MARYLAND

HIGHWAY SAFETY IMPROVEMENT PROGRAM

2017 ANNUAL REPORT

U.S. Department of Transportation
Federal Highway Administration

Photo source: Federal Highway Administration

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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.”

Executive Summary

Summary Maryland Highway Safety Improvement Program (HSIP) CY 2016

- The purpose of the HSIP is to achieve a significant reduction in traffic fatalities and serious injuries on public roads. To obligate "core" safety funds MDOT SHA must have in effect an HSIP under which the State: 1) develops and implements a Strategic Highway Safety Plan (SHSP) that identifies and analyzes highway safety problems and opportunities to reduce fatalities and serious injuries, 2) produces a program of projects or strategies to reduce identified safety problems, 3) evaluates the plan on a regular basis to ensure the accuracy of the data and priority of proposed improvements, 4) submits an annual report to the FHWA Division.
- The principal objective of Maryland's Fund 76 Safety and Spot Improvement Program is: on an annual basis, to identify those highway locations that contain safety deficiencies based on abnormal collision experience and, as quickly as possible, implement safety improvements to reduce or eliminate these deficiencies.
- HSIP Staff is located in Planning, Engineering and Highway Safety Office portions of MDOT
- HSIP is administered centrally via Statewide Competitive Application Process
- Local roads are usually not allocated HSIP funds
- The Maryland Highway Safety Office (MHSO) along with the Maryland Transportation Authority and the Maryland Institute for Emergency Medical Services are important partners with the Maryland State Highway Administration (SHA) in the HSIP process. The Federal Highway Administration (FHWA), National Highway Traffic Safety Administration, Federal Motor Carrier Safety Administration and several regional planning organizations along with local governments, various police agencies and academic organizations also coordinate with the SHA.
- Programs administered under the HSIP
    1. Median Barrier
    2. Horizontal Curve
    3. Skid Hazard
    4. Roadway Departure
    5. Left-turn crash
    6. Intersection Crash Data
    7. Low Cost Spot Improvements
    8. Pedestrian Safety
    9. Rural State Highway
    10. Right Angle Crash
    11. Highway Sections
- The data types used in the HSIP program methodology are vehicle crashes, traffic volume, functional classification and highway mileage
- The project identification methodology used in the HSIP program are crash frequency and relative severity index
- The HSIP projects are advanced for implementation by an SHA selection committee. The criteria considered are Safety, Congestion, Operations and Local Support

- The types of systemic improvements include
    1. Cable Median Barriers
    2. Rumble Strips
    3. Pavement/Shoulder Widening
    4. Install/Improve Pavement Marking and/or Delineation
    5. Upgrade Guard Rails
    6. Other-Sidewalk Improvements

- Engineering studies and Road Safety Assessments are used to identify potential countermeasures
- The Highway Safety Manual is used in site specific studies that are related to the HSIP
- Reporting period for HSIP funding is CY 2016
- Programmed - $ 24,294,166
- Obligated - $ 20,255,299
- Programmed Non-infrastructure portion - $ 2,333,810
- Obligated Non-infrastructure portion - $ 2,100,428
- All police crash reports used for the crash database are in electronic format as of January 1 2015
- The general listing of projects includes various traffic control, roadside, intersection geometry and non-infrastructure projects
- The overview of safety trends indicates that the reported number of fatalities (FARS) have increased from 485 in 2011 to 513 in 2015 (annual format) and that the number of serious injuries (MD) have decreased from 3,809 in 2011 to 2,605 in 2015 (annual format)
- The overview of safety trends indicates that the reported number of non-motorized fatalities (FARS) have decreased from 107 in 2011 to 103 in 2015 (annual format) and that the number of non-motorized serious injuries (MD) have decreased from 430 in 2011 to 373 in 2015 (annual format)
- Overall five-year average crash trends for the individual functional classification and roadway ownership are shown in tables in the annual report
- Maryland maintains the Toward Zero Deaths (TZD) approach by developing interim targets to reduce fatalities by at least 50 percent in the next two decades
- The same methodology was used for serious injury targets. However, it should be noted that due to significant declines in serious injuries in recent years, the use of historical trends currently puts the State at or below current targets. This method was applied to the five performance measures required by the Federal Highway Administration (FHWA) fatalities, fatality rate, serious injury, serious injury rate, and non-motorized fatalities and serious injuries.
- “A wide range of stakeholder groups - including federal, state and local government agencies, nongovernmental organizations, regional authorities, and individual advocates - participated in the development of the SHSP (Maryland Strategic Plan). Each EA (Emphasis Area) Team - which includes regional and local agencies - held at least two facilitated discussions to identify, develop, and finalize strategies for the 2016-2020 SHSP. Each EA Team wrestled with difficult decisions regarding how to cover the essentials of transportation safety while remaining strategic and focused on the most vital needs”. (2016-20 SHSP)
- Older Driver and pedestrian (65+) Fatalities decreased from 76 in 2009 to 71 in 2015 (FARS - annual numbers) and Severe Injuries also decreased from 287 in 2009 to 172 in 2015 (MD - annual numbers)
- The State measures effectiveness of the HSIP by the change in fatalities and serious injuries
- Overall yearly crash trends for the individual SHSP (Strategic Highway Safety Program) emphasis areas along with the HSIP Sub-Program areas are shown in tables in the annual report
- All Maryland counties along with Baltimore City are now provided a three year listing of pedestrian involved crashes which includes a summary of severe injury and fatal crashes on state highways along with a detailed listing for local roads.
- Maryland’s current SHSP was approved by the Governor or designated State representative on 05/31/2017
- The years being covered by the current SHSP are 2016 to 2020
- Maryland anticipates completing its next SHSP update by 2020
- The current status (percent complete) of MIRE fundamental data elements collection efforts are shown in tables in the annual report
- MDOT SHA is implementing Esri’s Roads and Highways (R&H) software to manage our GIS roadway and LRS data for HPMS submission. With the Intersection Manager tool, our ability to better manager intersection data, and data gaps, we will be able to be 100 percent compliant by 2026.
- In conjunction with the Esri R&H implementation, we also began the One Maryland, One Centerline (OMOC) program where MDOT SHA has met with all 23 counties, and Baltimore City, to discuss the sharing of data between jurisdictions via one common geometry, maintained by the appropriate authority. This geometry will

be the base of the R&H data model. This data share and cooperation between levels of jurisdictions will also allow us to identify and fill data gaps, with the appropriate, authoritative information.

- The suspected serious injury identifier, definition and attributes used by Maryland for both the crash report form and the crash database are shown in tables in the annual report
- Also indicated in these tables is whether or not these elements are compliant with the MMUCC 4th edition criteria for data element P5 - Injury Status, suspected serious injury.
- The purpose/scope of the HSIP review in 2016 was to determine if Maryland HSIP Planning Process meets the requirements of 23 CFR 924.9 and identify areas for improvement and successful practices in Maryland HSIP Planning Process.
- An action plan was developed to bring Maryland's HSIP planning process into compliance with the HSIP Final Rule.

Introduction

The Highway Safety Improvement Program (HSIP) is a core Federal-aid program with the purpose of achieving a significant reduction in fatalities and serious injuries on all public roads. As per 23 U.S.C. 148(h) and 23 CFR 924.15, States are required to report annually on the progress being made to advance HSIP implementation and evaluation efforts. The format of this report is consistent with the HSIP Reporting Guidance dated December 29, 2016 and consists of five sections: program structure, progress in implementing highway safety improvement projects, progress in achieving safety outcomes and performance targets, effectiveness of the improvements and compliance assessment.

Program Structure

Program Administration

Describe the general structure of the HSIP in the State.

The purpose of the HSIP is to achieve a significant reduction in traffic fatalities and serious injuries on public roads. To obligate “core” safety funds MDOT SHA must have in effect an HSIP under which the State: 1) develops and implements a Strategic Highway Safety Plan (SHSP) that identifies and analyzes highway safety problems and opportunities to reduce fatalities and serious injuries, 2) produces a program of projects or strategies to reduce identified safety problems, 3) evaluates the plan on a regular basis to ensure the accuracy of the data and priority of proposed improvements, 4) submits an annual report to the FHWA Division.

Emphasis on Maryland’s highways is placed on improving the safety of intersections, sections and ramps that are identified as Candidate Safety Improvement Locations (CSILs) or through Road Safety Audits and on implementing proven blanket safety improvements on a systematic basis. Safety improvements include the installation of rumble strips and median barriers; upgrading signs, signals, and markings; improving geometrics; and highway and bridge widening, resurfacing, rehabilitation, and reconstruction.

The processes used to identify locations, referred to in the HSIP as hazardous locations, which have abnormal accident experience. Those locations, referred to herein as Candidate Safety Improvement Locations (CSILs), include intersections, spots and sections where the combination of accident frequencies and/or rates are significantly higher than those at similar locations. The identification of CSILs is based on all police reported collisions, i.e., those crashes reported by law enforcement agencies across Maryland to the Maryland State Police. Information from these reports is entered into a statewide accident database for analysis.

The State Highway Administration (SHA) typically identifies CSILs only on the state maintained highway system. Several local jurisdictions use the accident data, which SHA provides to all of the jurisdictions annually, to identify similar location on their road systems.

The principal objective of Maryland's Fund 76 Safety and Spot Improvement Program is: on an annual basis, to identify those highway locations that contain safety deficiencies based on abnormal collision experience and, as quickly as possible, implement safety improvements to reduce or eliminate these deficiencies. Locations identified by the District Engineers as having a combined safety/capacity problem although not necessarily qualifying as Candidate Safety Improvement Locations, also can be included as candidate Fund 76 Program projects. The SHA Administrator makes the final project selection.

2017 Maryland Highway Safety Improvement Program

Maryland's Fund 76 Spot Improvement Program was developed under the guidelines set forth in 23 CFR 924, and was designed to address the most critical highway safety problems statewide through a systematic and unbiased approach. The Fund 76 Program is under the direction of the SHA's Deputy Administrator/Chief Engineer for Operations, with program development and assistance from the Office of Traffic and Safety.

Through the Fund 76 process, accident data for all State highways is reviewed annually, and all sections and intersections experiencing abnormally high accident rates are studied to determine what countermeasures are applicable. In addition, listings of accidents on local roads are sent to the local governments for their use.

Where is HSIP staff located within the State DOT?

Other-Planning and Engineering

Enter additional comments here to clarify your response for this question or add supporting information.

In addition to Planning and Engineering the State Highway Safety Office contributes to the HSIP within MDOT

How are HSIP funds allocated in a State?

Central Office via Statewide Competitive Application Process

Enter additional comments here to clarify your response for this question or add supporting information.

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

Local Roads are usually not given HSIP funds from the State

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

Traffic Engineering/Safety
Planning
Districts/Regions
Governors Highway Safety Office
Other-Maryland State Highway District Offices

Enter additional comments here to clarify your response for this question or add supporting information.

Maryland's HSIP Planning Process. (1) Collecting and maintaining safety data on all public roads. (2) Advancing the State's capabilities for safety data collection and analysis by improving the timeliness, accuracy, completeness, uniformity, integration, and accessibility of their safety data on all public roads. (3) Updating the SHSP (4) Analyzing safety data to develop a program of highway safety improvement projects to reduce fatalities and serious injuries on all public roads through the implementation of a comprehensive program of systemic and spot safety improvement projects. (5) Conducting engineering studies to develop highway safety improvement projects. (6) Establishing priorities for implementing highway safety improvement projects

Describe coordination with internal partners.

2017 Maryland Highway Safety Improvement Program

Within the Maryland Department of Transportation (MDOT) the State Highway Administration (SHA) Office of Traffic and Safety and Office of Planning and Preliminary Engineering along with the Motor Vehicle Administration (MVA) Maryland Highway Safety Office (MHSO) provided leadership, support, and coordination for Maryland's highway safety projects in CY 2016. Part of SHA and MVA's responsibility is to work with other State agencies to address highway safety issues. This effort results in a multi agency approach which includes the Maryland Transportation Authority, the Maryland Institute for Emergency Medical Services and others that have roles in highway safety problems. The seven SHA District Offices also provide a network of field personnel willing to coordinate and provide technical assistance to local agencies. There is a continuing relationship between SHA and MVA with the Federal Highway Administration (FHWA) along with National Highway Traffic Safety Administration and Federal Motor Carrier Safety Administration.

Identify which external partners are involved with HSIP planning.

Regional Planning Organizations (e.g. MPOs, RPOs, COGs)
Local Government Agency
Law Enforcement Agency
Academia/University
FHWA
Other-External partners including MPOs, local government, police agencies and academic organizations were included in the 2016-20 SHSP planning process

Enter additional comments here to clarify your response for this question or add supporting information.

External partners are involved the following aspects of the HSIP planning process(1), (2), (3) and (5) that are listed below. HSIP planning includes the following: (1) A process for collecting and maintaining safety data on all public roads. Roadway data shall include, at a minimum, the MIRE Fundamental Data Elements as established in §924.17. Railway-highway crossing data shall include all fields from the U.S. DOT National Highway-Rail Crossing Inventory. (2) A process for advancing the State's capabilities for safety data collection and analysis by improving the timeliness, accuracy, completeness, uniformity, integration, and accessibility of their safety data on all public roads. (3) A process for updating the SHSP (4) A process for analyzing safety data to develop a program of highway safety improvement projects to reduce fatalities and serious injuries on all public roads through the implementation of a comprehensive program of systemic and spot safety improvement projects. (5) A process for conducting engineering studies (such as road safety audits and other safety assessments or reviews) to develop highway safety improvement projects. (6) A process for establishing priorities for implementing highway safety improvement projects

Describe coordination with external partners.

