## 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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In 2009, under Safetea-LU, Massachusetts began obligating funds from the HSIP funding category, only after an HSIP Task Force was developed and HSIP guidelines were implemented. HSIP projects and programs must have been identified through our Strategic Highway Safety Plan and consisted of a combination of high crash locations and systemic projects. The HSIP program consisted mainly of infrastructure projects but there have been some programs that involved enforcement, education and awareness. The HSIP is a much needed program to bring down our fatalities and injuries in order to achieve our Towards Zero Death goal. This report summarizes the HSIP management and structure in Massachusetts as well as describing the selected HSIP programs and projects.
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 $33 million in 2015 HSIP funds. $18.7M administered in HQ and $14.6M 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 is an ongoing Bicycle - Pedestrian safety program that works at the community level to address enforcement, education, awareness and infrastructure and in most cases, these areas are focused on 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 were updated based on MAP-21. Program and project selection occurs both in MassDOT HQ and at the regional MPO level (MassDOT District and MassDOT Planning sit on the MPOs). There is funding set aside for each MPO. The statewide HSIP, administered through MassDOT HQ, involves systemic projects and high crash locations as well as programs and strategies based on the SHSP. The programs and strategies from the SHSP are developed through the SHSP Emphasis Area teams with input from many.

Identify which external partners are involved with Highway Safety Improvement Program planning.
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–none known

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
2015  Massachusetts  Highway Safety Improvement Program

- Local Safety
- Pedestrian Safety
- Right Angle Crash

☐ Left Turn Crash
☐ Shoulder Improvement
☐ Segments

☐ Other:

Program:  Intersection

Date of Program Methodology:  10/1/2014

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
- 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

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

☐ Ranking based on B/C

☐ Available funding

☐ Incremental B/C

☐ Ranking based on net benefit

☐ Other

☑ PROJECT READINESS

Program: Safe Corridor

Date of Program Methodology: 10/1/2014

What data types were used in the program methodology?

**Crashes**

☑ All crashes

☐ Fatal crashes only

☐ Fatal and serious injury crashes only

☑ Other-truck crashes and State Police feedback on places problem corridors and where enforcement can easily and

**Exposure**

☐ Traffic

☐ Volume

☐ Population

**Roadway**

☐ Median width

☐ Horizontal curvature

☐ Functional classification

☐ Lane miles

☐ Roadside features
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—police feedback on locations

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
Massachusetts Highway Safety Improvement Program

☐ selection committee
☒ Other - MassDOT worked with State Police for this program to identify corridors

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
☒ where variable message boards can be visible and police can enforce

Program: Bicycle Safety

Date of Program Methodology: 10/1/2014

What data types were used in the program methodology?

Crashes
☐ All crashes

Exposure
☐ Traffic

Roadway
☐ Median width
<table>
<thead>
<tr>
<th>Fatal crashes only</th>
<th>Volume</th>
<th>Horizontal curvature</th>
</tr>
</thead>
<tbody>
<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>☐ Other</td>
<td>☑ Other-percent commuting by biking</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-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: Skid Hazard
Date of Program Methodology: 10/1/2014
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-pavement condition could accommodate HFST

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-combination of horizontal curve with crash history and pavement condition
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-The District Office selected the locations

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: Sign Replacement And Improvement

Date of Program Methodology: 10/1/2014
### 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>spreads-SYSTEMATIC APPROACH NOT BASED ON 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 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-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
Program: Pedestrian Safety
Date of Program Methodology: 10/1/2014

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-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
- 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-EMS data on pedestrians, ratio of pedestrian crashes to all crashes, commuting rates of pedestrians by towns

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

Program: Left Turn Crash

Date of Program Methodology: 10/1/2014

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></td>
<td></td>
</tr>
<tr>
<td>Fatal crashes only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatal and serious injury crashes only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Traffic</td>
<td>Median width</td>
</tr>
<tr>
<td></td>
<td>Volume</td>
<td>Horizontal curvature</td>
</tr>
<tr>
<td></td>
<td>Population</td>
<td>Functional classification</td>
</tr>
<tr>
<td></td>
<td>Lane miles</td>
<td>Roadside features</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>Other</td>
</tr>
</tbody>
</table>

