MARYLAND

HIGHWAY SAFETY
IMPROVEMENT PROGRAM
2018 ANNUAL REPORT

U.S. Department of Transportation
Federal Highway Administration

Photo source: Federal Highway Administration

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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 2017

- 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 were not allocated HSIP funds in CY 2017.
- 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 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 a SHA selection committee. The criteria considered are Safety, Congestion, Operations and Local Support.
- The proportion of HSIP program Funds used in CY 2016 for funding systemic improvements is 98.5%
- The types of systemic improvements include
- Other-Pedestrian and bicycle access
  1. Rumble Strips
  2. Pavement/Shoulder Widening
  3. Install/Improve Pavement Marking and/or Delineation
  4. Upgrade Guard Rails
  5. Install/Improve Lighting
  6. Other-Sidewalk Improvements

7. Other-Intersection geometry

- 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 2017.
- Programmed - $ 15,556,000
- Obligated - $ 12,620,408
- Programmed Non-infrastructure portion - $ 902,393
- Obligated Non-infrastructure portion - $ 844,326
- 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 decreased from 511 in 2012 to 505 in 2016 (annual format) and that the number of serious injuries (MD) have decreased from 3,312 in 2012 to 3,164 in 2016 (annual format). Please note that all 2016 FARS totals are preliminary at the time of this report.
- The overview of safety trends indicates that the reported number of non-motorized fatalities (FARS) have increased from 102 in 2012 to 120 in 2016 (annual format) and that the number of non-motorized serious injuries (MD) have increased from 406 in 2012 to 584 in 2016 (annual format). Please see above note on 2016 FARS totals.
- 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 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 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 manage 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 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 in CY 2016 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.

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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.

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.

Describe coordination with internal partners.

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 2017. Part of SHA and MVA's responsibility is to work with other

2018 Maryland Highway Safety Improvement Program
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.

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.

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?

Yes

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

An action plan was developed to bring Maryland's HSIP Planning process into compliance with the HSIP final rule in 2016. As a result changes are anticipated in the near future.

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

To upload a copy of the State processes, attach files below.

File Name:

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]

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

 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

 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?

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

 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

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

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]

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

Program: Right Angle 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?

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

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

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

 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

Program: Skid Hazard

Date of Program Methodology: 1/1/2012

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

2018 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	

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

What percentage of HSIP funds address systemic improvements?

98.5

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

Rumble Strips
Pavement/Shoulder Widening
Install/Improve Pavement Marking and/or Delineation
Upgrade Guard Rails
Install/Improve Lighting
Other-Sidewalk Improvements
Other-Intersection geometry
Other-Pedestrian and bicycle access

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.

This is expected to be addressed in the future.

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?

No

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)	$15,556,000	$12,620,408	81.13%
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)	$0	$0	0%
RHCP (for HSIP purposes) (23 U.S.C. 130(e)(2))	$0	$0	0%
Other Federal-aid Funds (i.e. STBG, NHPP)	$0	$0	0%
State and Local Funds	$0	$0	0%
Totals	$15,556,000	$12,620,408	81.13%

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

Please note updated totals

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

0%

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

0%

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?

$902,393

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

$844,326

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?

49%

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
3430	Non-infrastructure	Transportation safety planning			$450000	$500000	HSIP (23 U.S.C. 148)	Statewide	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
3362	Non-infrastructure	Transportation safety planning			$225000	$250000	HSIP (23 U.S.C. 148)	Statewide	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B149	Non-infrastructure	Transportation safety planning			$152393	$169326	HSIP (23 U.S.C. 148)	Statewide	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B237	Roadway delineation	Raised pavement markers			$1536648	$1904723	HSIP (23 U.S.C. 148)	Areawide SHA District 4	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B238	Roadway delineation	Raised pavement markers			$1984374	$2460014	HSIP (23 U.S.C. 148)	Areawide SHA District 5	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B233	Roadside	Barrier- metal			$1738853	$1750293	HSIP (23 U.S.C. 148)	Areawide SHA District 3	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B203	Roadside	Barrier - other			$3235829	$3595365	HSIP (23 U.S.C. 148)	Areawide SHA District 7	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
1301173	Roadside	Barrier- metal			$3043349	$3043349	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Other Freeways and Expressways	123,250	55	State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B230	Roadside	Barrier - other			$832775	$832775	HSIP (23 U.S.C. 148)	Areawide SHA District 1	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B176	Roadside	Barrier - other			$2143600	$2421121	HSIP (23 U.S.C. 148)	Areawide SHA District 6	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B182	Roadside	Barrier - other			$1818069	$2020076	HSIP (23 U.S.C. 148)	Areawide SHA District 5	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B203	Roadside	Barrier - other			$3341996	$3713329	HSIP (23 U.S.C. 148)	Areawide SHA District 7	0		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
000B196	Roadside	Barrier - other			$2486021	$2762245	HSIP (23 U.S.C. 148)	Areawide SHA District 4	0		State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B233	Roadside	Barrier- metal			$307585	$307585	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other	24,160	45	State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
000B136	Pedestrians and bicyclists	Miscellaneous pedestrians and bicyclists			$2756273	$3037947	HSIP (23 U.S.C. 148)	Areawide SHA District 4	0		State Highway Agency	Spot	Pedestrians	Improve roadway environments for walking
000B125	Pedestrians and bicyclists	Miscellaneous pedestrians and bicyclists			$4297634	$4760950	HSIP (23 U.S.C. 148)	Areawide SHA District 1	0		State Highway Agency	Spot	Pedestrians	Improve roadway environments for walking

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	RELATIONSHIP TO SHSP	
													EMPHASIS AREA	STRATEGY
000B038	Pedestrians and bicyclists	Miscellaneous pedestrians and bicyclists			$3192155	$3192155	HSIP (23 U.S.C. 148)	Areawide SHA District 4	0		State Highway Agency	Spot	Pedestrians	Improve roadway environments for walking
000B124	Pedestrians and bicyclists	Miscellaneous pedestrians and bicyclists			$4253084	$4419611	HSIP (23 U.S.C. 148)	Areawide SHA District 1	0		State Highway Agency	Spot	Pedestrians	Improve roadway environments for walking
1251063	Intersection geometry	Intersection geometry - other			$5191565	$5728098	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Other	38,701	50	State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
6956382	Lighting	Site lighting - interchange			$1525051	$1525051	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Interstate	97,630	55	State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
2511077	Intersection geometry	Intersection geometry - other			$1354129	$1508949	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Other	28,230	50	State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
2571016	Intersection geometry	Intersection geometry - other			$3276643	$3688348	HSIP (23 U.S.C. 148)	Rural Principal Arterial (RPA) - Other	19,565	50	State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
1249006	Intersection geometry	Intersection geometry - other			$1621902	$1672373	HSIP (23 U.S.C. 148)	Urban Minor Arterial	22,862	45	State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
3161032	Intersection geometry	Intersection geometry - other			$2054555	$2266616	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Other	20,732	35	State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements
1189009	Intersection geometry	Intersection geometry - other			$3831945	$4333517	HSIP (23 U.S.C. 148)	Urban Principal Arterial (UPA) - Other	15,872	50	State Highway Agency	Systemic	Highway Infrastructure	Corridor safety improvements