As stated in the 2016-20 SHSP (Maryland Highway Strategic Plan), stakeholder groups which included HSIP external partners participated in the development of the SHSP to identify, develop, and finalize strategies for the 2016-2020 SHSP. Stakeholder groups have coordinated in the collection and maintaining of safety data for all public roads and processes for advancing the State's capabilities for safety data collection and analysis through the TRCC).

Have any program administration practices used to implement the HSIP changed since the last reporting period?

2017 Maryland Highway Safety Improvement Program
Yes

Describe HSIP program administration practices that have changed since the last reporting period.

A HSIP Program review was completed in July 2016 and there are changes anticipated for next year.

Are there any other aspects of HSIP Administration on which the State would like to elaborate?

No

Program Methodology

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

No

Enter additional comments here to clarify your response for this question or add supporting information.

The current process for the planning and implementation is detailed in the Safety and Spot Improvement Program Fund 76. The evaluation process was documented in the HSIP evaluation reports before the new template was created. A new process/manual is in development and was an action plan item from the July 2016 HSIP Process review.

Select the programs that are administered under the HSIP.

Median Barrier
Intersection
Horizontal Curve
Rural State Highways
Skid Hazard
Roadway Departure
Low-Cost Spot Improvements
Pedestrian Safety
Right Angle Crash
Left Turn Crash
Segments

Enter additional comments here to clarify your response for this question or add supporting information.

Program: Horizontal Curve

Date of Program Methodology: 1/1/2010

What is the justification for this program? [Check all that apply]

2017 Maryland Highway Safety Improvement Program
Addresses SHSP priority or emphasis area

What is the funding approach for this program? [Check one]

Competes with all projects

What data types were used in the program methodology? [Check all that apply]

Crashes	Exposure	Roadway
All crashes	Volume Other-Highway mileage	Functional classification

What project identification methodology was used for this program? [Check all that apply]

Crash frequency
Relative severity index
Crash rate

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

No

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

Describe the methodology used to identify local road projects as part of this program.

How are projects under this program advanced for implementation?

selection committee

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

Relative Weight in Scoring

Other-Safety : 60
Other-Congestion / Operations : 30
Other-Support / Opportunity : 10

Total Relative Weight : 100

Enter additional comments here to clarify your response for this question or add supporting information.

Program: Intersection

Date of Program Methodology: 1/1/2010

What is the justification for this program? [Check all that apply]

Addresses SHSP priority or emphasis area

What is the funding approach for this program? [Check one]

Competes with all projects

What data types were used in the program methodology? [Check all that apply]

Crashes	Exposure	Roadway
All crashes		

What project identification methodology was used for this program? [Check all that apply]

Crash frequency
Relative severity index

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

No

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

Describe the methodology used to identify local road projects as part of this program.

How are projects under this program advanced for implementation?

selection committee

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

Relative Weight in Scoring

Other-Safety : 60
Other-Congestion / Operations : 30
Other-Support / Opportunity : 10

Total Relative Weight : 100

Enter additional comments here to clarify your response for this question or add supporting information.

Program: Left Turn Crash

Date of Program Methodology: 1/1/2010

What is the justification for this program? [Check all that apply]

Addresses SHSP priority or emphasis area

What is the funding approach for this program? [Check one]

Competes with all projects

What data types were used in the program methodology? [Check all that apply]

Crashes	Exposure	Roadway
All crashes		

What project identification methodology was used for this program? [Check all that apply]

Crash frequency
Relative severity index

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

No

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

Describe the methodology used to identify local road projects as part of this program.

How are projects under this program advanced for implementation?

2017 Maryland Highway Safety Improvement Program
selection committee

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

Relative Weight in Scoring

Other-Safety : 60
Other-Congestion / Operations : 30
Other-Support / Opportunity : 10

Total Relative Weight : 100

Enter additional comments here to clarify your response for this question or add supporting information.

Program: Low-Cost Spot Improvements

Date of Program Methodology: 1/1/2010

What is the justification for this program? [Check all that apply]

Addresses SHSP priority or emphasis area

What is the funding approach for this program? [Check one]

Competes with all projects

What data types were used in the program methodology? [Check all that apply]

Crashes	Exposure	Roadway
All crashes	Volume Other-Highway mileage	

What project identification methodology was used for this program? [Check all that apply]

Crash frequency
Relative severity index
Crash rate

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

No

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

Describe the methodology used to identify local road projects as part of this program.

How are projects under this program advanced for implementation?

selection committee

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

Relative Weight in Scoring

Other-Safety : 60
Other-Congestion / Opeartions : 30
Other-Support / Opportunity : 10

Total Relative Weight : 100

Enter additional comments here to clarify your response for this question or add supporting information.

Program: Median Barrier

Date of Program Methodology: 1/1/2010

What is the justification for this program? [Check all that apply]

Addresses SHSP priority or emphasis area

What is the funding approach for this program? [Check one]

Competes with all projects

What data types were used in the program methodology? [Check all that apply]

Crashes	Exposure	Roadway
All crashes	Volume Other-Highway mileage	

What project identification methodology was used for this program? [Check all that apply]

Crash frequency
Relative severity index
Crash rate

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

No

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

Describe the methodology used to identify local road projects as part of this program.

How are projects under this program advanced for implementation?

selection committee

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

Relative Weight in Scoring

Other-Safety : 60
Other-Congestion / Operations : 30
Other-Support / Opportunity : 10

Total Relative Weight : 100

Enter additional comments here to clarify your response for this question or add supporting information.

Program: Pedestrian Safety

Date of Program Methodology: 1/1/2012

What is the justification for this program? [Check all that apply]

Addresses SHSP priority or emphasis area

What is the funding approach for this program? [Check one]

2017 Maryland Highway Safety Improvement Program
Competes with all projects

What data types were used in the program methodology? [Check all that apply]

Crashes	Exposure	Roadway
All crashes	Volume Other-Highway mileage	

What project identification methodology was used for this program? [Check all that apply]

Crash frequency
Relative severity index
Crash rate

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

No

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

Describe the methodology used to identify local road projects as part of this program.

How are projects under this program advanced for implementation?

selection committee

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

Relative Weight in Scoring

Other-Safety : 60
Other-Congestion / Operations : 30
Other-Support / Opportunity : 10

Total Relative Weight : 100

Enter additional comments here to clarify your response for this question or add supporting information.

Program: Right Angle Crash

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Date of Program Methodology: 1/1/2010

What is the justification for this program? [Check all that apply]

Addresses SHSP priority or emphasis area

What is the funding approach for this program? [Check one]

Competes with all projects

What data types were used in the program methodology? [Check all that apply]

Crashes	Exposure	Roadway
All crashes		

What project identification methodology was used for this program? [Check all that apply]

Crash frequency
Relative severity index

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

No

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

Describe the methodology used to identify local road projects as part of this program.

How are projects under this program advanced for implementation?

selection committee

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

Relative Weight in Scoring

Other-Safety : 60
Other-Congestion / Operations : 30
Other-Support / Opportunity : 10

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Total Relative Weight : 100

Enter additional comments here to clarify your response for this question or add supporting information.

Program: Roadway Departure

Date of Program Methodology: 1/1/2010

What is the justification for this program? [Check all that apply]

Addresses SHSP priority or emphasis area

What is the funding approach for this program? [Check one]

Competes with all projects

What data types were used in the program methodology? [Check all that apply]

Crashes	Exposure	Roadway
All crashes	Volume Other-Highway mileage	

What project identification methodology was used for this program? [Check all that apply]

Crash frequency
Relative severity index
Crash rate

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

No

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

Describe the methodology used to identify local road projects as part of this program.

How are projects under this program advanced for implementation?

selection committee

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

Relative Weight in Scoring

Other-Safety : 60
Other-Congestion / Operations : 30
Other-Support / Opportunity : 10

Total Relative Weight : 100

Enter additional comments here to clarify your response for this question or add supporting information.

Program: Rural State Highways

Date of Program Methodology: 1/1/2010

What is the justification for this program? [Check all that apply]

Addresses SHSP priority or emphasis area

What is the funding approach for this program? [Check one]

Funding set-aside

What data types were used in the program methodology? [Check all that apply]

Crashes	Exposure	Roadway
All crashes	Volume Other-Highway mileage	Roadside features

What project identification methodology was used for this program? [Check all that apply]

Crash frequency
Relative severity index
Crash rate

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

No

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

Describe the methodology used to identify local road projects as part of this program.

How are projects under this program advanced for implementation?

selection committee

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

Relative Weight in Scoring

Other-Safety : 60
Other-Congestion / Operations : 30
Other-Support / Opportunity : 10

Total Relative Weight : 100

Enter additional comments here to clarify your response for this question or add supporting information.

Program: Segments

Date of Program Methodology: 1/1/2010

What is the justification for this program? [Check all that apply]

Addresses SHSP priority or emphasis area

What is the funding approach for this program? [Check one]

Competes with all projects

What data types were used in the program methodology? [Check all that apply]

Crashes	Exposure	Roadway
All crashes	Volume Other-Highway mileage	Functional classification

What project identification methodology was used for this program? [Check all that apply]

Crash frequency
Relative severity index
Crash rate

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

No

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

Describe the methodology used to identify local road projects as part of this program.

How are projects under this program advanced for implementation?

selection committee

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

Relative Weight in Scoring

Other-Safety : 60
Other-Congestion / Operations : 30
Other-Support / Opportunity : 10

Total Relative Weight : 100

Enter additional comments here to clarify your response for this question or add supporting information.

Program: Skid Hazard

Date of Program Methodology: 1/1/2012

What is the justification for this program? [Check all that apply]

Addresses SHSP priority or emphasis area

What is the funding approach for this program? [Check one]

Competes with all projects

What data types were used in the program methodology? [Check all that apply]

Crashes	Exposure	Roadway
All crashes	Volume Other-Highway mileage	

What project identification methodology was used for this program? [Check all that apply]

Crash frequency
Relative severity index
Crash rate

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

No

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

Describe the methodology used to identify local road projects as part of this program.

How are projects under this program advanced for implementation?

selection committee

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

Relative Weight in Scoring

Other-Saftey : 60
Other-Congestion / Operations : 30
Other-Support / Opportunity : 10

Total Relative Weight : 100

Enter additional comments here to clarify your response for this question or add supporting information.

What percentage of HSIP funds address systemic improvements?

91

HSIP funds are used to address which of the following systemic improvements? Please check all that apply.

Cable Median Barriers
Rumble Strips
Pavement/Shoulder Widening
Install/Improve Pavement Marking and/or Delineation
Upgrade Guard Rails
Other-Sidewalk Improvements

Enter additional comments here to clarify your response for this question or add supporting information.

What process is used to identify potential countermeasures? [Check all that apply]

Engineering Study
Road Safety Assessment

Enter additional comments here to clarify your response for this question or add supporting information.

Does the State HSIP consider connected vehicles and ITS technologies?

No

Enter additional comments here to clarify your response for this question or add supporting information.

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

Yes

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

The Highway Safety Manual is used in site specific studies as part of the HSIP Planning Process. It was also in the development of a intersection safety implementation plan.

Have any program methodology practices used to implement the HSIP changed since the last reporting period?

Yes

Describe program methodology practices that have changed since the last reporting period.

Are there any other aspects of the HSIP methodology on which the State would like to elaborate?

No

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

Calendar Year

Enter additional comments here to clarify your response for this question or add supporting information.

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

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	$17,966,626	$16,327,623	90.88%
HRRR Special Rule (23 U.S.C. 148(g)(1))	$0	$0	0%
Penalty Funds (23 U.S.C. 154)	$0	$0	0%
Penalty Funds (23 U.S.C. 164)	$5,157,540	$3,318,874	64.35%
RHCP (for HSIP purposes) (23 U.S.C. 130(e)(2))	$0	$0	0%
Other Federal-aid Funds (i.e. STBG, NHPP)	$0	$0	0%
State and Local Funds	$0	$0	0%
FHWA (formerly HPR) funding	$1,170,000	$608,802	52.03%
Totals	$24,294,166	$20,255,299	83.38%

Enter additional comments here to clarify your response for this question or add supporting information.

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

$152,393

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

$152,393

Enter additional comments here to clarify your response for this question or add supporting information.

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

$2,333,810

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

$2,100,428

Enter additional comments here to clarify your response for this question or add supporting information.

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

0%

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

50%

Enter additional comments here to clarify your response for this question or add supporting information.

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

none at this time

Does the State want to elaborate on any other aspects of it's progress in implementing HSIP projects?

Yes

Describe any other aspects of the State's progress in implementing HSIP projects on which the State would like to elaborate.