- Other-Systemic approach for all State signals with left turn lanes and protected-permissive phasing to install FYA

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-using systemic approach for all eligible state signals

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-SHSP emphasis area strategy

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

18

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

- Cable Median Barriers
- Traffic Control Device Rehabilitation
- Install/Improve Signing
- Upgrade Guard Rails
- Safety Edge
- Rumble Strips
- Pavement/Shoulder Widening
- Install/Improve Pavement Marking and/or Delineation
- Clear Zone Improvements
- Install/Improve Lighting
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-We have increased our systemic approach

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>HSIP (Section 148)</td>
<td>29958730</td>
<td>27955925.78</td>
</tr>
<tr>
<td>HRRRP (SAFETEA-LU)</td>
<td></td>
<td></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>
<tr>
<td>Penalty Transfer – Section 164</td>
<td>0</td>
<td>17399.22</td>
</tr>
<tr>
<td>Incentive Grants - Section 163</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incentive Grants (Section 406)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Federal-aid Funds (i.e. STP, NHPP)</td>
<td>27269255.2</td>
<td>25904952.31</td>
</tr>
<tr>
<td>State and Local Funds</td>
<td>10146062</td>
<td>11813363.48</td>
</tr>
</tbody>
</table>
Please note that there are a few projects that have not yet been obligated for this Federal Fiscal Year but are planned to be obligated during the months of August and September. Therefore, the "obligated" amount, includes those projects and programs.

How much funding is programmed to local (non-state owned and maintained) safety projects?
20 %

How much funding is obligated to local safety projects?
15 %

How much funding is programmed to non-infrastructure safety projects?
7 %

How much funding is obligated to non-infrastructure safety projects?
7 %

How much funding was transferred in to the HSIP from other core program areas during the reporting
Discuss impediments to obligating Highway Safety Improvement Program funds and plans to overcome this in the future.

MassDOT is very interested in having more low cost systemic approach projects on local roads, to address the safety concerns based on the data. However, many local communities do not have roadway layouts so that the specific rights-of-way are not defined. FHWA Division Office has asked us to perform surveys on each of the roadways for the systemic projects. This would push systemic low cost projects into a more costly program. We are working with our division office to enable us to do what many other states do (having locals certify that all signs and markings will occur within the local public right of way) or on another solution so that Massachusetts can fully utilize and implement low cost systemic approaches to safety for locally owned roadways.

