Description</th>
<th>1 Numbers</th>
<th>1 Numbers</th>
<th>HSSIP (Section 148)</th>
<th>Assistance with SHSP</th>
<th>0</th>
<th>0</th>
<th>Assistance with SHSP</th>
<th>Identify data needs and review performance measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-infrastructure Transportation safety planning</td>
<td>180000</td>
<td>200000</td>
<td>Multiple locations across the state</td>
<td>0</td>
<td>0</td>
<td>Multiple locations across the state</td>
<td>Identify data needs and review performance measures</td>
<td></td>
</tr>
</tbody>
</table>

### SHSP STRATEGIES - HIGH FRICTION SURFACE

<p>| Description | 3 Numbers | 3 Numbers | HSSIP (Section 148) | 0 | 0 | State Highway Agency | Lane Departure | Incorporate safety elements into roadside |
|-------------|-----------|-----------|---------------------|----|----|State Highway Agency | Lane Departure | Incorporate safety elements into roadside |
| Roadway Pavement surface - high friction surface | 1579500 | 1755000 | HSIP (Section 148) | 0 | 0 | State Highway Agency | Lane Departure | Incorporate safety elements into roadside |</p>
<table>
<thead>
<tr>
<th>TREATMENTS</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>design</th>
</tr>
</thead>
</table>
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>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of fatalities</td>
<td>395.6</td>
<td>376.6</td>
<td>367</td>
<td>360.2</td>
<td>0</td>
</tr>
<tr>
<td>Number of serious injuries</td>
<td>4237.6</td>
<td>3914.6</td>
<td>3700</td>
<td>3570.4</td>
<td>0</td>
</tr>
<tr>
<td>Fatality rate (per HMVMT)</td>
<td>0.72</td>
<td>0.69</td>
<td>0.67</td>
<td>0.66</td>
<td>0</td>
</tr>
<tr>
<td>Serious injury rate (per HMVMT)</td>
<td>7.7</td>
<td>7.14</td>
<td>6.76</td>
<td>6.51</td>
<td>0</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

![Diagram showing the number of fatalities and serious injuries from 2009 to 2013. The data shows a decrease in fatalities and serious injuries over the years.]
Rate of Fatalities and Serious injuries for the Last Five Years

![Graph showing the rate of fatalities and serious injuries over the years 2009 to 2013. The graph indicates a decrease in the rate of serious injuries and fatalities over the years.]
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>3</td>
<td>20</td>
<td>0.25</td>
<td>1.65</td>
</tr>
<tr>
<td>RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RURAL PRINCIPAL ARTERIAL - OTHER</td>
<td>7</td>
<td>29</td>
<td>1.36</td>
<td>4.21</td>
</tr>
<tr>
<td>RURAL MINOR ARTERIAL</td>
<td>7</td>
<td>29</td>
<td>1.33</td>
<td>5.17</td>
</tr>
<tr>
<td>RURAL MINOR COLLECTOR</td>
<td>3</td>
<td>25</td>
<td>0.55</td>
<td>4.17</td>
</tr>
<tr>
<td>RURAL MAJOR COLLECTOR</td>
<td>1</td>
<td>7</td>
<td>0.68</td>
<td>4.76</td>
</tr>
<tr>
<td>RURAL LOCAL ROAD OR STREET</td>
<td>14</td>
<td>34</td>
<td>2.13</td>
<td>5.16</td>
</tr>
<tr>
<td>URBAN PRINCIPAL</td>
<td>49</td>
<td>268</td>
<td>0.33</td>
<td>1.76</td>
</tr>
<tr>
<td><strong>ARterial - Interstate</strong></td>
<td><strong>Urban Principal Arterial - Other Freeways and Expressways</strong></td>
<td><strong>Urban Principal Arterial - Other</strong></td>
<td><strong>Urban Minor Arterial</strong></td>
<td><strong>Urban Minor Collector</strong></td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------------------------------------------</td>
<td>-------------------------------------</td>
<td>--------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td></td>
<td>69</td>
<td>122</td>
<td>1.23</td>
<td>2.16</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>948</td>
<td>0.23</td>
<td>8.63</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>999</td>
<td>0.32</td>
<td>11.38</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>129</td>
<td>484</td>
<td>1.71</td>
<td>6.48</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>209</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>373</td>
<td>0.08</td>
<td>2.33</td>
</tr>
</tbody>
</table>
# Fatalities by Roadway Functional Classification