All Police crash reports used for the crash database are in electronic format as of January 1 2015

General Listing of Projects

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

													RELATIONSHIP TO SHSP	
PROJECT NAME	**IMPROVEMENT CATEGORY**	**SUBCATEGORY**	**OUTPUTS**	**OUTPUT TYPE**	**HSIP PROJECT COST($)**	**TOTAL PROJECT COST($)**	**FUNDING CATEGORY**	**FUNCTIONAL CLASSIFICATION**	**AADT**	**SPEED**	**OWNERSHIP**	**METHOD FOR SITE SELECTION**	**EMPHASIS AREA**	**STRATEGY**
000B169	Roadway	Rumble strips - unspecified or other			$370656	$411840	HSIP (23 U.S.C. 148)	Areawide SHA District 1	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B170	Roadside	Barrier- metal			$1976776	$2210779	HSIP (23 U.S.C. 148)	Areawide SHA District 7	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
0811070	Roadside	Barrier - other			$2603104.40	$2603104.40	HSIP (23 U.S.C. 148)	Urban Principal Arterial - Interstate	65,000	65	State Highway Agency	Systemic	Highway Infrastructure	Corridor Safety improvements
1041021	Roadside	Barrier- metal			$298177.08	$298177.08	HSIP (23 U.S.C. 148)	Rural Principal Arterial - Other	23,431	45	State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
0703367	Roadside	Barrier- metal			$882726.60	$882726.60	HSIP (23 U.S.C. 148)	Urban Principal Arterial - Interstate	69,320	70	State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B160	Roadside	Barrier - other			$828290	$930472	HSIP (23 U.S.C. 148)	Areawide SHA District 5	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B176	Roadside	Barrier- metal			$2039430	$2286371	HSIP (23 U.S.C. 148)	Areawide SHA District 6	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B136	Pedestrians and bicyclists	Miscellaneous pedestrians and bicyclists			$2743165.70	$3023384.33	HSIP (23 U.S.C. 148)	Areawide SHA District 4	0		State Highway Agency	Systemic	Pedestrians	improve roadway environments for walking
000B154	Pedestrians and bicyclists	Miscellaneous pedestrians and bicyclists			$1822469	$2249962	HSIP (23 U.S.C. 148)	Areawide SHA District 5	0		State Highway Agency	Spot	Pedestrians	improve roadway environments for walking
000B173	Pedestrians and bicyclists	Miscellaneous pedestrians and bicyclists			$288900	$321000	HSIP (23 U.S.C. 148)	Statewide	0		State Highway Agency	Spot	Bicyclists	improve roadway environments for bicycling
5101004	Pedestrians and bicyclists	Miscellaneous pedestrians and bicyclists			$373500	$415000	HSIP (23 U.S.C. 148)	Urban Minor Arterial	12,583	30	State Highway Agency	Spot	Bicyclists	improve roadway enviroments for bicycling
0003430	Non-infrastructure	Data/traffic records			$72000	$80000	HSIP (23 U.S.C. 148)	Statewide	0		State Highway Agency	Spot	Highway Infrastructure	Corridor safety improvements
000B150	Non-infrastructure	Data/traffic records			$31035	$34484	HSIP (23 U.S.C. 148)	Statewide	0		State Highway Agency	Spot	Highway Infrastructure	Corridor safety improvements
000B149	Non-infrastructure	Non-infrastructure - other			$152393	$169326	HSIP (23 U.S.C. 148)	Areawide Baltimore City	0		City of Municipal Highway Agency	Spot	Highway Infrastructure	Corridor safety improvements
0003426	Non-infrastructure	Transportation safety planning			$225000	$250000	HSIP (23 U.S.C. 148)	Statewide	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
0003433	Non-infrastructure	Outreach			$1620000	$1800000	HSIP (23 U.S.C. 148)	Statewide	0		State Highway Agency	Systemic	Highway Infrastructure	Identify, develop and implement system-wide improvements that address the safety of vulnerable user groups

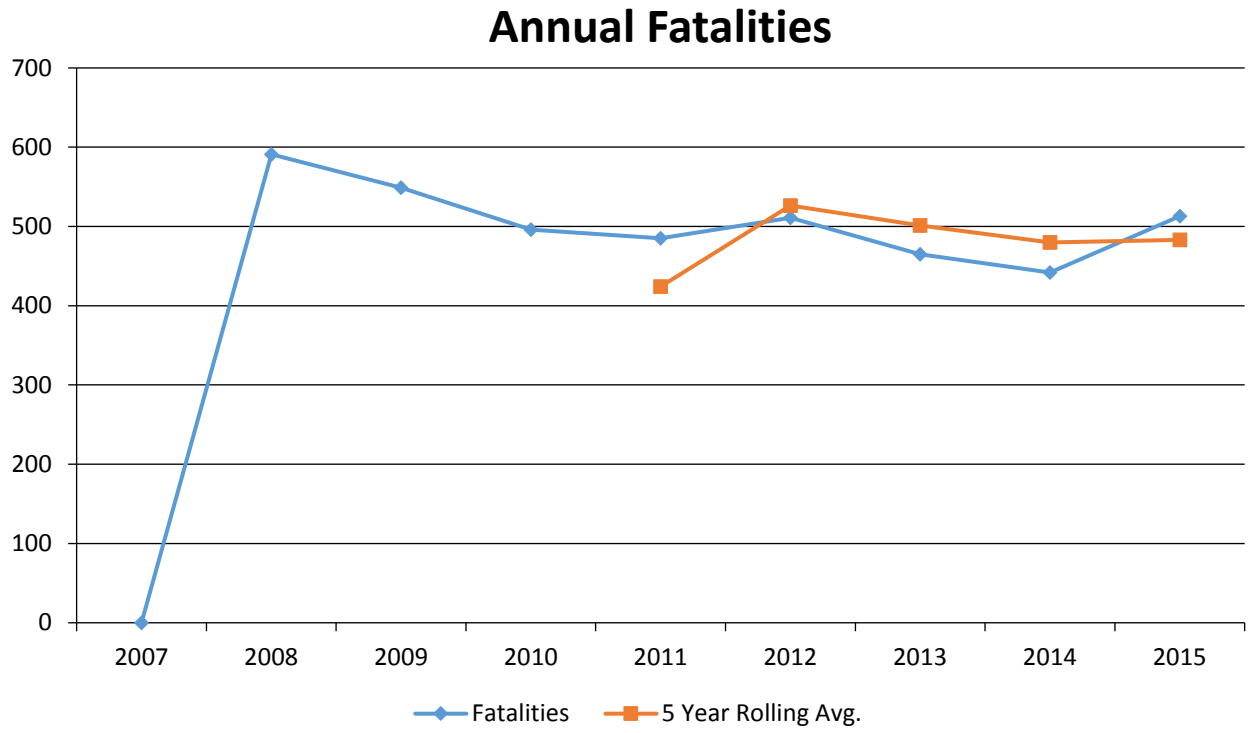
Enter additional comments here to clarify your response for this question or add supporting information.

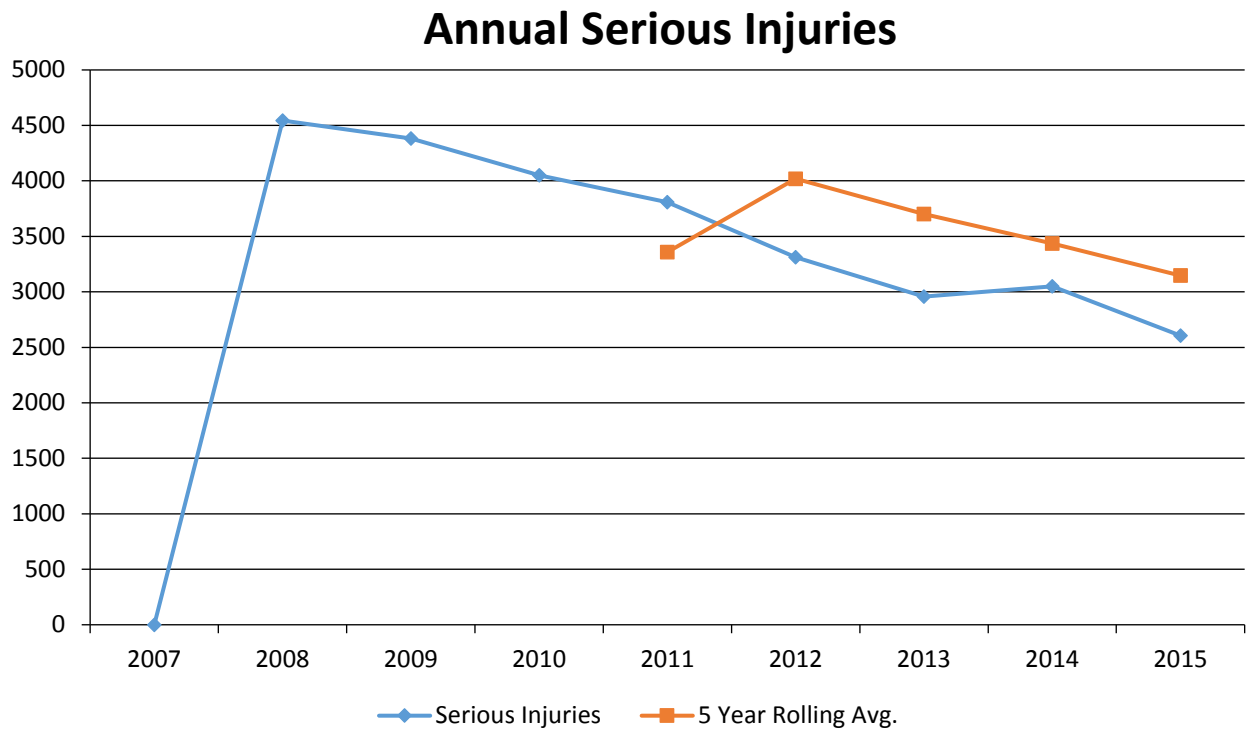
Safety Performance

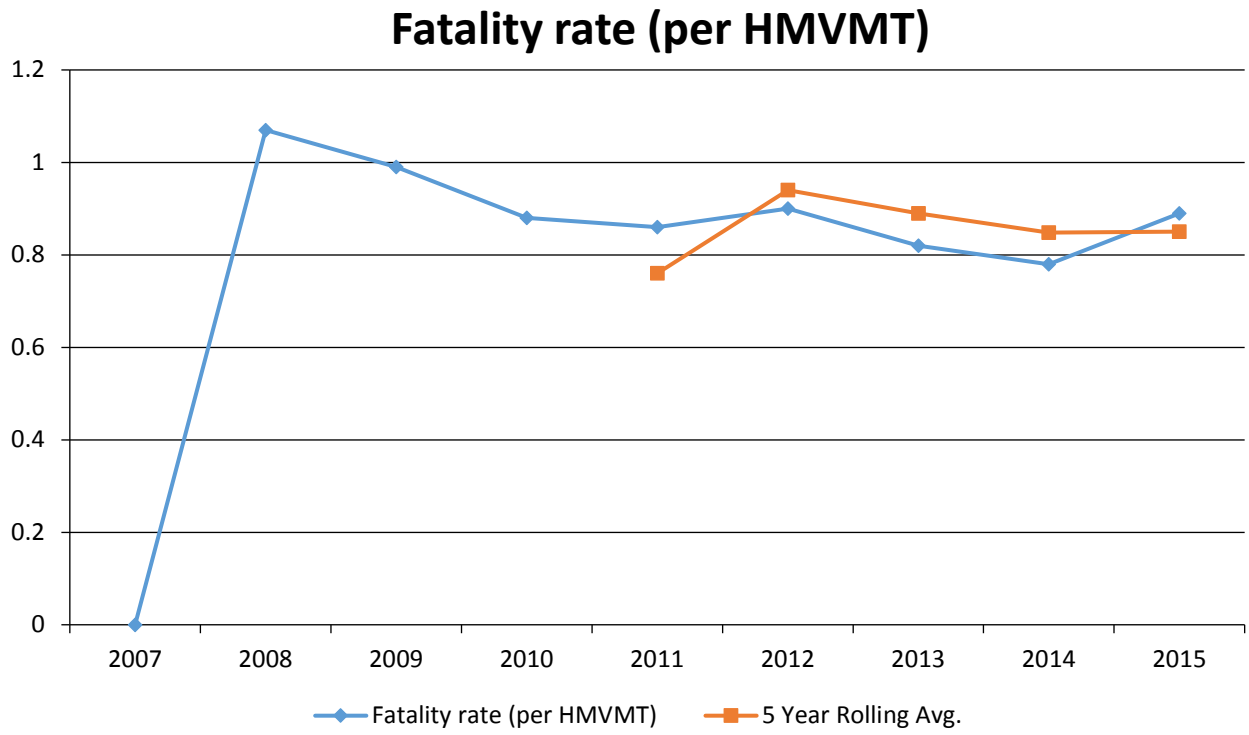
General Highway Safety Trends

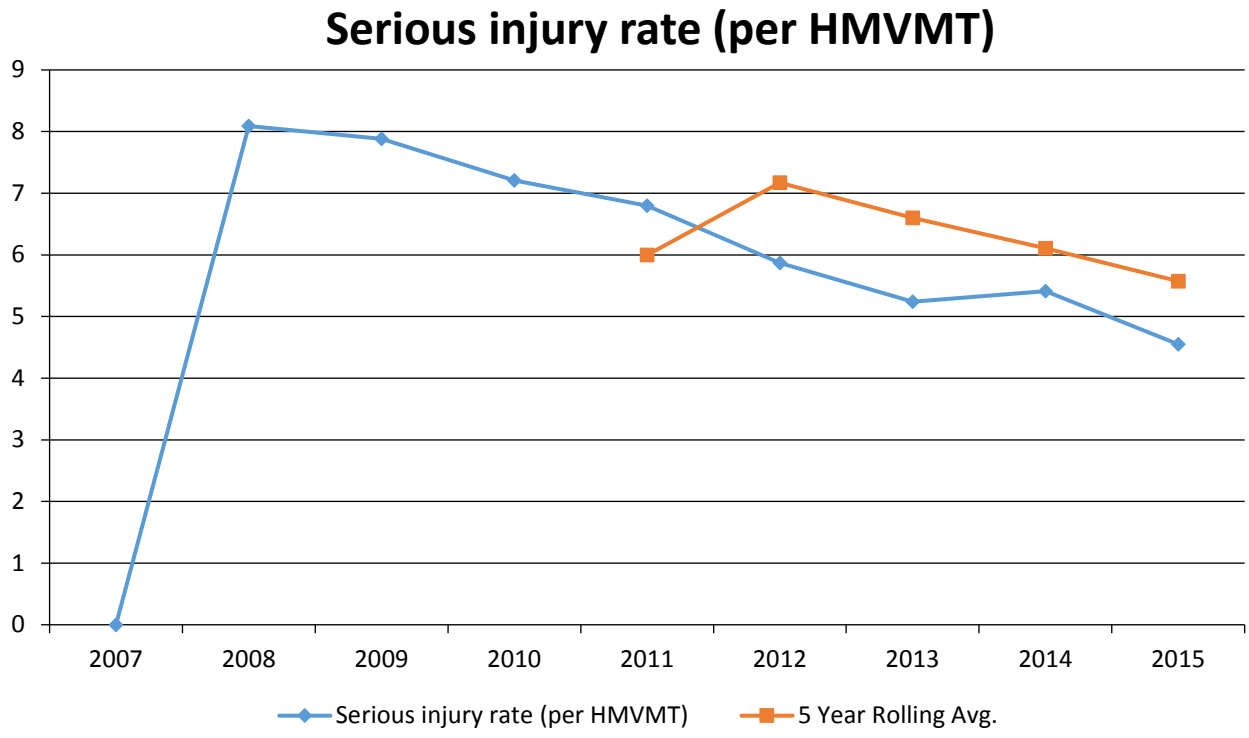
Present data showing the general highway safety trends in the State for the past five years.