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

The first HSIP project was obligated in 2009 and completed in 2011. The Registry of Motor Vehicles just closed the 2013 crash file in June 2015. Therefore, in the coming year or two, MassDOT will be able to begin performing an evaluation of the effectiveness of the HSIP projects by using 3 years of pre-implementation crash data and comparing to 3 years of post-implementation crash data.
**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>605657- MEDWAY - RECONSTRUCTION ON ROUTE 109, FROM HOLLISTON STREET TO 100 FT. WEST OF HIGHLAND STREET, INCLUDES REHAB OF M-13-012</td>
<td>Roadway Roadway - other</td>
<td>1.501 Miles</td>
<td>3000000</td>
<td>13382439.6</td>
<td>HSIP (Section 148)</td>
<td>Urban Principal Arterial - Other</td>
<td>2080</td>
<td>35</td>
<td>Town or Township Highway Agency</td>
<td>Intersections</td>
</tr>
<tr>
<td>605146- SALEM-RECONSTRUCTION ON CANAL STREET, FROM WASHINGTON STREET &amp; MILL STREET TO LORING AVENUE &amp; JEFFERSON</td>
<td>Roadway Roadway - other</td>
<td>1.339 Miles</td>
<td>2000000</td>
<td>10835675.66</td>
<td>HSIP (Section 148)</td>
<td>Rural Minor Arterial</td>
<td>1900</td>
<td>35</td>
<td>State Highway Agency</td>
<td>Roadway Departure</td>
</tr>
<tr>
<td>AVENUE</td>
<td>Intersection geometry</td>
<td>Intersection geometry - other</td>
<td>1 Numbers</td>
<td>4237130</td>
<td>8052365.3</td>
<td>HSIP (Section 148)</td>
<td>Rural Principal Arterial - Other</td>
<td>1554</td>
<td>35</td>
<td>State Highway Agency</td>
</tr>
<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>606394-BARNSTABLE-INTERSECTION IMPROVEMENTS AT FALMOUTH ROAD (ROUTE 28) AND BEARSES WAY</td>
<td>Intersection geometry</td>
<td>Intersection geometry - other</td>
<td>1 Numbers</td>
<td>4237130</td>
<td>8052365.3</td>
<td>HSIP (Section 148)</td>
<td>Rural Principal Arterial - Other</td>
<td>1554</td>
<td>35</td>
<td>State Highway Agency</td>
</tr>
<tr>
<td>606485-MILLBURY-SUTTON-MEDIAN BARRIER REPLACEMENT ON ROUTE 146, FROM ROUTE 122A TO BOSTON ROAD</td>
<td>Roadside Barrier - other</td>
<td>2.742 Miles</td>
<td>2250000</td>
<td>6091525</td>
<td>HSIP (Section 148)</td>
<td>Rural Principal Arterial - Other</td>
<td>4420</td>
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<td>Roadway Departure</td>
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<tr>
<td>606347-STURBRIDGE-RESURFACING AND RELATED WORK ON ROUTE 20, FROM ROUTE 49 TO I-84</td>
<td>Roadway Pavement surface - high friction surface</td>
<td>0 Miles</td>
<td>1000000</td>
<td>2836751.77</td>
<td>HSIP (Section 148)</td>
<td>Rural Principal Arterial - Other</td>
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<tr>
<td>Code</td>
<td>Description</td>
<td>Numbers</td>
<td>HSIP (Section)</td>
<td>Pre/Post</td>
<td>District</td>
<td>Agency</td>
<td>Intersections</td>
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<td>607072-</td>
<td>DISTRICT 1-2-3 - IMPLEMENT (PHASE III) OF THE FLASHING YELLOW ARROW AT</td>
<td>9</td>
<td>1170000</td>
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<td></td>
<td>SIGNALIZED INTERSECTIONS VARIOUS LOCATIONS - ONE OF THE FHWA NINE PROVEN</td>
<td>13</td>