**Roadway Functional Classification**
# Serious Injuries by Roadway Functional Classification

![Bar chart showing the number of serious injuries by roadway functional classification for the years 2009 to 2013.](chart.png)
Fatality Rate by Roadway Functional Classification

![Fatality Rate by Roadway Functional Classification](image_url)
Serious Injury Rate by Roadway Functional Classification

Roadway Functional Classification

Serious Injury Rate (per HHVMT)
## 2014 Massachusetts Highway Safety Improvement Program

### Year - 2012

<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>134</td>
<td>964</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>COUNTY HIGHWAY AGENCY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOWN OR TOWNSHIP HIGHWAY AGENCY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CITY OF MUNICIPAL HIGHWAY AGENCY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>STATE PARK, FOREST, OR RESERVATION AGENCY</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>LOCAL PARK, FOREST OR RESERVATION AGENCY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>OTHER STATE AGENCY</td>
<td>7</td>
<td>77</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>OTHER LOCAL AGENCY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PRIVATE (OTHER THAN RAILROAD)</td>
<td>4</td>
<td>35</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RAILROAD</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>STATE TOLL AUTHORITY</td>
<td>3</td>
<td>29</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>LOCAL TOLL AUTHORITY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>OTHER PUBLIC INSTRUMENTALITY (E.G. AIRPORT, SCHOOL, UNIVERSITY)</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CITY OR TOWN HIGHWAY AGENCY</td>
<td>194</td>
<td>2212</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Number of Fatalities by Roadway Ownership

![Bar chart showing number of fatalities by roadway ownership for the years 2009 to 2013. The chart compares fatalities across different functional classifications such as state, county, town, city, local park, and others.](chart)

Roadway Functional Classification

- State
- County
- Town
- City
- Local Park
- Other State
- Other Local
- Railroad
- State Toll
- Local Toll
- Other

The chart indicates variations in fatality rates across different roadway categories and years.
Number of Serious Injuries by Roadway Ownership

Roadway Functional Classification

- State
- County
- Town
- City
- State Park
- Other
- Private
- Railroad
- State Toll
- Local Toll
- Other
Fatality Rate by Roadway Ownership

Roadway Functional Classification

- State
- County
- Town
- City
- State Park
- Other State
- Other Local
- Private
- Railroad
- State Toll
- Local Toll
- Other
Serious Injury Rate by Roadway Ownership

Serious Injury Rate (per HWVMT)

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

none

**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>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatality rate (per capita)</td>
<td>0.454</td>
<td>0.426</td>
<td>0.438</td>
<td>0.436</td>
<td>0.344</td>
</tr>
<tr>
<td>Serious injury rate (per capita)</td>
<td>3.66</td>
<td>3.576</td>
<td>3.472</td>
<td>3.452</td>
<td>2.714</td>
</tr>
<tr>
<td>Fatality and serious injury rate (per capita)</td>
<td>4.118</td>
<td>4.006</td>
<td>3.916</td>
<td>3.894</td>
<td>3.062</td>
</tr>
</tbody>
</table>

*Performance measure data is presented using a five-year rolling average.*
Does the older driver special rule apply to your state?

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

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

- None
- Benefit/cost
- Policy change
- Other: Other

What significant programmatic changes have occurred since the last reporting period?