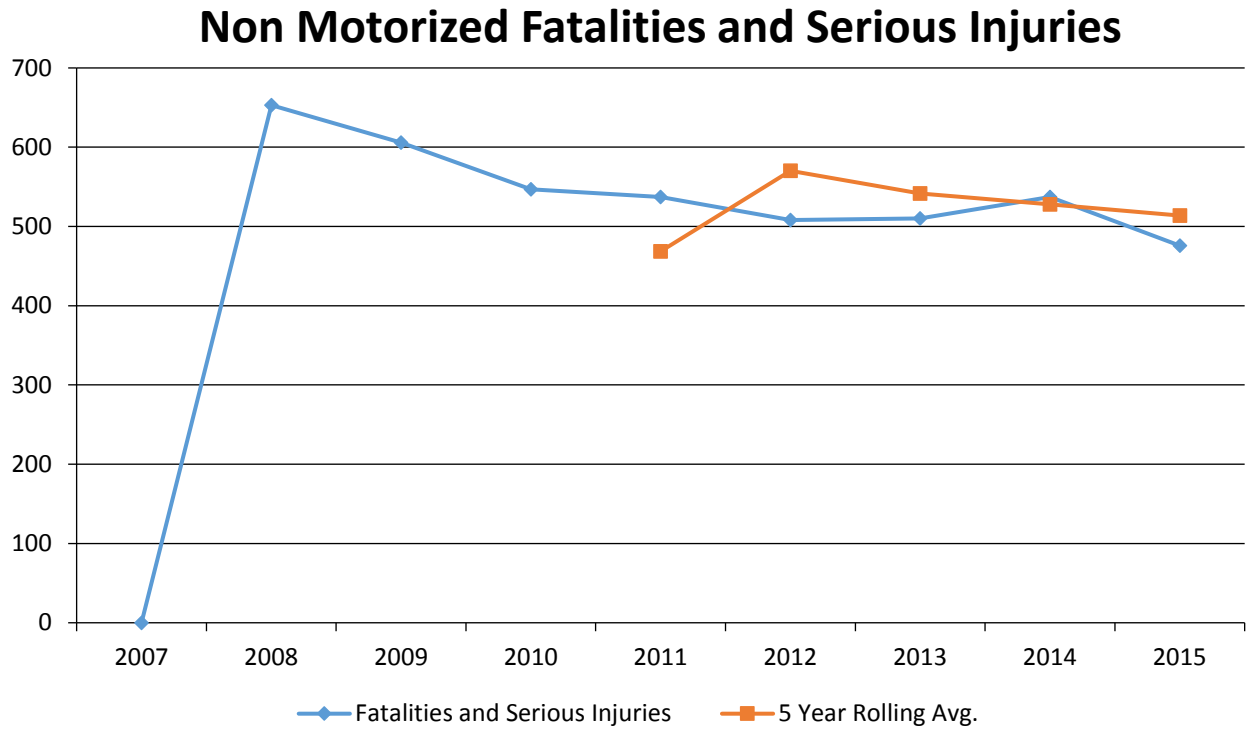
PERFORMANCE MEASURES	2007	2008	2009	2010	2011	2012	2013	2014	2015
Fatalities	0	591	549	496	485	511	465	442	513
Serious Injuries	0	4,544	4,383	4,051	3,809	3,312	2,957	3,050	2,605
Fatality rate (per HMVMT)	0.000	1.070	0.990	0.880	0.860	0.900	0.820	0.780	0.890
Serious injury rate (per HMVMT)	0.000	8.090	7.880	7.210	6.800	5.870	5.240	5.410	4.550
Number non-motorized fatalities	0	122	124	110	107	102	114	106	103
Number of non-motorized serious injuries	0	531	482	437	430	406	396	431	373


Annual Fatalities
700
600
500
400
300
200
100
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
1.2
1
0.8
0.6
0.4
0.2
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
Fatality rate (per HMVMT)
5 Year Rolling Avg.


Serious injury rate (per HMVMT)
9
8
7
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
Serious injury rate (per HMVMT)
5 Year Rolling Avg.



Enter additional comments here to clarify your response for this question or add supporting information.

Describe efforts to obtain most current calendar year's crash data.*2016 FARS fatality information is obtained by the National Highway Traffic Safety Administration (NHTSA), which releases prior-year fatalities twice: a preliminary report in the spring of the following year, and sometime after the 12-month closing of the final FARS file. The State will update 2016 fatality information when it is available and final from NHTSA (sometime in 2018). The State will also have to update the 2015 data when NHTSA releases the final 2015 FARS file. State data for serious injuries (all and non-motorists) will be available when the Maryland State Police and State Highway Administration determine that all 2016 crash reports have been submitted by local law enforcement agencies. The projection for this 'closeout' is summer/fall, 2017. Note: 2007 data not available*

Describe fatality data source.

FARS

Enter additional comments here to clarify your response for this question or add supporting information.

State fatality totals used for selected questions in the HSIP as noted

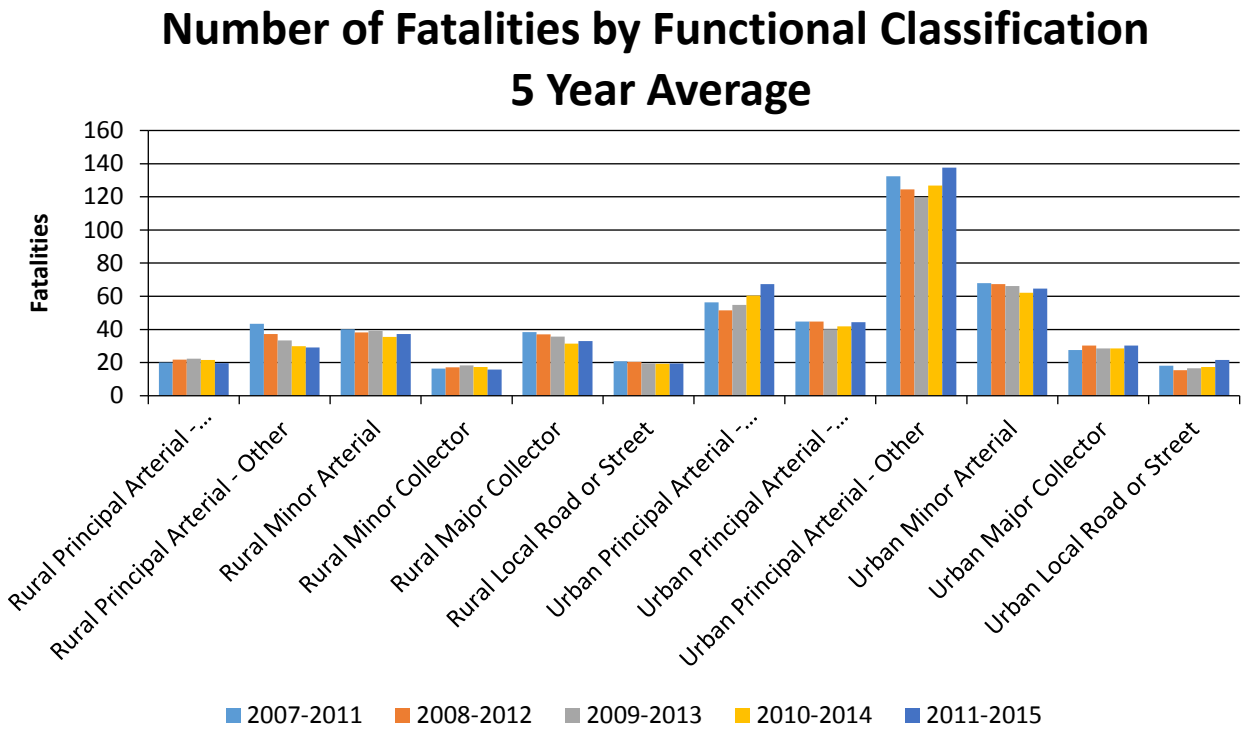
To the maximum extent possible, present this data by functional classification and ownership.