<td>450000</td>
<td>varies</td>
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<td>0</td>
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<td>608269-</td>
<td>DISTRICT 4-6 - IMPLEMENT (PHASE III) OF THE FLASHING YELLOW ARROW AT SIGNALIZED</td>
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<td>1300000</td>
<td>varies</td>
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<td></td>
<td>INTERSECTIONS VARIOUS LOCATIONS - ONE OF THE FHWA NINE PROVEN COUNTERMEASURES</td>
<td>9</td>
<td>450000</td>
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<tr>
<td>RES</td>
<td>Intersection geometry</td>
<td>Intersection geometry - other</td>
<td>1</td>
<td>Numbers</td>
<td>300449</td>
<td>629039.75</td>
<td>HSIP (Section 148)</td>
<td>Urban Minor Arterial</td>
<td>1100</td>
<td>35</td>
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<tr>
<td>607222- GREENFIELD- INTERSECTION IMPROVEMENTS AT ROUTE/5/10 &amp; CHAPSID STREET</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>604035- HADLEY- SIGNAL &amp; INTERSECTION IMPROVEMENT AT ROUTE 9 (RUSSELL STREET) &amp; ROUTE 47 (MIDDLE STREET)</td>
<td>Intersection traffic control</td>
<td>Intersection traffic control - other</td>
<td>1</td>
<td>Numbers</td>
<td>1201102</td>
<td>4319150.1</td>
<td>HSIP (Section 148)</td>
<td>Urban Principal Arterial - Other</td>
<td>2500</td>
<td>45</td>
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<tr>
<td>606729- TAUNTON- COUNTY STREET (RTE 140) RECONSTRUCTION FORM RTE 24 TO MOZZONE BLVD TO WIDEN RR TRACKS AREA</td>
<td>Roadway</td>
<td>Roadway - other</td>
<td>0.262</td>
<td>Miles</td>
<td>1560000</td>
<td>3634748.14</td>
<td>HSIP (Section 148)</td>
<td>Rural Minor Arterial</td>
<td>3000</td>
<td>45</td>
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<tr>
<td>Project Code</td>
<td>Description</td>
<td>Roadway</td>
<td>Numbers</td>
<td>Project Code</td>
<td>Details</td>
<td></td>
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<tr>
<td>608024-STATEWIDE-CONVERSION OF INTERSTATE AND FREEWAY EXIT NUMBERS TO MILEPOST-BASED</td>
<td>Roadway signs and traffic control Roadway signs (including post) - new or updated</td>
<td>0</td>
<td>3555556</td>
<td>5995280</td>
<td>HSIP (Section 148)</td>
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<td>SHSP- PROJECT HSI-002S(361), Statewide, MassDOT / Mass. State Police Work Zone Safety Enforcement Program</td>
<td>Work Zone Numbers</td>
<td>1</td>
<td>449585.18</td>
<td>499439</td>
<td>HSIP (Section 148) mostly on controlled access roadways: interstates and principal arterials</td>
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<tr>
<td>SHSP- HSI-002S(678), Statewide-Pedestrian &amp; Bicycle Traffic Safety Prog. w/ seven RPAs, Pittsfield Police, MA Bike Coalition &amp;</td>
<td>Non-infrastructure Enforcement</td>
<td>19</td>
<td>631463.4</td>
<td>701626</td>
<td>HSIP (Section 148) this is a non-infrastructure project and the work will pertain to all roads</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>this is a non-infrastructure project and the work will pertain to all roads</td>
<td></td>
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</tr>
</tbody>
</table>
### WalkBoston