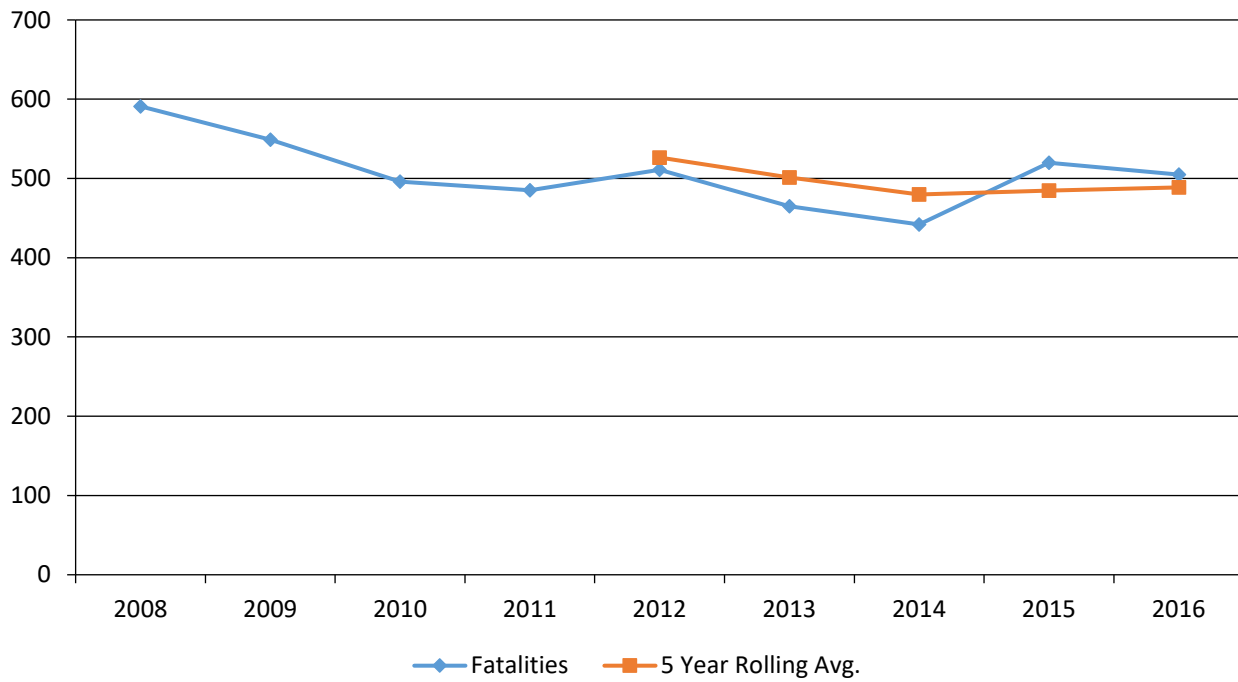**Enter additional comments here to clarify your response for this question or add supporting information.**
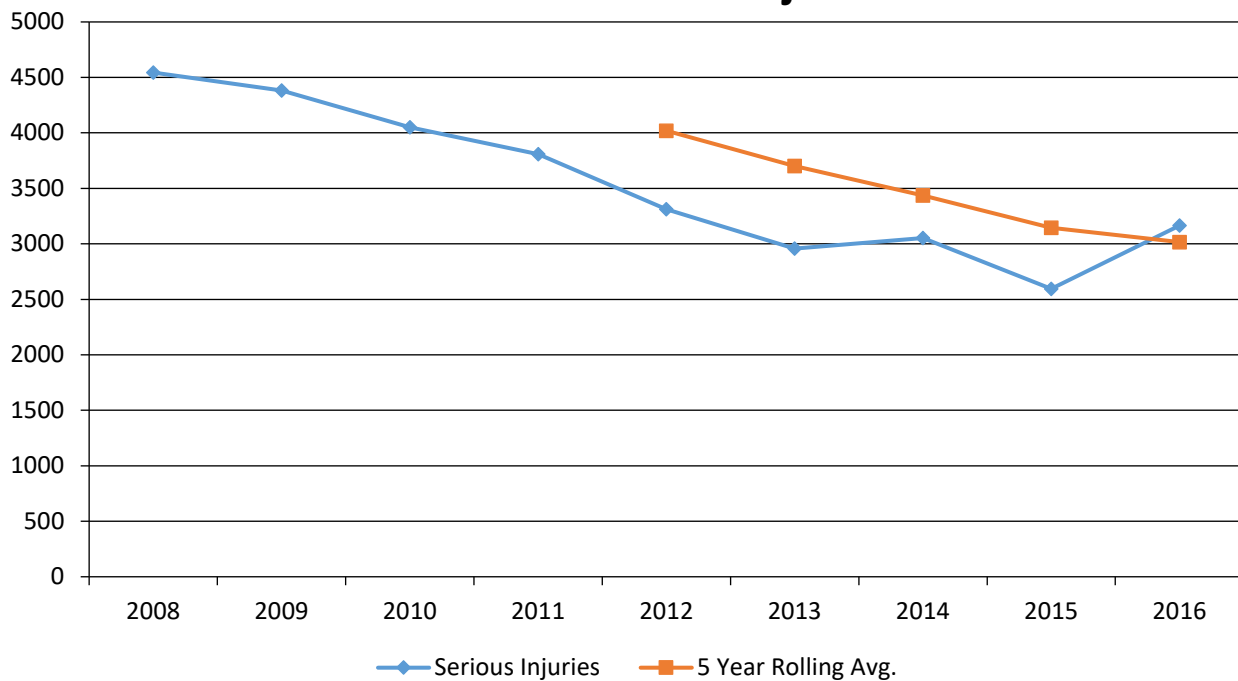
Safety Performance

General Highway Safety Trends

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

PERFORMANCE MEASURES	2008	2009	2010	2011	2012	2013	2014	2015	2016
Fatalities	591	549	496	485	511	465	442	520	505
Serious Injuries	4,544	4,383	4,051	3,809	3,312	2,957	3,053	2,595	3,164
Fatality rate (per HMVMT)	1.070	0.990	0.880	0.860	0.900	0.820	0.780	0.910	0.860
Serious injury rate (per HMVMT)	8.090	7.880	7.210	6.800	5.870	5.240	5.410	4.550	5.370
Number non-motorized fatalities	122	124	110	107	102	114	106	103	120
Number of non-motorized serious injuries	531	482	437	430	406	396	431	373	584

Annual Fatalities

Legend: Fatalities — 5 Year Rolling Avg.

Annual Serious Injuries
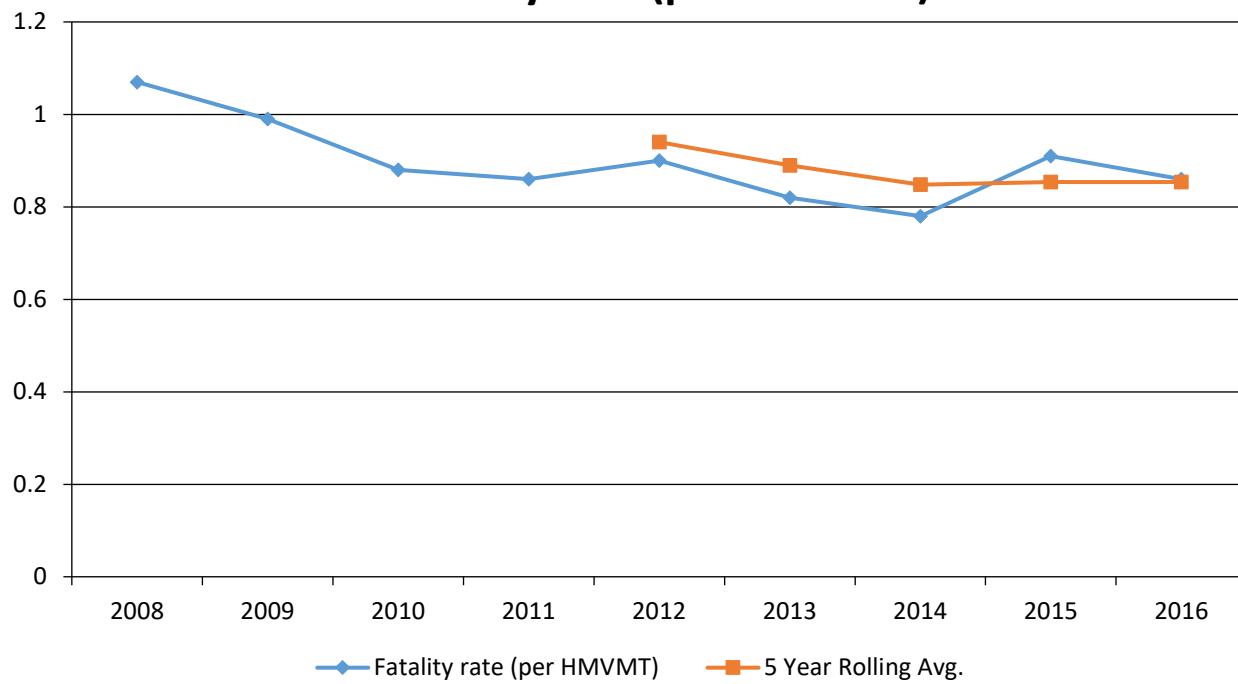
Legend: Serious Injuries — 5 Year Rolling Avg.

Fatality rate (per HMVMT)

Fatality rate (per HMVMT) — 5 Year Rolling Avg.