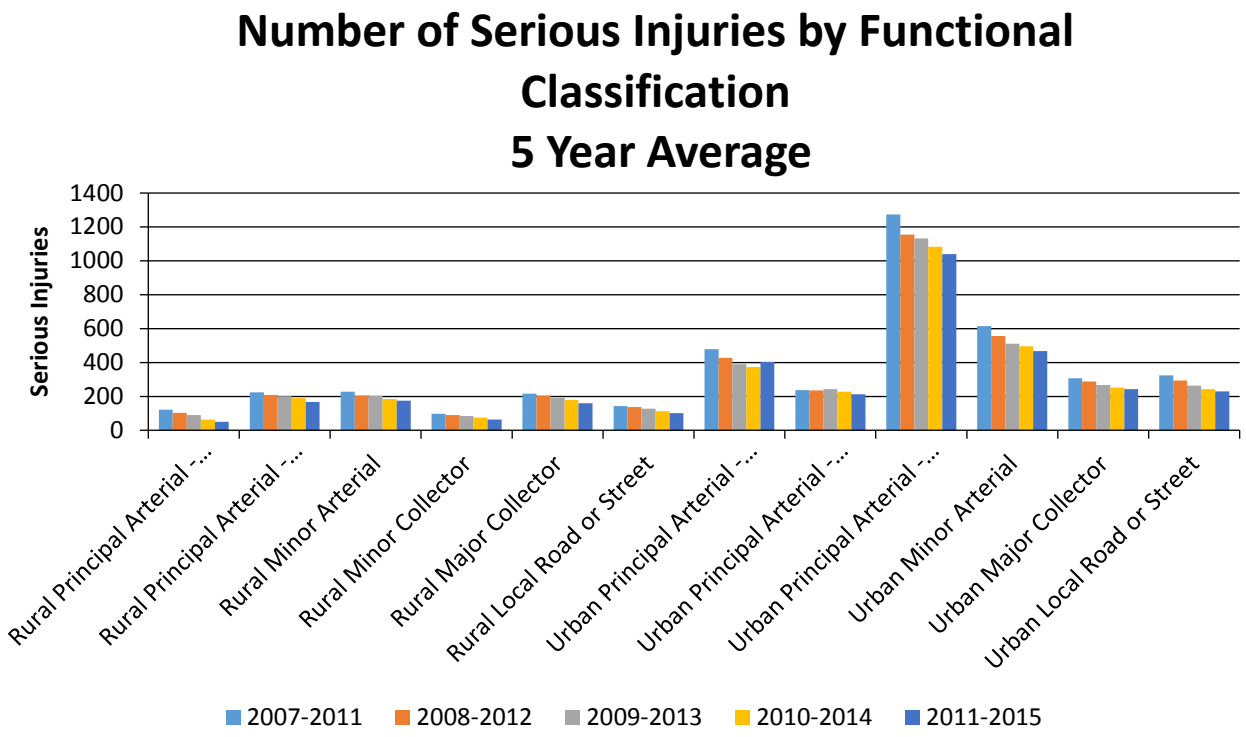
Year 2015

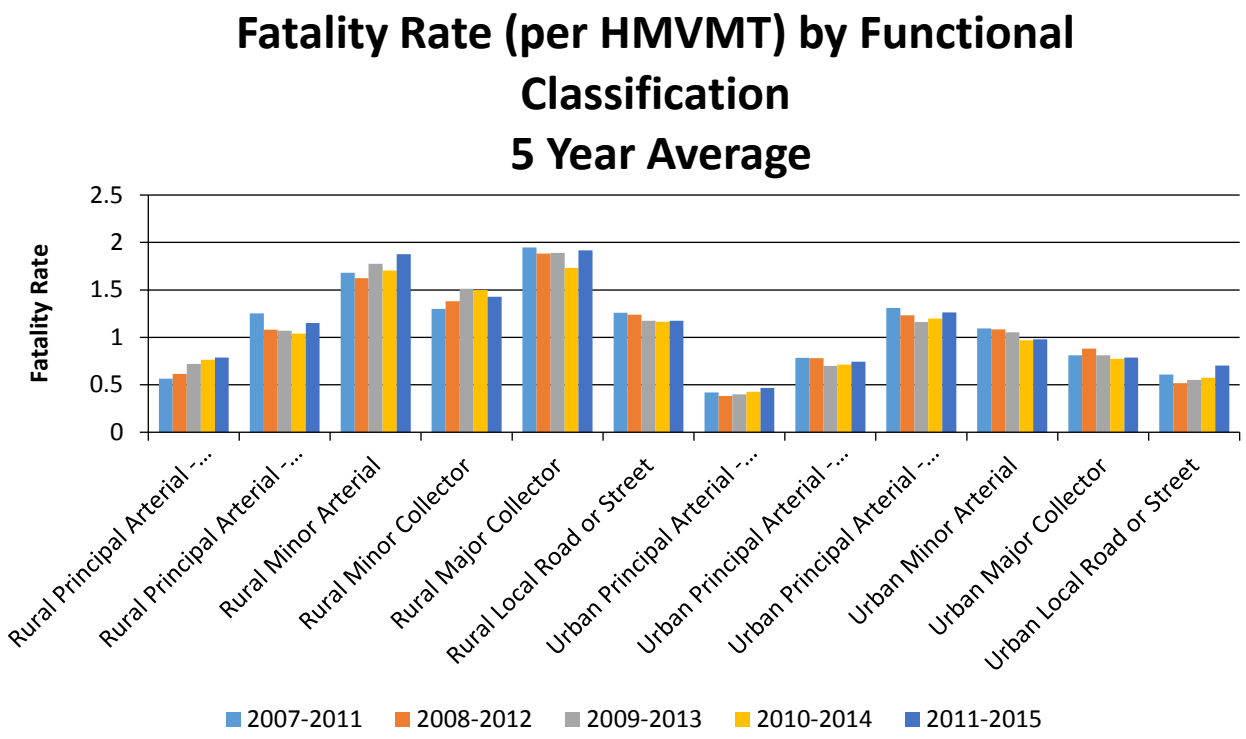
Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Rural Principal Arterial - Interstate	19.6	49.6	0.79	1.95
Rural Principal Arterial - Other Freeways and Expressways				
Rural Principal Arterial - Other	29.2	167.2	1.15	6.55
Rural Minor Arterial	37.2	174.6	1.88	8.76
Rural Minor Collector	15.8	63.4	1.43	5.75
Rural Major Collector	33	160	1.92	9.18
Rural Local Road or Street	19.4	100.4	1.17	6.07
Urban Principal Arterial - Interstate	67.4	402.4	0.47	2.77
Urban Principal Arterial - Other Freeways and Expressways	44.4	211.4	0.74	3.55
Urban Principal Arterial - Other	137.6	1,039.2	1.26	9.63
Urban Minor Arterial	64.6	467.2	0.98	7.1
Urban Minor Collector				
Urban Major Collector	30.2	243.4	0.79	6.37
Urban Local Road or Street	21.6	229.2	0.7	7.52

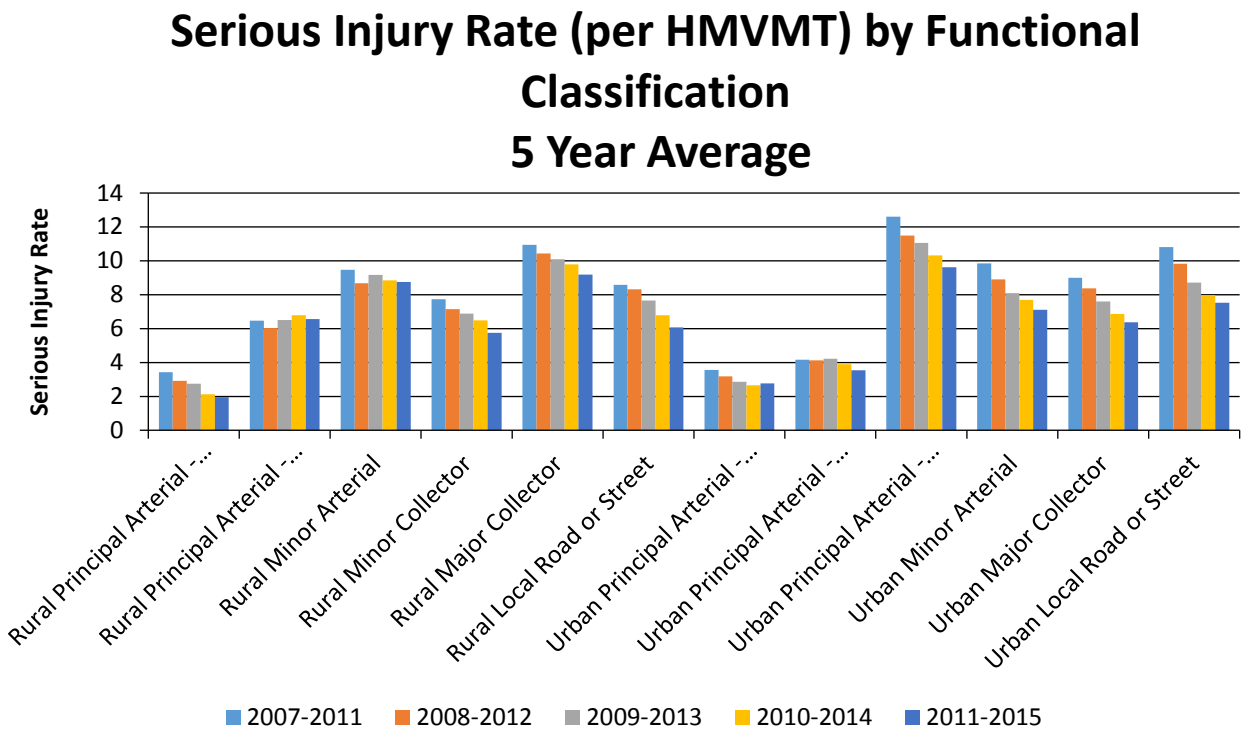
Year 2015

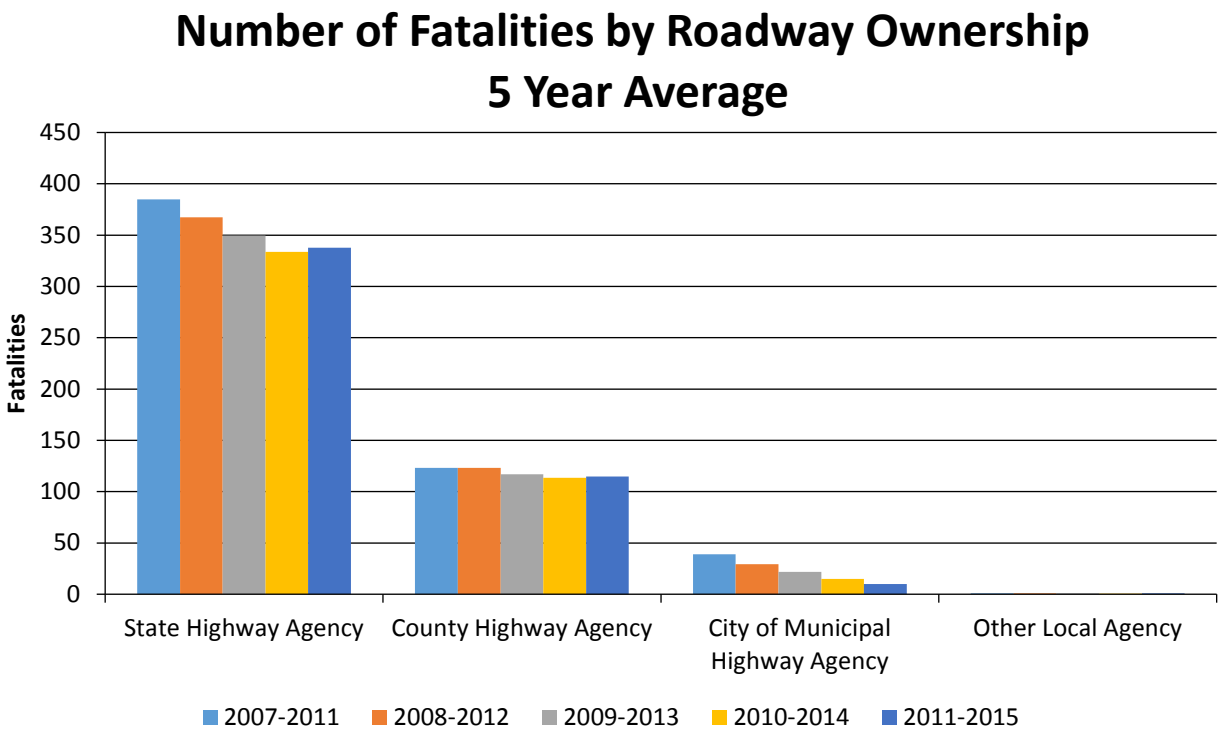
Roadways	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
State Highway Agency	337.8	1,931.8	0	0
County Highway Agency	114.6	823.6	0	0
Town or Township Highway Agency				
City of Municipal Highway Agency	10	231.2	0	0
State Park, Forest, or Reservation Agency				
Local Park, Forest or Reservation Agency				
Other State Agency				
Other Local Agency	0.8	9.6	0	0
Private (Other than Railroad)				
Railroad				
State Toll Authority				
Local Toll Authority				
Other Public Instrumentality (e.g. Airport, School, University)				
Indian Tribe Nation				

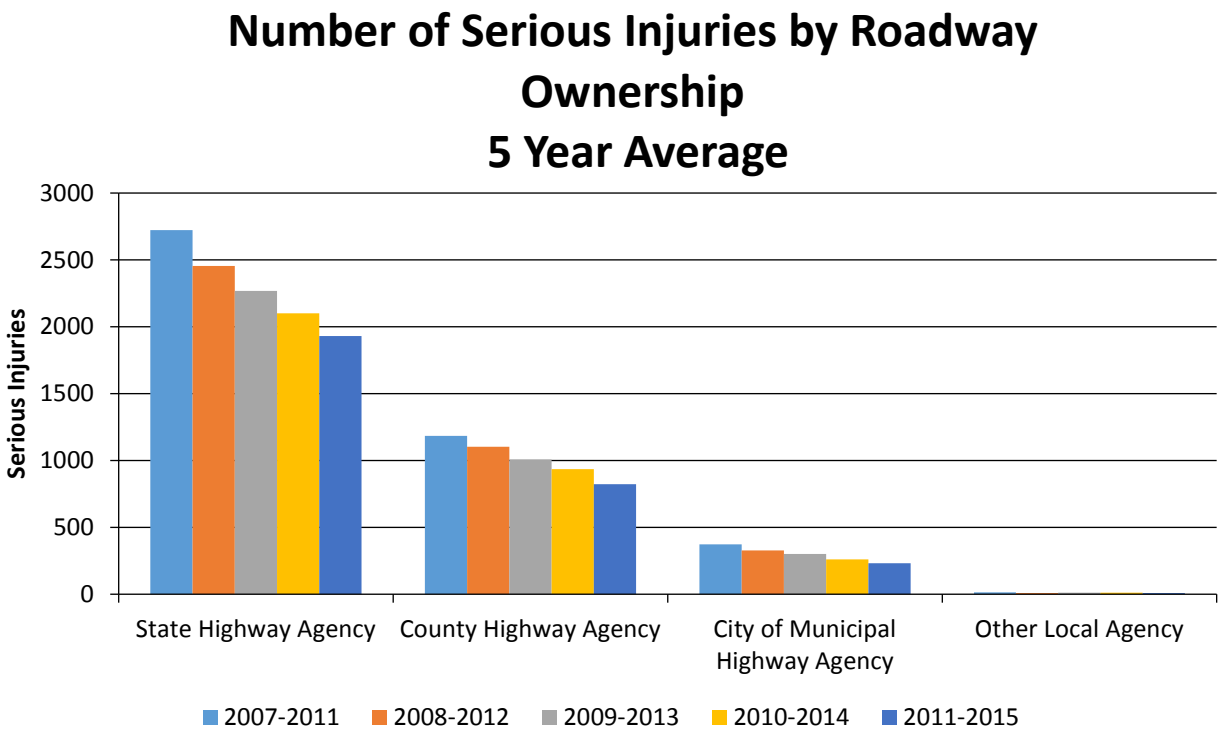

Number of Fatalities by Functional Classification
5 Year Average
Fatalities
160
140
120
100
80
60
40
20
0
Rural Principal Arterial -...
Rural Principal Arterial - Other
Rural Minor Arterial
Rural Minor Collector
Rural Major Collector
Rural Local Road or Street
Urban Principal Arterial -...
Urban Principal Arterial -...
Urban Principal Arterial - Other
Urban Minor Arterial
Urban Major Collector
Urban Local Road or Street
2007-2011
2008-2012
2009-2013
2010-2014
2011-2015