| SHSP- HSI-002S(809), Statewide - Agree. #87077 with City of Boston for Crash Data Reporting System Improvements | Non-infrastructure Data/traffic records | 1 Numbers | 69667.2 | 77408 | HSIP (Section 148) | this is a non-infrastructure project and the work will pertain to all roads in Boston | 0 | 0 | City of Municipal Highway Agency | Data |

| SHSP-STATEWIDE - DESIGN CONSULTING SERVICES FOR LOCAL COMMUNITIES ON BICYCLE PEDESTRIAN SAFETY ISSUES | Non-infrastructure Road safety audits | 1 Numbers | 315000 | 350000 | HSIP (Section 148) | this is a non-infrastructure project and the work will pertain to all roads in local communities involved in this program | 0 | 0 | City of Municipal Highway Agency | Pedestrians |

<p>| SHSP-STATEWIDE - DESIGN CONSULTING SERVICES AND | Non-infrastructure Transportati | 1 Numbers | 450000 | 500000 | HSIP (Section 148) | this is a non-infrastructure project | 0 | 0 | this is a non-infrastructure project | Data and general SHSP help |</p>
<table>
<thead>
<tr>
<th>SAFETY ENGINEERING FOR HSM AND OTHER SAFETY PLANNING</th>
<th>on safety planning</th>
<th>and the work will pertain to all roads</th>
<th>and the work will pertain to all roads</th>
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</thead>
<tbody>
<tr>
<td>608152 - DISTRICT 4 - HIGH FRIC TION SURFACE TREATMENT AND RELATED WORK AT 3 LOCATIONS</td>
<td>Roadway Pavement surface - high friction surface</td>
<td>HSIP (Section 148)</td>
<td>Urban Principal Arterial - Interstate</td>
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<tr>
<td></td>
<td>3 Numbers</td>
<td>2052000</td>
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<td></td>
<td></td>
<td>2280000</td>
<td>0</td>
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<td></td>
<td></td>
<td></td>
<td>State Highway Agency</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lane Departure</td>
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<tr>
<td>608110 - DISTRICT 1-2 - IMPLEMENT (PHASE II) OF THE FLASHING YELLOW ARROW AT SIGNALIZED INTERSECTIONS VARIOUS LOCATIONS - ONE OF THE FHWA NINE PROVEN COUNTERMEASURES</td>
<td>Intersection traffic control Modify traffic signal - add flashing yellow arrow</td>
<td>HSIP (Section 148)</td>
<td>varies</td>
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<td></td>
<td>52 Numbers</td>
<td>517770</td>
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<td></td>
<td></td>
<td>575316.75</td>
<td>0</td>
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<td></td>
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<td>State Highway Agency</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Intersections</td>
</tr>
<tr>
<td>District</td>
<td>Description</td>
<td></td>
<td></td>
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<td>----------</td>
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</tr>
<tr>
<td>DISTRICT 3</td>
<td>IMPLEMENT (PHASE II) OF THE FLASHING YELLOW ARROW AT SIGNALIZED INTERSECTIONS VARIOUS LOCATIONS - ONE OF THE FHWA NINE PROVEN COUNTERMEASURES</td>
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<tr>
<td>DISTRICT 4</td>
<td>IMPLEMENT (PHASE II) OF THE FLASHING YELLOW ARROW AT SIGNALIZED INTERSECTIONS VARIOUS LOCATIONS - ONE OF THE FHWA NINE PROVEN COUNTERMEASURES</td>
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<tr>
<td>RES</td>
<td>Description</td>
<td>Numbers</td>
<td>Location</td>
</tr>
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<tr>
<td>608113-</td>
<td>DISTRICT 5-6 - IMPLEMENT (PHASE II) OF THE FLASHING YELLOW ARROW AT SIGNALIZED INTERSECTIONS VARIOUS LOCATIONS - ONE OF THE FHWA NINE PROVEN COUNTERMEASURES</td>
<td>70 Numbers</td>
<td>653985</td>
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<td>608087-</td>
<td>BROCKTON- PEDESTRIAN IMPROVEMENTS AT VARIOUS LOCATIONS</td>
<td>1 Numbers</td>
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<td>SHAPE -</td>
<td>STATEWIDE - SUPPORT FOR TRAFFIC</td>
<td>1 Numbers</td>
<td>90000</td>
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<tr>
<td>INCIDENT MANAGEMENT</td>
<td>roads in which State Police respond</td>
<td></td>
<td></td>
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<td>---------------------</td>
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</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>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of fatalities</td>
<td>382.8</td>
<td>371.8</td>
<td>361.6</td>
<td>354</td>
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</tr>
<tr>
<td>Number of serious injuries</td>
<td>5050.4</td>
<td>4833.6</td>
<td>4710.6</td>
<td>4548.2</td>
<td>0</td>
</tr>
<tr>
<td>Fatality rate (per HMVMT)</td>
<td>0.7</td>
<td>0.68</td>
<td>0.66</td>
<td>0.64</td>
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</tr>
<tr>
<td>Serious injury rate (per HMVMT)</td>
<td>9.22</td>
<td>8.84</td>
<td>8.59</td>
<td>8.24</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

- **Fatalities**: 3828, 3718, 3616, 354
- **Serious Injuries**: 5000, 4500, 4000, 3500, 3000

Legend:
- Red square: # Fatalities
- Blue bar: # Serious Injuries
The fatality information came directly from the FARS website (7/21/15) and may reflect draft numbers only. The serious injury data was provided from Department of Public Health for MA Hospital Inpatient Discharge and MA Outpatient Observation Stay Databases, MA Center for Health Information and Analysis.
To the maximum extent possible, present performance measure* data by functional classification and ownership.