Serious injury rate (per HMVMT)

Serious injury rate (per HMVMT) — 5 Year Rolling Avg.
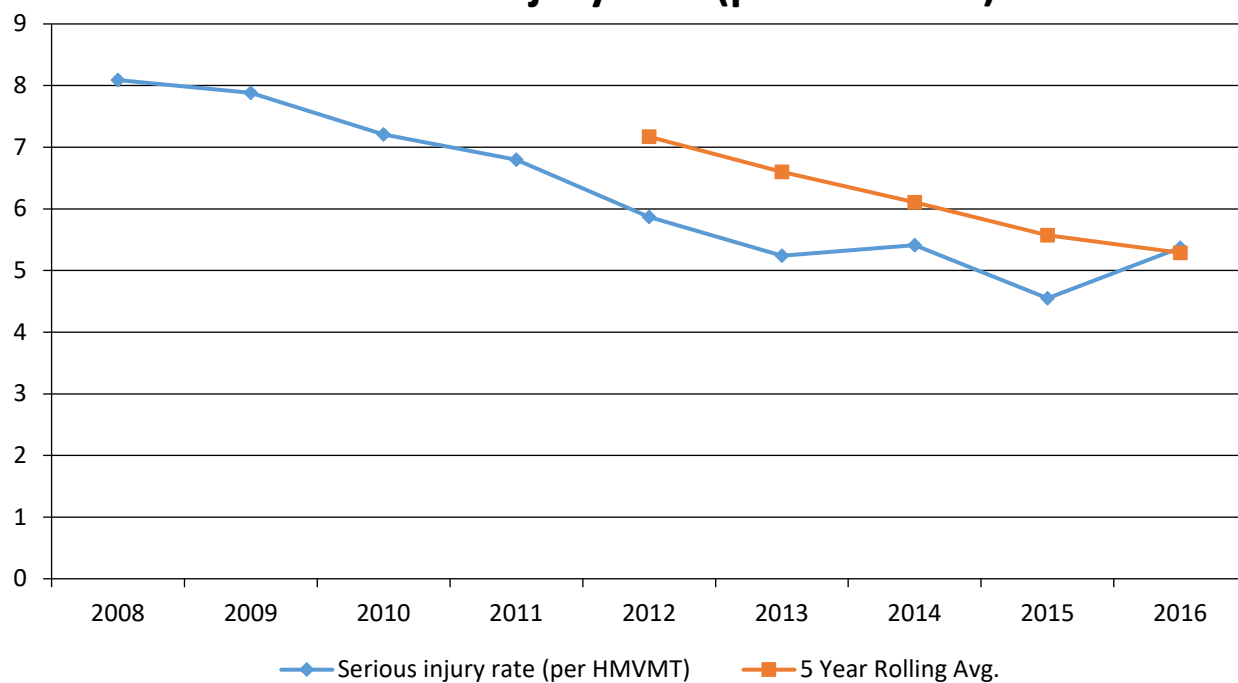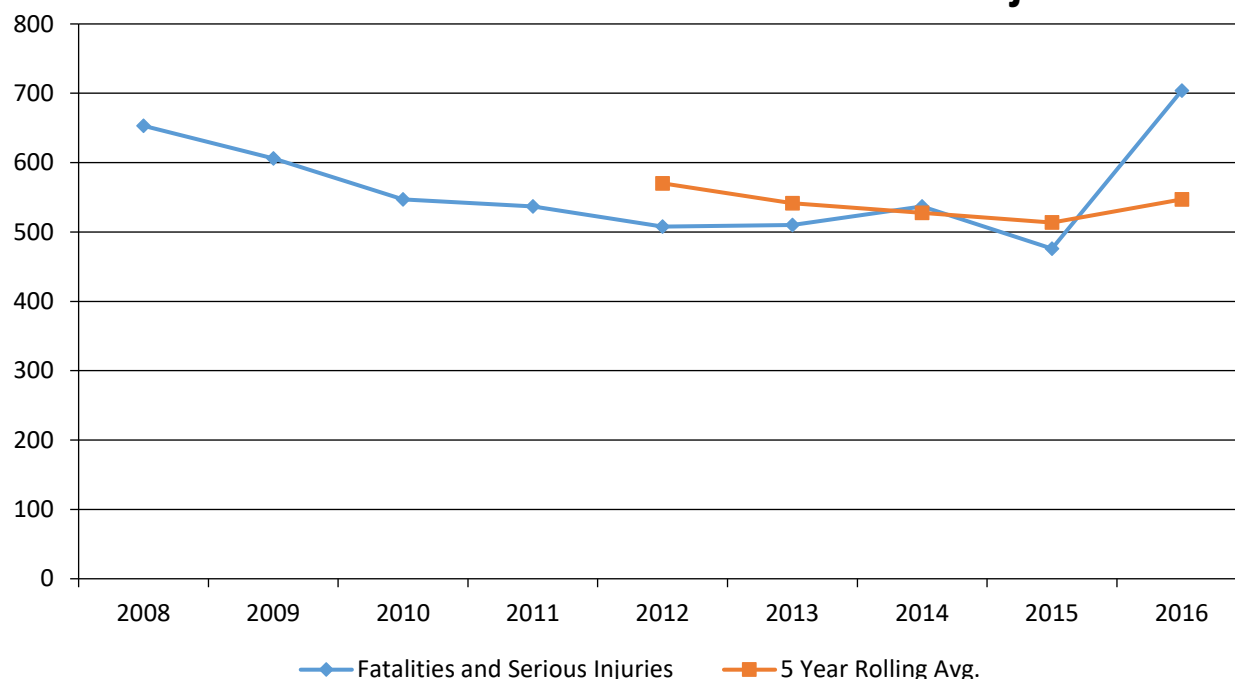
Non Motorized Fatalities and Serious Injuries

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

The 2016 Fatality rate (per HMVMT) is estimated. The actual FARS fatality rate was not available at the time of this report.

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.

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 2016

2018 Maryland Highway Safety Improvement Program

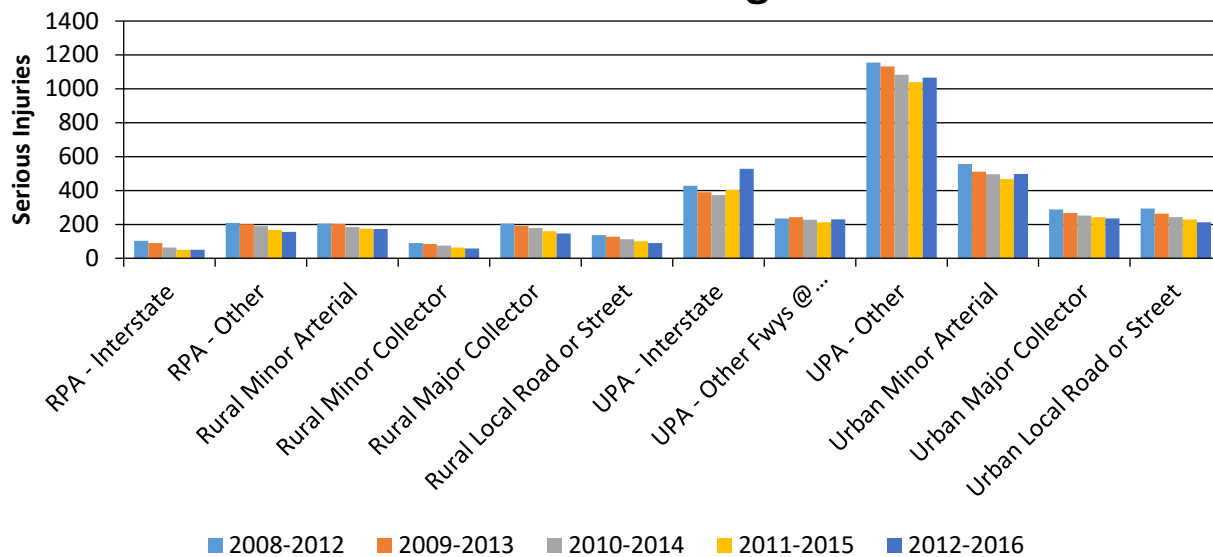| Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Rural Principal Arterial (RPA) - Interstate	23	49.8	0.99	2.13
Rural Principal Arterial (RPA) - Other Freeways and Expressways				
Rural Principal Arterial (RPA) - Other	32.2	156	1.42	6.78
Rural Minor Arterial	38	173	2.02	9.17
Rural Minor Collector	15.8	56.6	1.5	5.47
Rural Major Collector	32.8	145.4	1.99	8.76
Rural Local Road or Street	20.6	89.6	1.24	5.39
Urban Principal Arterial (UPA) - Interstate	73.4	527.4	0.5	3.53
Urban Principal Arterial (UPA) - Other Freeways and Expressways	45	230	0.73	3.73
Urban Principal Arterial (UPA) - Other	157.2	1,065.8	1.44	9.79
Urban Minor Arterial	70.4	497.6	1.02	7.22
Urban Minor Collector				
Urban Major Collector	32.8	234.2	0.83	5.83
Urban Local Road or Street	21	212.8	0.68	6.88