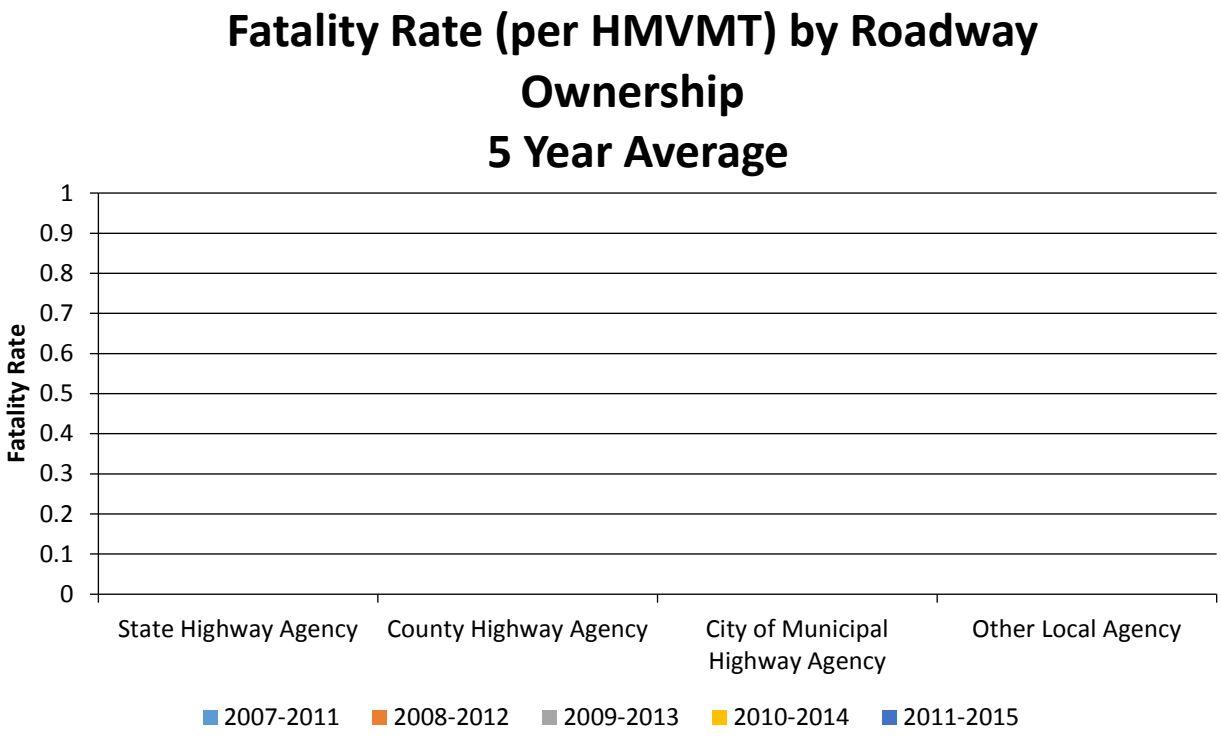

Number of Serious Injuries by Functional Classification
5 Year Average
Serious Injuries
1400
1200
1000
800
600
400
200
0
Rural Principal Arterial -...
Rural Principal Arterial -...
Rural Minor Arterial
Rural Minor Collector
Rural Major Collector
Rural Local Road or Street
Urban Principal Arterial -...
Urban Principal Arterial -...
Urban Principal Arterial -...
Urban Minor Arterial
Urban Major Collector
Urban Local Road or Street
2007-2011
2008-2012
2009-2013
2010-2014
2011-2015

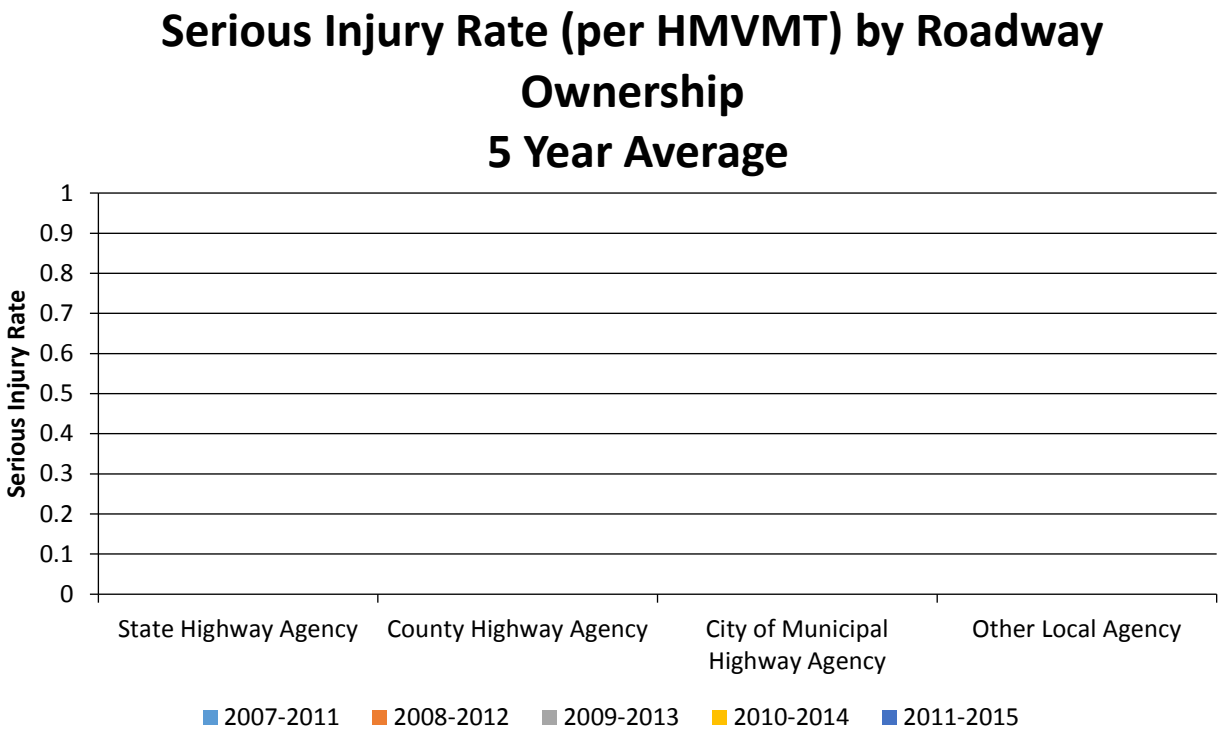

Fatality Rate (per HMVMT) by Functional Classification
5 Year Average
Fatality Rate
2.5
2
1.5
1
0.5
0
Rural Principal Arterial -...
Rural Principal Arterial -...
Rural Minor Arterial
Rural Minor Collector
Rural Major Collector
Rural Local Road or Street
Urban Principal Arterial -...
Urban Principal Arterial -...
Urban Principal Arterial -...
Urban Minor Arterial
Urban Major Collector
Urban Local Road or Street
2007-2011
2008-2012
2009-2013
2010-2014
2011-2015


Serious Injury Rate (per HMVMT) by Functional Classification
5 Year Average
Serious Injury Rate
14
12
10
8
6
4
2
0
Rural Principal Arterial -...
Rural Principal Arterial -...
Rural Minor Arterial
Rural Minor Collector
Rural Major Collector
Rural Local Road or Street
Urban Principal Arterial -...
Urban Principal Arterial -...
Urban Principal Arterial -...
Urban Minor Arterial
Urban Major Collector
Urban Local Road or Street
2007-2011
2008-2012
2009-2013
2010-2014
2011-2015


Number of Fatalities by Roadway Ownership
5 Year Average
Fatalities
450
400
350
300
250
200
150
100
50
0
State Highway Agency
County Highway Agency
City of Municipal Highway Agency
Other Local Agency
2007-2011
2008-2012
2009-2013
2010-2014
2011-2015


Number of Serious Injuries by Roadway Ownership
5 Year Average
Serious Injuries
3000
2500
2000
1500
1000
500
0
State Highway Agency
County Highway Agency
City of Municipal Highway Agency
Other Local Agency
2007-2011
2008-2012
2009-2013
2010-2014
2011-2015


Fatality Rate (per HMVMT) by Roadway Ownership
5 Year Average
Fatality Rate
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
State Highway Agency
County Highway Agency
City of Municipal Highway Agency
Other Local Agency
2007-2011
2008-2012
2009-2013
2010-2014
2011-2015



Enter additional comments here to clarify your response for this question or add supporting information.

Are there any other aspects of the general highway safety trends on which the State would like to elaborate?

No

Safety Performance Targets

Safety Performance Targets

Calendar Year 2018 Targets *

Number of Fatalities	415.6

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

Maryland maintains the TZD approach by developing interim targets to reduce fatalities by at least 50 percent in the next two decades (from 592 in 2008 to 296 in 2030). Considering the federal guidelines detailed in Moving Ahead for Progress in the 21st Century (MAP-21) and the subsequent Fixing America's Surface Transportation (FAST) Act, Maryland executives collaborated on revisions to the

target-setting methodology. The initial TZD goal remains: 296 fatalities or fewer by 2030. The annual targets for each of the SHSP's six emphasis areas are set using an exponential trend line connecting the historical data to the 2030 goal. Five-year averages are used to calculate projections, and the targets for each individual year are taken from the midpoint of the five-year average (e.g., 2017 annual interim target = midpoint of the 2015-2019 average). The same methodology was used for serious injury targets. However, it should be noted that due to significant declines in serious injuries in recent years, the use of historical trends currently puts the State at or below current targets. This method was applied to the five performance measures required by the Federal Highway Administration (FHWA) fatalities, fatality rate, serious injury, serious injury rate, and non-motorized fatalities and serious injuries.

Number of Serious Injuries 3171.3

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

Maryland maintains the TZD approach by developing interim targets to reduce fatalities by at least 50 percent in the next two decades (from 592 in 2008 to 296 in 2030). Considering the federal guidelines detailed in Moving Ahead for Progress in the 21st Century (MAP-21) and the subsequent Fixing America's Surface Transportation (FAST) Act, Maryland executives collaborated on revisions to the target-setting methodology. The initial TZD goal remains: 296 fatalities or fewer by 2030. The annual targets for each of the SHSP's six emphasis areas are set using an exponential trend line connecting the historical data to the 2030 goal. Five-year averages are used to calculate projections, and the targets for each individual year are taken from the midpoint of the five-year average (e.g., 2017 annual interim target = midpoint of the 2015-2019 average). The same methodology was used for serious injury targets. However, it should be noted that due to significant declines in serious injuries in recent years, the use of historical trends currently puts the State at or below current targets. This method was applied to the five performance measures required by the Federal Highway Administration (FHWA) fatalities, fatality rate, serious injury, serious injury rate, and non-motorized fatalities and serious injuries.

Fatality Rate 0.680

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

Maryland maintains the TZD approach by developing interim targets to reduce fatalities by at least 50 percent in the next two decades (from 592 in 2008 to 296 in 2030). Considering the federal guidelines detailed in Moving Ahead for Progress in the 21st Century (MAP-21) and the subsequent Fixing America's Surface Transportation (FAST) Act, Maryland executives collaborated on revisions to the target-setting methodology. The initial TZD goal remains: 296 fatalities or fewer by 2030. The annual targets for each of the SHSP's six emphasis areas are set using an exponential trend line connecting the historical data to the 2030 goal. Five-year averages are used to calculate projections, and the targets for each individual year are taken from the midpoint of the five-year average (e.g., 2017 annual interim target = midpoint of the 2015-2019 average). The same methodology was used for serious injury targets. However, it should be noted that due to significant declines in serious

injuries in recent years, the use of historical trends currently puts the State at or below current targets. This method was applied to the five performance measures required by the Federal Highway Administration (FHWA) fatalities, fatality rate, serious injury, serious injury rate, and non-motorized fatalities and serious injuries.

Serious Injury Rate 5.637

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

Maryland maintains the TZD approach by developing interim targets to reduce fatalities by at least 50 percent in the next two decades (from 592 in 2008 to 296 in 2030). Considering the federal guidelines detailed in Moving Ahead for Progress in the 21st Century (MAP-21) and the subsequent Fixing America's Surface Transportation (FAST) Act, Maryland executives collaborated on revisions to the target-setting methodology. The initial TZD goal remains: 296 fatalities or fewer by 2030. The annual targets for each of the SHSP's six emphasis areas are set using an exponential trend line connecting the historical data to the 2030 goal. Five-year averages are used to calculate projections, and the targets for each individual year are taken from the midpoint of the five-year average (e.g., 2017 annual interim target = midpoint of the 2015-2019 average). The same methodology was used for serious injury targets. However, it should be noted that due to significant declines in serious injuries in recent years, the use of historical trends currently puts the State at or below current targets. This method was applied to the five performance measures required by the Federal Highway Administration (FHWA) fatalities, fatality rate, serious injury, serious injury rate, and non-motorized fatalities and serious injuries.

Total Number of Non-Motorized Fatalities and Serious Injuries 459.2

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

Maryland maintains the TZD approach by developing interim targets to reduce fatalities by at least 50 percent in the next two decades (from 592 in 2008 to 296 in 2030). Considering the federal guidelines detailed in Moving Ahead for Progress in the 21st Century (MAP-21) and the subsequent Fixing America's Surface Transportation (FAST) Act, Maryland executives collaborated on revisions to the target-setting methodology. The initial TZD goal remains: 296 fatalities or fewer by 2030. The annual targets for each of the SHSP's six emphasis areas are set using an exponential trend line connecting the historical data to the 2030 goal. Five-year averages are used to calculate projections, and the targets for each individual year are taken from the midpoint of the five-year average (e.g., 2017 annual interim target = midpoint of the 2015-2019 average). The same methodology was used for serious injury targets. However, it should be noted that due to significant declines in serious injuries in recent years, the use of historical trends currently puts the State at or below current targets. This method was applied to the five performance measures required by the Federal Highway Administration (FHWA) fatalities, fatality rate, serious injury, serious injury rate, and non-motorized fatalities and serious injuries.

Enter additional comments here to clarify your response for this question or add supporting information.