### Year - 2013

<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>4</td>
<td>21.8</td>
<td>0.36</td>
<td>2.15</td>
</tr>
<tr>
<td>RURAL PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS</td>
<td>0</td>
<td>5.2</td>
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<td>2.59</td>
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<tr>
<td>RURAL PRINCIPAL ARTERIAL - OTHER</td>
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<td>12</td>
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<td>RURAL MINOR ARTERIAL</td>
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<td>1.83</td>
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<td>1.16</td>
<td>6.9</td>
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<td>44</td>
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<tr>
<td>RURAL LOCAL ROAD OR STREET</td>
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<td>37.8</td>
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<td>2015</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
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<td>URBAN MAJOR COLLECTOR</td>
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<td>URBAN LOCAL ROAD OR STREET</td>
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<td>486.4</td>
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<td>223.8</td>
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<td>URBAN COLLECTOR (COMBINED MAJOR + MINOR)</td>
<td>2.2</td>
<td>371.2</td>
<td>0.07</td>
<td>12.99</td>
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</tbody>
</table>
# Fatalities by Roadway Functional Classification

![Chart showing # of Fatalities by Roadway Functional Classification for different years, including 2010, 2011, 2012, 2013, and 2014. The x-axis represents different types of roadways, such as major collector (U), minor collector (U), principal arterial (R), etc., and the y-axis represents the number of fatalities.](chart.png)
# Serious Injuries by Roadway Functional Classification

![Bar chart showing the number of serious injuries by roadway functional classification from 2010 to 2014.](image)

- **2010**: 0
- **2011**: 0
- **2012**: 0
- **2013**: 0
- **2014**: 0

Roadway Functional Classification

- Major Collector (U)
- Minor Collector (R)
- Local Road or Street (R)
- Principal Arterial - Interstate (U)
- Principal Arterial - Interchange (R)
- Principal Arterial - Other Freeways and Expressways (U)
- Principal Arterial - Other (R)
- Minor Arterial (U)

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2015 Massachusetts Highway Safety Improvement Program

---

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Fatality Rate by Roadway Functional Classification

Roadway Functional Classification

- 2010
- 2011
- 2012
- 2013
- 2014

Fatality Rate (per HMVMT)

0.0 0.5 1.0 1.5 2.0 2.5 3.0

Major Collector (U)
Minor Collector (R)
Local Road or Street (R)
Principal Arterial - Other (R)
Principal Arterial - Other (U)
Principal Arterial - Interstate (R)
Principal Arterial - Interstate (U)
Major Arterial - Other (U)
Minor Arterial - Other (U)
Minor Arterial - Other (R)
Principal Arterial - Expressways and Freeways (R)
Principal Arterial - Expressways and Freeways (U)
Serious Injury Rate by Roadway Functional Classification

Roadway Functional Classification

2010 2011 2012 2013 2014
<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>
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</thead>
<tbody>
<tr>
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<td>0</td>
</tr>
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<td>0</td>
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<tr>
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<td>0</td>
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<td>OTHER LOCAL AGENCY</td>
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<tr>
<td>PRIVATE (OTHER THAN RAILROAD)</td>
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<td>RAILROAD</td>
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<td>0</td>
</tr>
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<td>STATE TOLL AUTHORITY</td>
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<tr>
<td>LOCAL TOLL AUTHORITY</td>
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<td>OTHER PUBLIC INSTRUMENTALITY (E.G. AIRPORT, SCHOOL, UNIVERSITY)</td>
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<td>0.6</td>
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<td>CITY OR TOWN HIGHWAY AGENCY</td>
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<td>2143.6</td>
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</tbody>
</table>
Number of Fatalities by Roadway Ownership