Year 2016

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	351	1,807		
County Highway Agency	124	710		
Town or Township Highway Agency				
City of Municipal Highway Agency	26	222		
State Park, Forest, or Reservation Agency				
Local Park, Forest or Reservation Agency				
Other State Agency				
Other Local Agency				
Private (Other than Railroad)				
Railroad				
State Toll Authority				
Local Toll Authority				
Other Public Instrumentality (e.g. Airport, School, University)	0	10		
Indian Tribe Nation				

Number of Fatalities by Functional Classification
5 Year Average

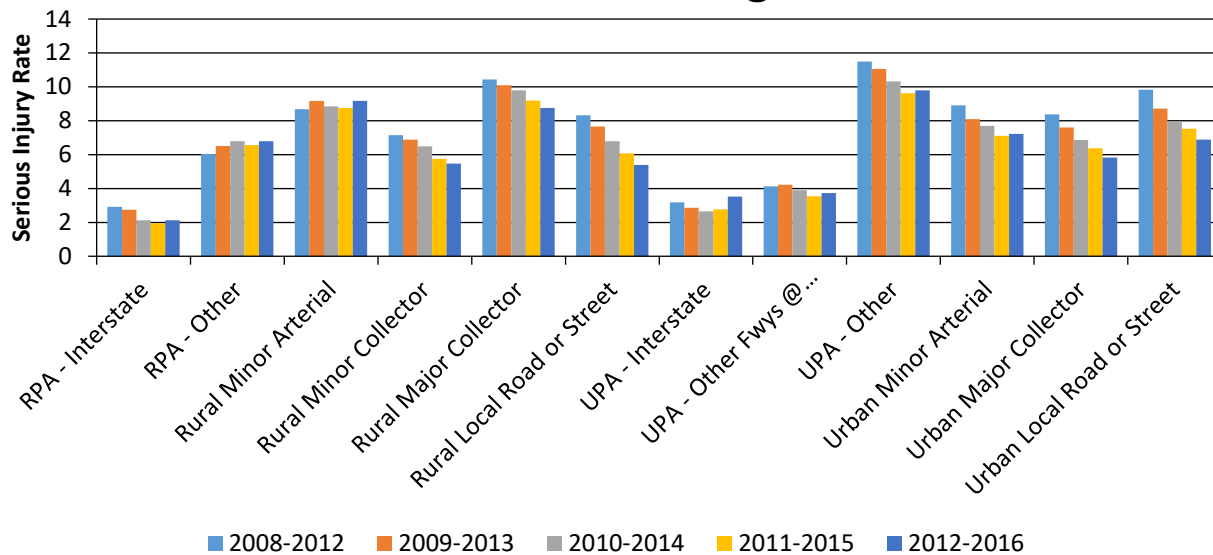Legend: 2008-2012, 2009-2013, 2010-2014, 2011-2015, 2012-2016
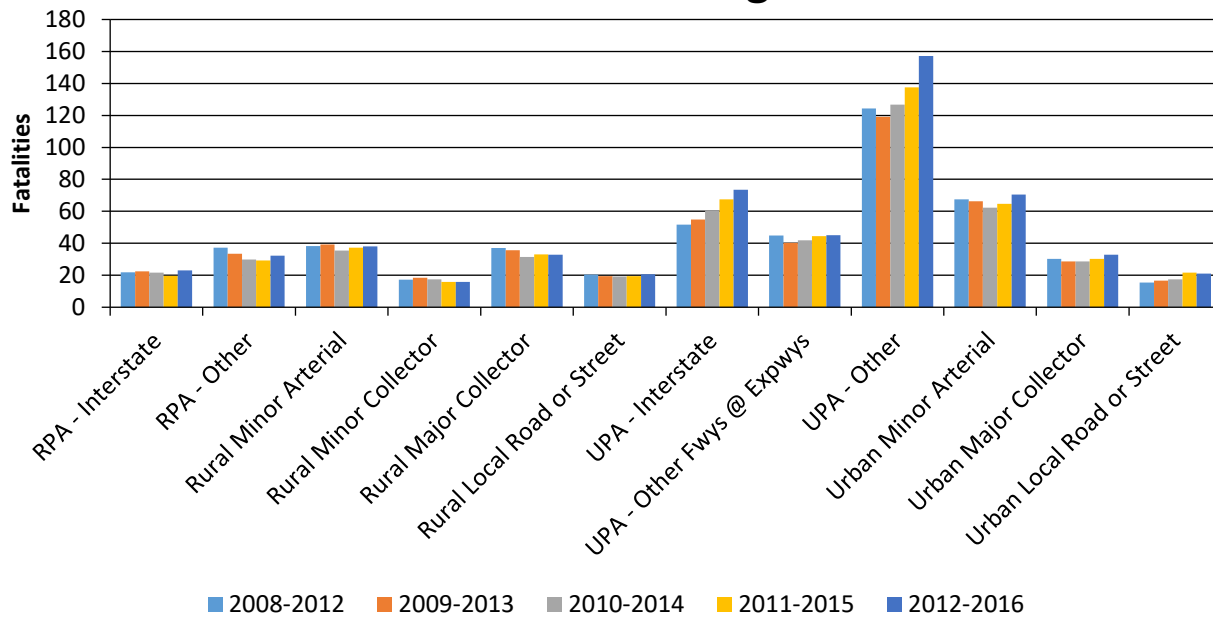
Number of Serious Injuries by Functional Classification
5 Year Average

Fatality Rate (per HMVMT) by Functional Classification
5 Year Average
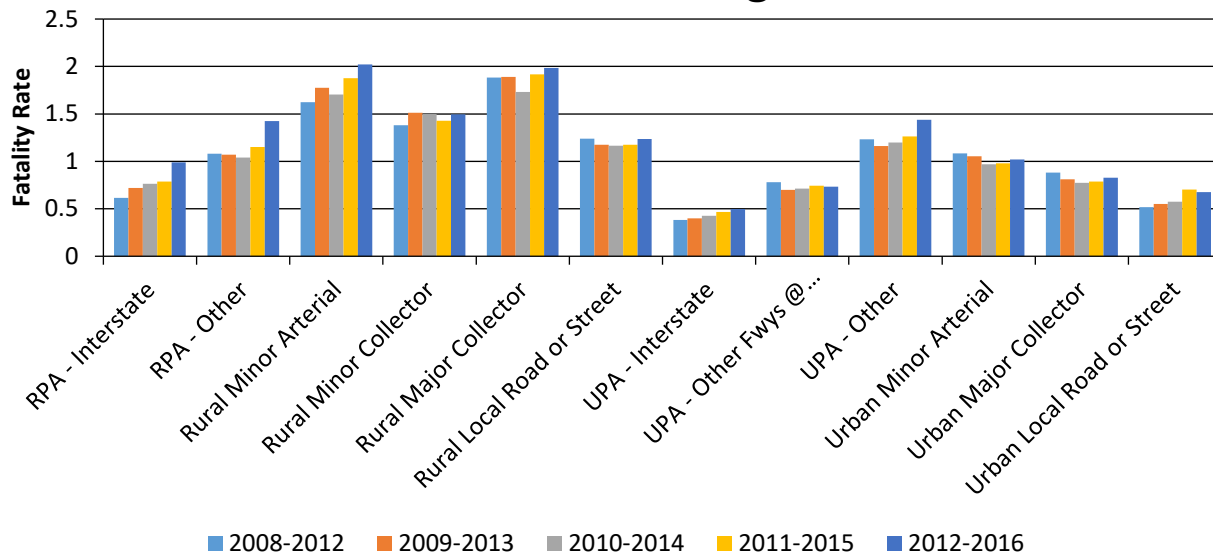
Legend: ■ 2008-2012 ■ 2009-2013 ■ 2010-2014 ■ 2011-2015 ■ 2012-2016