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

"Stakeholders. A wide range of stakeholder groups - including federal, state and local government agencies, nongovernmental organizations, regional authorities, and individual advocates - participated in the development of the SHSP (Maryland Strategic Plan). Each EA (Emphasis Area) Team - which includes regional and local agencies - held at least two facilitated discussions to identify, develop, and finalize strategies for the 2016-2020 SHSP.Each EA Team wrestled with difficult decisions regarding how to cover the essentials of transportation safety while remaining strategic and focused on the most vital needs."[1] This list of stakeholder safety partner agencies is as follows:

Baltimore Metropolitan Council
Washington Regional Alcohol Program
Maryland Institute for Emergency Medical Services System
National Study Center
State Highway Administration
Maryland Highway Safety Office
Motor Vehicle Administration
Maryland Department of Health and Mental Hygiene
National Highway Traffic Safety Administration
Federal Highway Administration
Maryland Transportation Authority Police
Maryland State Police
Montgomery County Police Department
Howard County Police Department
Maryland Chiefs of Police Association
Leidos consultants
Sabra, Wang & Associates consultants[2]

[1] Maryland Strategic Highway Safety Plan 2016-20 PG 5
[2] Maryland Strategic Highway Safety Plan 2016-20 Appendix A

The process stakeholders from SHSP were consulted to establish safety performance targets

Does the State want to report additional optional targets?

No

Enter additional comments here to clarify your response for this question or add supporting information.

Applicability of Special Rules

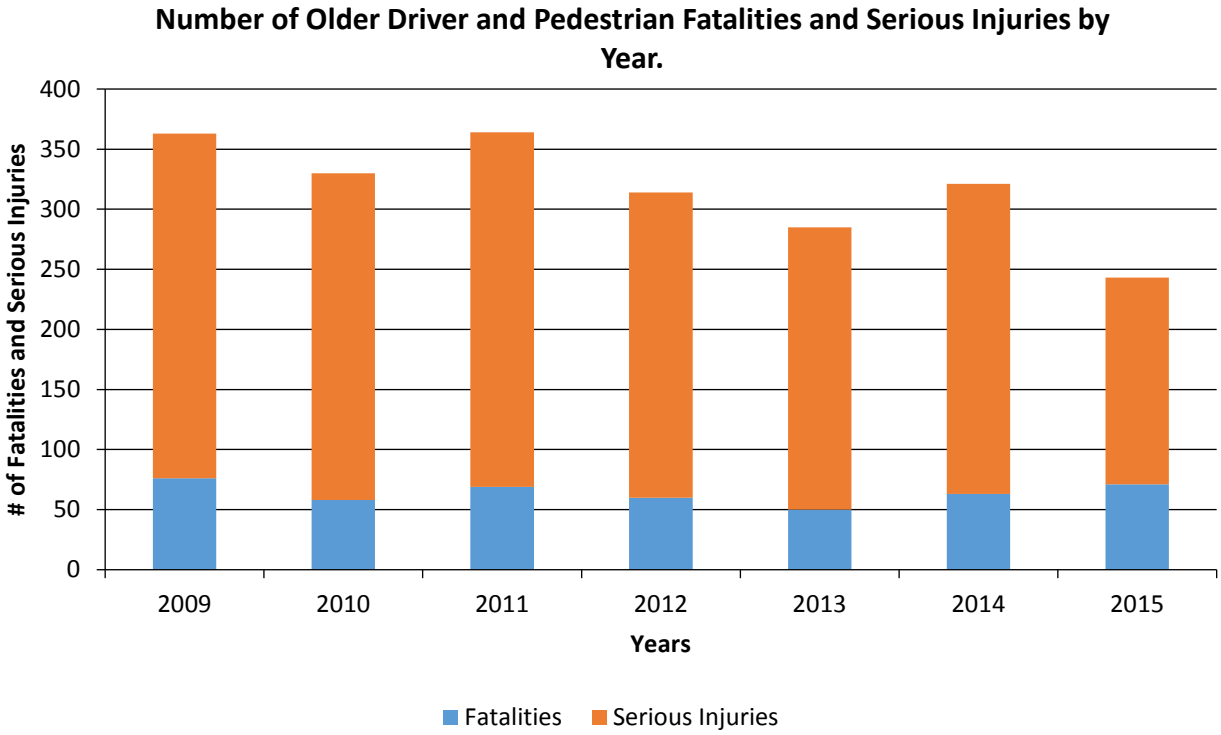
Does the HRRR special rule apply to the State for this reporting period?

No

Enter additional comments here to clarify your response for this question or add supporting information.

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

PERFORMANCE MEASURES	2009	2010	2011	2012	2013	2014	2015
Number of Older Driver and Pedestrian Fatalities	76	58	69	60	50	63	71
Number of Older Driver and Pedestrian Serious Injuries	287	272	295	254	235	258	172



Enter additional comments here to clarify your response for this question or add supporting information.

Evaluation

Program Effectiveness

How does the State measure effectiveness of the HSIP?

Change in fatalities and serious injuries

Enter additional comments here to clarify your response for this question or add supporting information.

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

Program Type	Target Crash Type	Fatalities 2013	Fatalities 2014	Fatalities 2015	Serious Injuries 2013	Serious Injuries 2014	Serious Injuries 2015	Fatality Rate (per HMVT) 2013	Fatality Rate (per HMVT) 2014	Fatality Rate (per HMVT) 2015	Serious Injury Rate (per HMVMT) 2013	Serious Injury Rate (per HMVMT) 2014	Serious Injury Rate (per HMVMT) 2015
Wet Surface Crashes	Wet Road	95	72	88	488	513	378	0.17	0.13	0.15	0.86	0.91	0.66
Left Turn Crash	Left Turn	24	22	43	228	252	181	0.04	0.04	0.08	0.40	0.45	0.32
Angle Crash	Angle	63	55	56	555	575	485	0.11	0.10	0.10	0.98	1.02	0.85
Median Barrier	Opposite Direction	62	51	67	227	203	237	0.11	0.09	0.12	0.40	0.36	0.41

For Wet surface crashes over a three year period there has a 7% decrease in fatalities, 22% decrease in serious injuries, 11% decrease in fatality rate and a 22% decrease in serious injury rate.

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

Increased awareness of safety and data-driven process
Increased focus on local road safety

Enter additional comments here to clarify your response for this question or add supporting information.

All Maryland counties along with Baltimore City are now provided a three year listing of pedestrian involved crashes which includes a summary of severe injury and fatal crashes on state highways along with a detailed listing for local roads. In 2016 SHA established a HSM implementation team and began working on an updated process for project selection and evaluation for the HSIP program.

Are there any significant programmatic changes that have occurred since the last reporting period?

Yes

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

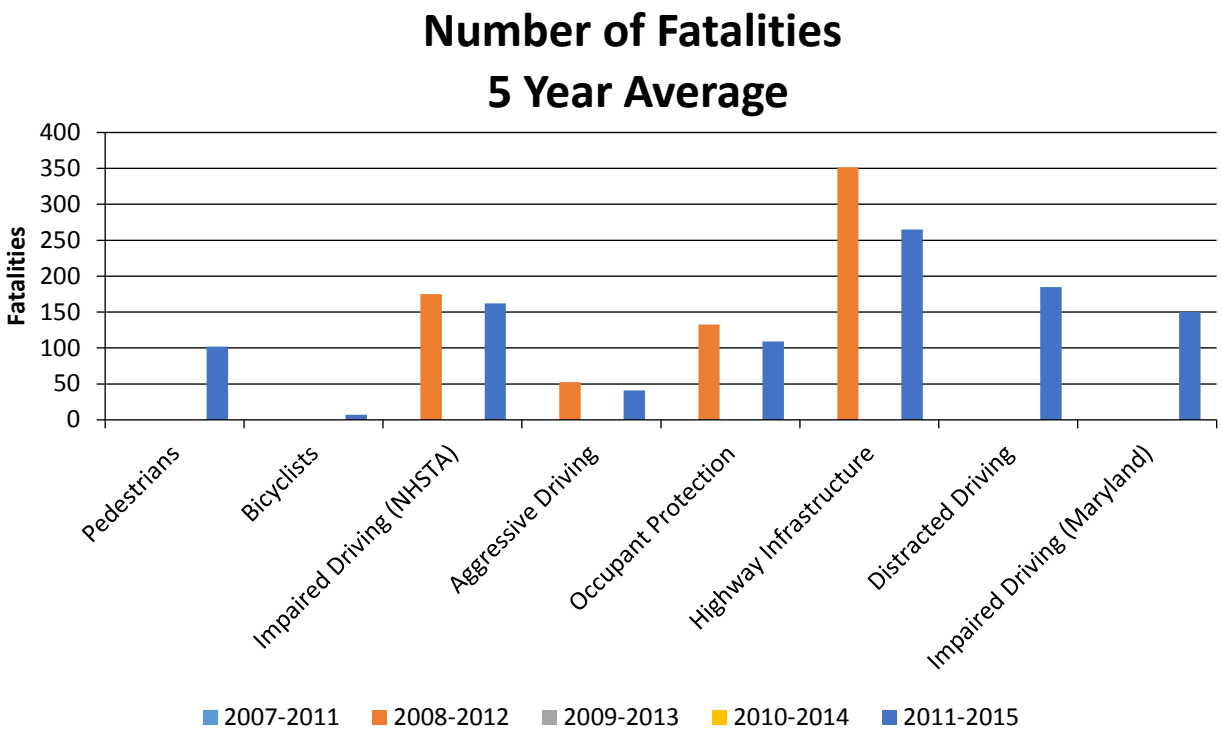
A review of Maryland's HSIP planning process was completed in 2016 and an action plan was developed to bring Maryland SHA's HSIP program into compliance with the HSIP final rule.

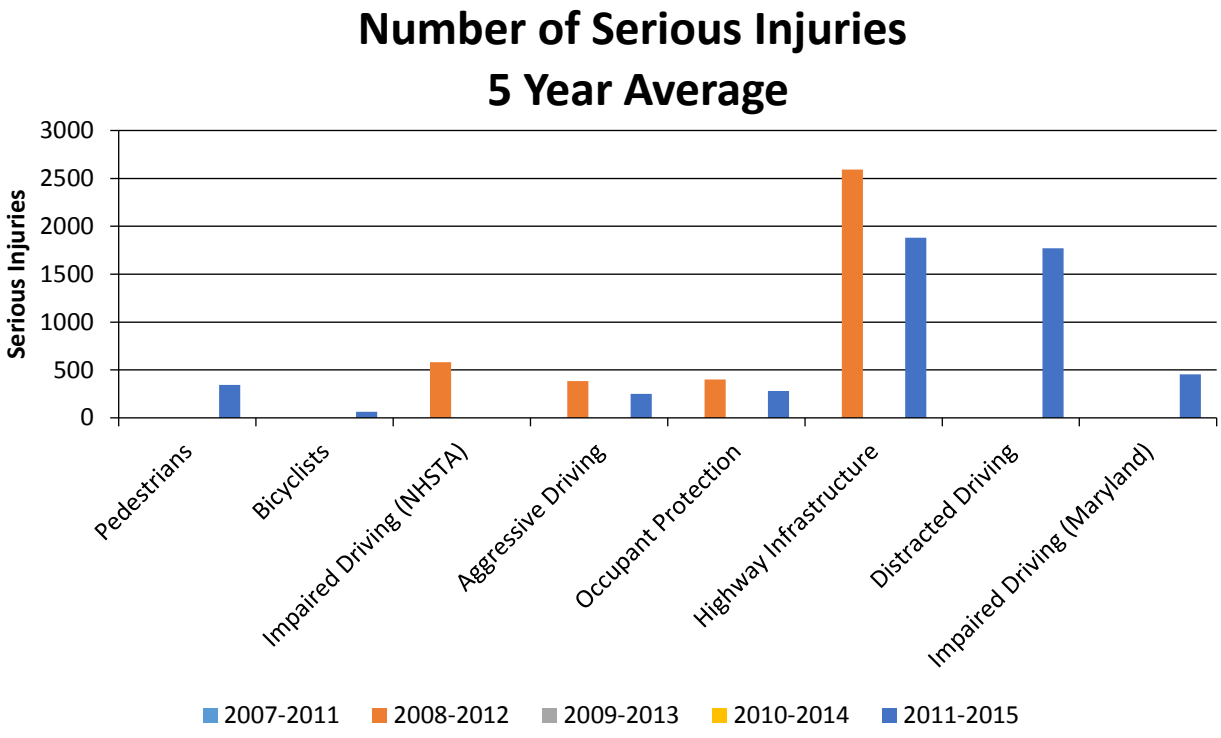
Effectiveness of Groupings or Similar Types of Improvements

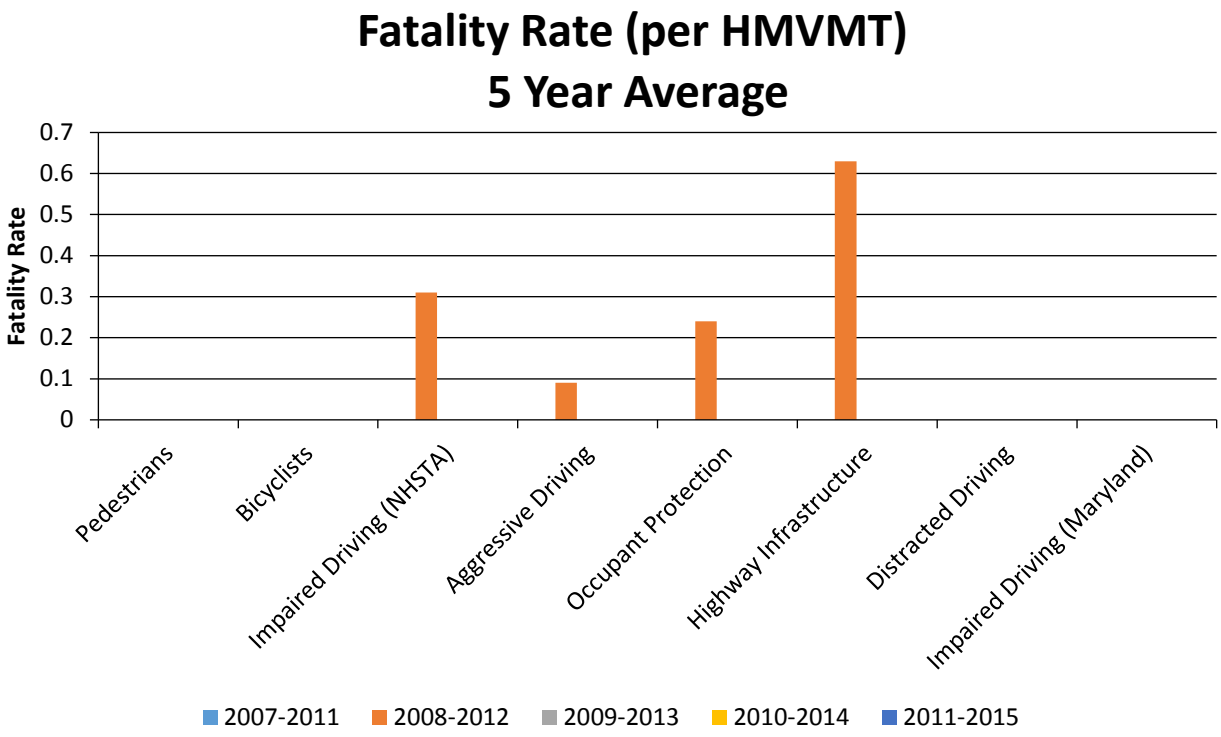
Present and describe trends in SHSP emphasis area performance measures.