- Shift Focus to Fatalities and Serious Injuries
- Include Local Roads in Highway Safety Improvement Program
- Organizational Changes
- None
- Other: Other-no longer just select spot improvement locations. Include programs and systemic improvements into the mix

Briefly describe significant program changes that have occurred since the last reporting period.
We now use a combination of spot improvements, safety programs and systemic projects in the mix of our HSIP. The overall safety programs and systemic projects are based on SHSP strategies and action items.
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>Roadway Departure</td>
<td></td>
<td>162</td>
<td>907</td>
<td>0.29</td>
<td>1.65</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Intersections</td>
<td></td>
<td>93</td>
<td>1601</td>
<td>0.17</td>
<td>2.92</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Number of Serious Injuries by SHSP Emphasis Area

Year 2009 to Year 2013

SHSP Emphasis Area

Lane Departure
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists

# of Serious Injuries

0
500
1000
1500
2000
2500

2009
2010
2011
2012
2013
Serious Injury Rate by SHSP Emphasis Area

Year 2009 to Year 2013

Rate of Serious Injury

Lane Departure  roadway Departure  Intersections  Pedestrians  Bicyclists  Older Drivers  Motorcyclists

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>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle Safety</td>
<td>9</td>
<td>169</td>
<td></td>
<td>0.02</td>
<td>0.31</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Crash Data</td>
<td>360</td>
<td>3585</td>
<td></td>
<td>0.66</td>
<td>6.54</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Roadway Departure</td>
<td>162</td>
<td>907</td>
<td></td>
<td>0.29</td>
<td>1.65</td>
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<tr>
<td>Sign Replacement And Improvement</td>
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<td>309</td>
<td></td>
<td>0.11</td>
<td>0.57</td>
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<td>0</td>
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</tr>
</tbody>
</table>
# Fatalities by Target Crash Type for Groups of Similar Projects

Year 2009 to Year 2013

Target Crash Type

- All
- Angle
- Crossed barrier
- Pedestrian object
- Head-on
- Left-turn
- Night-time
- Non-intersection
- Rear-end
- Right-turn
- Run-off-road
- Speed-related
- Truck-related
- Vehicle/animal
- Vehicle/bicycle
- Vehicle/pedestrian

# of Fatalities

- 2009
- 2010
- 2011
- 2012
- 2013
# Serious Injuries by Target Crash Type for Groups of Similar Projects

Year 2009 to Year 2013

- 2009
- 2010
- 2011
- 2012
- 2013

Target Crash Type

# of Serious Injuries

- All
- Angle
- Cross median
- Pedestrian
- Sidewipe
- 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
Fatality Rate by Target Crash Type for Groups of Similar Projects

Year 2009 to Year 2013

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/pedestrian

Rate of Fatalities:
- 0
- 0.05
- 0.1
- 0.15
- 0.2

Years:
- 2009
- 2010
- 2011
- 2012
- 2013
Serious Injury Rate by Target Crash Type for Groups of Similar Projects

Year 2009 to Year 2013

Target Crash Type
### 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>
</tr>
</thead>
<tbody>
<tr>
<td>Add/Upgrade/Modify/Remove Traffic Signal</td>
<td>5</td>
<td>113</td>
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<tr>
<td>Install/Improve Signing</td>
<td>63</td>
<td>309</td>
<td>0.11</td>
<td>0.57</td>
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<td>0</td>
</tr>
</tbody>
</table>
# Fatalities by Target Crash Type for Systemic Safety Improvements

Year 2009 to Year 2013

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 Fatalities

-0.6
-0.4
-0.2
0
0.2
0.4
0.6

2009
2010
2011
2012
2013
# Serious Injuries by Target Crash Type for Systemic Safety Improvements

Year 2009 to Year 2013

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
Serious Injury Rate by Target Crash Type for Systemic Safety Improvements

Year 2009 to Year 2013

Target Crash Type

Rate of Serious Injury

-0.6 -0.4 -0.2 0 0.2 0.4 0.6

2009 2010 2011 2012 2013
Describe any other aspects of the overall Highway Safety Improvement Program effectiveness on which you would like to elaborate.

none
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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<tbody>
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## Optional Attachments

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<th>Sections</th>
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<tr>
<td>Progress in Achieving Safety Performance</td>
<td>older driver data for 2014 report.xlsx</td>
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<tr>
<td>Targets: Application of Special Rules</td>
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</table>
5 year rolling average means the average of five individual, consecutive annual points of data (e.g. annual fatality rate).

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

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

HMVMT means hundred million vehicle miles traveled.

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

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

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

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

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

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

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

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