Serious Injury Rate (per HMVMT) by Functional Classification
5 Year Average

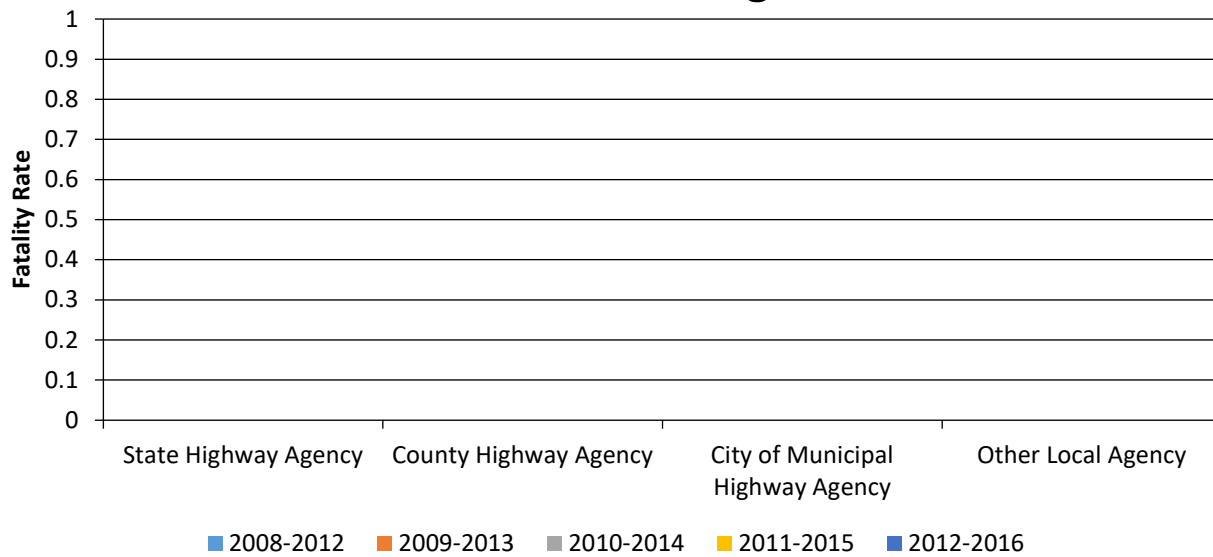Legend: 2008-2012, 2009-2013, 2010-2014, 2011-2015, 2012-2016

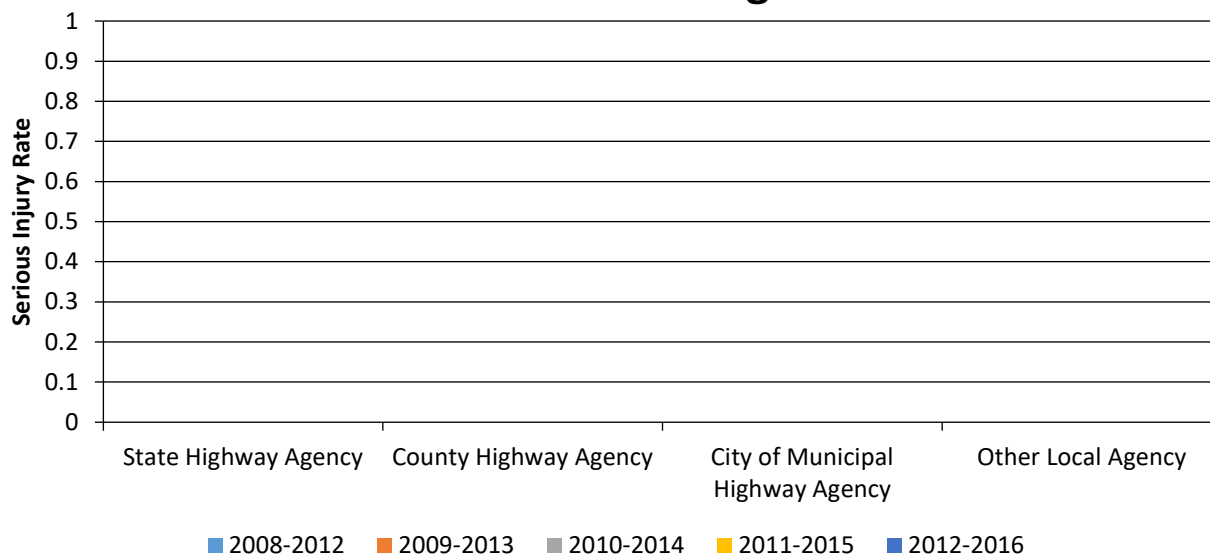# Number of Fatalities by Roadway Ownership
5 Year Average
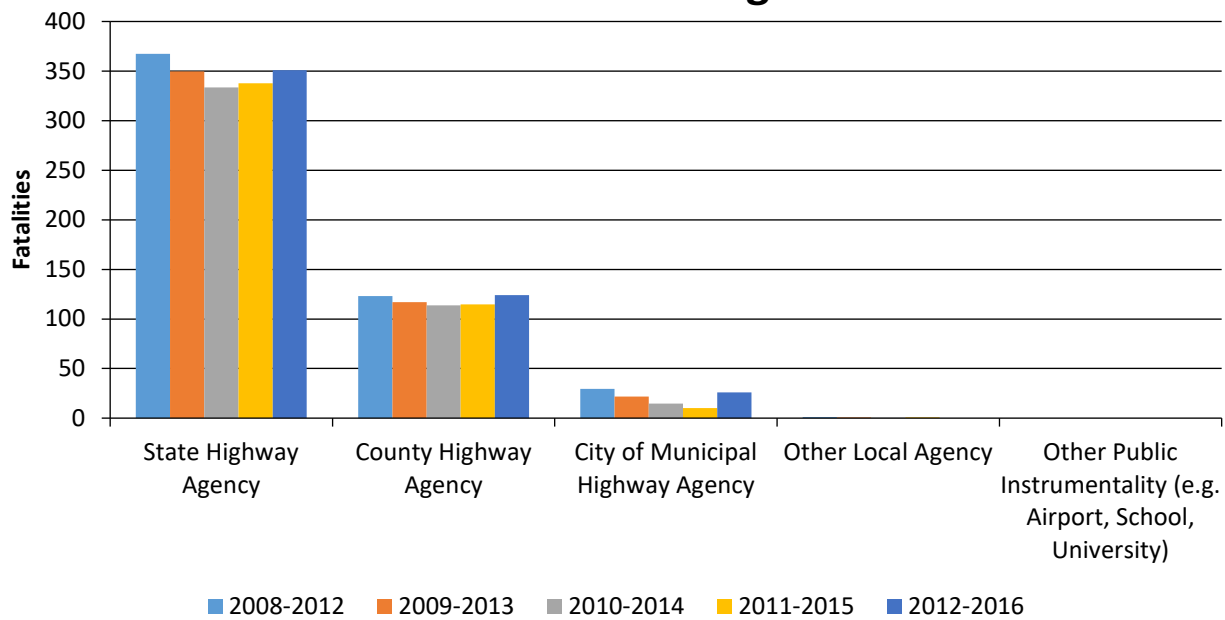
Number of Serious Injuries by Roadway Ownership
5 Year Average
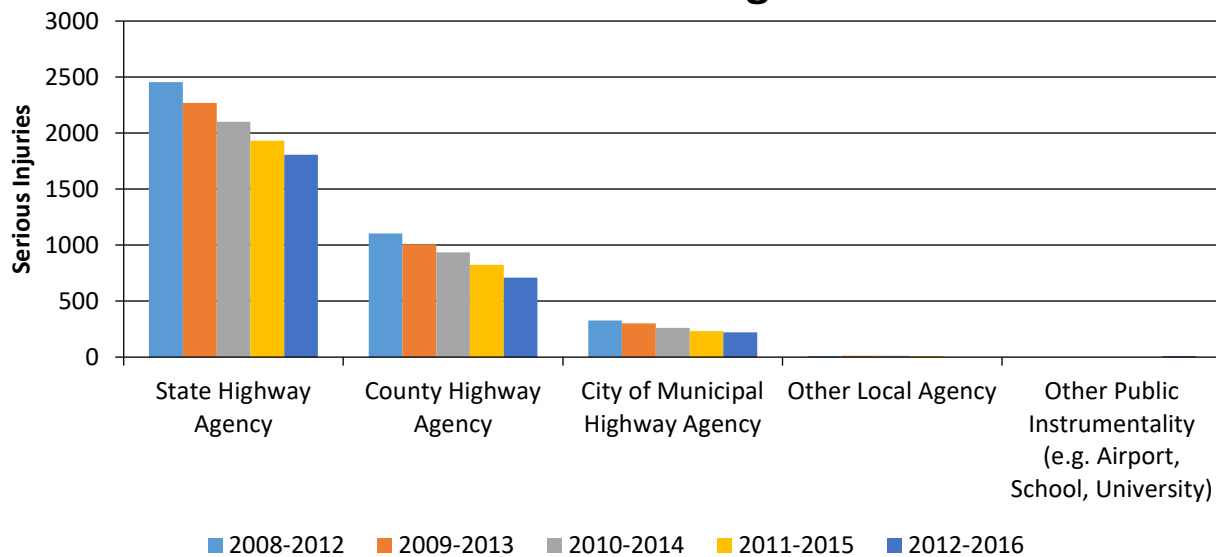
Fatality Rate (per HMVMT) by Roadway Ownership
5 Year Average