2010 | 2011 | 2012 | 2013 | 2014

Roadway Functional Classification

State |
COUNTY |
TOWN |
CITY |
LOCAL PARK |
OTHER STATE |
PRIVATE |
RAILROAD |
STATE TOLL |
LOCAL TOLL |
OTHER |

# of Fatalities
Number of Serious Injuries by Roadway Ownership

- 2010
- 2011
- 2012
- 2013
- 2014

# of Serious Injuries

Roadway Functional Classification
The rates for jurisdiction were not available because VMT per jurisdiction is not calculated or known in MA. The rates for functional classification use the fatality and injury data as well as the VMTs of that particular functional classification. The fatality and serious injury data for jurisdiction came from the Statewide Crash Data System (not FARS). The data included in the tables does NOT include those crashes which were not able to be located or are on a roadway in which there is not a data element (like Federal Park land). The fatality functional classification data came directly from FARS (queried on 7/20/15) although note that the 2013 data are only draft/preliminary.
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>0.46</td>
<td>0.43</td>
<td>0.44</td>
<td>0.45</td>
<td>0.44</td>
</tr>
<tr>
<td>Serious injury rate (per capita)</td>
<td>4.82</td>
<td>4.69</td>
<td>4.54</td>
<td>4.45</td>
<td>4.34</td>
</tr>
<tr>
<td>Fatality and serious injury rate (per capita)</td>
<td>5.27</td>
<td>5.12</td>
<td>4.98</td>
<td>4.91</td>
<td>4.79</td>
</tr>
</tbody>
</table>

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

See attached
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-We are working with CDC and Public Health to evaluate our Bike / Ped Safety program using DPH's contracted evaluator

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-WE can shortly begin to perform evaluations of our HSIP programs

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

None
**SHSP Emphasis Areas**
For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.

### Year - 2013

<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>181.8</td>
<td>888.2</td>
<td>0.33</td>
<td>1.61</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Intersections</td>
<td></td>
<td>104.4</td>
<td>1560.8</td>
<td>0.19</td>
<td>2.83</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pedestrians</td>
<td></td>
<td>68.8</td>
<td>702</td>
<td>0.12</td>
<td>1.27</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bicyclists</td>
<td></td>
<td>8.4</td>
<td>166.4</td>
<td>0.02</td>
<td>0.3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Older Drivers</td>
<td></td>
<td>71.4</td>
<td>550.8</td>
<td>0.13</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Motorcyclists</td>
<td></td>
<td>47.6</td>
<td>646</td>
<td>0.09</td>
<td>1.17</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Work Zones</td>
<td></td>
<td>6</td>
<td>0</td>
<td>0.01</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Number of Fatalities by SHSP Emphasis Area

Year 2010 to Year 2014

SHSP Emphasis Area

# of Fatalities

Lane Departure  |  Roadway Departure  |  Intersections  |  Pedestrians  |  Bicyclists  |  Older Drivers  |  Motorcyclists  |  Work Zones

2010  |  2011  |  2012  |  2013  |  2014
Number of Serious Injuries by SHSP Emphasis Area

Year 2010 to Year 2014

# of Serious Injuries

2010 2011 2012 2013 2014

Lane Departure  Roadway Departure  Intersections  Pedestrians  Bicyclists  Older Drivers  Motorcyclists  Work Zones

SHSP Emphasis Area
Fatality Rate by SHSP Emphasis Area

Year 2010 to Year 2014

Rate of Fatalities

SHSP Emphasis Area
Fatality data comes from FARS website, except for 2013 which comes from a combination of FARS website and MA FARS analyst. Older driver serious injury data comes from Crash Data System. Pedestrian, bicyclist and motorcyclist serious injury comes from Department of Public Health. Serious injury data for work zone crashes was not a reliable field in the State's Crash Data System and is therefore not presented.
Groups of similar project types
Present the overall effectiveness of groups of similar types of projects.

Year - 2013

<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>Sign Replacement And Improvement</td>
<td>65.4</td>
<td>311.2</td>
<td>0.12</td>
<td>0.56</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Intersection</td>
<td>104.4</td>
<td>1560.8</td>
<td>0.19</td>
<td>2.83</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Bicycle Safety</td>
<td>8.4</td>
<td>166.4</td>
<td>0.02</td>
<td>0.3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Pedestrian Safety</td>
<td>68.8</td>
<td>702</td>
<td>0.12</td>
<td>1.27</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
# Fatalities by Target Crash Type for Groups of Similar Projects

Year 2010 to Year 2014

Target Crash Type

- All
- Angle
- Cross-median
- Sidewalk
- Head-on
- Left-turn
- Night-time
- Intersection
- Rear-end
- Right-turn
- Run-off-road
- Speed-related
- Truck-related
- Vehicle/animal
- Vehicle/bicycle
- Vehicle/pedestrian

# of Fatalities
-0.6
-0.4
-0.2
0
0.2
0.4
0.6

2010
2011
2012
2013
2014
#Serious Injuries by Target Crash Type for Groups of Similar Projects