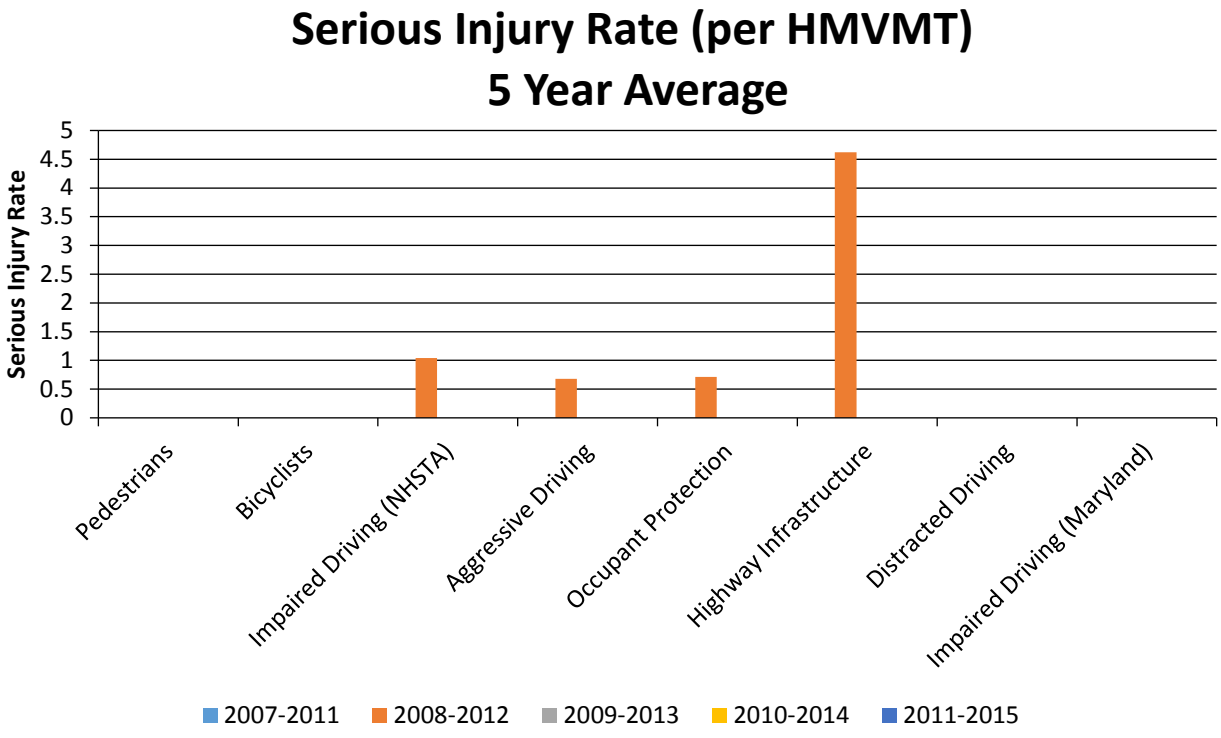
Year 2015

SHSP Emphasis Area	Targeted Crash Type	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)	Other 1	Other 2	Other 3
Pedestrians	See notes	102	343					
Bicyclists	See notes	7	64					
Impaired Driving (NHSTA)	See notes	162						
Aggressive Driving	See notes	41	251					
Occupant Protection	See notes	109	282					
Highway Infrastructure	See Notes	265	1,879					
Distracted Driving	See notes	185	1,770					
Impaired Driving (Maryland)	See notes	150	455					


Number of Fatalities
5 Year Average
Fatalities
400
350
300
250
200
150
100
50
0
Pedestrians
Bicyclists
Impaired Driving (NHSTA)
Aggressive Driving
Occupant Protection
Highway Infrastructure
Distracted Driving
Impaired Driving (Maryland)
2007-2011
2008-2012
2009-2013
2010-2014
2011-2015


Number of Serious Injuries
5 Year Average
Serious Injuries
3000
2500
2000
1500
1000
500
0
Pedestrians
Bicyclists
Impaired Driving (NHSTA)
Aggressive Driving
Occupant Protection
Highway Infrastructure
Distracted Driving
Impaired Driving (Maryland)
2007-2011
2008-2012
2009-2013
2010-2014
2011-2015





Enter additional comments here to clarify your response for this question or add supporting information.

See attached file - "Question 43"

Five year Rolling Average totals from SHSP submitted

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

No

Enter additional comments here to clarify your response for this question or add supporting information.

Project Effectiveness

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

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL INJURY BEFORE	ALL INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
Maryland has chosen not to complete this optional section														

Enter additional comments here to clarify your response for this question or add supporting information.

Are there any other aspects of the overall HSIP effectiveness on which the State would like to elaborate?

No

Compliance Assessment

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

05/31/2017

What are the years being covered by the current SHSP?

From: 2016 To: 2020

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

2020

Enter additional comments here to clarify your response for this question or add supporting information.

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

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

MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
Access Control (22)	100	100								
One/Two Way Operations (91)	100	100								
Number of Through Lanes (31)	100	100					100	90		
Average Annual Daily Traffic (79)	100	100					5	0		
AADT Year (80)	100	98								
Type of Governmental Ownership (4)	100	100					100	100	100	100
INTERSECTION										
Unique Junction Identifier (120)			100	100						
Location Identifier for Road 1 Crossing Point (122)			100	100						
Location Identifier for Road 2 Crossing Point (123)			100	100						
Intersection/Junction Geometry (126)			70	70						
Intersection/Junction Traffic Control (131)			50	50						
AADT for Each Intersecting Road (79)			25	25						
AADT Year (80)			25	25						
Unique Approach Identifier (139)			0	0						
INTERCHANGE/RAMP										
Unique Interchange Identifier (178)					100	100				
Location Identifier for Roadway at Beginning of Ramp Terminal (197)					100	100				
Location Identifier for Roadway at Ending Ramp Terminal (201)					100	100				
Ramp Length (187)					100	100				
Roadway Type at Beginning of Ramp Terminal (195)					100	100				

MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
Roadway Type at End Ramp Terminal (199)					100	100				
Interchange Type (182)					100	100				
Ramp AADT (191)					100	100				
Year of Ramp AADT (192)					100	100				
Functional Class (19)					100	100				
Type of Governmental Ownership (4)					100	100				
Totals (Average Percent Complete):	**100.00**	**99.89**	**58.75**	**58.75**	**100.00**	**100.00**	**89.44**	**87.78**	**100.00**	**100.00**

Enter additional comments here to clarify your response for this question or add supporting information.

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

- MDOT SHA is implementing Esri's Roads and Highways (R&H) software to manage our GIS roadway and LRS data for HPMS submission. With the Intersection Manager tool, our ability to better manager intersection data, and data gaps, we will be able to be 100 percent compliant by 2026.
- In conjunction with the Esri R&H implementation, we also began the One Maryland, One Centerline (OMOC) program where MDOT SHA has met with all 23 counties, and Baltimore City, to discuss the sharing of data between jurisdictions via one common geometry, maintained by the appropriate authority. This geometry will be the base of the R&H data model. This data share and cooperation between levels of jurisdictions will also allow us to identify and fill data gaps, with the appropriate, authoritative information.

Provide the suspected serious injury identifier, definition and attributes used by the State for both the crash report form and the crash database using the table below. Please also indicate whether or not these elements are compliant with the MMUCC 4th edition criteria for data element P5. Injury Status, suspected serious injury.

CRITERIA	SUSPECTED SERIOUS INJURY IDENTIFIER(NAME)	MMUCC 4TH EDITION COMPLIANT *	SUSPECTED SERIOUS INJURY DEFINITION	MMUCC 4TH EDITION COMPLIANT *	SUSPECTED SERIOUS INJURY ATTRIBUTES(DESCRIPTORS)	MMUCC 4TH EDITION COMPLIANT *
Crash Report Form	Injury Severity 04: Suspected Serious Injury	Yes	N/A	Yes	N/A	Yes
Crash Report Form Instruction Manual	Injury Severity 04: Suspected Serious Injury	Yes	A suspected serious injury is any injury other than fatal which results in one or more of the following: (see MMUCC P5 Injury Status)	Yes	A suspected serious injury is any injury other than fatal which results in one or more of the following: Severe laceration resulting in exposure of underlying tissues/muscle/organs or resulting in significant loss of blood Broken or distorted extremity (arm or leg) Crush injuries Suspected skull, chest or abdominal injury other than bruises or minor lacerations Significant burns (second and third degree burns over 10% or more of the body) Unconsciousness when taken from the crash scene	Yes

CRITERIA	SUSPECTED SERIOUS INJURY IDENTIFIER(NAME)	MMUCC 4TH EDITION COMPLIANT *	SUSPECTED SERIOUS INJURY DEFINITION	MMUCC 4TH EDITION COMPLIANT *	SUSPECTED SERIOUS INJURY ATTRIBUTES(DESCRIPTORS)	MMUCC 4TH EDITION COMPLIANT *
					Paralysis	
Crash Database	Injury Severity 04: Suspected Serious Injury	Yes	N/A	Yes	N/A	Yes
Crash Database Data Dictionary	Injury Severity 04: Suspected Serious Injury	Yes	A suspected serious injury is any injury other than fatal which results in one or more of the following: (see MMUCC P5 Injury Status)	Yes	A suspected serious injury is any injury other than fatal which results in one or more of the following: Severe laceration resulting in exposure of underlying tissues/muscle/organs or resulting in significant loss of blood Broken or distorted extremity (arm or leg) Crush injuries Suspected skull, chest or abdominal injury other than bruises or minor lacerations Significant burns (second and third degree burns over 10% or more of the body) Unconsciousness when taken from the crash scene Paralysis	Yes

Enter additional comments here to clarify your response for this question or add supporting information.

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

Yes

Describe the purpose and outcomes of the State’s HSIP program assessment.

The purpose/scope of the review was to determine if Maryland HSIP Planning Process meets the requirements of 23 CFR 924.9 and identify areas for improvement and successful practices in Maryland HSIP Planning Process.

An action plan was developed to bring Maryland’s HSIP planning process into compliance with the HSIP Final Rule.

Optional Attachments

Program Structure:

Project Implementation:

Safety Performance:

Evaluation:

Question 43 Notes.docx

Compliance Assessment:

Glossary

5 year rolling average	means the average of five individuals, consecutive annual points of data (e.g. annual fatality rate).
Emphasis area	means a highway safety priority in a State's SHSP, identified through a data-driven, collaborative process.
Highway safety improvement project	means strategies, activities and projects on a public road that are consistent with a State strategic highway safety plan and corrects or improves a hazardous road location or feature or addresses a highway safety problem.
HMVMT	means hundred million vehicle miles traveled.
Non-infrastructure projects	are projects that do not result in construction. Examples of non-infrastructure projects include road safety audits, transportation safety planning activities, improvements in the collection and analysis of data, education and outreach, and enforcement activities.
Older driver special rule	applies if traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65 in a State increases during the most recent 2-year period for which data are available, as defined in the Older Driver and Pedestrian Special Rule Interim Guidance dated February 13, 2013.
Performance measure	means indicators that enable decision-makers and other stakeholders to monitor changes in system condition and performance against established visions, goals, and objectives.
Programmed funds	mean those funds that have been programmed in the Statewide Transportation Improvement Program (STIP) to be expended on highway safety improvement projects.
Roadway Functional Classification	means the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide.
Strategic Highway Safety Plan (SHSP)	means a comprehensive, multi-disciplinary plan, based on safety data developed by a State Department of Transportation in accordance with 23 U.S.C. 148.
Systematic	refers to an approach where an agency deploys countermeasures at all locations across a system.
Systemic safety improvement	means an improvement that is widely implemented based on high risk roadway features that are correlated with specific severe crash types.
Transfer	means, in accordance with provisions of 23 U.S.C. 126, a State may transfer from an apportionment under section 104(b) not to exceed 50 percent of the amount apportioned for the fiscal year to any other apportionment of the State under that section.