Serious Injury Rate (per HMVMT) by Roadway Ownership
5 Year Average

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 2019 Targets *

Number of Fatalities   435.0

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

Maryland has set highway safety performance targets that are quantifiable, and data driven, maintaining the Toward Zero Deaths (TZD) approach by developing interim targets to reduce overall fatalities and serious injuries by at least 50 percent in the next two decades, starting with a baseline of 2008 to an end goal in 2030. Five-year rolling averages are used to calculate five-year-average targets for fatalities and serious injuries, e.g., 2012–2016 actual crash data are used to determine targets for 2015–2019 (five-year average). (However, it should be noted that due to significant declines in

serious injuries in recent years, and a recent change in the Maryland crash report definition of injury severity, the use of historical trends currently puts the State at or below current targets for serious injuries.) This method is applied to the five performance measures required by the Federal Highway Administration (FHWA): fatalities, fatality rate, serious injuries, serious injury rate, and non-motorized fatalities and serious injuries with the first three being identical in Maryland's HSP and HSIP.

Number of Serious Injuries   3211.1

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

Maryland has set highway safety performance targets that are quantifiable, and data driven, maintaining the Toward Zero Deaths (TZD) approach by developing interim targets to reduce overall fatalities and serious injuries by at least 50 percent in the next two decades, starting with a baseline of 2008 to an end goal in 2030. Five-year rolling averages are used to calculate five-year-average targets for fatalities and serious injuries, e.g., 2012–2016 actual crash data are used to determine targets for 2015–2019 (five-year average). (However, it should be noted that due to significant declines in serious injuries in recent years, and a recent change in the Maryland crash report definition of injury severity, the use of historical trends currently puts the State at or below current targets for serious injuries.) This method is applied to the five performance measures required by the Federal Highway Administration (FHWA): fatalities, fatality rate, serious injuries, serious injury rate, and non-motorized fatalities and serious injuries with the first three being identical in Maryland's HSP and HSIP.

Fatality Rate   0.771

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

Maryland has set highway safety performance targets that are quantifiable, and data driven, maintaining the Toward Zero Deaths (TZD) approach by developing interim targets to reduce overall fatalities and serious injuries by at least 50 percent in the next two decades, starting with a baseline of 2008 to an end goal in 2030. Five-year rolling averages are used to calculate five-year-average targets for fatalities and serious injuries, e.g., 2012–2016 actual crash data are used to determine targets for 2015–2019 (five-year average). (However, it should be noted that due to significant declines in serious injuries in recent years, and a recent change in the Maryland crash report definition of injury severity, the use of historical trends currently puts the State at or below current targets for serious injuries.) This method is applied to the five performance measures required by the Federal Highway Administration (FHWA): fatalities, fatality rate, serious injuries, serious injury rate, and non-motorized fatalities and serious injuries with the first three being identical in Maryland's HSP and HSIP.

Serious Injury Rate   5.702

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

Maryland has set highway safety performance targets that are quantifiable, and data driven, maintaining the Toward Zero Deaths (TZD) approach by developing interim

targets to reduce overall fatalities and serious injuries by at least 50 percent in the next two decades, starting with a baseline of 2008 to an end goal in 2030. Five-year rolling averages are used to calculate five-year-average targets for fatalities and serious injuries, e.g., 2012–2016 actual crash data are used to determine targets for 2015–2019 (five-year average). (However, it should be noted that due to significant declines in serious injuries in recent years, and a recent change in the Maryland crash report definition of injury severity, the use of historical trends currently puts the State at or below current targets for serious injuries.) This method is applied to the five performance measures required by the Federal Highway Administration (FHWA): fatalities, fatality rate, serious injuries, serious injury rate, and non-motorized fatalities and serious injuries with the first three being identical in Maryland's HSP and HSIP.

Total Number of Non-Motorized Fatalities and Serious Injuries	473.9

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

Maryland has set highway safety performance targets that are quantifiable, and data driven, maintaining the Toward Zero Deaths (TZD) approach by developing interim targets to reduce overall fatalities and serious injuries by at least 50 percent in the next two decades, starting with a baseline of 2008 to an end goal in 2030. Five-year rolling averages are used to calculate five-year-average targets for fatalities and serious injuries, e.g., 2012–2016 actual crash data are used to determine targets for 2015–2019 (five-year average). (However, it should be noted that due to significant declines in serious injuries in recent years, and a recent change in the Maryland crash report definition of injury severity, the use of historical trends currently puts the State at or below current targets for serious injuries.) This method is applied to the five performance measures required by the Federal Highway Administration (FHWA): fatalities, fatality rate, serious injuries, serious injury rate, and non-motorized fatalities and serious injuries with the first three being identical in Maryland's HSP and HSIP.

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

2018 Maryland Highway Safety Improvement Program
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 65 years of age and older 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
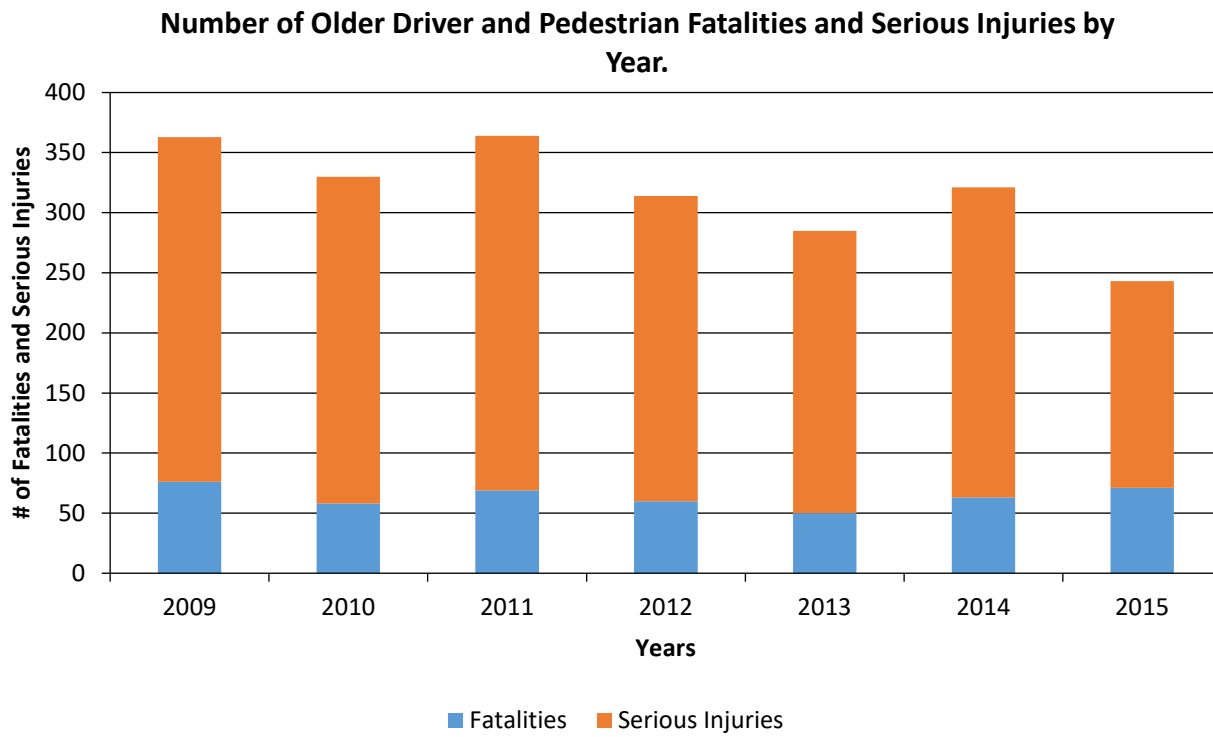
Number of Older Driver and Pedestrian Fatalities and Serious Injuries by Year.