Year 2010 to Year 2014

![Graph showing serious injuries by target crash type for groups of similar projects from 2010 to 2014. The graph includes categories such as All, Angle, Cross median, Sideswipe, Head-on, Left-turn, Right-turn, Intersections, Non-intersection, Rear-end, Run-off-road, Speed-related, Truck-related, Vehicle/animal, Vehicle/oil cycle, and Vehicle/pedestrian. The years 2010 to 2014 are represented by different colors.](image)
Fatality Rate by Target Crash Type for Groups of Similar Projects

Year 2010 to Year 2014

Target Crash Type
2013 Intersection fatality data is based FARS from the public facing website which is based on preliminary information only and is not the final number.
**Systemic Treatments**  
Present the overall effectiveness of systemic treatments.

### Year - 2013

<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>Install/Improve Pavement Marking and/or Delineation</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other-bicycle and pedestrian safety</td>
<td>77.6</td>
<td>868.4</td>
<td>0.14</td>
<td>1.57</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Install/Improve Signing</td>
<td>65.4</td>
<td>311.2</td>
<td>0.12</td>
<td>0.56</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
# Fatalities by Target Crash Type for Systemic Safety Improvements

Year 2010 to Year 2014

Target Crash Type
# Serious Injuries by Target Crash Type for Systemic Safety Improvements

Year 2010 to Year 2014

Target Crash Type

- All
- Angle
- Cross median
- Fixed object
- Head on
- Left-turn
- Night-time
- Intersections
- Rear-end
- Right-turn
- Run-off-road
- Speed-related
- Truck-related
- Vehicle/animal
- Vehicle/bicycle
- Vehicle/pedestrian

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Serious Injuries</td>
<td>0.6</td>
<td>0.4</td>
<td>0.2</td>
<td>0.0</td>
<td>-0.2</td>
</tr>
</tbody>
</table>
Fatality Rate by Target Crash Type for Systemic Safety Improvements

Year 2010 to Year 2014

Target Crash Type

Rate of Fatalities

2010 | 2012 | 2012 | 2013 | 2014

All | Angle | Cross median | Sideswipe | Head on | Left-turn | Night-time | Intersections | Rear-end | Right-turn | Run-off-road | Speed-related | Truck-related | Vehicle/animal | Vehicle/bicycle | Vehicle/pedestrian | Walkway
Serious Injury Rate by Target Crash Type for Systemic Safety Improvements

Year 2010 to Year 2014

Rate of Serious Injuries

Target Crash Type

- All
- Angle
- Cross median
- Fixed object
- Side impact
- Head-on
- Left-turn
- Right-turn
- Night-time
- Intersections
- Rear-end
- Run-off-road
- Speed-related
- Truck-related
- Vehicle/animal
- Vehicle/bicycle
- Vehicle/pedestrian

2010 - 2011 - 2012 - 2013 - 2014
Describe any other aspects of the overall Highway Safety Improvement Program effectiveness on which you would like to elaborate.

As noted earlier, the first HSIP project was obligated in 2009 and completed in 2012. The Registry of Motor Vehicles just closed the 2013 crash file in June 2015. Therefore, in 2017, MassDOT will be able to begin performing an evaluation of the effectiveness of the HSIP hot spot projects by using 3 years of pre-implementation crash data and comparing to 3 years of post-implementation crash data.
### Project Evaluation

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-All Injuries</th>
<th>Bef-PDO</th>
<th>Bef-Total</th>
<th>Aft-Fatal</th>
<th>Aft-Serious Injury</th>
<th>Aft-All Injuries</th>
<th>Aft-PDO</th>
<th>Aft-Total</th>
<th>Evaluation Results (Benefit/Cost Ratio)</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>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Optional Attachments

<table>
<thead>
<tr>
<th>Sections</th>
<th>Files Attached</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progress in Achieving Safety Performance Targets: Application of Special Rules</td>
<td>Attachment for Q27.docx</td>
</tr>
</tbody>
</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.