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 2014	Fatalities 2015	Fatalities 2016	Serious Injuries 2014	Serious Injuries 2015	Serious Injuries 2016	Fatality Rate (per HMVT) 2014	Fatality Rate (per HMVT) 2015	Fatality Rate (per HMVT) 2016	Serious Injury Rate (per HMVMT) 2014	Serious Injury Rate (per HMVMT) 2015	Serious Injury Rate (per HMVMT) 2016
Wet Surface Crashes	Wet Road	72	88	78	513	378	410	0.13	0.15	0.13	0.91	0.66	0.70
Left Turn Crash	Left Turn	22	43	29	252	181	235	0.04	0.08	0.05	0.45	0.32	0.40
Angle Crash	Angle	55	56	71	575	485	608	0.10	0.10	0.12	1.02	0.85	1.03
Median Barrier	Opposite Direction	51	67	67	203	237	274	0.09	0.12	0.11	0.36	0.41	0.46

For wet surface crashes over a three year period there was a 13% decrease in the serious injury rate. For left turn crashes over a three year period there was a 11% decrease in the 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. Work continues 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 is in progress to bring Maryland SHA's HSIP program into compliance with the HSIP final rule.
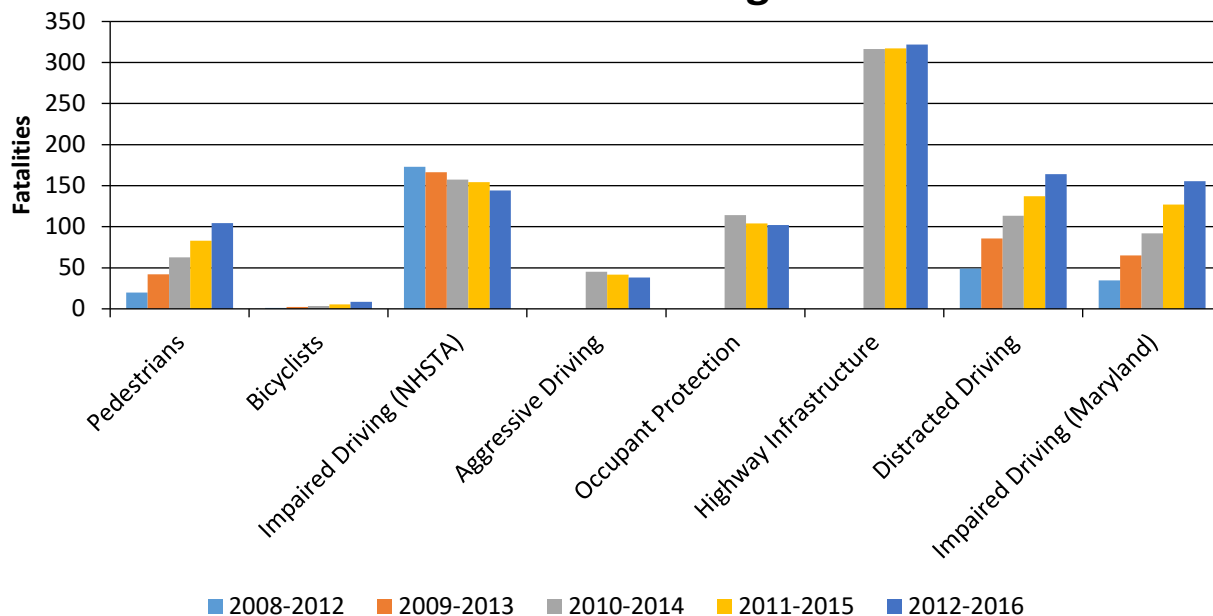
Effectiveness of Groupings or Similar Types of Improvements

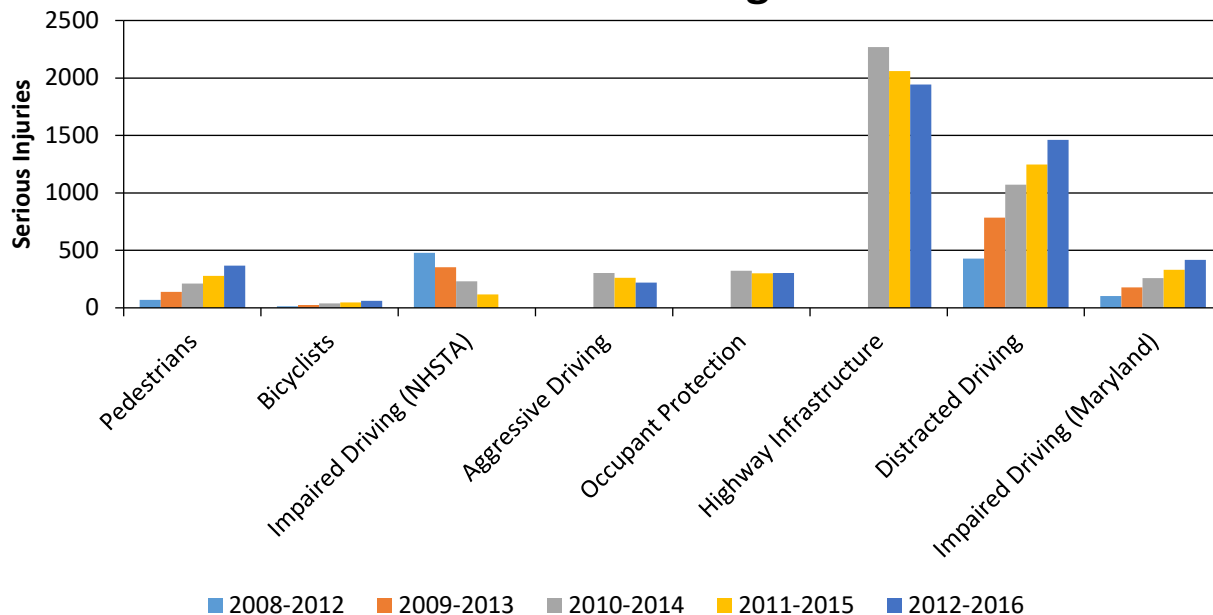**Present and describe trends in SHSP emphasis area performance measures.**

Year 2016

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	All	104.6	367.8	0.18	0.64	0	0	0
Bicyclists	All	8.6	60	0.02	0.11	0	0	0
Impaired Driving (NHSTA)	All	144	0	0	0	0	0	0
Aggressive Driving	All	38.2	220	0.07	0.39	0	0	0
Occupant Protection	All	102.2	302.2	0.18	0.53	0	0	0
Highway Infrastructure	All	321.8	1,942.6	0.56	3.4	0	0	0
Distracted Driving	All	164	1,460.6	0.29	2.57	0	0	0
Impaired Driving (Maryland)	All	155.6	416.8	0.27	0.73	0	0	0

Number of Fatalities
5 Year Average

Legend: 2008-2012 · 2009-2013 · 2010-2014 · 2011-2015 · 2012-2016

Number of Serious Injuries
5 Year Average
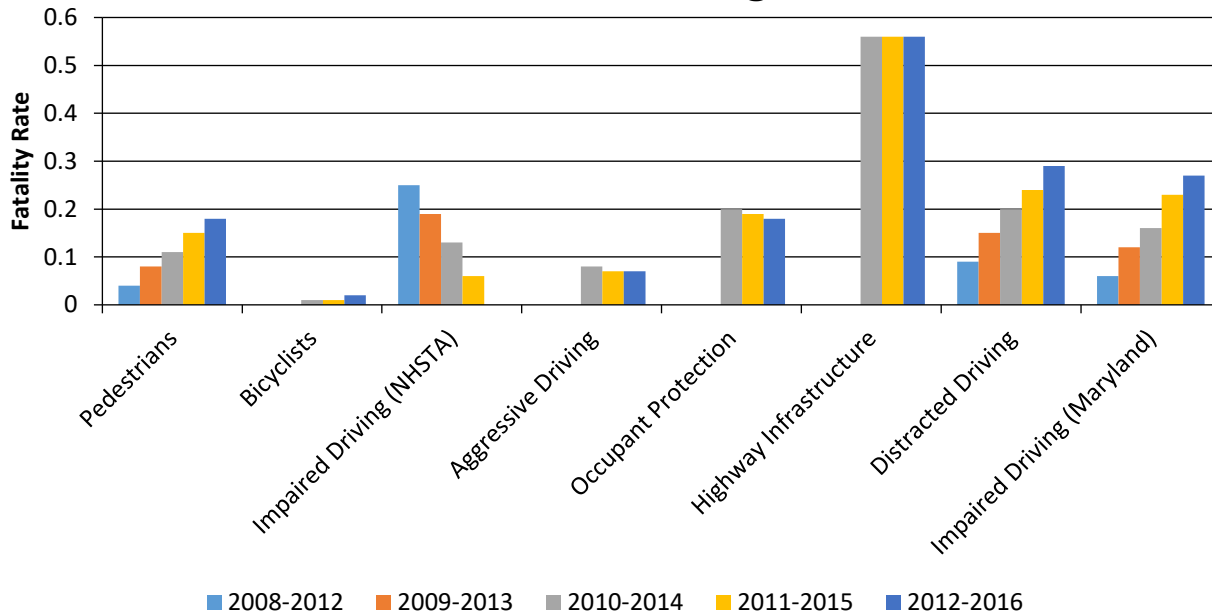
Legend: 2008-2012 · 2009-2013 · 2010-2014 · 2011-2015 · 2012-2016

Fatality Rate (per HMVMT)
5 Year Average

Legend: ■ 2008-2012 ■ 2009-2013 ■ 2010-2014 ■ 2011-2015 ■ 2012-2016

Serious Injury Rate (per HMVMT)
5 Year Average

Legend: ■ 2008-2012 ■ 2009-2013 ■ 2010-2014 ■ 2011-2015 ■ 2012-2016
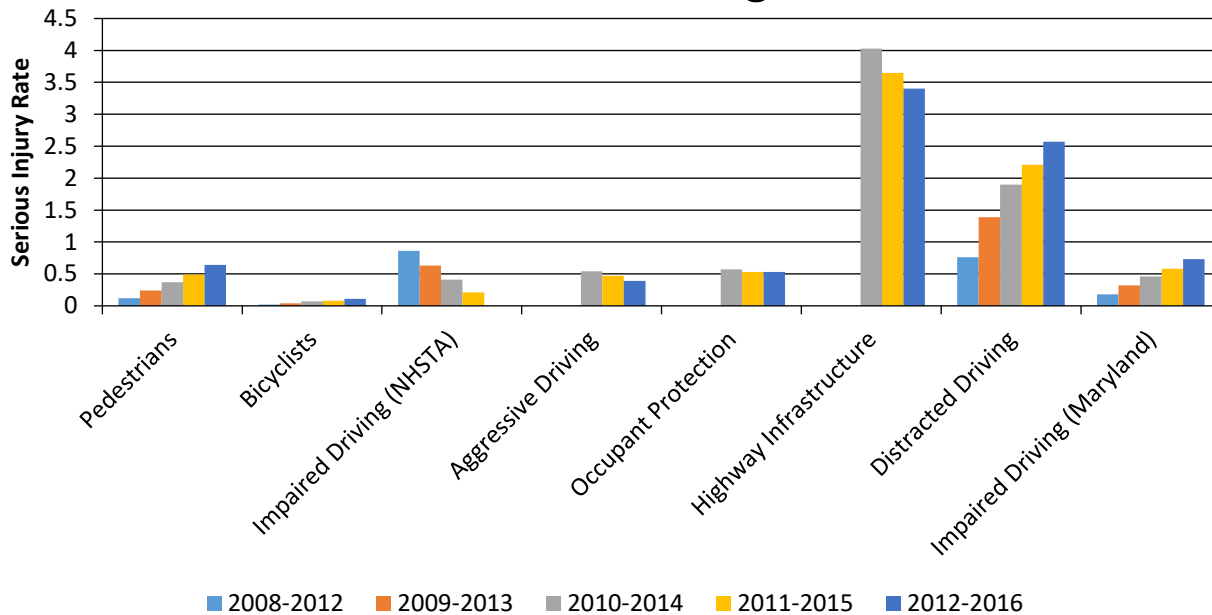
Enter additional comments here to clarify your response for this question or add supporting information.

Question 43

Note 1

"An aggressive driving crash occurs when at least one driver in the crash was reported to be driving aggressively, defined by having one of the following values in both the primary and secondary Contributing Circumstance fields from the standard crash report form:

Failed to yield right-of-way

Failed to obey stop sign

Failed to keep right of center

Failed to stop for a school bus

Too fast for conditions

Followed too closely

Failed to obey other traffic control

Exceeded speed limit

Failed to obey traffic signal

Improper lane change

Improper passing

Other improper action

Disregarded other road markings

Wrong way on a one way street

Failure to obey traffic signs, signals, or officer

Operated motor vehicle in erratic/reckless manner "

Note 2

"A distracted driving crash occurs when a driver shifts attention away from the driving task due to a number of things, including adjusting a radio, attending to a child, or using a cell phone (e.g., talking, texting, or other use)."

Note 3

"According to NHTSA's Fatal Analysis Reporting System (FARS), drivers are considered to be alcohol-impaired when their blood alcohol concentration (BAC) is 0.08 grams per deciliter (g/dL) or higher. Thus, any fatality occurring in a crash involving a driver with a BAC of 0.08 or higher is considered to be an alcohol-impaired driving fatality. In Maryland, an impaired driving crash as indicated on the Maryland crash report is determined by the investigating officer based on the driver's condition, BAC, and/or substance use detection. It will include any level of alcohol in the system and/or drug impairment. Therefore Maryland impaired driving targets are different than the targets based on FARS data." 2016 FARS totals are preliminary at the time of this report.

Note 4

"An unrestrained-occupant crash is defined as including a passenger vehicle (automobile, station wagon, van, SUV, or pickup truck) occupant:

- Less than eight years of age recorded as not using a "Child/Youth Restraint,"
- Eight years of age or older recorded as not using a "Lap and Shoulder Belt" or "Air Bag and Belt," or
- Whose restraint use was recorded as using "None" or "Air Bag Only."

Note 5

"Intersection-related and run-off-the-road crashes are the prime indicators of roadway infrastructure opportunities for improvement. Work-zone crashes also are included in this emphasis area.

A Run-Off-the-Road Crash is defined as a crash where the first event was recorded as striking a fixed object or running off the road, or the location of the crash was reported as off-road or in the median.

Intersection Crashes are those crashes reported as occurring in an intersection or being intersection-related (i.e., in a traffic situation resulting from an intersection).

Work-Zone Crashes are those crashes reported as occurring in a work zone in the standard crash report. They can include construction, maintenance, and utility work zones."

Note 6

"Pedestrian crashes are defined as crashes involving a person reported as a pedestrian on foot (using the 'pedestrian' person type and 'pedestrian on foot' pedestrian type), including a motorist who has exited a vehicle. Bicyclist crashes are defined as crashes involving a person reported as a bicyclist or pedalcyclist (using the 'bicyclist' or 'other pedalcyclist' type)."

All notes are from the Maryland Strategic Highway Safety Plan 2016-20

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 OTHER INJURY BEFORE	ALL OTHER 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.

MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE
ROADWAY SEGMENT										
Segment Identifier (12)	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								
Access Control (22)	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
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	100								
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)			99	99						
AADT Year (80)			99	99						
Unique Approach Identifier (139)			100	100						
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				
Roadway Type at End Ramp Terminal (199)					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
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	100.00	89.75	89.75	100.00	100.00	89.44	87.78	100.00	100.00

*Based on Functional Classification

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 has implemented Esri's Roads and Highways (R&H) software to manage our GIS roadway and LRS data for HPMS submission. This year MDOT SHA used Roads and Highways for their 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. We have begun a pilot conflation process between MDOT SHA and two county jurisdictions to test process and develop the protocols that will be used for the integration of the remaining counties of Maryland. This geometry will be the base of the R&H data model. This data sharing and cooperation between the local and state jurisdictions will better allow us to identify and fill data gaps, with the appropriate, authoritative information.
- FHWA has authorized several pilots to investigate developing methodologies to more accurately calculate local AADTs for lower functionally classified roadways. MIRE FDEs require this type of data, while the local jurisdictions do not have the wherewithal nor need to completely capture and maintain this type of data. Therefore, the need to develop better proxies or models to better estimate these AADTs for local roads is an ongoing FHWA investigation.

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)	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 *
					Unconsciousness when taken from the crash scene 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?
No

When does the State plan to complete it's next HSIP program assessment.

2019

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

Optional Attachments

Program Structure:

Project Implementation:

Safety Performance:

Evaluation:

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.